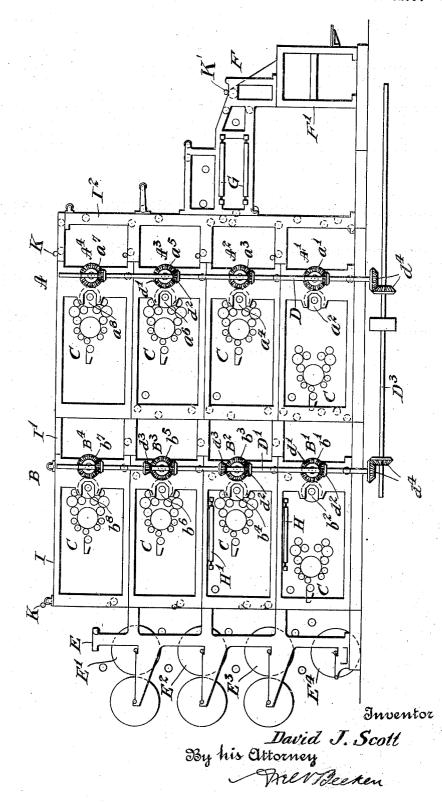
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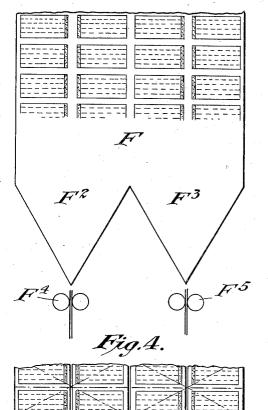
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Fig.3.



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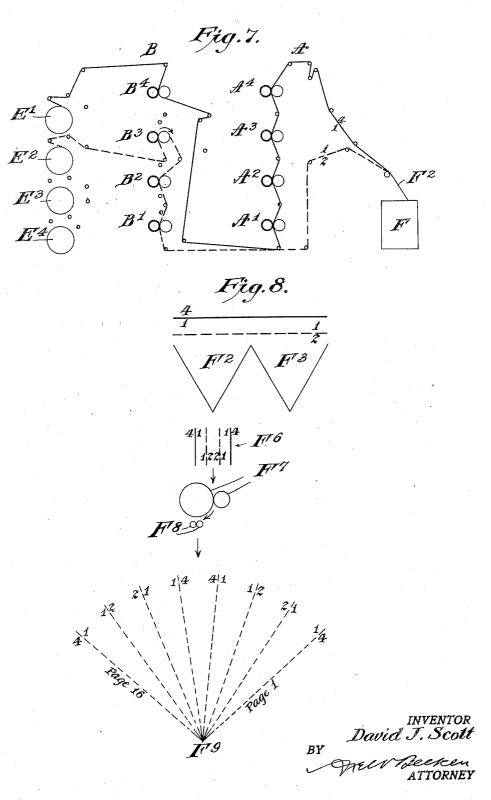
Dec. 3, 1929. 1,738,323 D. J. SCOTT MULTICOLOR PRINTING PRESS Filed Dec. 30, 1926 33 Sheets-Sheet 3 Fig.5. \mathcal{B} Æ B^4 C A^4 E^{1} \mathcal{A}^{3} B³ Q E^{2} B^2 $\mathcal{A}^2 O$ 72 C E^{3} B^{1} $\mathcal{A}^{1}C$ F E^{4} Fig.6. F^{2} F^{3} -F⁶ 12 2 21 2 - INVENTOR David J. Scott Fuge 1 Page 24 F9 BY 729.

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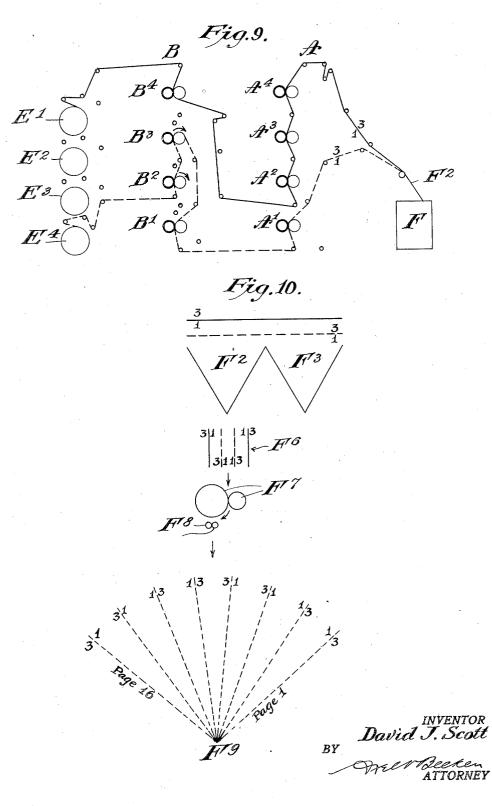
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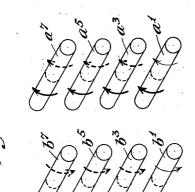


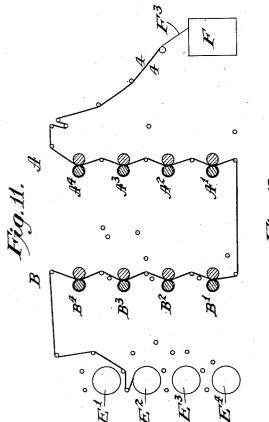
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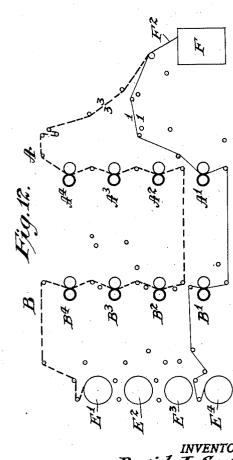
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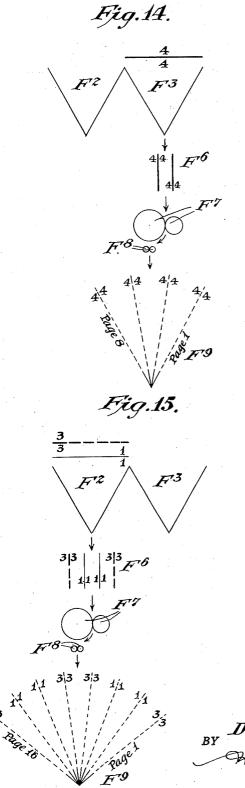
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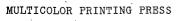
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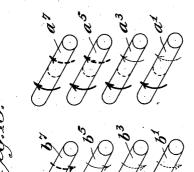


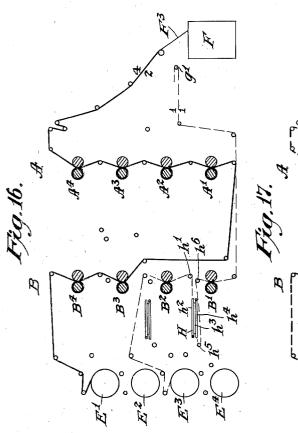
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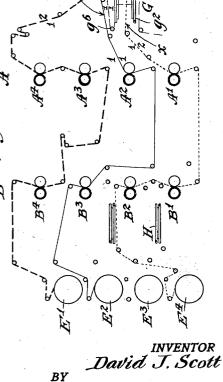
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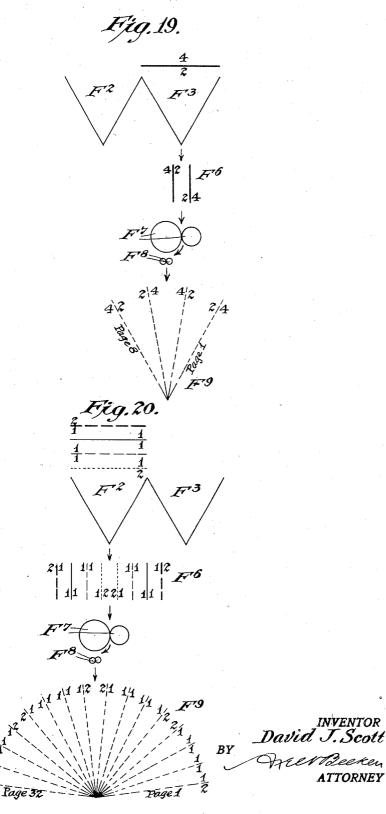




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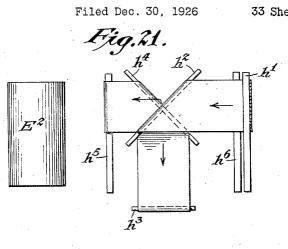
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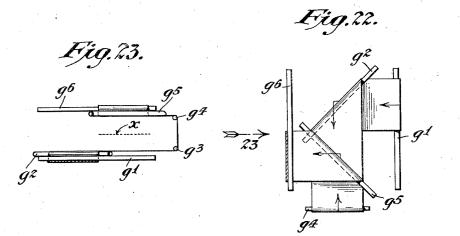


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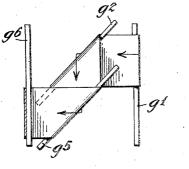
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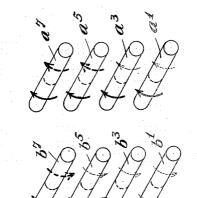
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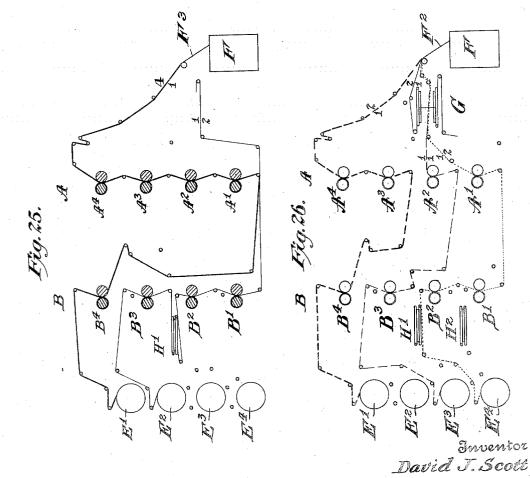
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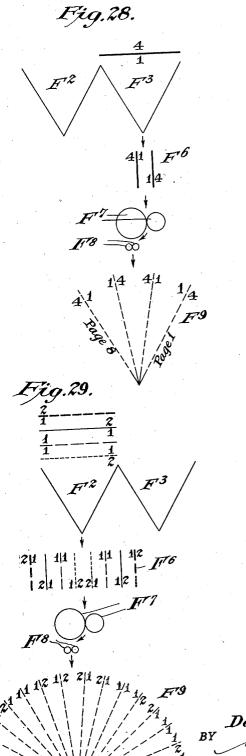
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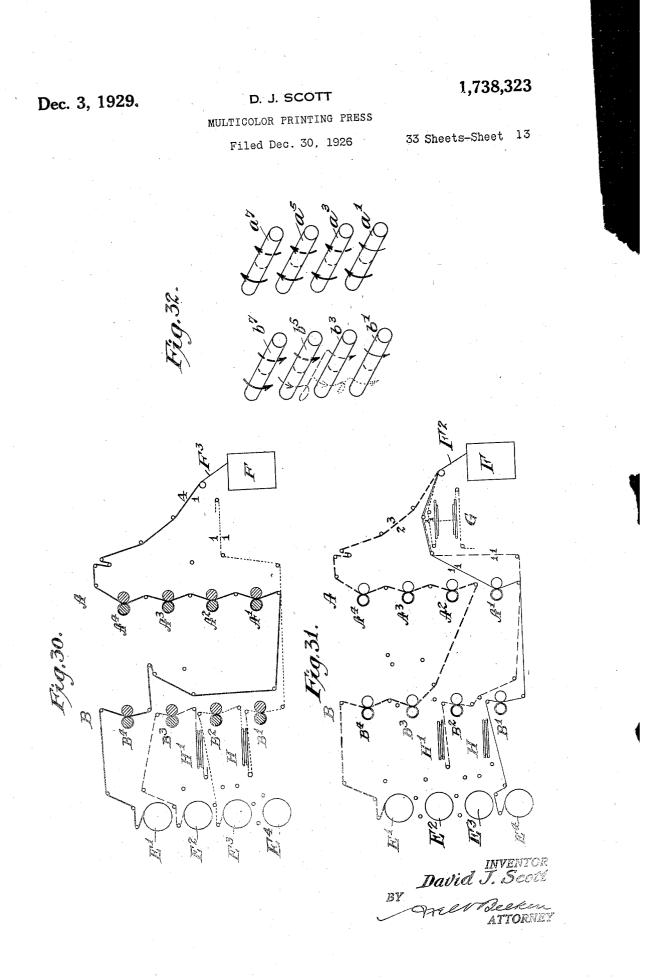


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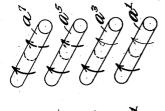


1,738,323 D. J. SCOTT Dec. 3, 1929. MULTICOLOR PRINTING PRESS 33 Sheets-Sheet 14 Filed Dec. 30, 1926 Fig.33. 41 F3 F9 ig.34. 32 11 HT3 172 3|2 111 111 111 11111 **476** 1 F78. 1 1× 1× 2/3 312 14 1/1 ventor **Scot**é 19 David BY *Beeken* ATTORNEY 123 Page 1 Page 32

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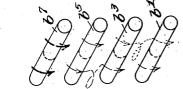
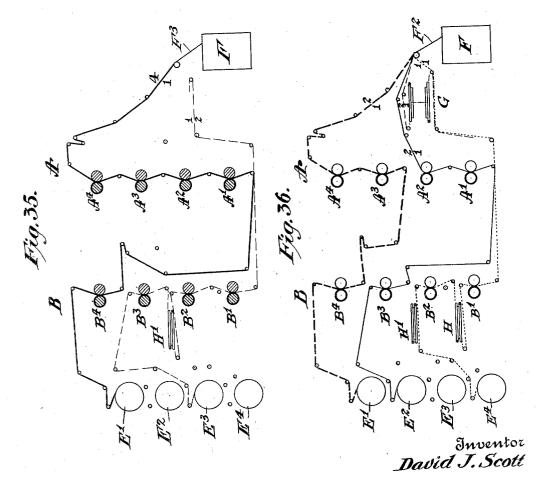


Fig. 37.



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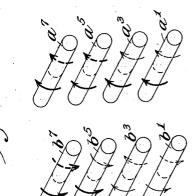
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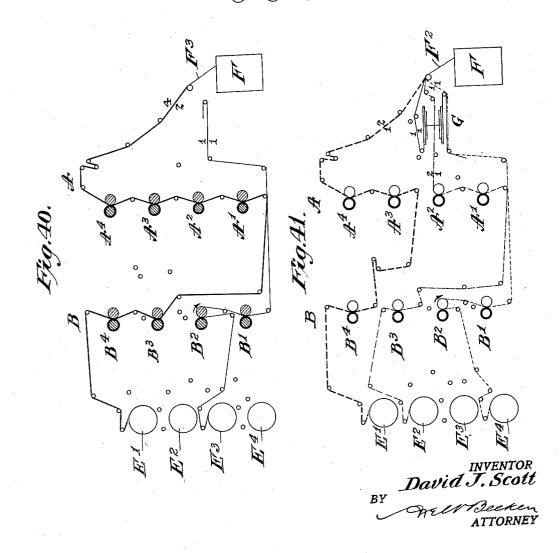
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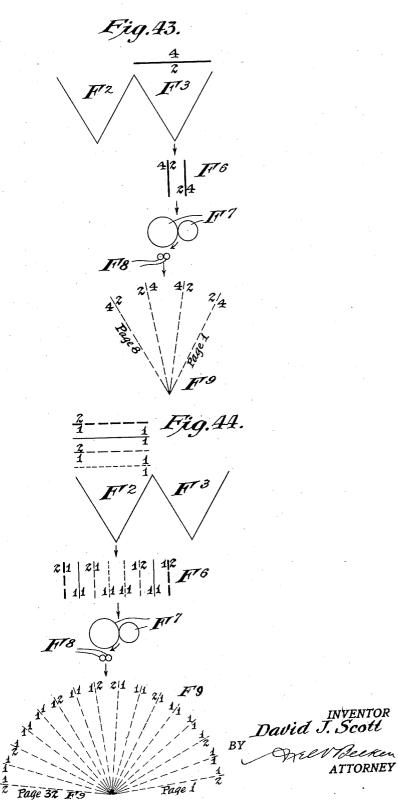
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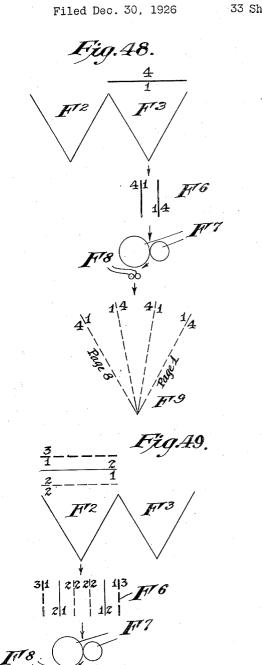
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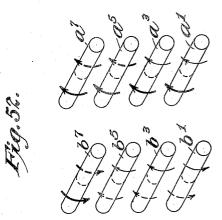
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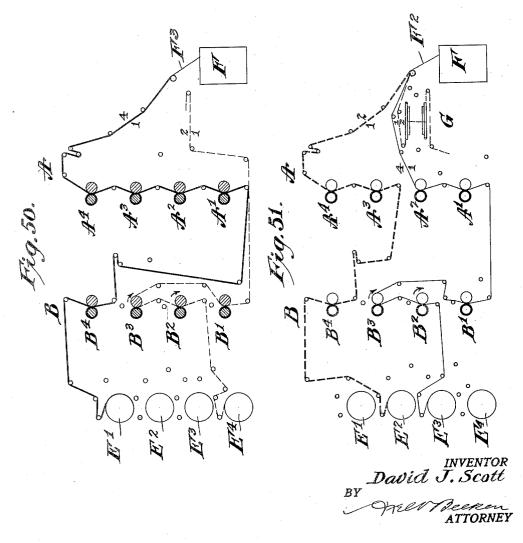
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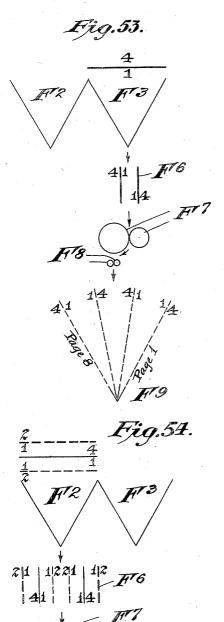


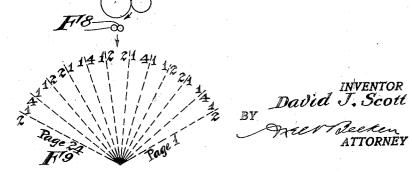


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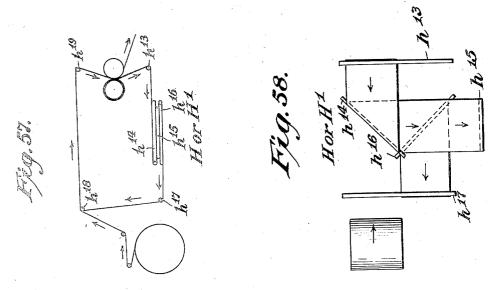


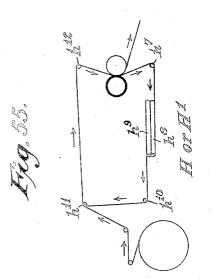


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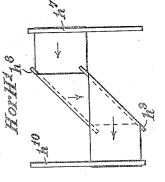
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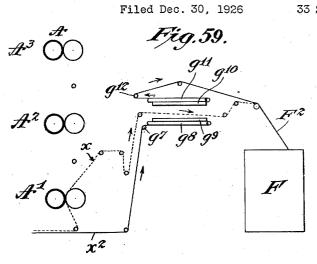




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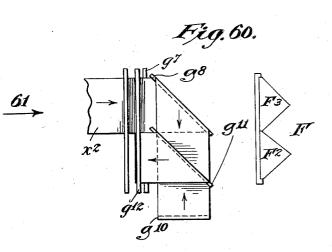
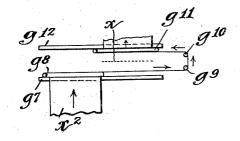
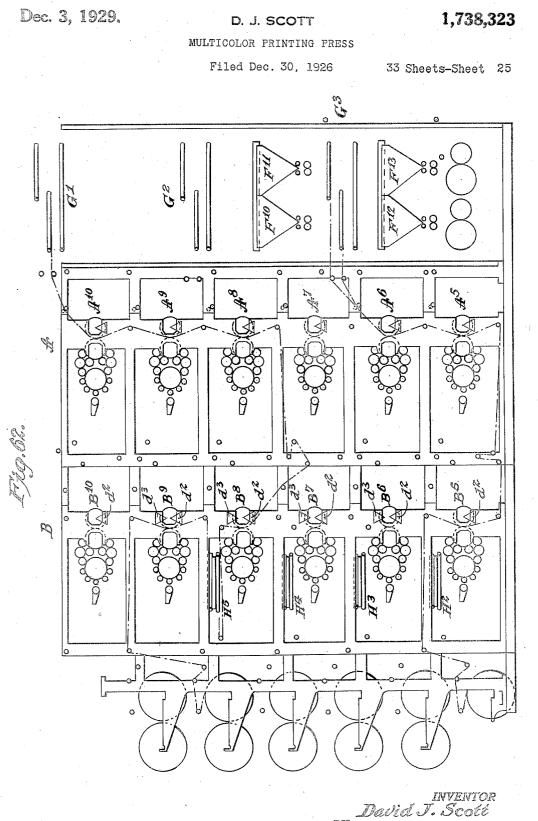


Fig.61.



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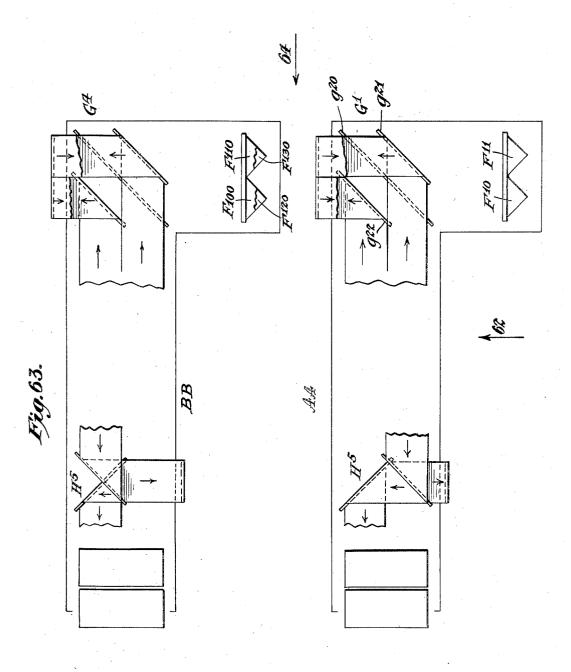


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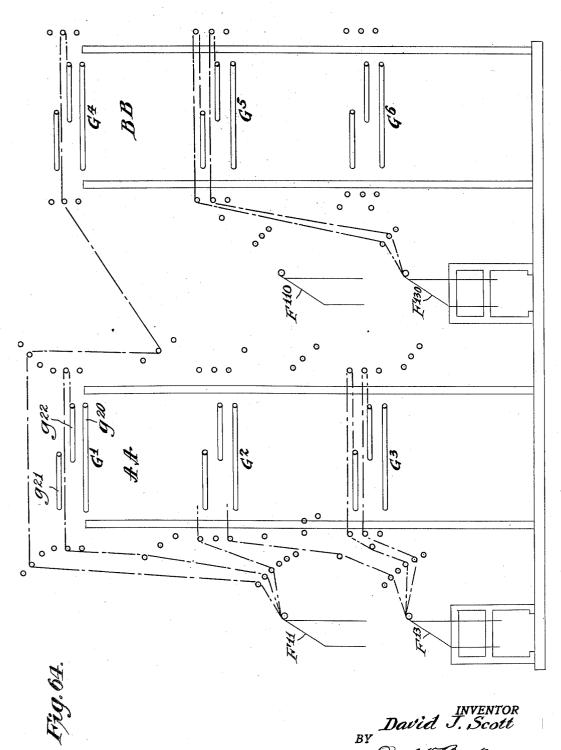
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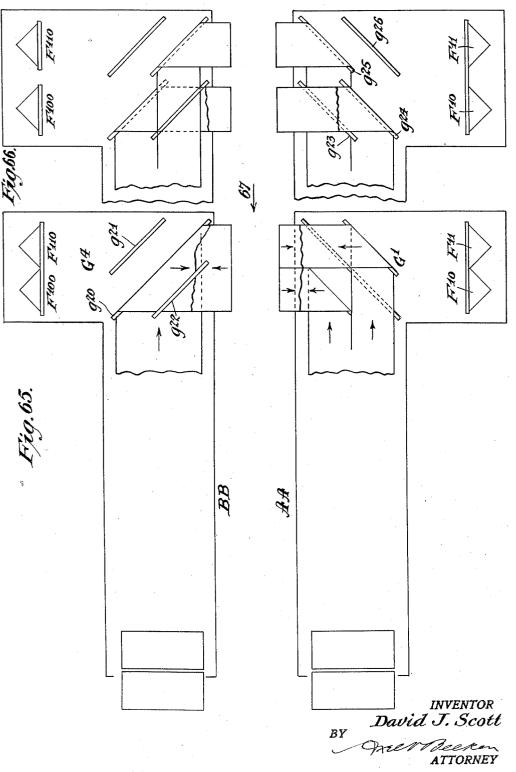
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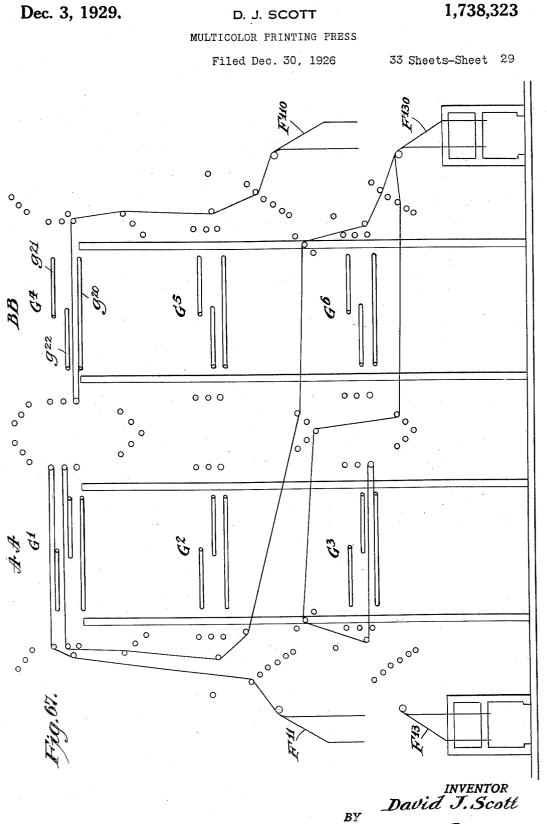
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Fig.69. Fig.68. 923 ġ25 g26 'g24 *923* \rightarrow ъΣ 0 g'25 G26 `g24 85 O F 10 FII F100 F110 r [-0 <u>8</u> 96 00 *927* 927 હર્ F 13 F42 _____ ·----26 g27 96 ъĽ ∞ Ω gi F11 69

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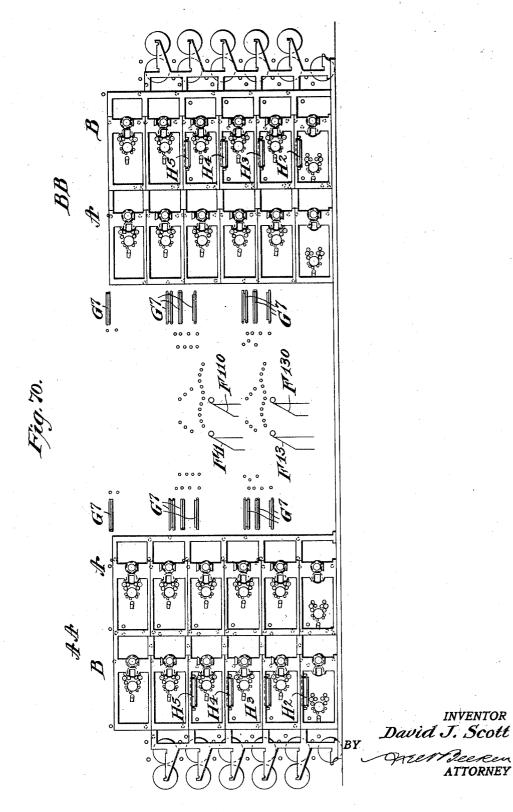
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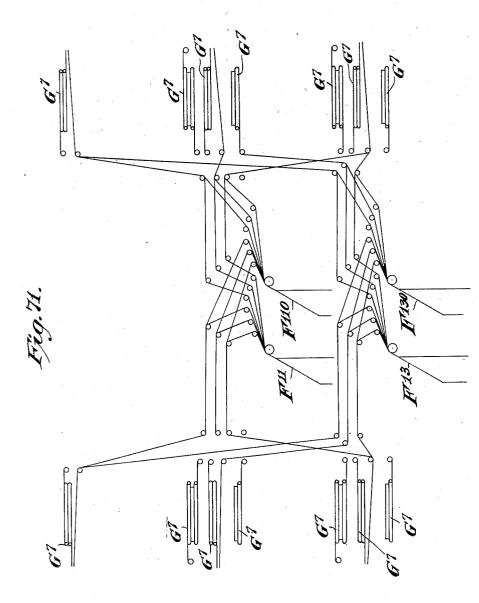
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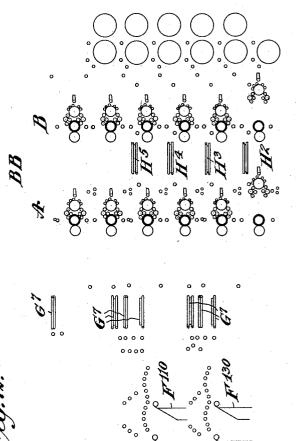
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Patented Dec. 3, 1929

UNITED STATES PATENT OFFICE

DAVID J. SCOTT, OF PLAINFIELD, NEW JERSEY, ASS (GNOR TO ISABELLA SCOTT AND DAVID J. SCOTT, EXECUTORS OF THE ESTATE OF WALTER SCOTT, DECEASED, DOING BUSINESS UNDER THE NAME OF WALTER SCOTT & COMPANY, OF PLAINFIELD, NEW JERSEY

MULTICOLOR-PRINTING PRESS

Application filed December 30, 1926. Serial No. 158,052.

This invention relates to multi-color rotary printing machines and has for its main object the production of a machine, for printing and perfecting one or more webs at will in one or more colors, of simple construction and of K great flexibility, that is : Many different products can be obtained in a variety of ways so that the full capacity of the machine may at all times be utilized, if desired. The machine can be used both for regular newspaper print-

- 10 ing and for "tabloid" printing or for a com-bination of the two, and the invention consists of the features hereinafter pointed out in the claims.
- In the accompanying drawings the inven-15 tion is disclosed in several concrete and preferred forms in which

Fig. 1 is a view in side elevation of a multicolor rotary machine embodying one form of the invention : 20

Fig. 2 is a perspective view of a designcarrying cylinder provided with plates for papers of tabloid size:

Fig. 3 is a diagrammatic view showing a 25 double-width printed web, printed by the cylinder in Fig. 2, passing over two former folders:

Fig. 4 is a diagrammatic view showing a double-width web section printed with tabloid size pages and showing the lines of slit-30 ting, severing and folding:

Fig. 5 is a diagrammatic view of the parts shown in Fig. 1, with typical web leads indicated, when the rotation of one of the printing couples is reversed:

35 Fig. 6 is a diagrammatic view showing the webs printed by the arrangement of Fig. 5 adjacent the folders and showing the product obtained thereby:

Fig. 7 is a diagrammatic view of the parts 40 shown in Fig. 1 showing typical web leads when the rotation of another printing couple is reversed:

Fig. 8 is a diagrammatic view showing the 45 webs of Fig. 7 coming over the former folders and the product obtained thereby:

Fig. 9 is a diagrammatic view of the parts shown in Fig. 1 showing typical web leads when two printing couples have their rotation 50 reversed:

Fig. 10 is a diagrammatic view showing the webs of Fig. 9 coming over the former folders and the product obtained thereby:

Fig. 11 is a vertical sectional diagrammatic view of the parts shown in Fig. 1 disclosing 55 the far end of the machine and indicating a typical web lead passing through the far end of the machine :

Fig. 12 is a diagrammatic view of the parts shown in Fig. 1 of the near end of the machine 60 with typical web leads indicated to be run simultaneously with the web lead indicated in Fig. 11:

Fig. 13 is a perspective view of the impression cylinders of the two sets, the web leads 65 of Figs. 11 and 12 being indicated by arrows:

Fig. 14 is a diagrammatic view of the web of Fig. 11 coming over the former folder and the product obtained thereby:

Fig. 15 is a diagrammatic view of the 70 webs of Fig. 12 coming over the former folder and the product obtained thereby:

Fig. 16 is a vertical sectional diagrammatic view showing typical web leads at the far side of the machine of Fig. 1, one web being 75 printed and perfected by two couples of the same set at the far side of the machine:

Fig. 17 is a diagrammatic view of the parts shown in Fig. 1 of the near side of the machine showing typical web leads to be used so in connection with the web leads of Fig. 16 and showing also a web from the far side of the machine associated with webs on the near side of the machine:

Fig. 18 is a perspective view of the impres- 85 sion cylinders of the two sets with the web leads of Figs. 16 and 17 indicated by arrows:

Fig. 19 is a diagrammatic view showing one of the webs of Fig. 16 coming over the former folder and the product obtained there- 90 by:

Fig. 20 is a diagrammatic view showing the webs of Fig. 17 coming over the former folder and the product obtained thereby:

Fig. 21 is a detail plan view showing one 95 adjustment of angle bars such as is used in connection with one of the web leads in Fig. 16:

Fig. 22 is a detail plan view of one adjustment of the angle bars adjacent the fold- 100

er for cross-associating a web from the far to the near side of the machine as shown in Fig. 17:

Fig. 23 is a diagrammatic detail view of 5 the parts shown in Fig. 22 and looking in the direction of arrow 23 of Fig. 22:

Fig. 24 is a diagrammatic plan view of another adjustment of the angle bars adjacent the folder:

Fig. 25 is a vertical sectional diagram-10 matic view of the far side of the machine shown in Fig. 1 with typical web leads indicated, one web being printed and perfected in several colors at the far side of the ma-15 chine:

Fig. 26 is a diagrammatic view of the machine shown in Fig. 1 with typical web leads at the near side of the machine indicated to be used in connection with the web

20 leads of Fig. 25 and showing also a web from the far side of the machine associated with the webs at the near side:

Fig. 27 is a perspective diagrammatic view of the impression cylinders of the two sets with the web leads of Figs. 25 and 26 indi-25 cated by arrows:

Fig. 28 is a diagrammatic view showing one of the webs of Fig. 25 coming over the former folder and the product obtained there-30 by:

Fig. 29 is a diagrammatic view showing the webs of Fig. 26 coming over the former folder and the product obtained thereby:

Fig. 30 is a vertical sectional diagrammatic 35 view of the far side of the machine shown in Fig. 1 with typical web leads indicated, one web being both printed and perfected by two printing couples of the same set at the far side of the machine and another web being printed at the far side of the machine and 40

transferred to the near side of the machine to receive further impressions:

Fig. 31 is a diagrammatic view of the near side of the machine shown in Fig. 1 showing 45 typical web leads to be used in connection with the web leads of Fig. 30 and showing also a web transferred from the far side of the machine to receive further impressions and another web transferred from the far 50

side of the machine to the near side folder: Fig. 32 is a perspective view of the impression cylinders of the two sets with the web leads of Figs. 30 and 31 indicated by arrows:

Fig. 33 is a diagrammatic view showing 55 one of the webs of Fig. 30 passing over the former folder and the product obtained thereby

Fig. 34 is a diagrammatic view of the webs 60 of Fig. 31 passing over the former folder and the product obtained thereby:

Fig. 35 is a vertical sectional diagrammatic view of the far side of the machine shown in Fig. 1 showing typical web leads, one of c5 the webs being printed and perfected in sev-

eral colors at the far end of the machine by printing couples of the same set:

Fig. 36 is a diagrammatic view of the near side of the machine of Fig. 1 showing typical web leads to be used in connection with the web leads of Fig. 35 and showing a web 70printed and perfected by couples of the same set at the near side of the machine and showing another web cross-associated from the far side of the machine to the near side folder:

Fig. 37 is a perspective view of the impres-75 sion cylinders of the two sets with the web leads of Figs. 35 and 36 indicated by arrows:

Fig. 38 is a diagrammatic view showing one of the webs of Fig. 35 passing over the former folder and the product obtained 80 thereby:

Fig. 39 is a diagrammatic view showing the webs of Fig. 36 passing over the former folder and the product obtained thereby:

85 Fig. 40 is a vertical sectional diagrammatie view of the far side of the machine of Fig. 1 showing typical web leads, one of the printing couples of one set having its direction of rotation reversed :

90 Fig. 41 is a diagrammatic view of the near side of the machine shown in Fig. 1 showing typical web leads to be used in connection with the web leads of Fig. 40 and showing also a web from the far side of the machine 95 cross-associated with the near side folder:

Fig. 42 is a perspective view of the impression cylinders of the two sets with the web leads of Figs. 40 and 41 indicated by arrows:

Fig. 43 is a diagrammatic view showing 100 one of the webs of Fig. 40 passing over the former folder and the product obtained thereby:

Fig. 44 is a diagrammatic view showing the webs of Fig. 41 passing over the former folder 105 and the product obtained thereby:

Fig. 45 is a vertical sectional diagrammatic view of the far side of the machine shown in Fig. 1 showing typical web leads, another of the couples of one of the sets having its 110 direction of rotation reversed:

Fig. 46 is a diagrammatic view of the near side of the machine shown in Fig. 1 with typical web leads to be used in connection with the web leads of Fig. 45 and showing 115 also a web from the far side cross-associated with the near side folder:

Fig. 47 is a perspective view of the impression cylinders of the two sets with the web leads in Figs. 45 and 46 indicated by arrows: 120

Fig. 48 is a diagrammatic view showing one of the webs of Fig. 45 passing over the former folder and the product obtained thereby :

Fig. 49 is a diagrammatic view showing the $_{125}$ webs of Fig. 46 passing over the former folder and the product obtained thereby:

Fig. 50 is a vertical sectional diagrammatic view of the far side of the machine shown in Fig. 1 showing typical web leads and with the 130

of the first set being reversed :

Fig. 51 is a diagrammatic view of the near side of the machine shown in Fig. 1 showing 5 typical web leads to be used in connection with the web leads of Fig. 50 and showing also a web from the far side of the machine cross-associated with the near side folder:

Fig. 52 is a perspective view of the impres-10 sion cylinders of the two sets with the web

leads of Figs. 50 and 51 indicated by arrows: Fig. 53 is a diagrammatic view showing one of the webs of Fig. 50 passing over the former folder and the product obtained 15 thereby:

Fig. 54 is a diagrammatic view showing the webs of Fig. 51 passing over the former folder and the product obtained thereby:

Fig. 55 is a diagrammatic view in side 20 elevation showing an adjustment of angle bars whereby a web may be printed in several colors on the same side, being first printed at the far side of the machine and then at the near side and passing twice through the same 25 printing couple:

Fig. 56 is a diagrammatic top plan view of the parts shown in Fig. 55:

Fig. 57 is a diagrammatic side view of an adjustment of angle bars whereby a web may ²⁰ be printed and perfected by the same printing couple, the web passing twice through the same printing couple:

Fig. 58 is a diagrammatic plan view of the parts shown in Fig. 57:

25 Fig. 59 is a diagrammatic side view of an adjustment of angle bars adjacent the folder whereby a web may be transferred from the far side of the machine to the near side with the same side of the web up, said web also

4) passing around another web at the near side of the machine:

Fig. 60 is a diagrammatic plan view of the parts shown in Fig. 59:

Fig. 61 is a diagrammatic view looking in 45 the direction of arrow 61 of Fig. 60:

Fig. 62 is a view in side elevation of a machine embodying the invention and showing a modified form thereof:

Fig. 63 is a diagrammatic top plan view of 50 the machine shown in Fig. 62 with another machine similar to it placed behind it:

Fig. 64 is an enlarged diagrammatic view of the folders shown in Figs. 62 and 63 and looking in the direction of arrow 64 of 55 Fig. 63:

Fig. 65 is a view similar to Fig. 63 but showing the folders facing in opposite directions:

Fig. 66 is a view similar to one end of Fig. ()65 showing the folders spaced apart:

Fig. 67 is a diagrammatic view of the folders of Fig. 65 and looking in the direction of arrow 67 of Fig. 65:

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direction of rotation of two printing couples showing the folders facing in the same direction:

> Fig. 69 is a view of the folder arrangement shown in Fig. 68 looking in the direction of arrow 69 of Fig. 68:

70 Fig. 70 is a diagrammatic view in side elevation showing two machines like that of Fig. 62 arranged in tandem with straight line folders in between:

Fig. 71 is a diagrammatic detail view 75 showing the web leads for the folders between the two machines shown in Fig. 70:

Fig. 72 is a purely diagrammatic view of the two machines of Fig. 70 with the set of printing couples thereof arranged in a slight-80 ly different way.

A simple form of a preferred embodiment of the invention is shown in Fig. 1, in which is shown a plurality of printing couples, each couple including an impression and a design 85 cylinder, said couples arranged in two sets spaced apart, with a plurality of couples in each set. The character of the printing couples is immaterial, so long as they are rotary members, and the design cylinder may 90 be a member that prints by the offset method or an ordinary plate cylinder. The two sets of printing couples are designated respectively by A and B, the couples in set A being indicated respectively by Λ' , Λ^2 , Λ^3 and Λ^4 95 while the couples in set B are indicated respectively by B', B², B³ and B⁴. The impression cylinders of the couples in set A are denoted by a', a^3 , a^5 and a^7 , the design cylinders of set A being indicated by a^2 , a^4 , a^6 and 100 a^{s} . The corresponding cylinders of set B are marked b and corresponding exponents. Suitable inking mechanism C is associated with each printing couple, and, in accordance with standard practice, such inking mechanisms are movable toward and away from the design cylinders. In the present form shown the impression cylinders of both sets face in the same direction, a feature which is of advantage under certain conditions. 110 Any suitable means may be used to drive the cylinders of the printing couples. The cylinders of each couple are geared together and power may be applied either to the design cylinder or to the impression cylinder and the other member of the couple driven from its companion cylinder. In either event the impression cylinders of one set are preferably driven in a direction opposite to that of the impression cylinders of the other set. 120 In the present instance the impression cylinders are driven direct from the two upright shafts D and D' by means of suitable bevel gears d' and d^2 ; and gears d^2 may be slidable on the upright shafts in a manner well un- 125 derstood so as to disconnect any printing couple from the driving means without disturbing the driving connection with any of the others. Suitable means for reversing the Fig. 68 is a view similar to Fig. 66 but direction of rotation of some of the couples, 130

105

are provided, this being accomplished by slidable gears d^3 , on shaft D', said gears d^3 being associated, in the present instance, with couples B² and B³. Shafts D and D' are driven from any suitable source such as power shaft D³ by suitable means such as bevel gears d^4 .

E is a stand for web rolls and F indicates a fo'der of suitable character. In the form of the invention shown there are interposed between the folder and set A suitable web turner bars which we shall here designate by the general reference character G and, preferably, adjacent to some of the printing couples, here B' and B², of set B are web 15 turner bars which we shall designate generally by H and H'. Each printing couple and its associated devices is preferably a unit and is carried by rectangular sub-frames I which sub-frames are placed one on top of the other to produce a set, such as A or B. The sub-20 frames of sets A and B are separated by horizontal spacer bars I' and the folder frame F' is separated from the sub-frame of set A by means of a spacer member I². Slitters are 25 indicated at K and K'. In addition there are suitable guide bars etc. which need not be described in detail.

The cylinders of the machine are preferably double-width, that is to say : four ordinary 30 newspaper pages wide, but, as one of the main features of the invention is in connection with the production of so-called "tabloid" form of papers, typical products and runs of such "tabloid" papers will first be described, it be-35 ing distinctly understood that the machine is not limited in its use to the production of such "tabloid" form of papers.

In Fig. 2 is shown a preferred form of plat-ing arrangement for the design cylinders when running "tabloid" forms. As there shown there are four plates J extending 40 lengthwise of the cylinder and four plates around the cylinder, or sixteen plates in all, with the columns running lengthwise of the **4**ñ cylinder, as indicated in dotted lines, and with the tops J' of the plates (said top representing the title of the paper) so arranged that (considering now only a single row of 50 plates extending lengthwise of the cylinder) the two plates at one side of the middle of the cylinder are arranged in opposition and the two plates at the other side are also arranged in opposition, this arrangement being effected 55 by having tops J' of the respective pair of plates adjacent each other. Folder F preferably has two formers F² and F³ and associated folding mechanism F⁴ and F⁵ as shown diagrammatically in Fig. 3. It is, of course, 60 possible to feed four half-width webs abreast, but preferably a double-width web is fed which is slit at J² before printing and which is again slit, preferably after printing and before folding, along the lines J^s and J^s so

folding mechanism also severs the webs transversely preferably along dotted lines J⁵, and the product thus obtained may be visualized by the crossed diagonal lines in Fig. 4. A transverse fold along the lines J⁶ is also preferably given to the webs thus producing ⁷⁰ an eight (tabloid) page folded assembly, and a number of these assemblies can be combined in various ways to be hereafter described.

Referring now again to Fig. 1 and taking 75 up first the more obvious combinations of products, it will be understood that, when gears d^3 are out of and gears d^2 are in mesh with gears d', a double-width web can be led from say web roll E' up over the top of the 80 machine, said web being slitted into two sections in its passage, and then down through the couples of set B receiving four colors on one side, after which said web sections are led up through the couples of set A receiving four colors on the other side. The thus print-85 ed and perfected product is then led to the folder, being again slitted, to produce two eight (tabloid) page sections from each former F^2 and F^3 , each section being printed in four colors. The eight (tabloid) page sec-tions delivered by formers F^2 and F^3 may, if 90 desired, be duplicate products, or they may not be duplicate products in which latter case two eight (tabloid) page sections from F^2 95 and F³ may be cross associated into one product in a manner well understood in the art. The extreme opposite condition, in the simple form of runs, would be to lead four double-width webs from rolls E', E², E³ and E⁴ 100 through the machine, in which case the web from E' would pass down through couple B4 and then up through couple A*, the web from E² would pass down through couple B³ and up through couple A³, the web from E³ would 105 pass down through couple B² and up through couple A², and the web from E⁴ would pass down through couple B' and up through couple A', thus printing and perfecting four double-width webs in a single color. These webs 110 would be in superposed relation and would be led to the folder to produce a thirty-two (tabloid) page section, with one color on all pages, from each former F² and F³, and the products coming from the two formers could be dupli-115 cate or different products and could be associated or not as desired.

In describing the operation of the machine thus far double-width webs have been used as an illustration but it will of course be un- 120 derstood that the full capacity of the machine need not be used and that webs of narrower widths can be employed.

Between the two extreme operating conditions described of one web printed and per- 125 fected in four colors and four superposed webs printed and perfected in one color, a number of intermediate runs can be obtained. Thus we might have two superposed webs each 65 that four half-width webs are produced. The printed and perfected in two colors, or each 130

printed in one color and perfected in three colors, or one printed and perfected in three colors and the other in one color. Again three superposed webs could be used to be printed 5 and perfected in one or more colors. The above examples are considered sufficient to illustrate the variety of products obtainable on simple runs.

A number of different runs can be obtained 10 by reversing rotation of couple B², by throwing gear d^2 out and gear d^3 in, and a typical run of this character is illustrated in Figs. 5 and 6. As here shown a web coming from roll E' is run down through couple B⁴ and 15 then up through couples A³ and A⁴ thus printing the web in one color and perfecting it in two colors as indicated by the numerals. A web from roll E^2 is run down through couple B^{3} and then up through couples A' and \mathbb{A}^2 thereby also printing that web in one 20 color and perfecting it in two colors as indicated by the numerals. A third web may be led from roll E⁴ up through couple B² and then down through couple B' thus printing 25 and perfecting it in set B in one color as indicated by the numerals. The three superposed webs are then led to the folder and the resultant product is illustrated in Fig. 6 where the product coming from former F^2 only has been considered. Webs F^6 , coming 30 from former F^2 , have been separated to admit of showing the number of colors on each page, and similarly the final product F⁹ at the bottom of the figure has its pages extend-35 ed by means of dotted lines to admit of showing the number of colors by numerical indication and this same arrangement is followed in the subsequent diagrams, and it will help to understand the diagram if we bear in mind that, in looking at a product such as is shown

at the bottom of Fig. 6, we are looking to-ward the top of the product as defined by head J' (Figs. 2, 3 and 4). The webs coming over former F^2 are eventually led between cylinders \mathbf{F}^{τ} where transverse cuttings are

made along the lines J^5 (Fig. 4) and the sheets thus produced are given a final fold between rollers F⁸ (Fig. 6) along the lines J⁶ (Fig. 4). In the example given, a twenty-

- four (tabloid) page section is produced by the webs coming over former F^2 , and it will be 50seen that this product has its outer cover and the inside center both in two colors and various other color combinations in between.
- 55 From the diagram Fig. 5 it will be seen that each of the superposed webs travels in a substantially U-shape path, that each web crosses but once between sets B and A and that one or more superposed webs can be printed and
- 60 perfected in one or more colors without reversal of the web or webs between sets. The result of this is to make the space between sets B and A less crowded and therefore more accessible than is the case where a web is 65

caused to travel back and forth a number of this condition has not necessarily been as- 130

times between the sets. It will be found that these features are characteristic of all of the web runs, though it is not thereby intended to convey that the invention is necessarily limited thereto. It will also be seen 70 that another characteristic feature resides in the fact that the web in leaving one set as B preferably travels in a direction opposite to that in which it enters the other set as A, this being illustrated by all three webs in Fig. 75 5; and Fig. 5 further illustrates the fact that even where one couple, as B^2 , has its direction of rotation reversed, the web then preferably passes through another couple, as B', so that its direction in leaving one set, as B, is prefer- 80 ably opposite to that in which it enters the other set as A. It will be understood that the leads shown in Fig. 5 are merely typical of what may be accomplished by reversing rotation of couple B^2 , for example, it is easy to see s5 that the web from E^2 could be led from couple B³ to couple A² thus being printed and perfected in but one color, and that the web from E⁴ could be led from B² to B' as shown and then to A' before passing to the folder. 90 Various other runs with this arrangement are obvious.

In Fig. 7 is shown a typical run when rotation of couple B³ is reversed by throwing out gear d^2 and throwing in gear d^3 . Here a 95 web is led from E' down through couple B⁴ and then up through couples A', A^2 , \bar{A}^3 and Λ^4 thus printing and perfecting the web in one color on one side and in four colors on the other side. A web is also led from E^2 up 100 through couple B³ thus printing it on one side and then down through couples B² and B' thereby perfecting it in two colors. Both webs then go to the folder. The resulting product is shown in Fig. 8 where the assembly from former F^2 consists of a sixteen 105 (tabloid) page section with the outside cover and center pages printed in four colors and the other pages printed in one or two colors.

In Fig. 9 is shown a typical run when the 110 rotation of couples B² and B³ is reversed. Here a web is led from roll E' down through couple B^4 and then up through couples \tilde{A}^2 , A³ and A⁴. A second web is led from E^4 up through couples B^2 and B^3 and then 115 down through couple B' and then up through couple A', which latter couple prints on the same side of the web as couples B² and B³. The two webs are then led to the folder, and the product coming from former F² will be 120 a sixteen (tabloid) page product with the two outside pages and the two center pages printed each in three colors and with other pages printed in one and three colors. Other runs under this arrangement will be obvious. 125

In the examples of runs previously illustrated, we have regarded the machine as supplying duplicate products, although, in the discussion accompanying the description,

sumed in all cases. We now come to a series of diagrams where the two products are definitely different. That is to say we are now assuming that the plates on one-half of the design cylinder are different from those on the other half and that there are two singlewidth webs abreast, one on the far side of the machine and one on the near side; and that each side of the machine may have one 10 or more superposed webs. A typical example of this arrangement is shown in Figs. 11 to

- 15 inclusive. In Fig. 11 is shown a single-width web coming from E^2 and passing down through the couples of set B and then 15 up through the couples of set A at the far
- side of the machine, thus printing and per-fecting it in four colors. In Fig. 12 a single-width web coming from roll E' passes down through couples B^4 , B^3 and B^2 and then up 20 through couples A^2 , A^3 and A^4 on the near
- side of the machine, thus printing and perfecting it in three colors, while a second single-width web is led from E⁴ down through B' and up through A' also on the 25 near side of the machine, thus printing and perfecting it in one color. All the webs are
- led to the folder and the product obtained from the web on the far side of the machine is shown in Fig. 14 as coming over former 30 F^a and consists of an eight (tabloid) page
- section with all pages printed in four colors, while the products of the two webs from the near side of the machine are shown in Fig. 15 as coming over former F² and consist of 35 a sixteen (tabloid) page section, with the cover and center pages printed in three col-ors and with the other pages variously
- Various other web leads under printed. these conditions will be apparent. For in-40 stance there could be two, or three or four webs, on the far side of the machine and a variable number of webs on the near side. Also it will be understood that the ink fountains can be divided centrally so that each 45 couple need not print the same color at both
- of its ends.

Heretofore we have not considered the part which web turner bars or angle bars play in the operation of the machine. In 50 Fig. 16 a single-width web is shown coming from roll E' which passes down through the couples B^4 and B^3 and then up through couples A', A^2 , A^3 and A^4 on the far side of the machine and thence to former or 55 folder F³. Formers F² and F³ may be regarded as separate folders. A second singlewidth web is also shown as coming from roll E^s passing thence down through couple B², thence over turner bars H, and then back ⁶⁹ and down through couple B'. The turner bar is, in this instance, adjusted as shown in Fig. 21, the web coming down from cou-ple B^* around guide bar h', thence over turner bar h^2 , thence over guide bar h^3 , thence 65 over turner bar \hbar^4 , thence over guide bar

 h^{5} and thence over guide bar h^{6} and down through couple B'. In other words the web, after printing it at the far end of couple B² is inverted and brought back in the same plane so that it can be printed on its opposite side at the far end of couple B'. Obviously this web can then be run to former or folder F^s in superposed relation with the web coming from roll E' so as to be asso-ciated therewith. In the particular example $_{75}$ here disclosed it is otherwise disposed of as will presently appear. The web leads on the near side of the machine are shown in Fig. 17. Here a single-width web is led from roll E' down through couple B⁴ and then up through couples A^3 and A^4 . A second single-width web is led from roll E² down 80 through couple B^s and then up through couple A². A third single-width web is led from roll E⁴ down through couples B² and 85 B' and then up through couple A'. These three webs are now run to the folder in superposed relation. In the present instance it is desired to associate the web printed on the far side of the machine by couples B² 90 and B' with the product on the near side of the machine and angle bars G are there-fore brought into play. It will be understood, however, that it would not be desirable to associate this web from the far side of 95 the machine with the product of the near side by merely placing it on top or on the bottom of the product of the near side of the machine because the web from the far side of the machine is, in this case, printed and 100 perfected in but one color, and, on account of the demands of the trade, it is usually undesirable to have the outside cover or the center pages in a single color. Occasion is therefore taken, in this example of the in-105 vention, to show how the web from the far side of the machine may not only be crossassociated with the webs on the near side of the machine but may also be interposed between two of the webs on the near side of 110 the machine before passing to the folder. The details of this arrangement are shown in Figs. 16, 17, 22 and 23. As there shown, the web on the far side of the machine, after being printed and perfected in a single color 115 by couples B^2 and B' is led to guide bar g', thence to angle bar g^2 , after which it passes over guide bars g^{3} and g^{4} , thence over angle bar g^{5} and thence over guide bar g^{6} . In passing over these bars, it will be observed, 120 said web has been inverted and has also been brought from the far side of the machine to the near side and has, in addition, been passed around one or more webs, here around web x on the near side of the machine and 125 is now interposed between webs x and x'. As the web from the far side of the machine, after passing over guide g° , is flowing in the same direction, and located in the same plane, as the webs on the near side of the 130

machine, there is no difficulty in leading the thus superposed webs to the folder. If it is desired merely to cross associate, before folding, without inverting the web coming from the far side of the machine then the angle bars can be adjusted as shown in Fig. 24 where the two angle bars g^2 and g^5 are shown parallel and the bars g^3 and g^4 are not used. In this instance, the web from the 10 far side of the machine passes over guide g', thence over angle bars g^2 and g^5 and thence to a guide bar, here marked for convenience g° , which may be any guide bar so located as to properly direct the web to 15 the folder after said web has been brought to the near side of the machine. In case the arrangement of Fig. 24 is used we may assume that the web from the far side of the machine has one side printed in more 20 than one color, as could easily be accomplished by running it through one or more of the couples A' or A^2 , in which case said web from the far side could form the outside cover or center pages of the product of the 25 near side of the machine. It will further be understood that angle bars H and angle bars G could be used independently of each other and need not always be used togetherwe have merely selected an intricate example 30 for illustration. So also it will be understood that a web can be brought from the near side of the machine and be crossassociated, before folding, with the product of the far side of the machine. The prod-35 ucts obtained by the diagrams Figs. 16 and 17 are shown in Figs. 19 and 20. As will be seen from Fig. 19 the product from roll E'on the far side of the machine passes to folder F³ and results in an eight (tabloid) 40 page section having the outer cover and the center pages printed in four colors and the other pages printed in two colors. As will te seen from Fig. 20 the three webs from the near side and the one web from the far $_{45}$ side are led to folder F² and result in a thirty-two (tabloid) page section having the cover and center pages printed in two colors and having the other pages variously printed. An example of the use of angle bars H' 50 is shown in Figs. 25 to 29. Here a single-width web is led from roll E' on the far side of the machine, down through couple B^4 and up through couples A', A², A³ and A⁴. An-other single-width web is led from roll E^2 55 on the far side of the machine and down through couple B³, then through angle bars H', which can be arranged or adjusted to the position shown in Fig. 21, and then down through couples B² and B' thus printing the 60 web in one color and perfecting it in two side of the machine. On the near side of the colors. Obviously this web from E^2 can be machine a single-width web is led from roll run to former F^3 and be associated with E' down through couples B^4 and B^3 and the web from E' but it may be desired to thence up through couples A², A³ and A⁴, cross-associate the web from E^2 with the while a second single-width web is led from

The product on the near side of the machine may of course vary, but as shown in Fig. 26 it consists of a single-width web from roll E' that passes down through couple B⁴ and then up through couples A³ and A^4 , another single-width web from roll E^3 that passes down through couple B³ and up through couple A^2 , and a third single-width web that passes from roll E⁴ down through couples B^2 and B' and then up through 75 couple A'. The web from roll E^2 from the far side of the machine is then run, after being printed and perfected in the manner described, over angle bars G arranged for example as shown in Figs. 22 and 23 and associated with the product of the near side of the machine. It will be observed that, in this instance, the web coming from the far side of the machine jumps or passes around two webs on the near side of the 85 machine. The products obtained by this arrangement are shown in Figs. 28 and 29. The product from the far side of the machine passing over former F³ consists of an eight (tabloid) page section with the cover 90 and center pages printed in four colors and with the other pages printed in one color. The product from the near side of the machine passing over former F² consists of a thirty-two (tabloid) page section with the 95 cover and center pages printed in two colors and the other pages variously printed.

An example of using both sets of turning bars H and H' and also the turning bars G is shown in Figs. 30 to 34. Here a single- 100 width web is led from roll E' on the far side of the machine and passes down through couple B⁴ and up through couples A', A^2 , A^3 and A⁴. A second single-width web passes from roll E² down through couple B³ 105 on the far side of the machine, then through the angle bars $\mathbf{H'}$, then through couple \mathbf{B}^2 on the near side of the machine and then to folder F² also on the near side of the machine. This web is thus printed and perfected in 110 one color. To accomplish this the angle bars H' will be adjusted substantially as shown in Fig. 22. A third single-width web is led from roll E³ on the far side of the machine and passes down through couple B² on the 115 far side of the machine, then passes through angle bars H, which will be arranged as shown in Fig. 21, and then down through couple B' on the far side of the machine. The web thus printed and perfected in a 120single color can then be passed to former F^s or it may be cross-associated, by means of angle bars G which would be adjusted as shown in Fig. 22, with the product on the near side of the machine. On the near side of the ¹²⁵ 130 65 product on the near side of the machine. roll E⁴ down through couple B' and then up

from the arrangement shown in Figs. 30 and Fig. 22 and brought to the near side of the 31 are disclosed in Figs. 33 and 34, from machine. At the near side of the machine a which it will be seen that the product from the far side of the machine coming over former F^3 is an eight (tabloid) page section printed in four colors on the cover and center pages with the other pages printed in a single color, and that the product at the near side of the press coming over former F² is a 10 thirty-two (tabloid) page section with the cover and center pages printed in three colors, and with the other pages variously printed. Another example in which both turner 15 bars H and H' as well as turner bars G are used is shown in Figs. 35 to 39. Here a singlewidth web is shown as coming from roll E' at the far side of the machine and passing down through couple B⁴ and up through couples A', A², A³ and A⁴. Another single-width web is shown as coming from roll E³ and passing down through couple B³, thence through angle bars H', adjusted as shown in Fig. 21, and thence down through couples B^2 and B'. The web thus printed in one 25 color and perfected in two colors can then be associated with the first web by passing it over former F^3 or it can be passed over turner bars G, adjusted as shown in Fig. 22, 30 to the near side of the machine. At the near side of the machine a single width web is passed from roll E' down through couple B⁴ and then up through couples A³ and A⁴; a second single width web is passed from roll ³⁵ E² down through couple B³ and then up through couples A' and A² and to the folder being threaded over guides above turner bars G; and a third web is passed from roll E⁴ down through couple B², thence through turner bars H, adjusted as in Fig. 21 and then 40 down through couple B' and to the folder being threaded over guides below turner bars G. The product coming over former F³ from ple A'. The product from the far side of the far side of the machine consists of an 45 eight (tabloid) page section printed in four colors on the cover and center pages and in one color on the other pages (Fig. 38) and the product coming from the near side of the machine over former F² (Fig. 39) consists 50 of a thirty-two (tabloid) page section

printed in two colors on the cover and center pages and variously printed on the other pages. Certain combination runs can also be ob-

55 tained by omitting the use of angle bars H and H' by merely reversing the rotation of certain of the couples as B² and B³. In Fig. 40 a single-width web is led from the far side of roll E' down through couples 60 B⁴ and B³ and up through couples A', A², \mathbf{A}^{3} and \mathbf{A}^{4} and a second single-width web is led from the far side of roll E^3 up through reversely rotated couple B^2 , then down through couple B' thus printing and per-65 fecting the web in a single color, after which the near side of the machine a single-width 100

through couple A'. The products coming it is passed over angle bars G adjusted as in single-width web is passed from roll E' down through couple B⁴ and then up through cou-70ples A³ and A⁴; a second single-width web is passed from roll E² down through couple B^3 and then up through couples A' and \hat{A}^2 ; and a third single-width web is passed from roll E⁴ up through reversely rotated couple 75 B^2 and then down through couple B' thus printing and perfecting the web in a single color. The product from the far side of the machine coming over former F³ consists of an eight (tabloid) page section printed on 80 the cover and center pages in four colors and having its other pages printed in two colors; the product from the near side of the machine coming over former F² is a thirty-two (tabloid) page section having its cover and center 85 printed in two colors and having its other

pages variously printed. If couple B³ is reversely rotated the arrangement may be as follows: A single-width web is led from roll E' down through cou-90 ple B⁴ and up through couples A', A², A³ and A⁴ at the far side of the machine (Fig. 45) and a second single-width web may be led from roll E³ at the far side of the machine up through reversely rotated couple B³ and 95 then down through couples B² and B' thus printing the web in one color and perfecting it in two colors. This second web is then passed over angle bars G, adjusted as in Fig. 22 and brought to the near side of the ma- 100 chine. At the near side of the machine (Fig. 46) a single-width web is led from roll E^2 down through couple B⁴ and then up through couples A^2 , A^3 and A^4 , and a second singlewidth web is led from roll E⁴ up through re-105 versely rotated couple B3, then down through couples B² and B' and then up through couthe machine coming over former F³ is an eight (tabloid) page section having its outer 110 and center pages printed in four colors and its other pages printed in a single color; the product from the near side of the machine coming over former F² is a twenty-four (tabloid) page section having its cover and cen- 115 ter pages printed in three colors and having its other pages variously printed.

If both of the couples B³ and B² are reversely rotated; then the arrangement may be as follows: A single-width web is led 120 from roll E' at the far side of the machine (Fig. 50) down through couple B^4 and then up through couples A', A^2 , A^3 and A^4 , and a second single-width web is led from roll E⁴ at the far side of the machine up through 125 reversely rotated couples B^2 and B^3 and then down through couple B' after which it is passed through angle bars G, adjusted as in Fig. 22, to the near side of the machine. At

web is led from roll E² down through couple however, that regular newspaper size as- B^4 and then up through couples A^3 and A^4 , and a second single-width web is led from roll E³ up through reversely rotated couples B^2 and B^3 , then down through couple B' and then up through couples A' and $\bar{A^2}$ whereby

- the web receives one color on one side and four on the other. The product on the far side of the machine coming over former F³ is an eight (tabloid) page section having four 10
- colors on its cover and center pages and one color on its other pages, and the product from the near side of the machine coming over former F^2 is a twenty-four (tabloid) page section having two colors on its cover and cen-15
- ter pages and having its other pages variously printed.

Various other combinations can of course be run and without going too much into detail and showing all the cylinders over again 20 we desire to point out certain other features that increase the flexibility of the machine. As shown in Figs. 55 and 56, a single-width web coming from a roll would be led down between a couple at the far end of the press and

- 25could then pass around a guide bar h^{τ} , then around angle bars h^8 and h^9 , and then around guide bars h^{10} , h^{11} and h^{12} thereby bringing the web to the near end of the machine with 30 the same side up so that the same couple of
- the machine would print the web in two colors on one side. The web could thereafter be led to another couple and be perfected.
- In Figs. 57 and 58 and a single-width web is led from a roll down between a couple at 35 the far end of the machine, thence to guide bar h^{13} thence over angle bar h^{14} , thence to guide bar h^{15} , thence to angle bar h^{16} and over guide bars h^{17} , h^{18} and h^{19} down between the same couple but at the near side of the
- 40 machine and with the web inverted so that the same couple would both print and perfect the web.

Should it be desired, on account of color arrangement or for other reasons, to lead a $\mathbf{45}$ web from the far side of the machine through angle bars G to the near side and to jump or pass around a web on the near side and to do so without inverting the web from the far side then the following arrangement can be 50 used: (Figs. 59, 60 and 61) assume that a web x^2 at the far side of the machine in line with former F³ is to be brought over to the near side in line with former F^2 , then said web x^2 can be passed around guide bar g^7 , thence around angle bar g^8 , around guide bars g^9 and g^{10} , thence around angle bar g^{11} , 55 guide bar g^{12} and thence to former F^2 . In traversing this path web x^2 will have crossed 60 from the far to the near side, will have passed around one or more webs as x and will present the same side up as previously.

In the preceding detailed description of the various web runs tabloid page products 65 have been assumed. It will be understood,

semblies can be equally well produced. Referring to Fig. 2 it will be seen that the cylinder there shown could be provided in whole or in part with regular size newspaper print-70ing plates and that by having the columns of such plates running circumferentially around the cylinder the folding equipment described need not be changed; no slitting, however, would take place along the lines J³ 75 and J^4 (Fig. 4). It will be evident how one or more double-width webs could be printed in one or more colors with its pages of regular newspaper size and it is therefore unnecessary to describe such runs, but a few instances 80 will be given showing how both regular size and "tabloid" papers can be produced at the same time. Referring, for instance, to Fig. 11, it is evident that the web printed on the far side of the machine could be printed regu-85 lar newspaper size, and that the webs printed on the near side (Fig. 12) could be printed "tabloid" size. So likewise in Fig. 16 the web from roll E' could be printed regular newspaper size and the web from E² could be 90 printed "tabloid" size and would be associated with similar "tabloid" webs on the near side (Fig. 17). It would seem to be unnecessary to go through the diagrams again, except to point to Fig. 30 where the web from 95 roll E' could be printed regular newspaper size and the web from roll E² could be printed "tabloid" size being partly printed on the far side of the machine and partly on the near (Fig. 31). So also the web from roll E³ on 100 the far side (Fig. 30) could be a "tabloid" printed web to be associated with other "tabloid" printed webs on the near side.

In Fig. 1 the invention is shown in a simple form, but the invention is not to be limited 105 thereto as it can be embodied in much larger machines. Fig. 62 shows such an embodiment. Here, instead of eight couples as in Fig. 1, we have twelve couples arranged in two sets A and B, the couples of set A being 110 marked A^5 to A^{10} inclusive and the couples of set B being marked B⁵ to B¹⁰ inclusive. With this arrangement four of the couples (B⁶ to B⁹ inclusive) in set B are preferably made reversible as to rotation by being provided 115 with pinions D³ as well as with pinions D², and, instead of two angle bar equipments as H and H' in Fig. 1, we have four angle bar equipments H² to H⁵ inclusive. By these means a much greater variety of products can 120 be obtained than by the form of the invention shown in Fig. 1. The folders may, of course, be arranged as straight-line folders as in Fig. 1, but, in the form of the invention here shown, the folders are right-angle folders 125 F¹⁰, F¹¹, F¹² and F¹³, there being additional folders employed in view of the increased capacity of the machine.

It will further be understood that the machine may include more than two sets of 130

couples. For instance, there may be three or more sets and these sets may be variously arranged. If four sets are used the arrangement may be as shown in Fig. 63 in which AA indicates a group of sets such as is shown in

⁵ Figs. 1 or 62 and BB represents another group of sets placed behind AA. The details of the mechanisms are not shown but it will be evident that the cylinders of the two sets would be in end-to-end relation and that the 10 folders of the two sets would preferably be right-angle folders, facing the same way and

in alinement. As shown in Figs. 62, 63 and

64 each group is provided with four folders F¹⁰, F¹¹, F¹², F¹³ and F¹⁰⁰, F¹¹⁰, F¹²⁰ and F¹³⁰ 15 and three sets of angle bars G', G², G³, G⁴, G⁵, G⁶, each set of angle bars consisting of three bars g^{20} , g^{21} and g^{22} and by means of these angle bars and suitable guide bars any web can be given a quarter turn and be 20 brought in line with any folder so that the products can be delivered separately or together or be combined into assemblies of various kinds as any single-width web of one 25 group can be combined with any single-width web of the other group.

In Figs. 65 and 67 the right angle folders of the two groups are shown as facing in the opposite direction, the arrangement of the two 30 groups of sets and the angle bars being the same. It will be observed that in Fig. 65 a double-width web is shown as being turned over angle bar q^{20} in which case it would be slitted as is customary before reaching a set

35 of folders. The two folders comprising a set need not be close together as in Figs. 63 and 65 but may be spaced apart as shown in Figs. 66, 68 and 69 but in that event the arrangement of the angle bars would be slightly different in that there would preferably be four short angle bars g^{23} , g^{24} , g^{25} and g^{26} in each of the three sets of angle bars. In Fig. 69 there is a further indicated conventional means as guide **45** bars g^{27} for cross-associating the products of various folders so that the webs can be asso-

ciated before or after folding.

In Figs. 70 and 71 the two groups AA and **BB**, each comprising a set of couples A and 50 B are shown differently arranged in that the groups are placed in tandem, spaced apart and with folders intervening. In this case it will be observed the impression cylinders of each couple of each set are all facing in the same direction and the folders are straight 55 line folders. There will preferably be eight

- folders as in Figs. 63 and 64 only four of which, however, can be seen. Adjacent each group of sets are a sufficient number of angle 60 bar equipments G^{τ} and guide bars as shown
- to lead any web to any folder and to associate the webs into various assemblies both before and after folding.

Fig. 72 shows the same construction as **65** Figs. 70 and 71 except that here the impres-

sion cylinders of the couples of group AAface in one direction while the impression cylinders of the couples of group BB face in the opposite direction. The number of sets of couples in each group may vary; thus there 70 need only be one set in group BB, set A of group BB being omitted.

The arrangement shown in Figs. 62, 63, 64, 65, 66, 67, 68 and 69 is not claimed specifically herein but forms the subject matter of another application Ser. No. 309,862, filed 75 October 2, 1928.

I claim:

1. A printing machine including: a plurality of printing couples, each couple in-80 cluding an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, 85 and guides to direct a web or each of a plurality of superposed webs through one or more couples of one set and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set 00 to thereby print and perfect the web or the plurality of webs in one or more colors.

2. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, 95 said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cyl-100 inders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and guides to direct a web or each of a plurality of superposed webs through one or more cou-105 ples of one set and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set to thereby print and perfect the web or the plurality of webs in one or more colors.

3. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality 115 of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, and guides to direct a web or each of a plurality of superposed webs through one or more couples of one set and 120 thereafter, without reversal of the web or webs between sets, through one or more couples of the other set to thereby print and perfect the web or the plurality of webs in one or more colors.

4. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plu- 130

110

rality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples

- of one set in one direction and the impression Б cylinders of the couples of the other set in the other direction, and guides to direct a web or each of a plurality of superposed webs through one or more couples of one set and thereafter, without reversal of the web or 10
- webs between sets, through one or more couples of the other set to thereby print and perfect the web or the plurality of webs in one or more colors.
- 5. A printing machine including: a plu-15 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set,
- the impression cylinders of all the couples of both sets facing in the same direction, and means to cause a web to travel through the machine in a substantially U-shape path, while printing and perfecting it in one or
- 25 more colors, consisting of guides to direct the web through one or more couples of one set and thereafter through one or more couples of the other set, the web in leaving one set traveling in a direction opposite to that in
- 30 which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

6. A printing machine including: a plurality of printing couples, each couple includ-

- 35 ing an impression and a design cylinder, said impression cylinders of all the couples of both 100 couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving 40
- the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a web to travel through the machine in
- 45 a substantially U-shape path, while printing and perfecting it in one or more colors, consisting of guides to direct the web through one or more couples of one set and thereafter through one or more couples of the other set,
- 50 the web in leaving one set traveling in a direction opposite to that in which it enters the other set and the web passing from one set to the other without reversal thereof between sets.
- 7. A printing machine including: a plu-55 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of
- 60 couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, and means to cause a web to travel through the machine in a substantially

to direct the web through one or more couples of one set and thereafter through one or more couples of the other set, the web in leaving one set traveling in a vertical direction opposite to that in which it enters the other set and 70 the web passing from one set to the other without reversal thereof between sets.

8. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said 75 couples arranged in two parallel upright sets. spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the 80 impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a web to travel through the machine in a substantially U- 85 shape path, while printing and perfecting it in one or more colors, consisting of guides to direct the web through one or more couples of one set and thereafter through one or more couples of the other set, the web in leaving 90 one set traveling in a vertical direction opposite to that in which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

9. A printing machine including: a plu- 95 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart. with a plurality of couples in each set, the sets facing in the same direction, and means to cause a plurality of webs to travel through the machine in superposed and substantially U-shape paths, while printing and perfecting means to rotate the impression cylinders of them in one or more colors, consisting of 105 guides to direct each of the webs through one or more couples of one set and thereafter through one or more couples of the other set, the webs in leaving one set traveling in a direction opposite to that in which they enter '110 the other set and the webs passing from one set to the other without reversal thereof between sets.

10. A printing machine including: a plurality of printing couples, each couple includ- 115 ing an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving 120 means to rotate the impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a plurality of webs to travel through the 125 machine in superposed and substantially Ushape paths, while printing and perfecting them in one or more colors, consisting of U-shape path, while printing and perfecting guides to direct each of the webs through one 65 it in one or more colors, consisting of guides or more couples of one set and thereafter 130

through one or more couples of the other set, the webs in leaving one set traveling in a direction opposite to that in which they enter the other set and the webs passing from one 5 set to the other without reversal thereof between sets.

11. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said 10 couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, and means to cause a plurality 15 of webs to travel through the machine in superposed and substantially U-shape paths, while printing and perfecting them in one or more colors, consisting of guides to direct each of the webs through one or more couples 20 of one set and thereafter through one or more couples of the other set, the webs in leaving one set traveling in a direction vertically opposite to that in which they enter the other

set and the webs passing from one set to the 25 other without reversal thereof between sets. 12. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright 30 sets, spaced apart horizontally, with a plurality of couples in each set, the impression

- cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples 55 of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a
- plurality of webs to travel through the machine in superposed and substantially U-shape 40 paths, while printing and perfecting them in one or more colors, consisting of guides to direct each of the webs through one or more couples of one set and thereafter through one or more couples of the other set, the webs 45 in leaving one set traveling in a direction ver-
- tically opposite to that in which they enter the other set and the webs passing from one set to the other without reversal thereof between sets.

50 13. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, 55the impression cylinders of all the couples of both sets facing in the same direction, and guides to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or more webs in one co or more colors and thereafter, without reversal of the web or webs between sets,

- through one or more couples of the other set to thereby perfect one or more webs in one or more colors.
- 65 14. A printing machine including: a plu-

rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples 70of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and guides 75 to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or more webs in one or more colors and thereafter, without reversal of the web or webs between sets, through one 80 or more couples of the other set to thereby perfect one or more webs in one or more colors.

15. A printing machine including: a plurality of printing couples, each couple in- 85 cluding an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, 90 and guides to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or more webs in one or more colors and thereafter through one or more couples of the other set to perfect one 95 or more webs in one or more colors, the web or webs in leaving one set traveling in a direction opposite to that in which they enter the other set and the web or webs passing from one set to the other without reversal thereof 100 between sets.

16. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced 105 apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direc- 110 tion and the impression cylinders of the couples of the other set in the other direction, and guides to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or more 115 webs in one or more colors and thereafter through one or more couples of the other set to perfect one or more webs in one or more colors, the web or webs in leaving one set traveling in a direction opposite to that in 120 which they enter the other set and the web or webs passing from one set to the other without reversal thereof between sets.

17. A printing machine including: a plurality of printing couples, each couple in- 125 cluding an impression of a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets 130

facing in the same direction, and guides to webs passing from one set to the other withdirect one or each of a plurality of webs through one or more couples of one set to thereby print one or more webs in one or more ^r colors and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set to thereby perfect one or more webs in one or more colors. 18. A printing machine including: a plu-

10 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylin-15 ders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other

20 direction, and guides to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or more webs in one or more colors and thereafter, without reversal of the web or webs 25 between sets, through one or more couples of

the other set to thereby perfect one or more webs in one or more colors.

19. A printing machine including: a plu-rality of printing couples, each couple includ-30 ing an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in 35 the same direction, and guides to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or more webs in one or more colors and thereafter through one or more couples of 40 the other set to perfect one or more webs in one or more colors, the web or webs in leaving one set traveling in a direction opposite to that in which they enter the other set and the web or webs passing from one set to the 45 other without reversal thereof between sets.

20. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, 50 spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one 55 set in one direction and the impression cylinders of the couples of the other set in the other direction, and guides to direct one or each of a plurality of webs through one or more couples of one set to thereby print one or 60 more webs in one or more colors and thereafter through one or more couples of the other set to perfect one or more webs in one or more colors, the web or webs in leaving one set traveling in a direction opposite to that in 65 which they enter the other set and the web or

out reversal thereof between sets.

21. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said 70 couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, and means to cause a web to travel through the 75 machine in a substantially U-shape path consisting of guides to direct the web through one or more couples of one set to print it in one or more colors and thereafter through one or more printing couples of the other set to 80 perfect it in one or more colors.

22. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, 85 with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and 90 the impression cylinders of the couples of the other set in the other direction, and means to cause a web to travel through the machine in a substantially U-shape path consisting of guides to direct the web through one or more 95 couples of one set to print it in one or more colors and thereafter through one or more printing couples of the other set to perfect it in one or more colors.

23. A printing machine including: a plu- 100 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both 105 sets facing in the same direction, and means to cause a web to travel through the machine in a substantially U-shape path consisting of guides to direct the web through one or more couples of one set to print it in one or more 110 colors and thereafter through one or more printing couples of the other set to perfect it in one or more colors, the web in leaving one set traveling in a direction opposite to that in which it enters the other set and the 115 web passing from one set to the other without reversal thereof between sets.

24. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said 120 couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of 125 the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a web to travel through the machine in a substantially U-shape path consisting of 130

guides to direct the web through one or more said couples arranged in two parallel upright couples of one set to print it in one or more sets, spaced apart horizontally, with a plucolors and thereafter through one or more printing couples of the other set to perfect it in one or more colors, the web in leaving one ing in the same direction, driving means to set traveling in a direction opposite to that in which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

25. A printing machine including: a plu-10 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plu-15 rality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction. and means to cause a web to travel through the machine in a substantially U-shape path consisting of guides 20 to direct the web through one or more couples of one set to print it in one or more colors and thereafter through one or more printing couples of the other set to perfect it in one or more colors.

26. A printing machine including: a plu-25 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plu-30 rality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and the impression 35 cylinders of the couples of the other set in the other direction, and means to cause a web to travel through the machine in a substan- rality of printing couples, each couple intially U-shape path consisting of guides to direct the web through one or more couples of one set to print it in one or more colors 40 and thereafter through one or more printing couples of the other set to perfect it in one or more colors.

27. A printing machine including: a plu-45 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression 50 cylinders of all the couples of both sets facing in the same direction, and means to cause a web to travel through the machine in a substantially U-shape path consisting of guides to direct the web through one or more couples 55 of one set to print it in one or more colors and thereafter through one or more printing couples of the other set to perfect it in one or more colors, the web in leaving one set traveling in a vertical direction opposite to that in 60 which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

28. A printing machine including: a plu-

rality of couples in each set, the impression cylinders of all the couples of both sets facrotate the impression cylinders of the couples 70 of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a web to travel through the machine in a substan-75 tially U-shape path consisting of guides to direct the web through one or more couples of one set to print it in one or more colors and thereafter through one or more printing couples of the other set to perfect it in one or 80 more colors, the web in leaving one set traveling in a vertical direction opposite to that in which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

85 29. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, 90 the impression cylinders of all the couples of both sets facing in the same direction, and means to cause a plurality of webs to travel through the machine in superposed substantially U-shape paths consisting of guides to 95 direct each of the webs through one or more couples of one set to print them in one or more colors and thereafter through one or more couples of the other set to perfect them in one or more colors.

30. A printing machine including: a plucluding an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each 105 set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and the impression cylinders of the 110 couples of the other set in the other direction, and means to cause a plurality of webs to travel through the machine in superposed substantially U-shape paths consisting of guides to direct each of webs through one or 115 more couples of one set to print them in one or more colors and thereafter through one or more couples of the other set to perfect them in one or more colors.

31. A printing machine including: a plu- 120 rality of printing couples, each couple in-cluding an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of 125 both sets facing in the same direction, and means to cause a plurality of webs to travel through the machine in superposed substanrality of printing couples, each couple in- tially U-shape paths consisting of guides to 15 cluding an impression and a design cylinder, direct each of the webs through one or more 130

couples of one set to print them in one or more colors and thereafter through one or more couples of the other set to perfect them in one or more colors, the web in leaving one set traveling in a direction opposite to that in which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

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32. A printing machine including: a plu-10 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the cou-15 ples of both sets facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direc-

- 20 tion, and means to cause a plurality of webs to travel through the machine in superposed substantially U-shape paths consisting of guides to direct each of the webs through one or more couples of one set to print them
- 25 in one or more colors and thereafter through one or more couples of the other set to perfect them in one or more colors, the web in leaving one set traveling in a direction opposite to that in which it enters the other 30 set and the web passing from one set to the
- other without reversal thereof between sets. 33. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylin-35 der, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, and means to 40 cause a plurality of webs to travel through the machine in superposed substantially U-shape paths consisting of guides to direct each of the webs through one or more couples of one set to print them in one or more colors 45 and thereafter through one or more couples
- of the other set to perfect them in one or more colors

34. A printing machine including: a plurality of printing couples, each couple in-50 cluding an impression and a design cylinder, said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets 55 facing in the same direction, driving means to rotate the impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause 60 a plurality of webs to travel through the machine in superposed substantially U-shape paths consisting of guides to direct each of the webs through one or more couples of one set to print them in one or more colors and GF. thereafter through one or more couples of

the other set to perfect them in one or more colors.

35. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, 70 said couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, and means to cause 75 a plurality of webs to travel through the machine in superposed substantially U-shape paths consisting of guides to direct each of the webs through one or more couples of one set to print them in one or more colors and 80 thereafter through one or more couples of the other set to perfect them in one or more colors, the web in leaving one set traveling in a vertical direction opposite to that in which it enters the other set and the web pass- 85 ing from one set to the other without reversal thereof between sets.

36. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said 90 couples arranged in two parallel upright sets, spaced apart horizontally, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, driving means to rotate the 95 impression cylinders of the couples of one set in one direction and the impression cylinders of the couples of the other set in the other direction, and means to cause a plurality of webs to travel through the machine in super- 100 posed substantially U-shape paths consisting of guides to direct each of the webs through one or more couples of one set to print them in one or more colors and thereafter through one or more couples of the other set to perfect 105 them in one or more colors, the web in leaving one set traveling in a vertical direction opposite to that in which it enters the other set and the web passing from one set to the other without reversal thereof between sets.

37. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to 115 print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and angle bars to invert a web and to direct it from one to another printing couple in the same set to 120 thereby print and perfect a web by couples belonging to the same set.

38. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cyl- 125 inder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and angle bars to 130

invert a web and to direct it from one to another printing couple in the same set to thereby print and perfect a web in one or more colors by couples belonging to the same set.

39. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to 19 print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and angle bars to invert one or more webs and to direct each web from one to another printing couple in 15 the same set to thereby print and perfect one or more webs by couples belonging to the same set.

40. A printing machine including: a plurality of printing couples, each couple includ-20 ing an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or 25 webs in one or more colors, and angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one or more webs in one or more colors by couples belonging to the same set. 30

41. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with 35 a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and alternative means, to admit of couples belonging to the 40 same set printing and perfecting a web, consisting of web guides and reversible driving connections for a printing couple and angle bars to invert a web and to direct it from one to another printing couple in the same set.

42. A printing machine including: a plu-. 45 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to 50 print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and alternative means, to admit of couples belonging to the same set printing and perfecting a web in one 55 or more colors, consisting of web guides and reversible driving connections for one or more printing couples of the same set and angle bars to invert a web and to direct it from one to another printing couple in the same set.

60 43. A printing machine including: a plurality of printing couples. each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to 65 print one or more webs in one or more colors

and the other set to perfect the same web or webs in one or more colors, and alternative means, to admit of couples belonging to the same set printing and perfecting one or more webs, consisting of web guides and reversible driving connections for one or more printing 70 couples of the same set and angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set.

44. A printing machine including: a plu-⁷⁵ rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set 80 to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and alternative means, to admit of couples belonging to the same set printing and perfecting one or more 85 webs in one or more colors, consisting of web guides and reversible driving connections for one or more printing couples of the same set and angle bars to invert one or more webs and to direct each web from one to another print- 90 ing couple in the same set.

45. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets 95 with a pluraltiy of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and angle bars to invert a web and to direct it from one 100 end of a printing couple to the other end thereof to thereby print and perfect a web by means of the same couple.

46. A printing machine including: a plurality of printing couples, each couple includ-105 ing an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or 110 webs in one or more colors, and angle bars to direct a web from one end of a printing couple to the other end thereof with the same side of the web up to thereby print a web in several colors by the same couple.

47. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set 120 to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and angle bars to direct a web from one end of a printing couple to the other end thereof to thereby 125 impart a plurality of impressions to the web by means of the same couple.

48. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying 130

cylinder, said couples arranged in two sets print a web in several colors by the same with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or

webs in one or more colors, and angle bars to invert a web and to direct it from one end of a printing couple to the other end of another printing couple of the same set to thereby print and perfect a web by means of couples in the same set. 10

49. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one 15

- set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, and angle bars to direct a web from one end of a printing couple to the other end of another printing 21
- couple of the same set with the same side of the web up to thereby print a web in several colors.
- 50. A printing machine including : a plu-25 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more 30 colors and the other set to perfect the same web or webs in one or more colors, and angle bars to direct a web from one end of a printing couple to the other end of another printing couple of the same set.
- 51. A printing machine including: a plu-25 rality of printing couples, each couple includ-ing an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one 40 set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one to another printing couple in the same set to 45 thereby print and perfect a web by couples belonging to the same set, and other angle bars to invert a second web and to direct it from one end of a printing couple to the other end

thereof to thereby print and perfect said second web by means of the same couple. 50

52. A printing machine including: a plurality of printing couples, each couple in-cluding an impression and a design carry-ing cylinder, said couples arranged in two 55 sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one 60 to another printing couple in the same set to thereby print and perfect a web by couples belonging to the same set, and other angle bars to direct a second web from one end of

couple.

53. A printing machine including: a plurality of printing couples, each couple in-cluding an impression and a design carrying cylinder, said couples arranged in two 70 sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one 75 to another printing couple in the same set to thereby print and perfect a web by couples belonging to the same set, and other angle bars to direct a web from one end of a printing couple to the other end thereof to thereby impart a plurality of impressions to the web by means of the same couple.

54. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying 85 cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same 90 web or webs in one or more colors, angle bars to invert a web and to direct it from one to another printing couple in the same set to thereby print and perfect a web by couples belonging to the same set, and other angle 95 bars to invert a web and to direct it from one end of a printing couple to the other end of another printing couple of the same set to thereby print and perfect a second web by means of couples in the same set. 100

55. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one 105 set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one to another printing couple in the same set to 110 thereby print and perfect a web by couples belonging to the same set, and other angle bars to direct a web from one end of a printing couple to the other end of another printing couple of the same set with the same side 115 of the web up to thereby print a web in several colors.

56. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying 120 cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars 125 to invert a web and to direct it from one to another printing couple in the same set to thereby print and perfect a web by couples a printing couple to the other end thereof belonging to the same set, and other angle 65 with the same side of the web up to thereby bars to direct a web from one end of a print- 130

ing couple to the other end of another printing couple of the same set.

57. A printing machine including: a plurality of printing couples, each couple ins cluding an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same 10 web or webs in one or more colors, angle bars to invert a web and to direct it from one to

- another printing couple in the same set to thereby print and perfect a web in one or more colors by couples belonging to the same 15 set, and other angle bars to invert a second web and to direct it from one end of a print-
- ing couple to the other end thereof to thereby print and perfect said second web by means of the same couple.
- 58. A printing machine including: a plu-20 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set
- 25 to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one to another printing couple in the same set to 30 thereby print and perfect a web in one or more
- colors by couples belonging to the same set, and other angle bars to direct a second web from one end of a printing couple to the other end thereof with the same side of the web up ss to thereby print a web in several colors by the same couple.

59. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cyl-40 inder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to in-45 vert a web and to direct it from one to another printing couple in the same set to thereby print and perfect a web in one or more colors by couples belonging to the same set, and other angle bars to direct a web from so one end of a printing couple to the other end thereof to thereby impart a plurality of impressions to the web by means of the same couple.

60. A printing machine including: a plu-55 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or so more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one to another printing couple in the same set to thereby print and perfect a web in one or 65 more colors by couples belong to the same

set, and other angle bars to invert a web and to direct it from one end of a printing couple to the other end of another printing couple of the same set to thereby print and perfect a second web by means of couples in the same 70 set.

61. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with 75 a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert a web and to direct it from one to another 80 printing couple in the same set to thereby print and perfect a web in one or more colors by couples belonging to the same set, and other angle bars to direct a web from one end of a printing couple to the other end of 85 another printing couple of the same set with the same side of the web up to thereby print a web in several colors.

62. A printing machine including: a plurality of printing couples, each couple includ- 90 ing an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or 95 webs in one or more colors, angle bars to invert a web and to direct it from one to another printing couple in the same set to thereby print and perfect a web in one or more colors by couples belonging to the same set, 100 and other angle bars to direct a web from one end of a printing couple to the other end of another printing couple of the same set.

63. A printing machine including: a plurality of printing couples, each couple in- 105 cluding an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same 110 web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one or more webs by couples belonging to the 115 same set, and other angle bars to invert a second web and to direct it from one end of a printing couple to the other end thereof to thereby print and perfect said second web by means of the same couple. 120

64. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, 125 one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple 130

in the same set to thereby print and perfect one or more webs by couples belonging to the same set, and other angle bars to direct a second web from one end of a printing couple to the other end thereof with the same side of the web up to thereby print a web in several colors by the same couple.

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65. A printing machine including: a plu-rality of printing couples, each couple including an impression and a design carrying cyl-10 inder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to in-15 vert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one or more webs by couples belonging to the same 20 set, and other angle bars to direct a web from one end of a printing couple to the other end thereof to thereby impart a plurality of impressions to the web by means of the same

couple. 66. A printing machine including: a plu-25 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets

with a plurality of couples in each set, one 30 set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing

35 couple in the same set to thereby print and perfect one or more webs by couples belonging to the same set, and other angle bars to invert a web and to direct it from one end of a printing couple to the other end of another printing couple of the same set to thereby print and perfect a second web by 40

means of couples in the same set.

67. A printing machine including: a plurality of printing couples, each couple in-cluding an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect 50 the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one or more webs by couples 55 belonging to the same set, and other angles bars to direct a web from one end of a printing couple to the other end of another printing (ouple of the same set with the same side of the web up to thereby print a web

60 in several colors.

68. A printing machine including: a plurality of printing couples, each couple in-cluding an impression and a design carrying cylinder, said couples arranged in two 65 sets with a plurality of couples in each set,

one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print 70 and perfect one or more webs by couples belonging to the same set, and other angle bars to direct a web from one end of a printing couple to the other end of another printing couple of the same set. 75

69. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, 80 one set to print one or more webs in one or more colors and the other set to perfecet the same web or webs in one or more colors. angle bars to invert one or more webs and to direct each web from one to another print-85 ing couple in the same set to thereby print and perfect one or more webs in one or more colors by couples belonging to the same set, and other angle bars to invert a second web and to direct it from one end of a printing 90 couple to the other end thereof to thereby print and perfect said second web by means of the same couple.

70. A printing machine including: a plu- 95 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print 105 and perfect one or more webs in one or more colors by couples belonging to the same set, and other angle bars to direct a second web from one end of a printing couple to the other end thereof with the same side of 110 the web up to thereby print a web in sev-eral colors by the same couple.

71. A printing machine including: a plurality of printing couples, each couple including an impression and a design carry- 115 ing cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, 120 angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one or more webs in one or more colors by couples belonging to the same set, 125 and other angle bars to direct a web from one end of a printing couple to the other end thereof to thereby impart a plurality of impressions to the web by means of the same couple. 130

72. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set ⁵ to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple in 10 the same set to thereby print and perfect one or more webs in one or more colors by couples belonging to the same set, and other angle bars to invert a web and to direct it from one end of a printing couple to the other end of 15 another printing couple of the same set to thereby print and perfect a second web by means of couples in the same set.

73. A printing machine including: a plu-20 rality of printing couples, each couple including an impression and a design carrying cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more 25 colors and the other set to perfect the same web or webs in one or more colors, angle bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one 20 or more webs in one or more colors by couples belonging to the same set, and other angle bars to direct a web from one end of a printing couple to the other end of another printing couple of the same set with the same side 35 of the web up to thereby print a web in several colors.

74. A printing machine including: a plurality of printing couples, each couple including an impression and a design carrying 40 cylinder, said couples arranged in two sets with a plurality of couples in each set, one set to print one or more webs in one or more colors and the other set to perfect the same web or webs in one or more colors, angle 45 bars to invert one or more webs and to direct each web from one to another printing couple in the same set to thereby print and perfect one or more webs in one or more colors by couples belonging to the same set, and other 50 angle bars to direct a web from one end of a printing couple to the other end of another

printing couple of the same set.

75. A printing machine including: a plurality of printing couples, each couple includ-55 ing an impression and a design cylinder, said couples arranged in two groups, each group consisting of a plurality of sets with a plurality of couples in each set, the impression cylinders of all the couples in the same group facing in the same direction, guides to direct 60 a web or each of a plurality of webs through one or more couples of one set of one group and thereafter, without reversal of the web or webs between sets, through one or more 65 couples of the other set of the same group to

thereby print and perfect the web or the plurality of webs in one or more colors, guides to direct a web or each of a plurality of webs through one or more couples of one set of the second group and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set of said second group, and folders to deliver the products of the two groups separately or together.

76. A printing machine including: a plu-75 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two groups, each group consisting of a plurality of sets with a plurality of couples in each set, the impres-80 sion cylinders of all the couples in the same group facing in the same direction, guides to direct a web or each of a plurality of webs through one or more couples of one set of one group and thereafter, without reversal of the 85 web or webs between sets, through one or more couples of the other set of the same group to thereby print and perfect the web or the plurality of webs in one or more colors, guides to direct a web or each of a plurality of webs 90 through one or more couples of one set of the second group and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set of said second group, and folders to deliver the products of 95 the two groups separately or together in the form of a variable number of assemblies variably combined.

77. A printing machine including: a plu-100 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, guides to 105 direct a web or each of a plurality of superposed webs through one or more couples of one set and thereafter, without reversal of the web or webs between sets, through one or 110 more couples of the other set to thereby print and perfect the web or the plurality of webs in one or more colors, additional printing couples to print and perfect one or more other webs in one or more colors, and folders to 115 deliver the products of the two sets and of the additional printing couples separately or together.

78. A printing machine including: a plurality of printing couples, each couple includ-120 ing an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, guides 125to direct a web or each of a plurality of superposed webs through one or more couples of one set and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set to thereby print 130 and perfect the web or the plurality of webs

in one or more colors, additional printing pressed webs at opposite sides of the machine, couples to print and perfect one or more other webs in one or more colors, and folders to deliver the products of the two sets and of the additional printing couples separately or together in the form of a variable number of assemblies variably combined.

79. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, 10 said couples arranged in two sets, spaced apart, with a plurality of couples in each set, the impression cylinders of all the couples of both sets facing in the same direction, guides 15 to direct a web or each of a pluality of super-

- posed webs through one or more couples of one set and thereafter, without reversal of the web or webs between sets, through one or more couples of the other set to thereby print
- and perfect the web or the plurality of webs 20 in one or more colors, additional printing couples, to print and perfect one or more other webs in one or more colors, arranged in tandem with the couples of the two sets, and
- 25 folders intermediate one of the sets and the additional printing couples to deliver the products of the two sets and of the additional printing couples separately or together.
- 80. A printing machine including: a plu-30 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two sets, spaced apart, with a plurality of couples in each set,
- the impression cylinders of all the couples of 35 both sets facing in the same direction, guides to direct a web or each of a plurality of superposed webs through one or more couples of one set and thereafter, without reversal of
- the web or webs between sets, through one or 40 more couples of the other set to thereby print and perfect the web or the plurality of webs in one or more colors, additional printing couples, to print and perfect one or more 45 other webs in one or more colors, arranged in
- tandem with the couples of the two sets, and folders intermediate one of the sets and the additional printing couples to deliver the products of the two sets and of the additional printing couples separately or together in the 50 form of a variable number of assemblies va-

riably combined. 81. A printing machine including: a plurality of printing couples, each couple includ-

55 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plural-60 ity of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or 65 more colors, a pluality of dissimilarly imand angle bars associated with the couples of the first set to thereby admit of the same web receiving impressions at opposite ends of the couples of the first set.

82. A printing machine including: a plu-TO rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 13 and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars associated with the couples of the first set to thereby admit of the same web being both printed and perfected at the same end of the couples of the first set.

83. A printing machine including: a plurality of printing couples, each couple includ- 😡 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one 100 or more colors, a plurality of dissimilarly imimpressed webs at opposite sides of the machine, and angle bars associated with the couples of the first set to thereby admit of the same web being both printed and perfected 105 by couples of the first set.

84. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs 110 differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web 115 through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars associated with the couples of the first set to thereby admit of the same web being printed at one end of the couples of the first set and being 125 perfected at the opposite end of the couples of the first set.

85. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the 130

opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars associated with the couples of the first set to thereby admit of the same web being printed in one color at one
18 end of the couples of the first set and being printed in another color at the opposite end

of the couples of the first set. 86. A printing machine including: a plurality of printing couples, each couple in-20 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct 25 a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of 30 dissimilarly impressed webs at opposite sides of the machine, and angle bars to bring into variably superimposed relation products from opposite sides of the machine before 35 the webs reach the couples of the second set and to admit of both printing and perfecting a web by couples of the first set.

87. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the 40 opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and super-45 imposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimi-50 larly impressed webs at opposite sides of the machine, and angle bars associated with the couples of the first set to bring into variably superimposed relation products from op-55 posite ends of the couples of the first set and to admit of both printing and perfecting a web by couples of the first set.

88. A printing machine including: a pluricality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the set and thereafter through one or more couples in each set. The set and thereafter through one or more couples in each set, two former folders, one folders, and angle bars to bring into variably superimposed relation products from oppoint 120

product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to 70 pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed 75 webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably superimposed relation products from opposite sides of the machine before the webs reach the couples of the sec-80 ond set and to admit of both printing and perfecting a web by couples of the first set.

89. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylin-85 der the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the 90 other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed rela- 95 tion to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly im- 100 pressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars associated with the couples of the first set to bring into variably superimposed relation products from opposite ends of the couples 105 of the first set and to admit of both printing and perfecting a web by couples of the first set.

90. A printing machine including: a plurality of printing couples, each couple includ- 110 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one 115 for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by 120 side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print 125 and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably

site sides of the machine before the webs reach both printing and perfecting one or more the couples of the second set and to admit of both printing and perfecting a web by couples of the first set.

- 91. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set
- 10 and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of
- couples and beyond said second set as the 15 webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past 20
- the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be 25 delivered to the folders, and angle bars asso-
- ciated with the couples of the first set to bring into variably superimposed relation products from opposite ends of the couples of the first set and to admit of both printing and perfecting a web by couples of the first set. 30
- 92. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif-35 ferently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set 4.0 and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plarality of dissimi-
- larly impressed webs at opposite sides of the machine, and alternative means to admit of 45both printing and perfecting a web by couples of the first set consisting of reversible driving connections for one of the couples of the first set and angle bars associated with the cou-50 ples of the first set.
- 93. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif-55 ferently, said couples arranged in a first set
- and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the

webs by couples of the first set consisting of reversible driving connections for a plurality of couples of the first set and angle bars associated with the couples of the first set.

94. A printing machine including: a plu-70rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 75 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and \mathbf{so} beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more 85 couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and alternative 90 means to admit of both printing and perfecting a web by couples of the first set consisting of reversible driving connections for one of the couples of the first set and angle bars associated with the couples of the first set. 95

95. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 100 and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 105 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more 116 couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and alternative 115 means to admit of both printing and perfecting one or more webs by couples of the first set consisting of reversible driving connections for a plurality of couples of the first set and angle bars associated with the couples of 120 the first set.

96. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differ- 125 ently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for 65 machine, and alternative means to admit of the product of the other side of the machine, 130

located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to 5 pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more 10 colors, a purality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and alternative means to admit of both printing and perfecting a web by couples of the first set consist-15 ing of reversible driving connections for one of the couples of the first set and angle bars associated with the couples of the first set. 97. A printing machine including: a plurality of printing couples, each couple includ-20 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for 25 the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in 30 side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to 35 thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and alternative means to admit of both printing and perfecting one or more webs by couples of the first 40 set consisting of reversible driving connec-tions for a plurality of couples of the first set and angle bars associated with the couples

of the first set. 98. A printing machine including: a plu-rality of printing couples, each couple includ-45 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 50 a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and there-55 after through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and means to variably associate 60 products from opposite sides of the machine before the webs have received their final im-

pression. 99. A printing machine including: a plu-65 cluding an impression and a design cylinder machine, and means to bring into variably 130

the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side 70 and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimi- 75 larly impressed webs at opposite sides of the machine, and angle bars to variably associate products from opposite sides of the machine before the webs have received their final impression.

100. A printing machine including: a plurality of printing couples, each couple includ ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 85 a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and there- 90 after through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and means adjacent the couples of the 95 first set to variably associate products from opposite ends of the couples of the first set.

101. A printing machine including: a plurality of printing couples, each couple in-cluding an impression and a design cylinder 100 the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and 105 superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimi-110 larly impressed webs at opposite sides of the machine, and angle bars adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first 115 set:

102. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 120 and a second set. spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set 125 and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimirality of printing couples, each couple in- larly impressed webs at opposite sides of the

superimposed relation products from opposite sides of the machine before the webs have received their final impression.

103. A printing machine including: a plu-5 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plu-10 rality of couples in each set, guides to di-

- rect a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of
- 15 the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars to bring into variably superimposed relation products from oppo-20 site sides of the machine before the webs

have received their final impression. 104. A printing machine including: a plurality of printing couples, each couple includ-

- ing an impression and a design cylinder the 25 opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and super-
- 30 imposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly
- 35 impressed webs at opposite sides of the machine, and means associated with the couples of the first set to bring into variably superimposed relation products from opposite ends of the couples of the first set.

105. A printing machine including : a plu-40 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and

- 45 a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and there-
- 50 after through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars associated with the 55 couples of the first set to bring into variably
- superimposed relation products from opposite ends of the couples of the first set.

106. A printing machine including: a plurality of printing couples, each couple in-60 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first riably superimposed relation products from set and a second set, spaced apart, with a plu- opposite sides of the machine before the webs rality of couples in each set, guides to direct a reach the couples of the second set. 65 plurality of webs both in side by side and

superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of 70 dissimilarly impressed webs at opposite sides of the machine, and means to variably asso-ciate products from opposite sides of the machine before the webs reach the couples of the second set.

75107. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 80 and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first 85 set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars to va- 90 riably associate products from opposite sides of the machine before the webs reach the couples of the second set.

108. A printing machine including: a plu-rality of printing couples, each couple in- 95 eluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct 100 a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and per-fect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and means to bring into variably superimposed relation products from opposite sides of the machine before the webs 110 reach the couples of the second set.

109. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web 120 through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the 125 machine and angle bars to bring into va-

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110. A printing machine including: a plu- 130

rality of printing couples, each couple in- impressed webs, at opposite sides of the macluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of 10 couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through 15 one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and 20 means to variably associate products from opposite sides of the machine either before or after the webs have received their final impression but before folding them.

111. A printing machine including: a plu-25 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plu-30 rality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the 35 webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the sec-40 ond set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to variably associate products 45 from opposite sides of the machine either before or after the webs have received their final impression but before folding them.

112. A printing machine including: a plurality of printing couples, each couple in-50 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former 55 folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs 60 both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one both in side by side and superimposed rela-65 or more colors, a plurality of dissimilarly tion to pass each web through one or more 130

chine, to be delivered to the folders, and means to variably associate products from opposite sides of the machine before the webs have received their final impression.

113. A printing machine including : a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first 75 set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of 80 couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through 35 one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle 90 bars to variably associate products from opposite sides of the machine before the webs have received their final impression.

114. A printing machine including: a plurality of printing couples, each couple in- 95 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former 100 folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs 105 both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one 110 or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means adjacent the couples of the first set to variably associate products from opposite 115 ends of the couples of the first set.

115. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs 120 differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the 125 machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs

couples of the first set and thereafter through couples in each set, two former folders, one one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first set.

- 116. A printing machine including: a plu-10 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set
- and a second set, spaced apart, with a plu-rality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine located adjacent the second set of couples and beyond said second set as the
- 26 webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through
- one or more couples of the second set to the 25folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and
- 30 means to bring into variably superimposed relation products from opposite sides of the machine either before or after the webs have received their final impression but before folding them.
- 117. A printing machine including: a plu-35 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set
- and a second set, spaced apart, with a plu-rality of couples in each set, two former dO folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set
- of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through
- 50 one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle
- bars to bring into variably superimposed re-65 lation products from opposite sides of the machine either before or after the webs have received their final impression but before folding them.
- 118. A printing machine including: a plu-60 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs different- first set to bring into variably superimposed ly, said couples arranged in a first set and a relation products from opposite ends of the 85 second set, spaced apart, with a plurality of couples of the first set.

for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one or more 75 colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means to bring into variably superimposed relation products from opposite sides of the machine before the 80 webs have received their final impression.

119. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif-85 ferently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the 90 machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed rela- 95 tion to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly 100 impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably superimposed relation products from opposite sides of the machine before the webs have received their 105 final impression.

120. A printing machine including : a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif-110 ferently, said couples arranged in a first set and a second set, spaced apart, with a plu-rality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the 115 machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more 120 couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the ma- 125 chine, to be delivered to the folders, and means associated with the couples of the

121. A printing machine including: a plu- of said second set, to the folders, to thereby rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif-5 and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of 10 couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through 15 one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle 20 bars associated with the couples of the first set to bring into variably superimposed relation products from opposite ends of the •couples of the first set.

122. A printing machine including: a plu-25 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first 30 set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of 35 couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through 40 one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be 45 delivered to the folders, and means to variably associate products from opposite sides of the machine either before or after the webs have received their final impression but before folding them. 123. A printing machine including: a plu-

50 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 55 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 63 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more 63 couples of the second set, or past the couples for the product of one and the other for the 100

print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered ferently, said couples arranged in a first set to the folders, and angle bars to variably as- 70 sociate products from opposite sides of the machine either before or after the webs have received their final impression but before folding them.

124. A printing machine including: a plu-75 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plu- 50 rality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the c5 webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past so the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means to vari- 95 ably associate products from opposite sides of the machine before the webs have received their final impression.

125. A printing machine including: a plurality of printing couples, each couple includ- 100 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one 105 for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by 116 side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby 115 print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to variably associate products from opposite sides of the 120 machine before the webs have received thei. final impression.

126. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the 125opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one

product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means to bring into variably

superimposed relation products from opposite sides of the machine either before or after the webs have received their final impression but before folding them.

127. A printing machine including: a plurality of printing couples, each couple includ20 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former
25 folders, one for the product of one and the other for the product of the other side of the

machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs 30 both in side by side and superimposed rela-

tion to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders,

25 to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably superimposed relation
40 products from opposite sides of the machine either before or after the webs have received

their final impression but before folding them. 128. A printing machine including: a plu-

45 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of

a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides

- 55 to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of
- 60 said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means to bring into variably su-

65 perimposed relation products from opposite

sides of the machine before the webs have received their final impression.

129. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the 70 opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the 75product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each 80 web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably superimposed relation products from opposite sides of the machine before the webs have no received their final impression.

130. A printing machine including : a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differ- 95 ently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, 100 located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and 105thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides 110 of the machine, to be delivered to the folders, and means to variably associate products from opposite sides of the machine either before or after the webs reach the couples of the second set but before folding them. 115

131. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 120 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 125 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more 130

couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to variably associate products from opposite sides of the

machine either before or after the webs reach the couples of the second set but before fold-10 ing them.

132. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differ-15 ently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, 20 located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the

- 25 first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at 30 opposite sides of the machine, to be delivered
- to the folders, and means to variably associate products from opposite sides of the machine before the webs reach the couples of the second set.
- 133. A printing machine including: a plu-35 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and
- 40 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides 45 to direct a plurality of webs both in side by side and superimposed relation to pass each
- web through one or more couples of the first set and thereafter through one or more 50 couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered 55 to the folders, and angle bars to variably associate products from opposite sides of the machine before the webs reach the couples
 - of the second set.
- 134. A printing machine including: a plu-60 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality c5 of couples in each set, two former folders,

one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in 70 side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby 75 print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means adjacent the couples of the first set to variably associate products so from opposite ends of the couples of the first set.

135. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder 85 the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the 90 other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed rela- 95 tion to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more 100 colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars adjacent the couples of the first set to variably associate products from opposite ends of the 105 couples of the first set.

136. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs 110 differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the 115 machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to 120 pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more 125 colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means to bring into variably superimposed relation products from opposite sides of the machine either 130

before or after the webs reach the couples of couples of the first set and thereafter through

137. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former 10 folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the

webs run, guides to direct a plurality of webs 15 both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders,

20 to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably superimposed relation

25 products from opposite sides of the machine either before or after the webs reach the couples of the second set.

138. A printing machine including: a plurality of printing couples, each couple in-30 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set. spaced apart, with a plurality of couples in each set, two former fold-35 ers, one for the product of one and the other for the product of the other side of the

- machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs 40 both in side by side and superimposed rela-
- tion to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more 45

colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and means to bring into variably superimposed relation products 50 from opposite sides of the machine before the

webs reach the couples of the second set.

139. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylin-55 der the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the co other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed rela-

one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed 70 webs, at opposite sides of the machine, to be delivered to the folders, and angle bars to bring into variably superimposed relation products from opposite sides of the machine before the webs reach the couples of the 75 second set.

140. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differ- 80 ently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, lo-85 cated adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first co set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at op- 95 posite sides of the machine, to be delivered . to the folders, and means associated with the couples of the first set to bring into variably superimposed relation products from opposite ends of the couples of the first set.

141. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 105 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 110 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more cou- 115 ples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered 120 to the folders, and angle bars associated with the couples of the first set to bring into variably superimposed relation products from opposite ends of the couples of the first set.

142. A printing machine including: a plu- 125 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first 63 tion to pass each web through one or more set and a second set, spaced apart, with a plu- 130

rality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars, associated with 10 the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, option-

ally, to so direct a web as to associate products from opposite sides of the machine, and, 15 optionally, to so direct a web as to both associate products from opposite sides of the

machine and to print and perfect said web by couples of the first set.

143. A printing machine including: a plu-20 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality 25 of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides so to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereso by print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, option-

ally, to so direct a web as to associate products from opposite sides of the machine, and, optionally, to so direct a web as to both asso-45 ciate products from opposite sides of the machine and to print and perfect said web by couples of the first set.

144. A printing machine including: a plurality of printing couples, each couple includ-50 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, 15 one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by 1) side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to thereby ci print and perfect, in one or more colors, a plu- ucts from opposite sides of the machine, and, 130

rality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to associate products from opposite sides of the machine, and, optionally, to so direct a web as to both associate products from opposite sides of the ma-75 chine and to print and perfect said web by couples of the first set.

145. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the 80 opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superim-85 posed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly im- 90 pressed webs at opposite sides of the machine, angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so 95 direct a web as to associate products from opposite sides of the machine, and, optionally, to so direct a web as to both associate products from opposite sides of the machine and to print and perfect said web by couples of the 100 first set, and reversible driving connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set. 105

146. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 110 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machne, located adjacent the second set of couples and 115 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more cou- 120 ples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associated with the 125 couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to associate prod-

optionally, to so direct a web as to both asso- optionally, to so direct a web as to associate ciate products from opposite sides of the ma- products from opposite sides of the machine, chine and to print and perfect said web by and, optionally, to so direct a web as to both couples of the first set, and reversible driving 5 connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set.

147. A printing machine including : a plu-10 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of 15 couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides

to direct a plurality of webs both in side by side and superimposed relation to pass each 20 web through one or more couples of the first set and thereafter through one or more cou-

ples of the second set, or past the couples of 25 said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associated with the 30 couples of the first set, to so direct a web as to admit of its being both printed and per-

fected by couples of the first set, and, optionally, to so direct a web as to associate products from opposite sides of the machine, and, ³⁵ optionally, to so direct a web as to both associate products from opposite sides of the machine and to print and perfect said web by couples of the first set, and reversible driving

connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set.

148. A printing machine including: a plu-rality of printing couples, each couple in-45 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former fold-50 ers, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both 55 in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed through one or more couples of the first set

associate products from opposite sides of the machine and to print and perfect said web by 70 couples of the first set, reversible driving connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set, and angle bars in-termediate the couples of the second set and the folders to associate a web printed and perfected by couples of the first set at one side of the machine with products from the other side of the machine.

149. A printing machine including : a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and 85 a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 90 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or 95 more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be 100 delivered to the folders, angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to associate 105 products from opposite sides of the machine, and, optionally, to so direct a web as to both associate products from opposite sides of the machine and to print and perfect said web by couples of the first set, reversible driving 110 connections, associated with the couples of the first set constituting alternative means to admit of both printing and perfecting a web by couples of the first set, and angle bars intermediate the couples of the second set and the 115 folders to associate a web printed and perfected by couples of the first set at one side of the machine with products from the other side of the machine.

150. A printing machine including: a plu- 120 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plu- 125 rality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web ⁶⁵ and perfected by couples of the first set, and, and thereafter through one or more couples 130

of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, and angle bars, associated with the couples of the first set, to so direct a web as

- 5 to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products 10 from opposite sides of the machine, and, optionally, to so direct a web as to both bring
- about said superimposed relation and to print and perfect said web by couples of the first set.

151. A printing machine including: a plu-15 rality of printing couples, each couple including an impression and a design cylinder the ity of couples in each set, guides to direct a opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 25 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more cou-30 ples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, and angle bars, associated 35 with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite sides of the machine, and, op-40 tionally, to so direct a web as to both bring. about said superimposed relation and to print and perfect said web by couples of the first set.

152. A printing machine including: a plu-45 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 50 and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of cou-55 ples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one 60 or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be 65 delivered to the folders, and angle bars, as-

sociated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed rela-70tion products from opposite sides of the machine, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set.

75153. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 80 and a second set, spaced apart, with a pluralplurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and there-85 after through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the machine, angle bars, associated with the couples of the 90 first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite sides of the 95 machine, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, and reversible driving connections, associated with the couples 100 of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set.

154. A printing machine including: a plurality of printing couples, each couple includ-105 ing an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former fold- 110 ers, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both 115 in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set to the folders. to thereby print and perfect, in one or more 120 colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associ-ated with the couples of the first set, to so direct a web as to admit of its being both 125 printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite sides of the machine, and, optionally, to so direct a web as to both 130

bring about said superimposed relation and to print and perfect said web by couples of the first set, and reversible driving connections, associated with the couples of the first 5 set, constituting alternative means to admit

of both printing and perfecting a web by couples of the first set.

155. A printing machine including: a plurality of printing couples, each couple in-

- 10 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former 15 folders, one for the product of one and the
- other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of
- 20 webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set,
- 25 to the folders, to thereby print and perfect, in one or more colors, a plurality of dis-similarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by
- couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from op-
- st posite sides of the machine, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, and reversible driving connections, associ-46 ated with the couples of the first set, con-stituting alternative means to admit of both printing and perfecting a web by couples of the first set.

156. A printing machine including: a plu-4: rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a 50 plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as c5 the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the 60 second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associated with the opposite ends of which impress webs dif-

as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite sides of the machine, and, option- 70 ally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, reversible driving connections, associ-ated with the couples of the first set, con-75 stituting alternative means to admit of both printing and perfecting a web by couples of the first set, and angle bars intermediate the couples of the second set and the folders to bring a web printed and perfected by 80 couples of the first set at one side of the machine into variably superimposed relation with products from the other side of the machine.

157. A printing machine including: a plu- 85 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plu- so rality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as 95 the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the sec- 100 ond set, or past the couples of said second set, to the folders, to thereby print and per-fect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, 105 angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably 110 superimposed relation products from opposite sides of the machine, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, 115 reversible driving connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set, and angle bars intermediate the couples 120 of the second set and the folders to bring a web printed and perfect by couples of the first set at one side of the machine into variably superimposed relation with products from the other side of the machine. 125

158. A printing machine including: a plu-rality of printing couples, each couple ineluding an impression and a design cylinder 65 the couples of the first set, to so direct a web ferently, said couples arranged in a first set 130

ity of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web 5 through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides of the 10 machine, and angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into va-15 riably superimposed relation products from opposite ends of the couples of the first set, and, optionally, to so direct a web as to both bring about said superimposed relation and

- to print and perfect said web by couples of 20 the first set. 159. A printing machine including : a plurality of printing couples, each couple in-
- cluding an impression and a design cylinder the opposite ends of which impress webs dif-25 ferently, said couples arranged in a first set
- and a second set, spaced apart, with a plu-rality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the 30 machine, located adjacent the second set of
- couples and beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more 35 couples of the first set and thereafter through
- one or more couples of the second set to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the ma-40 chine, to be delivered to the folders, and angle
- bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web
- 45 as to bring into variably superimposed relation products from opposite ends of the couples of the first set, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect 50 said web by couples of the first set.
- 160. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif-55 ferently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the 60 machine, located adjacent the second set of couples and beyond said second set as the webs run. guides to direct a plurality of webs

and a second set, spaced apart, with a plural- one or more couples of the second set, or past the couples of said second set, to the folders, to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be 70 delivered to the folders, and angle bars, assocated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to 75 bring into variably superimposed relation products from opposite ends of the couples of the first set, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said so web by couples of the first set.

161. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs dif- 85 ferently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web 20 through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs at opposite sides 95 of the machine, angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into va- 100 riably superimposed relation products from opposite ends of the couples of the first set. and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of 105 the first set, and reversible driving connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set.

162. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 115 and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product (f one and the other for the product of the other side of the machine, located adjacent the second set of couples and 120 beyond said second set as the webs run, guides to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more cou- 125 ples of the second set to the folders, to thereby print and perfect, in one or more colors, a both in side by side and superimposed rela- plurality of dissimilarly impressed webs, at tion to pass each web through one or more opposite sides of the machine, to be delivered 63 couples of the first set and thereafter through to the folders, angle bars, associated with the 130

couples of the first set, to so direct a web as to print and perfect, in one or more colors, a pluadmit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite ends of the couples of the first set, and, option-

- ally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, 10 and reversible driving connections, associated
- with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set.
- 163. A printing machine including: a plu-15rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 20 and a second set, spaced apart, with a plurality of couples in each set, two former folders,
- one for the product of one and the other for the product of the other side of the machine, located adjacent the second set of couples and 25 beyond said second set as the webs run, guides to direct a plurality of webs both in side by
- side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more 30 couples of the second set, or past the couples of said second set, to the folders, to
- thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be 25 delivered to the folders, angle bars, associated with the couples of the first set, to so direct a web as to admit of its being both printed and perfected by couples of the first set, and,
- optionally, to so direct a web as to bring into variably superimposed relation products 40 from opposite ends of the couples of the first set, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples
- 45 of the first set, and reversible driving connections, associated with the couples of the first set, constituting alternative means to admit of both printing and perfecting a web by couples of the first set.

164. A printing machine including: a plu-50 rality of printing couples, each couple including an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set 55 and a second set, spaced apart, with a plurality of couples in each set, two former folders, one for the product of one and the other for the product of the other side of the machine. located adjacent the second set of couples and beyond said second set as the webs run, guides 60 to direct a plurality of webs both in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples 05 of the second set to the folders, to thereby

rality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars, associated with the couples of the first set, to so direct a web as to 70 admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite ends of the couples of the first set, and, 75 optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, reversible driving connections, associated with the couples of the first set, constituting 80 alternative means to admit of both printing and perfecting a web by couples of the first set, and angle bars intermediate the couples of the second set and the folders to bring a web printed and perfected by couples of the 85 first set at one end thereof into variably superimposed relation with products from the other end of the couples.

165. A printing machine including : a plurality of printing couples, each couple in- 90 cluding an impression and a design cylinder the opposite ends of which impress webs differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former fold- 95 ers, one for the product of one and the other. for the product of the other side of the machine, located adjacent the second set of couples and beyond said second set as the webs run, guides to direct a plurality of webs both 104 in side by side and superimposed relation to pass each web through one or more couples of the first set and thereafter through one or more couples of the second set, or past the couples of said second set, to the folders, to 103 thereby print and perfect, in one or more colors, a plurality of dissimilarly impressed webs, at opposite sides of the machine, to be delivered to the folders, angle bars associated with the couples of the first set, to so direct a 110 web as to admit of its being both printed and perfected by couples of the first set, and, optionally, to so direct a web as to bring into variably superimposed relation products from opposite ends of the couples of the first 115 set, and, optionally, to so direct a web as to both bring about said superimposed relation and to print and perfect said web by couples of the first set, reversible driving connections, associated with the couples of the first set, 120constituting alternative means to admit of both printing and perfecting a web by couples of the first set, and angle bars intermediate the couples of the second set and the folders to bring a web printed and perfected 125 by couples of the first set at one end thereof into variably superimposed relation with products from the other end of the couples. 166. A printing machine including: a plurality of printing couples, each couple includ- 13

ing an impression and a design cylinder, said couples arranged in a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality 5 of webs through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect the web or webs in one or more colors, means to bring into variably superimposed 10 relation products from opposite ends of the couples of the first set before the webs reach the couples of the second set, additional printing couples to print and perfect one or more other webs in one or more colors, and 15 other means to bring into variably superimposed relation products from opposite ends of the couples of the two sets and to combine products of the couples of the two sets with products of the additional printing couples. 167. A printing machine including: a plu-20 rality of printing couples, each couple including an impression and a design cylinder, said couples arranged in a first set and a second set with a plurality of couples in each 25 set, guides to dircet a web or each of a plurality of webs through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect the web or webs in one or more colors, angle bars and guides to bring 30 into variably superimposed relation products from opposite ends of the couples of the first set before the webs reach the couples of the second set, additional printing couples to print and perfect one or more other webs in 35 one or more colors, and other angle bars and guides to bring into variably superimposed relation products from opposite ends of the couples of the two sets and to combine products of the couples of the two sets with prod-40

ucts of the additional printing couples. 168. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, 45 said couples arranged in a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples of the first set and thereafter through one or more 50 couples of the second set to thereby print and perfect the web or webs in one or more colors, means adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first set, additional printing couples to print and perfect one or 55 more other webs in one or more colors, and means adjacent the couples of the second set and the additional printing couples to variably associate products from opposite ends of 60 the couples of the two sets and to combine products of the couples of the two sets with products of the additional printing couples. 169. A printing machine including: a plurality of printing couples, each couple includ-65

ing an impression and a design cylinder,

said couples arranged in a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples of the first set and thereafter through one or more 70 couples of the second set to thereby print and perfect the web or webs in one or more colors, angle bars and guides adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first 75 set, additional printing couples to print and perfect one or more other webs in one or more colors, and other angle bars and guides adjacent the couples of the second set and the additional printing couples to variably asso- 80 ciate products from opposite ends of the couples of the two sets and to combine products of the couples of the two sets with products of the additional printing couples.

170. A printing machine including: a plu- 85 rality of printing couples, each couple includ~ ing an impression and a design cylinder, said couples arranged in a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality 90 of webs through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect the web or webs in one or more colors, means to bring into variably superimposed 95 relation products from opposite ends of the couples of the first set before the webs reach the couples of the second set, additional printing couples, to print and perfect one or more other webs in one or more colors, arranged in 100 tandem with the couples of the two sets, and other means to bring into variably superimposed relation products from opposite ends of the couples of the two sets and to combine products of the couples of the two sets with 105products of the additional printing couples.

171. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in a first set and a second 110 set with a plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples of the first set and thereafter through one or more 115 couples of the second set to thereby print and perfect the web or webs in one or more colors, angle bars and guides to bring into variably superimposed relation products from opposite ends of the couples of the first set before 120 the webs reach the couples of the second set, additional printing couples, to print and perfect one or more other webs in one or more colors, arranged in tandem with the couples of the two sets, and other angle bars and 125 guides to bring into variably superimposed relation products from opposite ends of the couples of the two sets and to combine products of the couples of the two sets with products of the additional printing couples. 130

172. A printing machine including: a plu-

rality of printing couples, each couple includ- products from opposite ends of the couples of ing an impression and a design cylinder, said the first set before the webs reach the second couples arranged in a first set and a second set with a plurality of couples in each set, 5 guides to direct a web or each of a plurality of webs through one or more couples of the first set and thereafter through one or more couples of the second set to thereby print and perfect the web or webs in one or more colors,

10 means adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first set, additional rality of printing couples, each couple includprinting couples, to print and perfect one or more other webs in one or more colors, ar-

- 15 ranged in tandem with the couples of the two sets, and means intermediate the couples of the second set and the additional printing couples to variably associate products from opposite ends of the couples of the two sets and to combine products of the couples of 20
- the two sets with products of the additional printing couples.

173. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples of 30 the first set and thereafter through one or more couples of the second set to thereby print and perfect the web or webs in one or more colors, angle bars and guides adjacent the couples of the first set to 35 variably associate products from opposite ends of the couples of the first set, additional printing couples, to print and perfect one or more other webs in one or more colors, arranged in tandem with the couples of the two 40sets, and other angle bars and guides intermediate the couples of the second set and the

additional printing couples to variably associate products from opposite ends of the couples of the two sets and to combine products of the couples of the two sets with prod-

ucts of the additional printing couples.

174. A printing machine including : a plurality of printing couples, each couple including an impression and a design cylinder, 50 said couples arranged in a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples of the first set and thereafter through one or 55 more couples of the second set to thereby print and perfect the web or webs in one or more colors, additional printing couples, to print and perfect one or more other webs in one or more colors, arranged in tandem 60 with the two sets, folders intermediate the second set and the additional printing couples to deliver the products of the two sets and of the additional printing couples separately or together, angle bars and guides to 65

set, and other angle bars and guides intermediate the folders and the second set and intermediate the folders and the additional 70 printing couples to bring into variably superimposed relation products from opposite ends of the couples of the two sets and products from opposite ends of the additional printing couples. 75

175. A printing machine including: a pluing an impression and a design cylinder, said couples arranged in two groups, each group consisting of a first set and a second set with 80 a plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples of the first set of one group and thereafter through one or more couples of the second set of the same 85 group to thereby print and perfect the web or the plurality of webs in one or more colors, guides to similarly direct a web or webs through the couples of the first and second sets of the second group, means adjacent the so couples of the first set of one group to bring into variably superimposed relation products from opposite ends of said couples of said first set of said group, means adjacent the couples of the first set of the second 95 group to similarly bring into variably superimposed relation products from opposite ends of said couples of said first set of said second group, and other means, associated with each group, to bring into variably super- 100 imposed relation products from opposite ends of the couples of the two sets of each group and to associate the products of both groups.

176. A printing machine including; a plurality of printing couples, each couple includ- 105 ing an impression and a design cylinder, said couples arranged in two groups, each group consisting of a first set and a second set with a plurality of couples in each set, guides to direct a web or each of a plurality of 110 webs through one or more couples of the first set of one group and thereafter through one or more couples of the second set of the same group to thereby print and perfect the web or the plurality of webs in one or more colors, 115 guides to similarly direct a web or webs through the couples of the first and second sets of the second group, angle bars and guides adjacent the couples of the first set of one group to bring into variably super- 120 imposed relation products from opposite ends of said couples of said first set of said group, angles bars and guides adjacent the couples of the first set of the second group to similarly bring into variably superimposed re- 125 lation products from opposite ends of said couples of said first set of said second group, and other angle bars and guides, associated with each group, to bring into variably superbring into variably superimposed relation imposed relation products from opposite 130

ends of the couples of the two sets of each group and to associate the products of both groups.

177. A printing machine including: a plurality of printing couples, each couple including an impression and a design cylinder, said couples arranged in two groups in tandem, each group consisting of a first set and a second set with a plurality of couples in 10 each set, guides to direct a web or each of a plurality of webs through one or more couples of the first set of one group and thereafter through one or more couples of the second set of the same group to thereby print 15 and perfect the web or the plurality of webs in one or more colors, guides to similarly direct a web or webs through the couples of the first and second sets of the second group, means adjacent the couples of the first set 20 of one group to bring into variably super-imposed relation products from opposite ends of said couples of said first set of said group, means adjacent the couples of the first set of the second group to similarly bring 25 into variably superimposed relation products from opposite ends of said couples of said first set of said second group, and other means, intermediate the two groups, to bring into variably superimposed relation prod-30 ucts from opposite ends of the couples of the two sets of each group and to associate

the products of both groups. 178. A printing machine including: a plu-rality of printing couples, each couple in-35 cluding an impression and a design cylinder, said couples arranged in two groups in tandem, each group consisting of a first set and a second set with a plurality of couples in each set, guides to direct a web or each of 40 a plurality of webs through one or more couples of the first set of one group and thereafter through one or more couples of the second set of the same group to thereby print and perfect the web or the plurality 45 of webs in one or more colors, guides to similarly direct a web or webs through the couples of the first and second sets of the second group, angle bars and guides adjacent the couples of the first set of one group 50 to bring into variably superimposed relation products from opposite ends of said cou-ples of said first set of said group, angle bars and guides adjacent the couples of the first set of the second group to similarly bring 55 into variably superimposed relation products from opposite ends of said couples of said first set of said second group, and other angle bars and guides, intermediate the two groups, to bring into variably superimposed 60 relation products from opposite ends of the couples of the two sets of each group and to associate the products of both groups.

179. A printing machine including : a plurality of printing couples, each couple in-65 cluding an impression and a design cylinder,

said couples arranged in two groups in tandem, each group consisting of a first set and a second set with plurality of couples in each set, guides to direct a web or each of a plurality of webs through one or more couples 70 of the first set of one group and thereafter through one or more couples of the second set of the same group to thereby print and perfect the web or the plurality of webs in one or more colors, guides to similarly direct 75 a web or webs through the couples of the first and second sets of the second group, folders intermediate the two groups to deliver the products of the two groups separately or together, means adjacent the cou- so ples of the first set of one group to bring into variably superimposed relation products from opposite ends of said couples of said first set of said group, means adjacent the couples of the first set of the second group 85 to similarly bring into variably superimposed relation products from opposite ends of said couples of said first set of said second group, and other means, intermediate the groups and the folders to bring into variably super- 90 imposed relation products from opposite ends of the couples of the two sets of each group and to associate the products of both groups.

180. A printing machine including: a plurality of printing couples, each couple in- 95 cluding an impression and a design cylinder, said couples arranged in two groups in tandem, each group consisting of a first set and a second set with a plurality of couples in each set, guides to direct a web or each 100 of a plurality of webs through one or more couples of the first set of one group and thereafter through one or more couples of the second set of the same group to thereby print and perfect the web or the plurality 105 of webs in one or more colors, guides to similarly direct a web or webs through the couples of the first and second sets of the second group, folders intermediate the two groups to deliver the products of the two 110 groups separately or together, angle bars and guides adjacent the couples of the first set of one group to bring into variably superimposed relation products from opposite ends of said couples of said first set of said group, 115 angle bars and guides adjacent the couples of the first set of the second group to similarly bring into variably superimposed relation products from opposite ends of said couples of said first set of said second group, 120 and other angle bars and guides, intermediate the groups and the folders to bring into variably superimposed relation products from opposite ends of the couples of the two sets of each group and to associate the prod- 125 ucts of both groups.

Signed at the borough of Manhattan, city, county and State of New York, this 29th day of December, 1926. DAVID J. SCOTT.

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Certificate of Correction

Patent No. 1,738,323.

Granted December 3, 1929, to

DAVID J. SCOTT

It is hereby certified that error appears in the printed specification of the above-numbered patent requiring correction as follows: Page 9, line 116, for the reference characters "D³" and "D²" read d^3 and d^2 ; same page, line 34, strike out the word "and", second occurrence; page 12, line 126, claim 17, for the word "of" read and; page 14, line 115, claim 30, before the word "webs" insert the article *the*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office. Signed and sealed this 18th day of February, A. D. 1930.

[SEAL]

M. J. MOORE, Acting Commissioner of Patents.