

Dec. 3, 1929.

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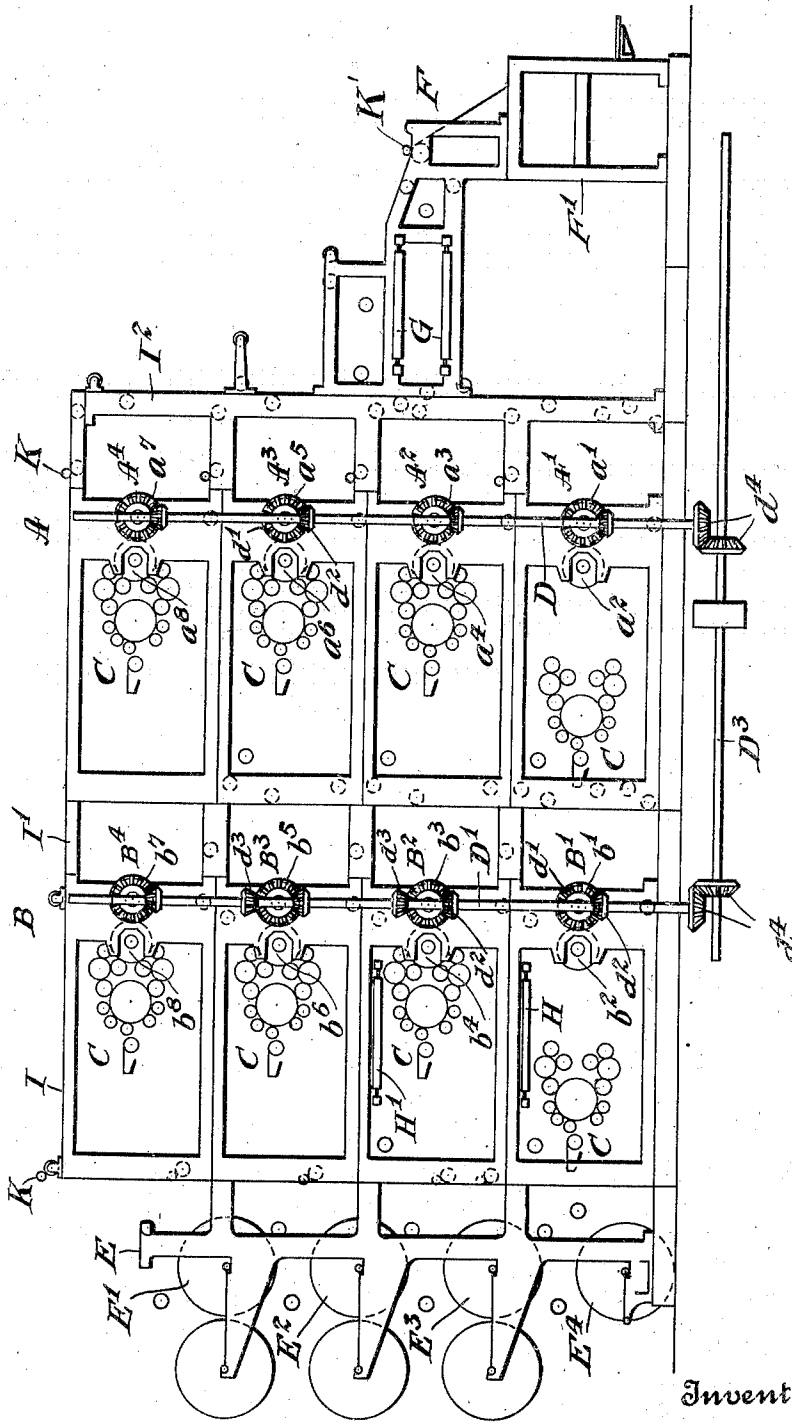
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33 Sheets-Sheet 1

Fig. 1.



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David J. Scott

By his Attorney

McVeen

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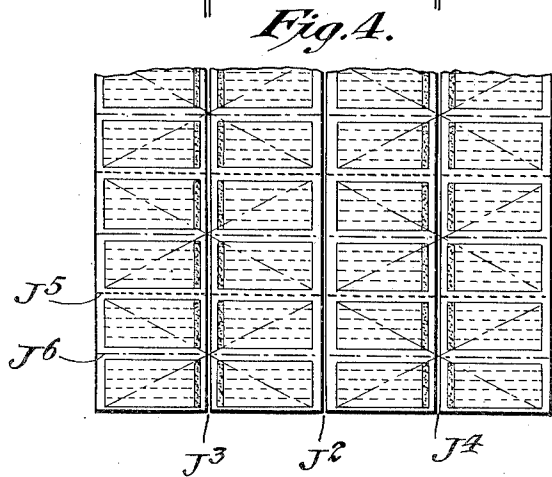
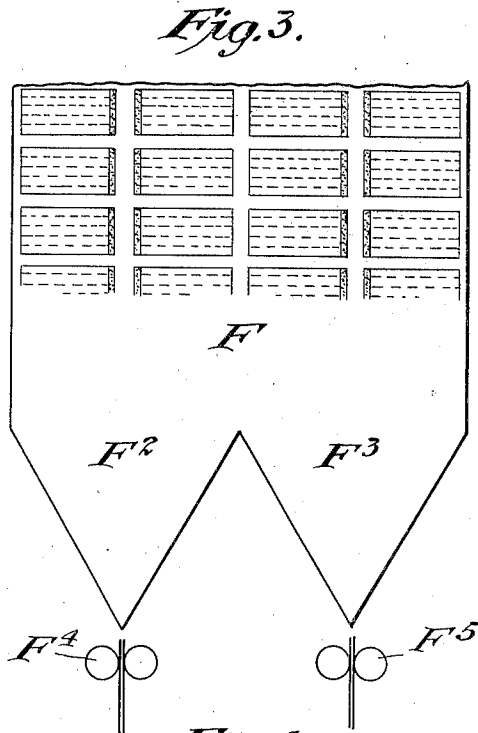
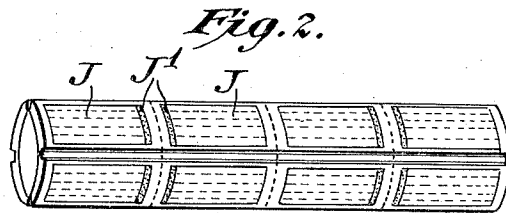
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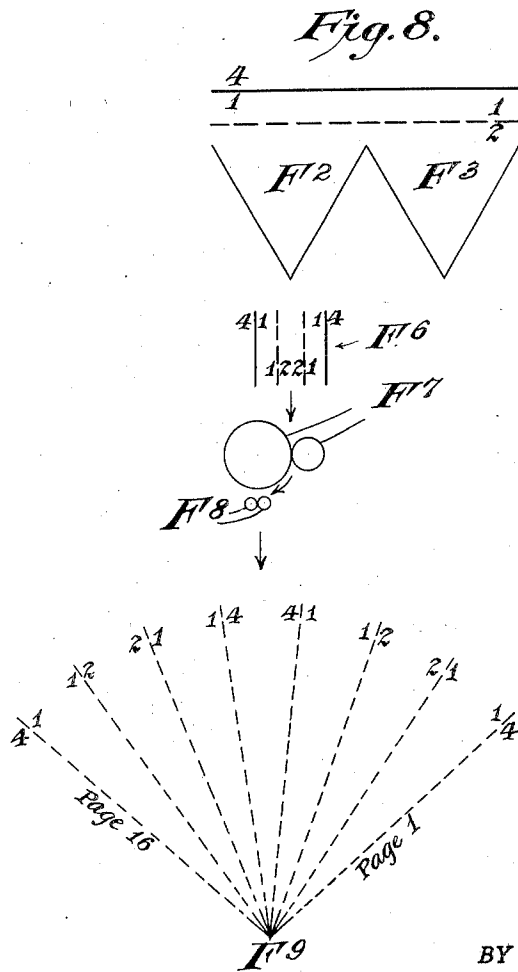
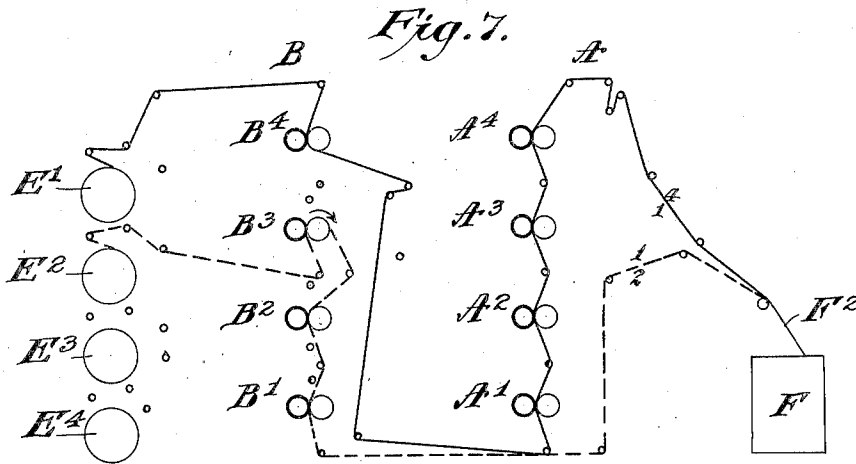
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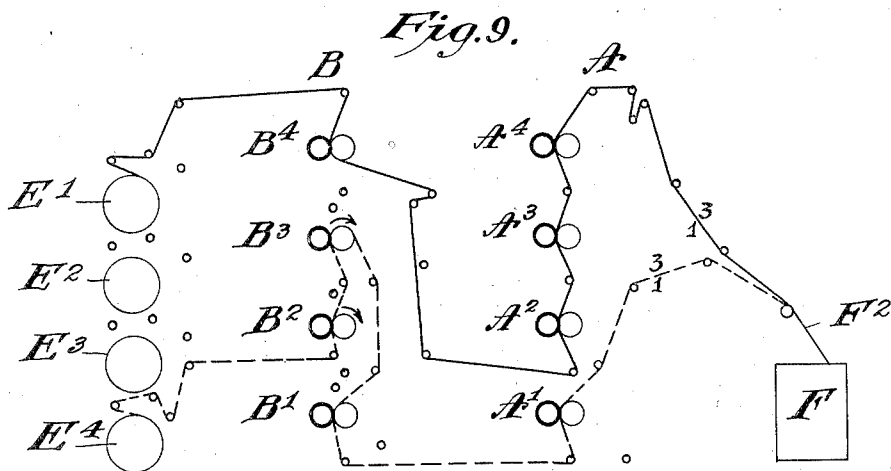
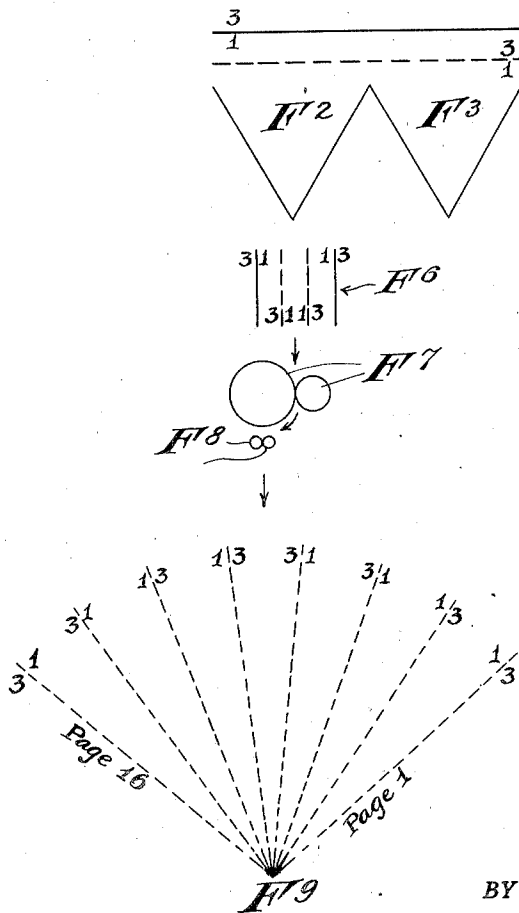


Fig. 10.



INVENTOR
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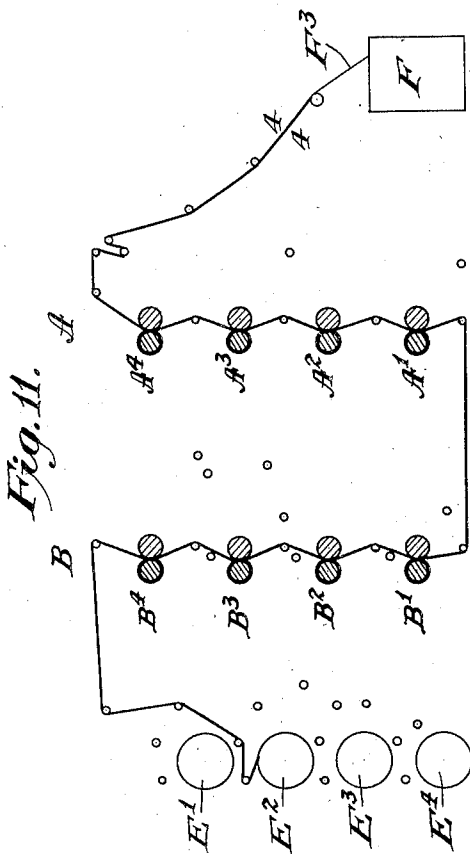
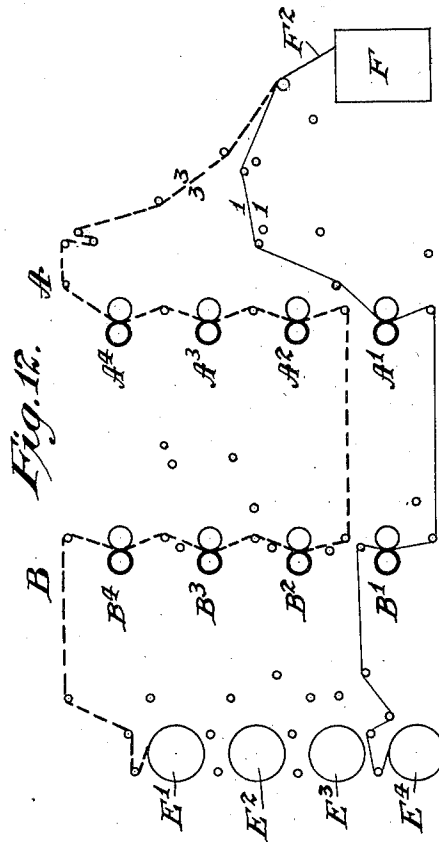
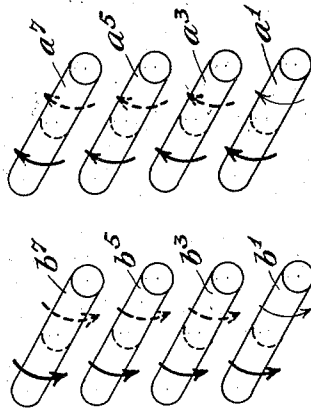


Fig. 13.



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Fig. 14.

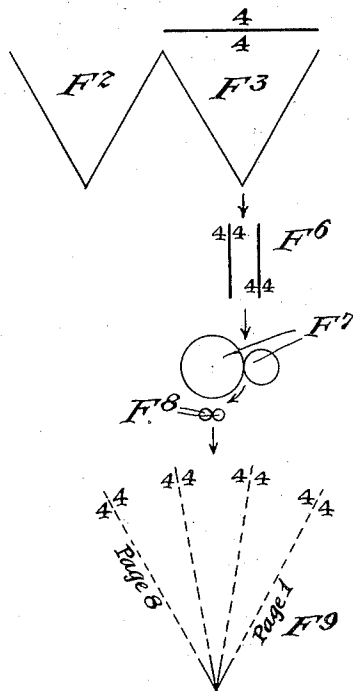
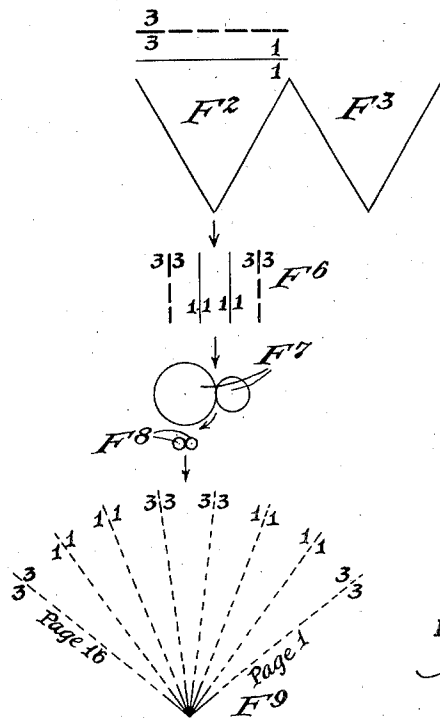


Fig. 15.



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Fig. 16.

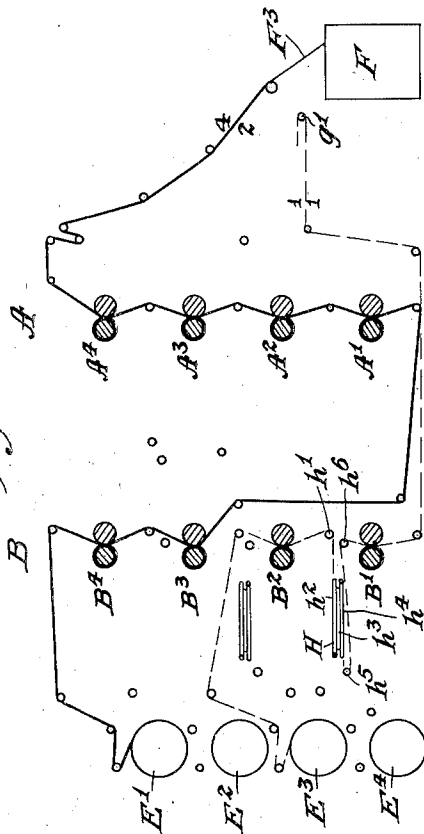


Fig. 17.

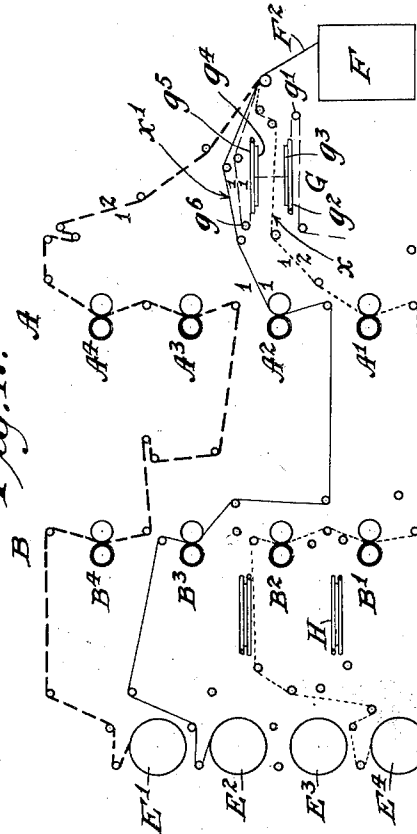
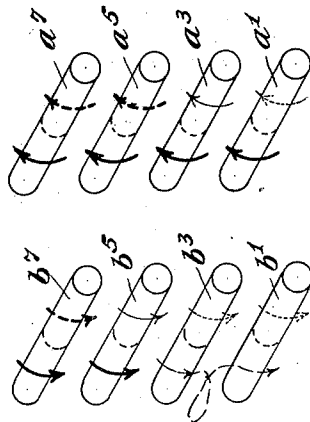


Fig. 18.



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Fig. 21.

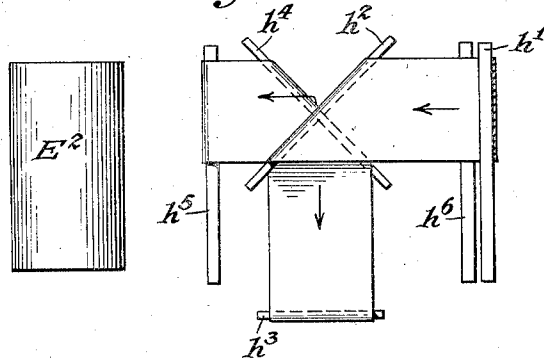


Fig. 22.

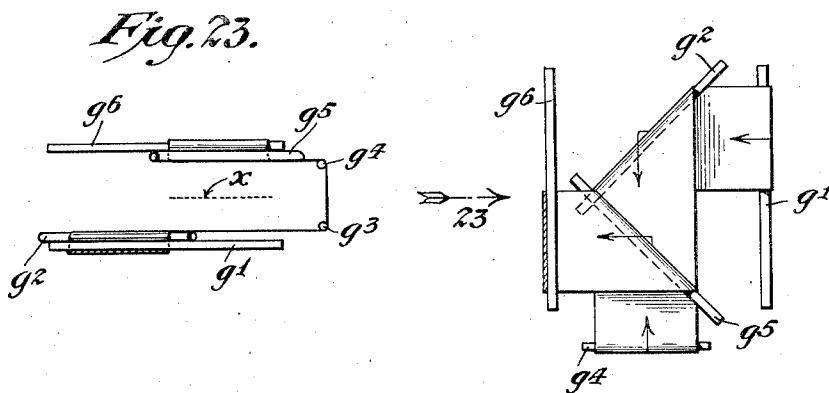
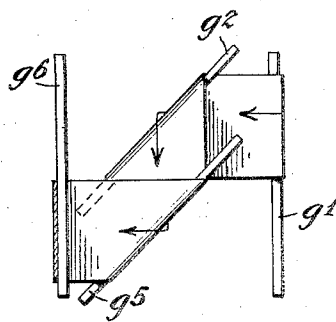


Fig. 2A.



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Fig. 25.

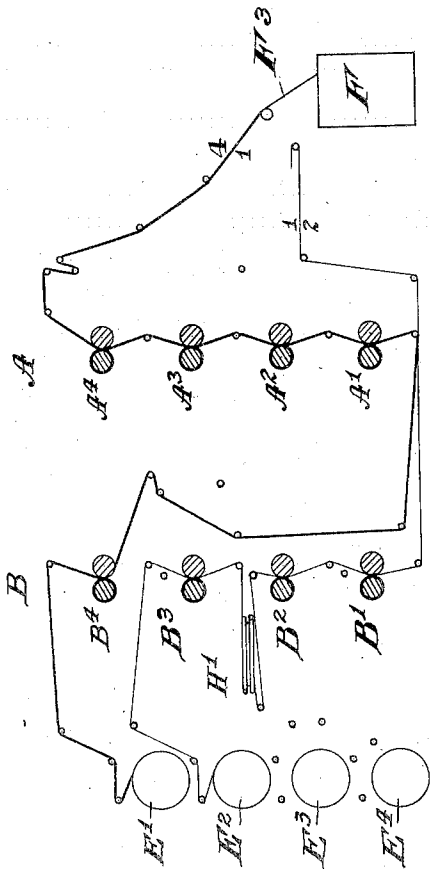


Fig. 27.

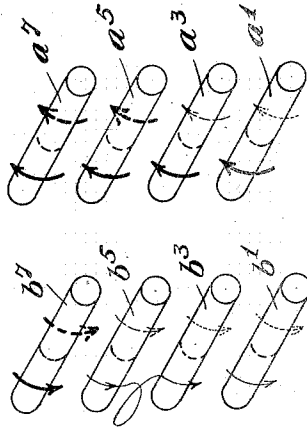
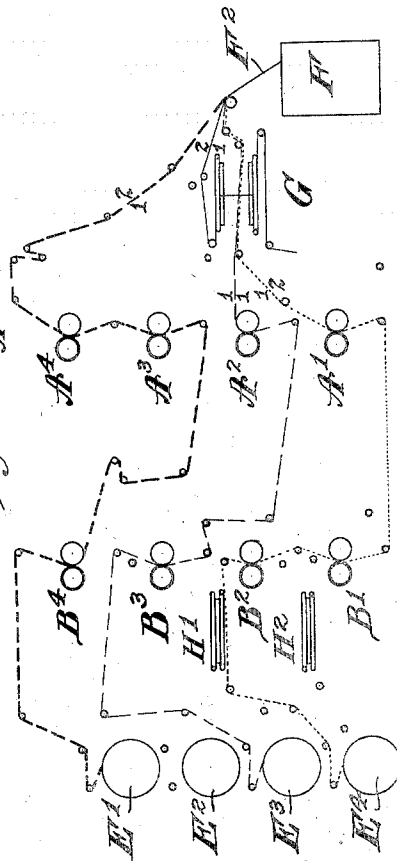


Fig. 26.



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Fig. 28.

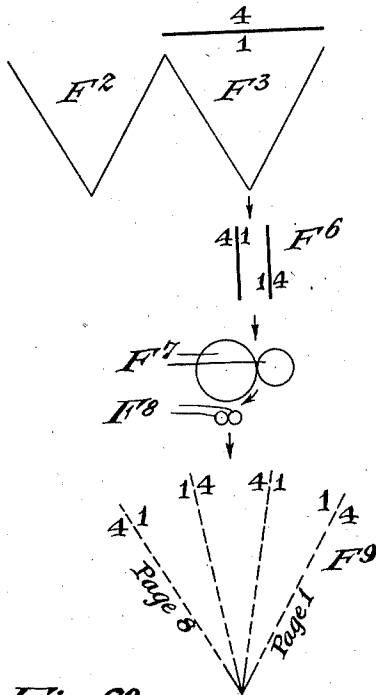
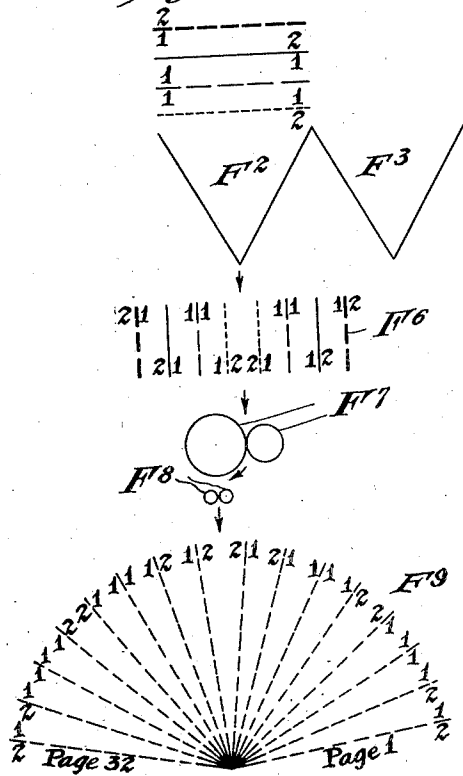


Fig. 29.



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Fig. 30.

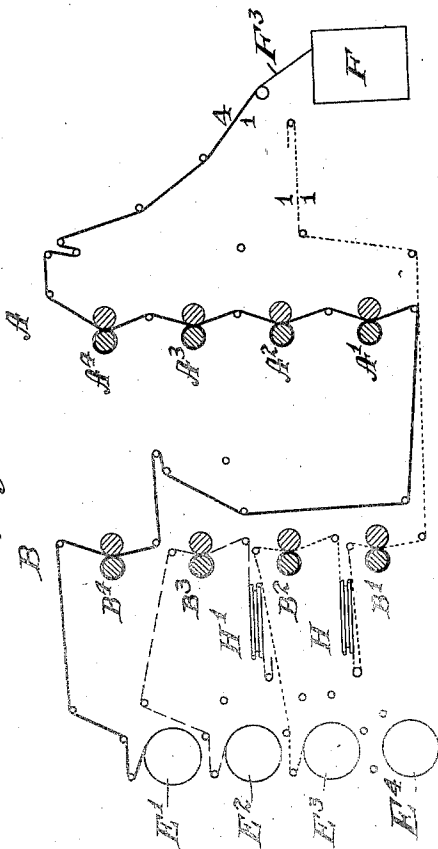


Fig. 32.

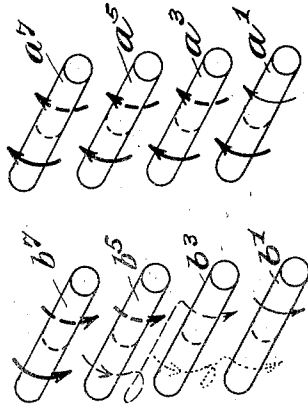
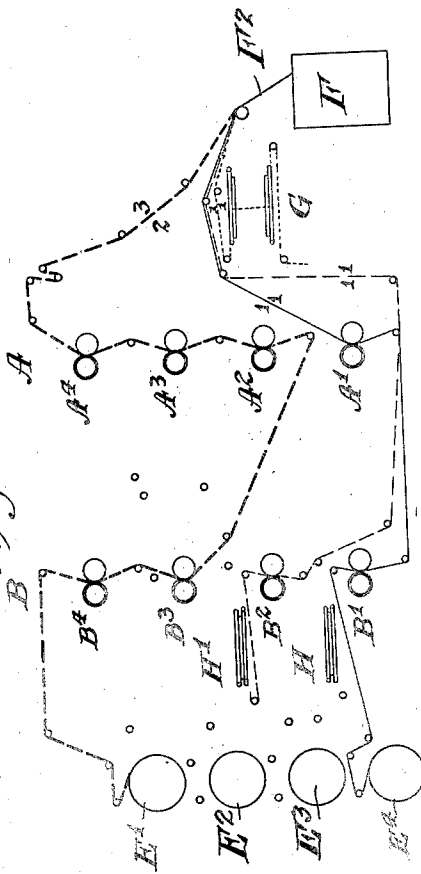


Fig. 31.



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Fig. 33.

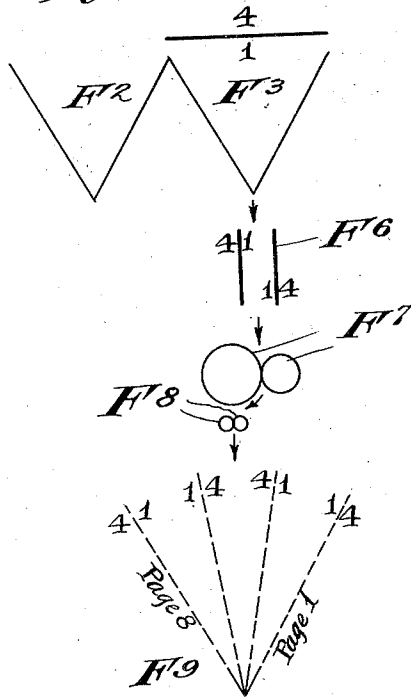
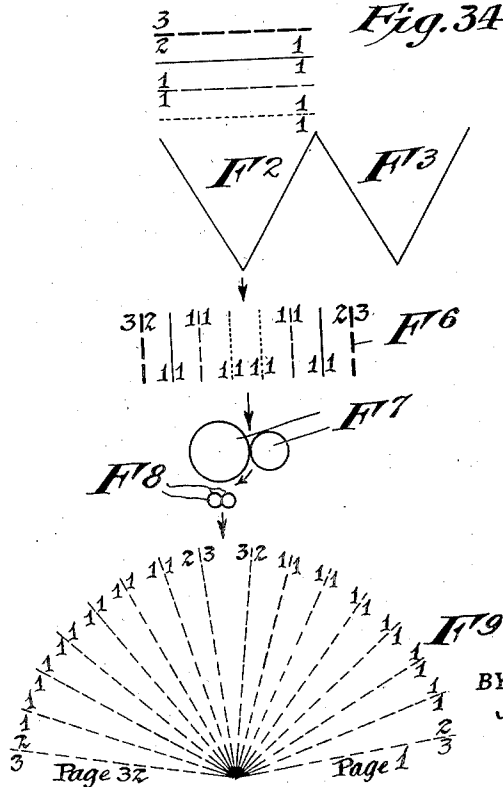


Fig. 34.



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Fig. 37.

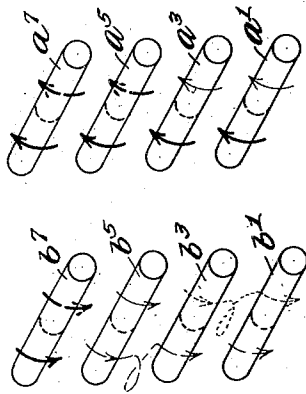


Fig. 35.

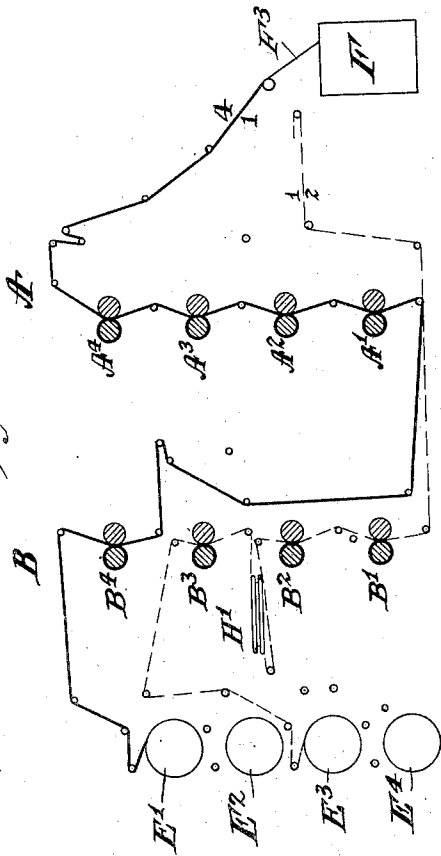
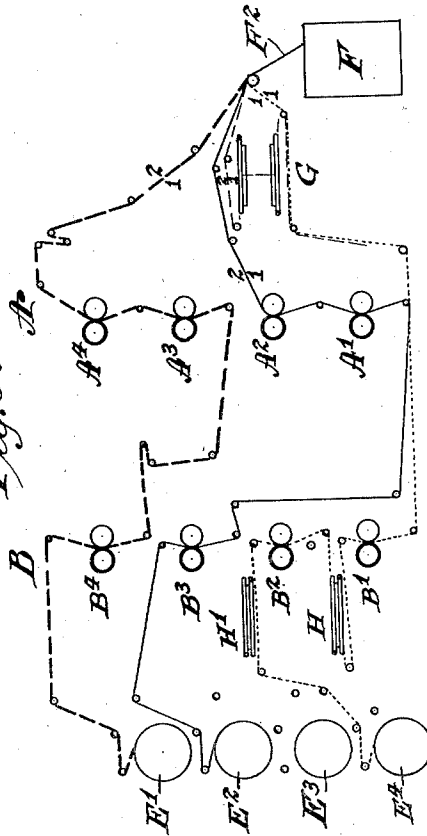


Fig. 36.



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Fig. 38.

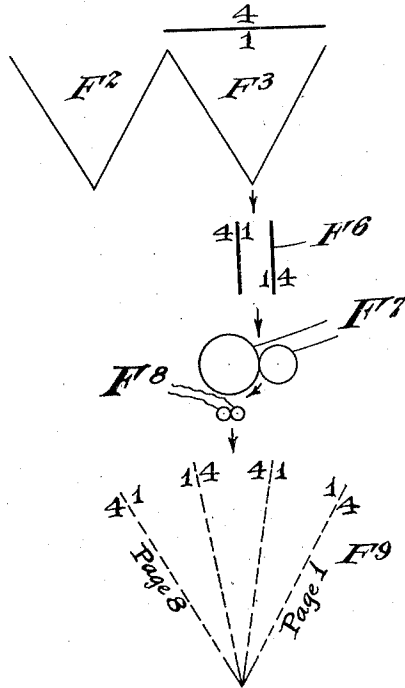
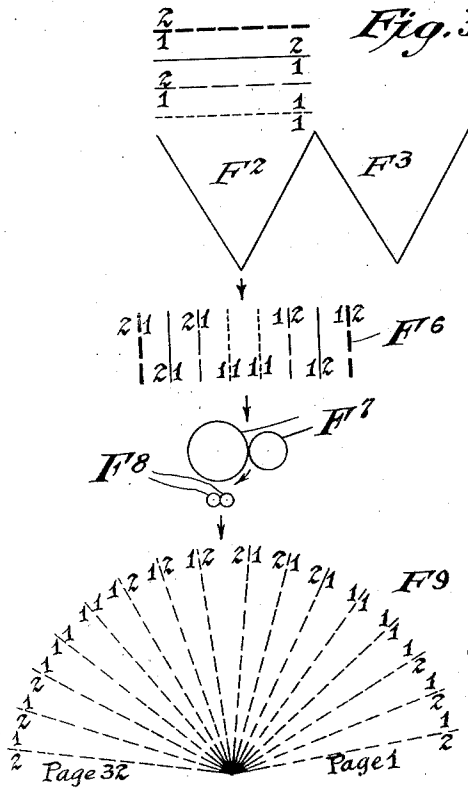


Fig. 39.



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Fig. A2.

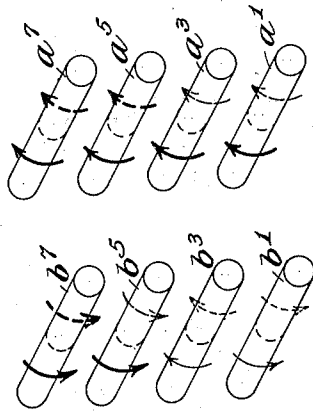


Fig. A0.

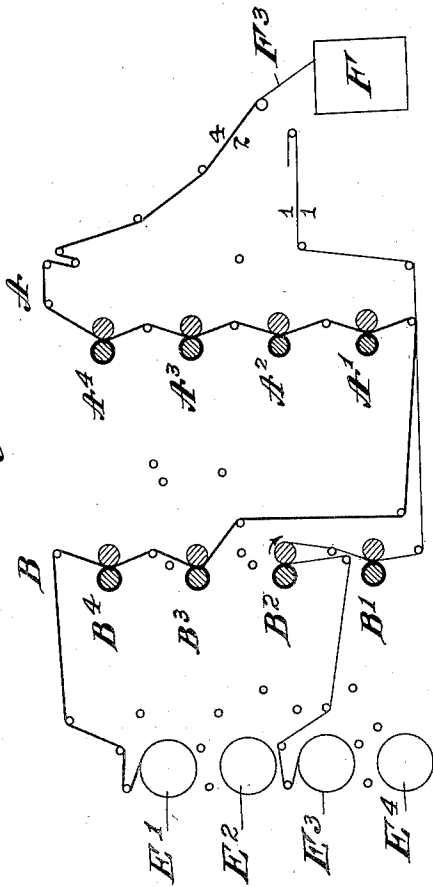
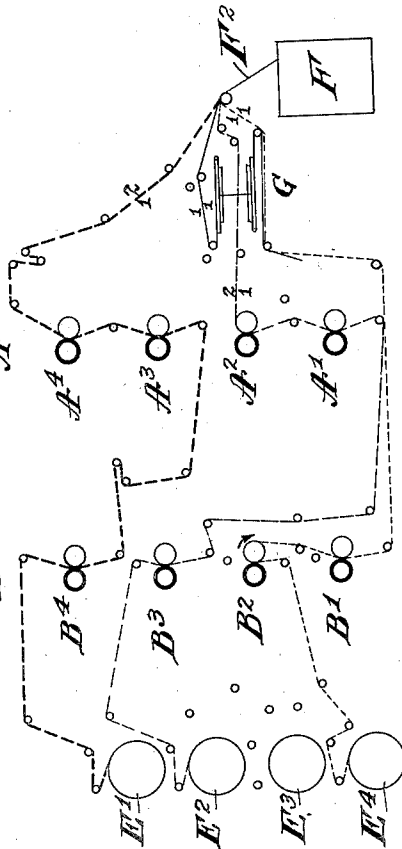


Fig. A1.



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Fig. 43.

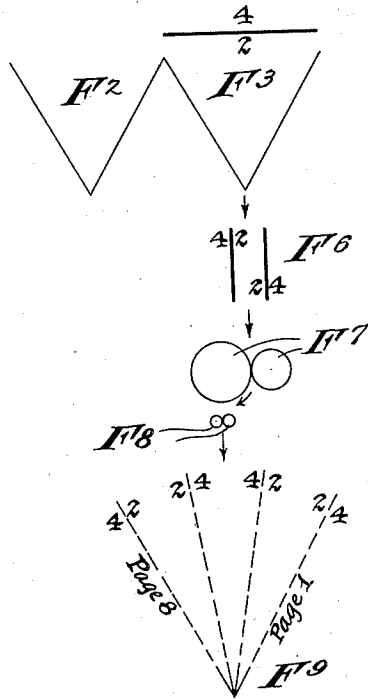
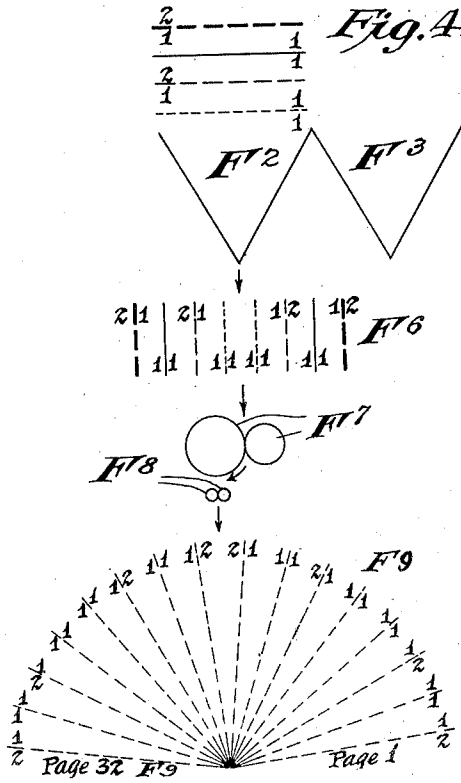


Fig. 44.



INVENTOR
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 BY *W. Becken*
 ATTORNEY

Fig. 45.

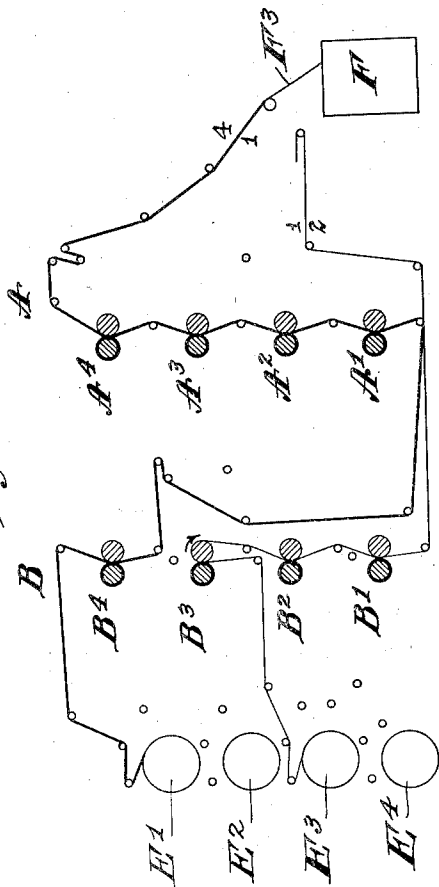


Fig. 46.

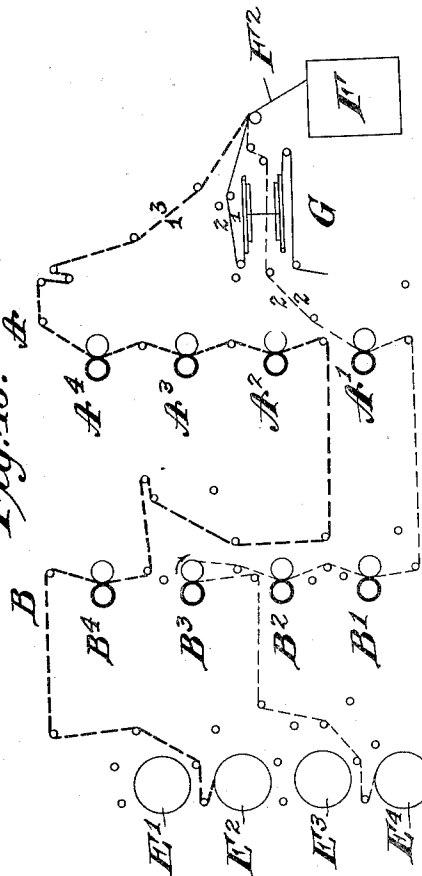
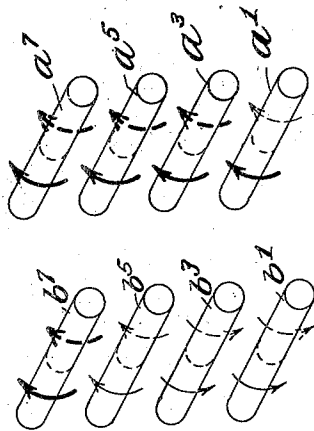


Fig. 47.



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 BY *W. H. Becken*
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Fig. 48.

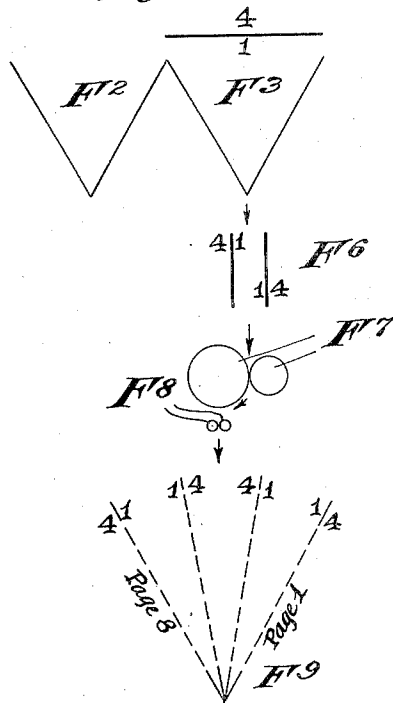
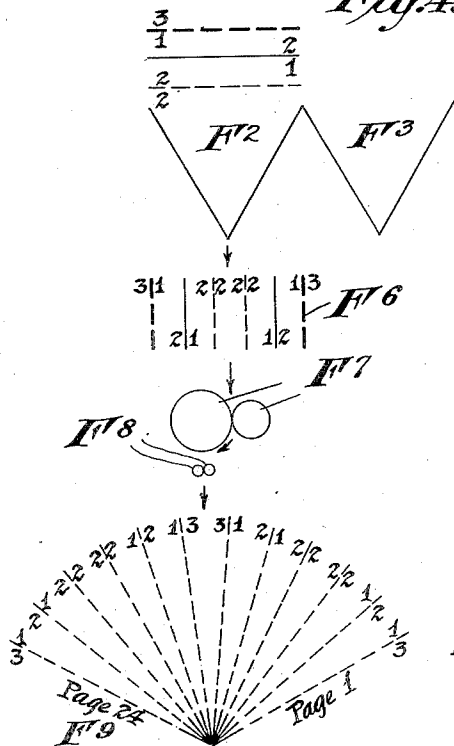


Fig. 49.



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 BY *W. L. Becken*
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1,738,323

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Fig. 50.

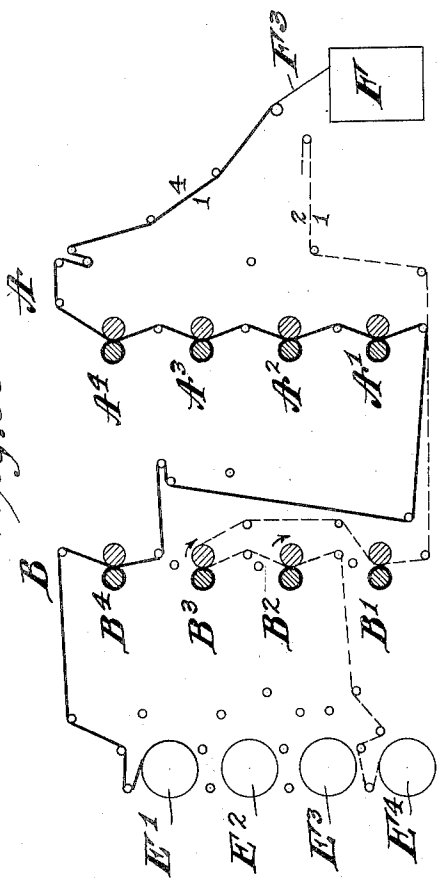


Fig. 52.

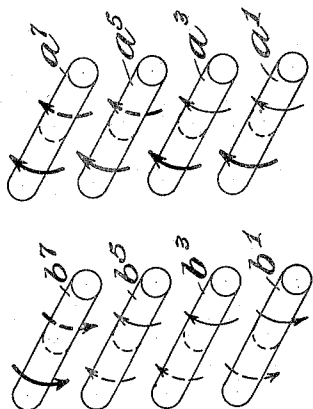
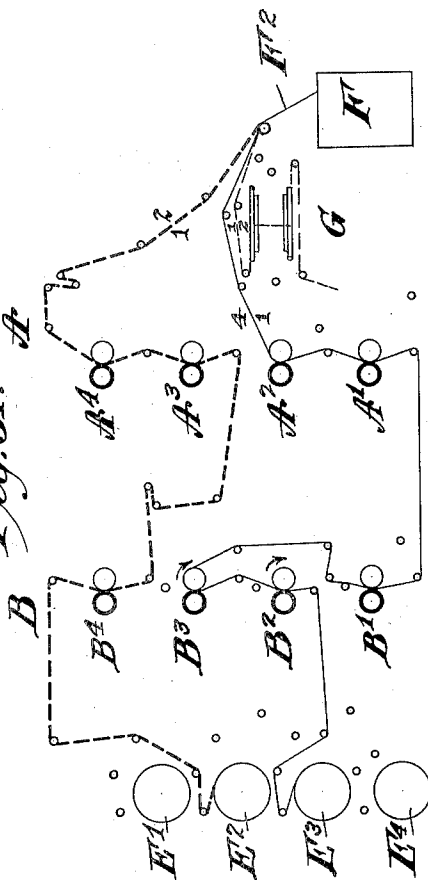


Fig. 51.



INVENTOR
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BY *Walter Becken*
ATTORNEY

Fig. 57.

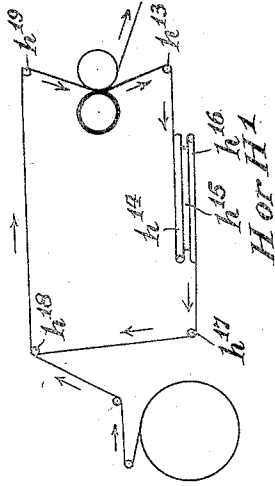


Fig. 58.

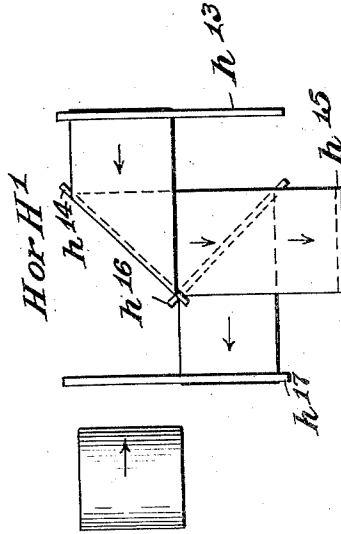


Fig. 55.

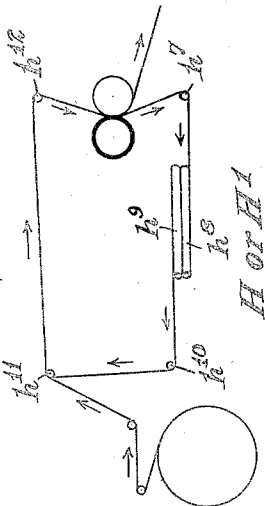
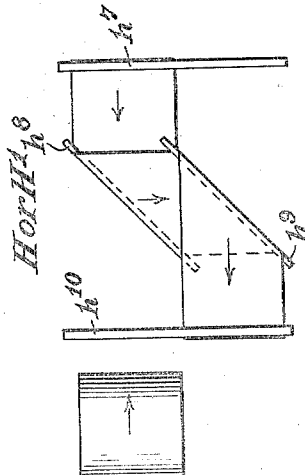


Fig. 56.



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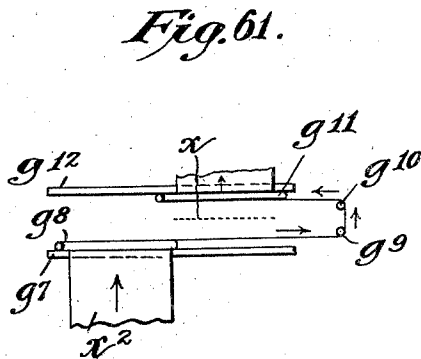
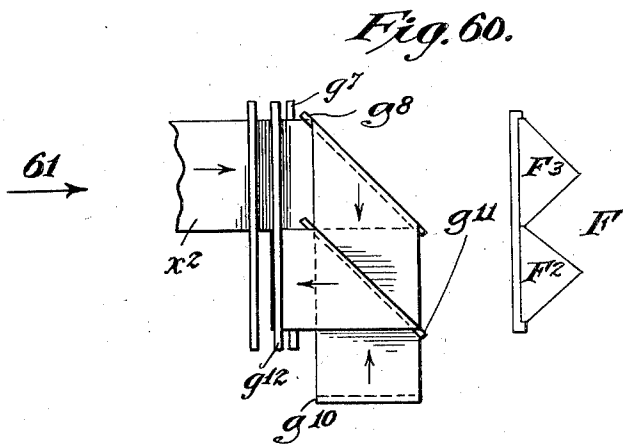
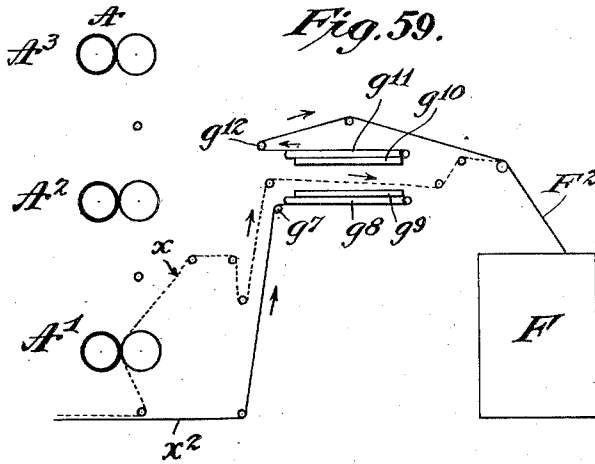
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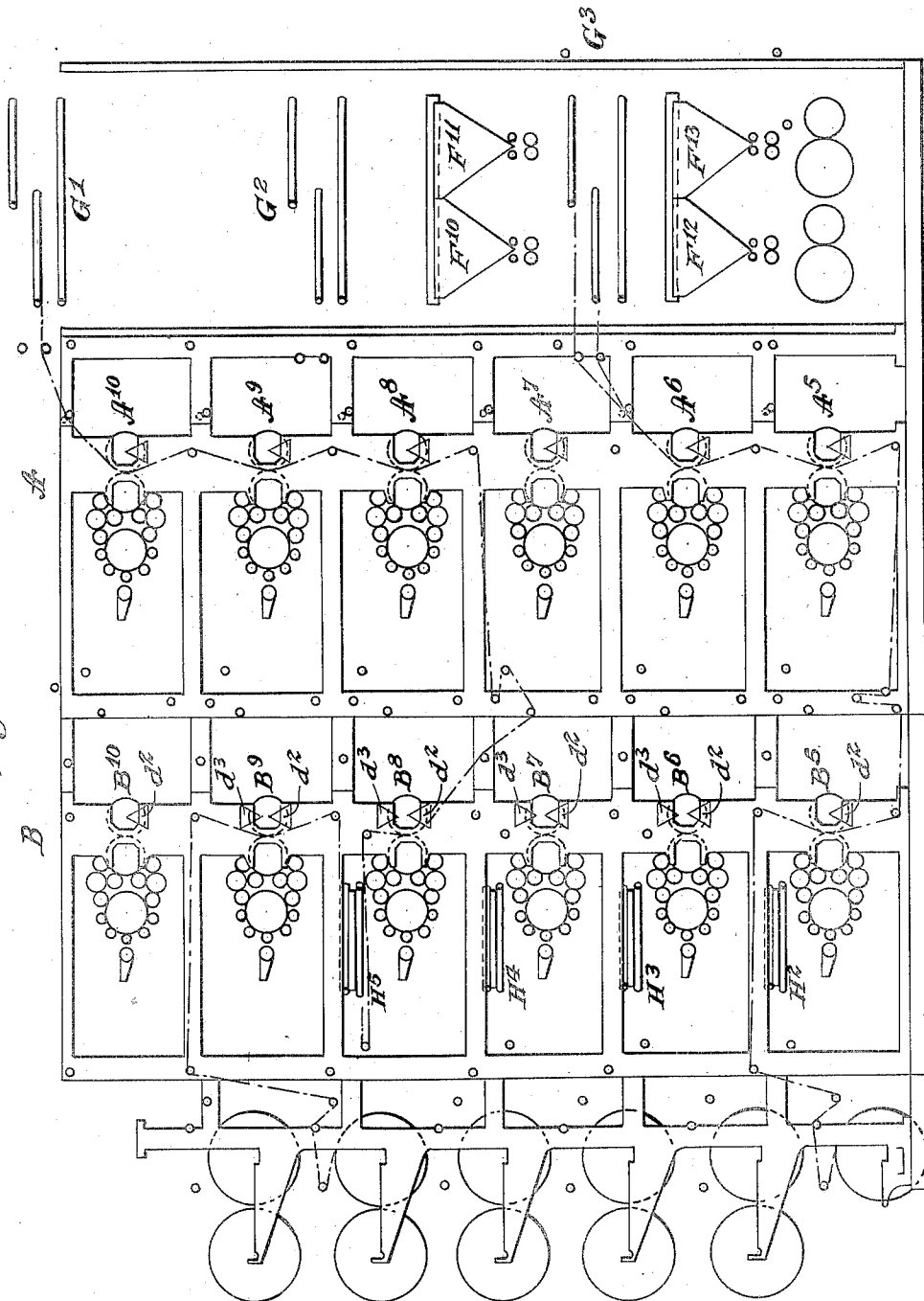
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Fig. 6c.



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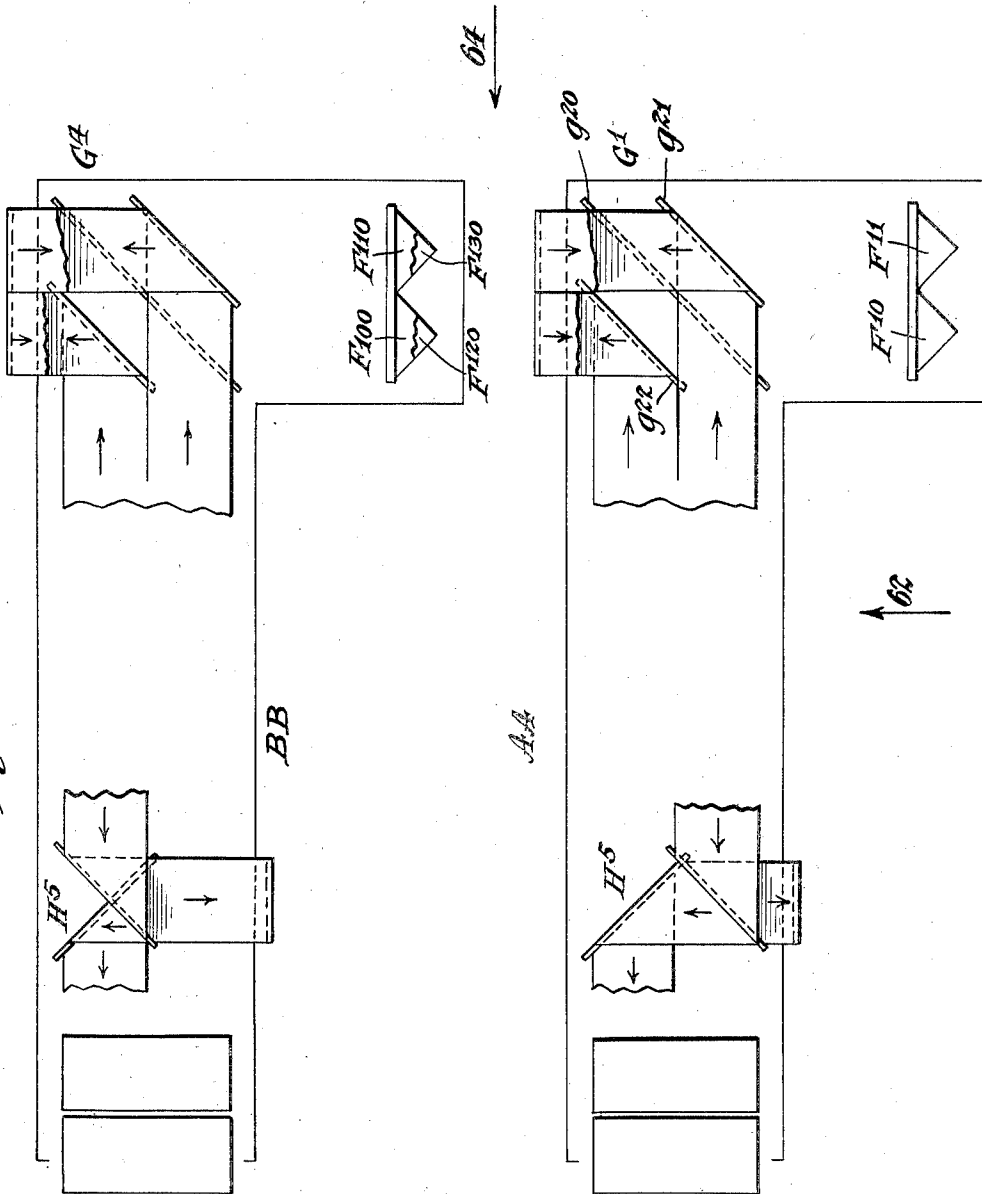
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Fig. 63.



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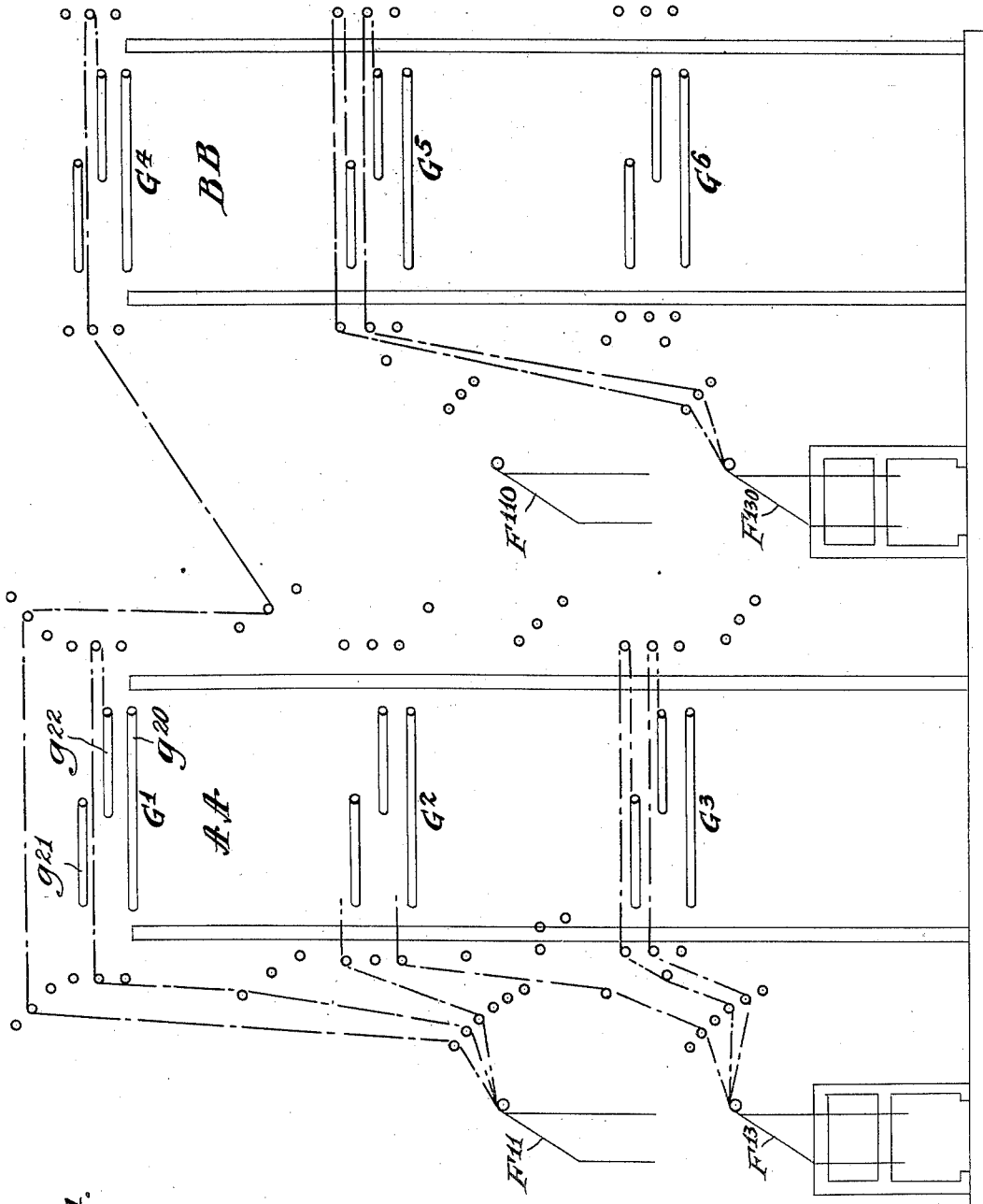


Fig. 6A.

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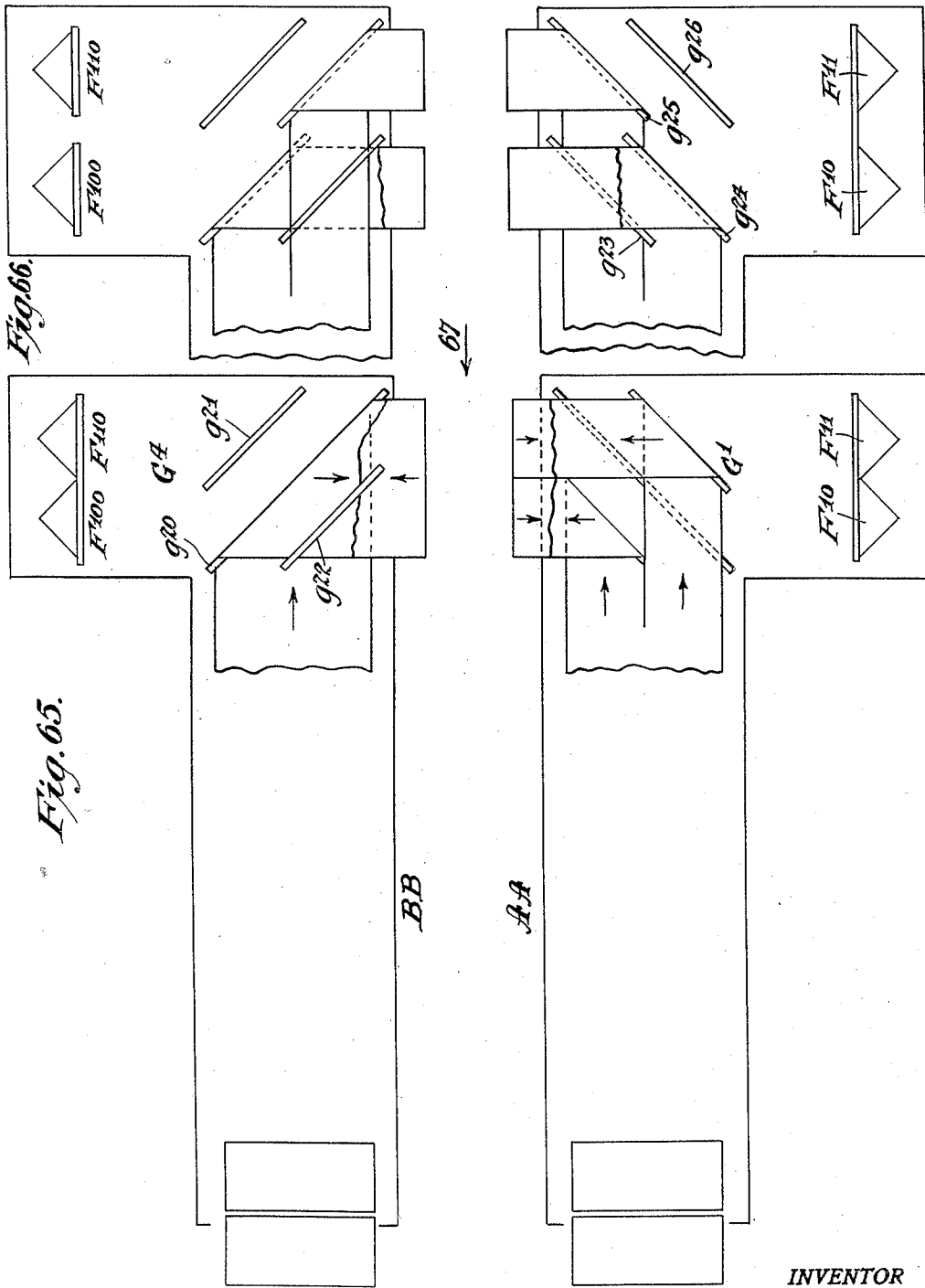


Fig. 65.

Fig. 66.

BB

AA

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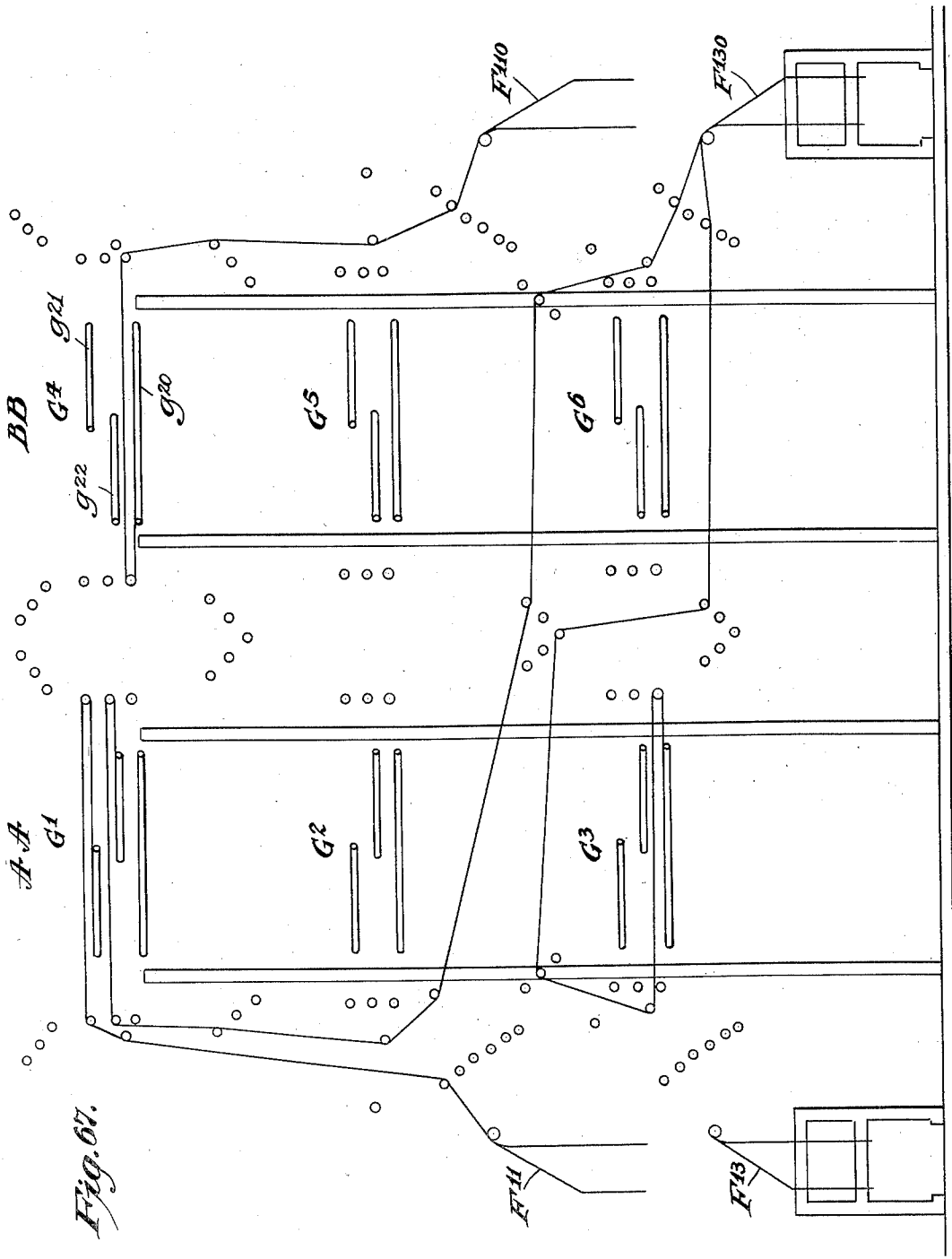


Fig. 67.

INVENTOR
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Fig. 68.

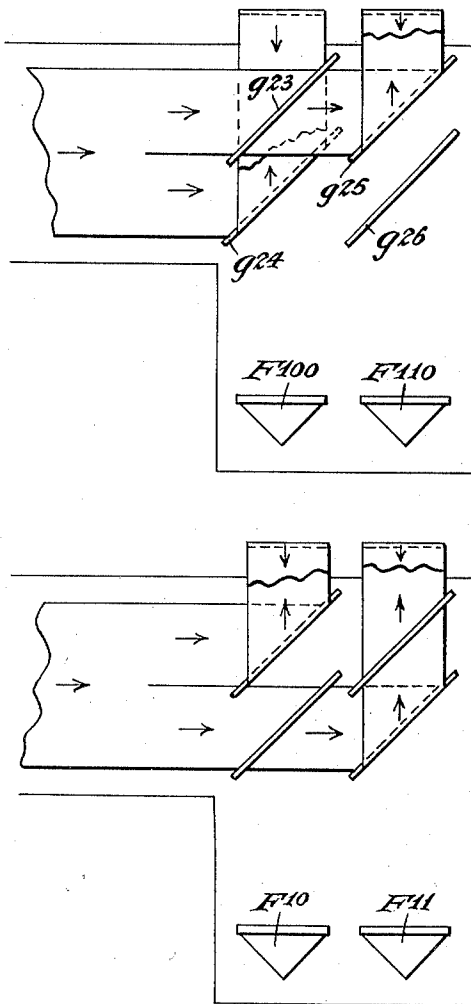
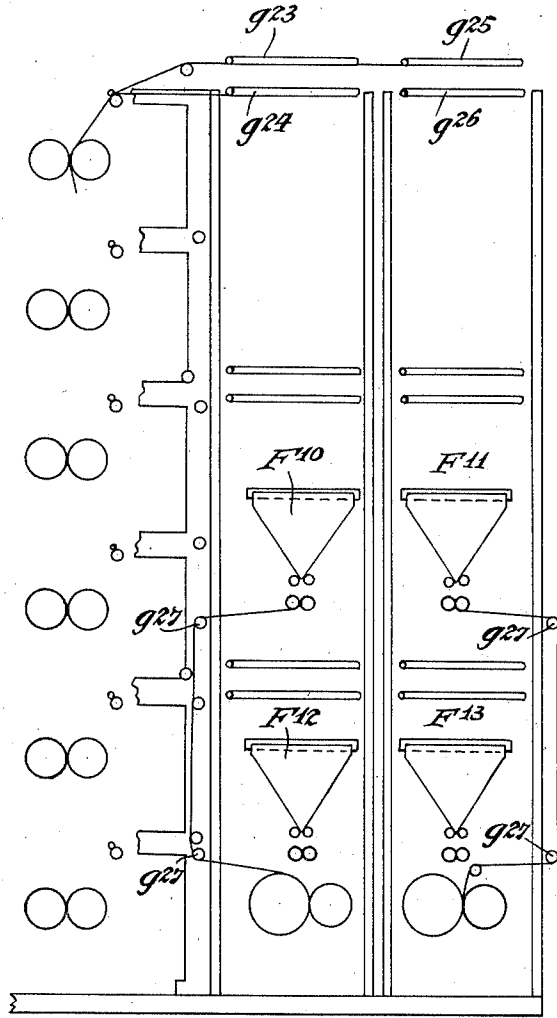


Fig. 69.



69 ↑

INVENTOR
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ATTORNEY

Dec. 3, 1929.

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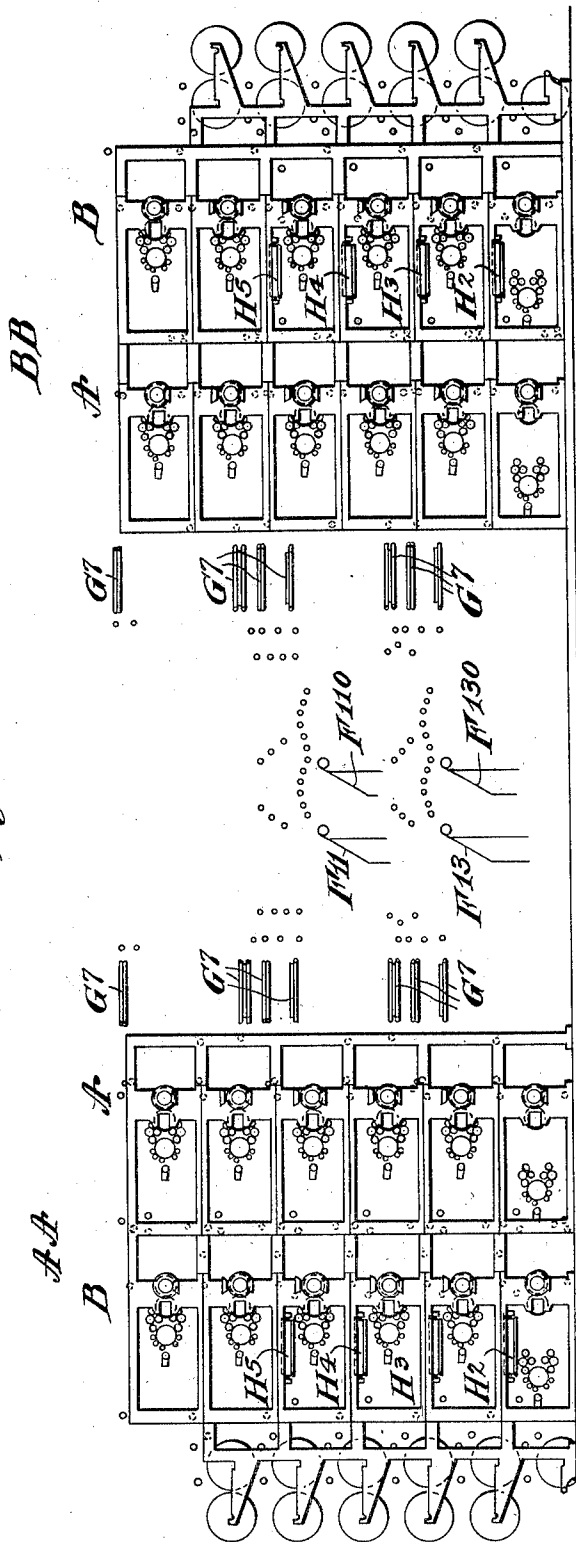
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Fig. 70.



BY

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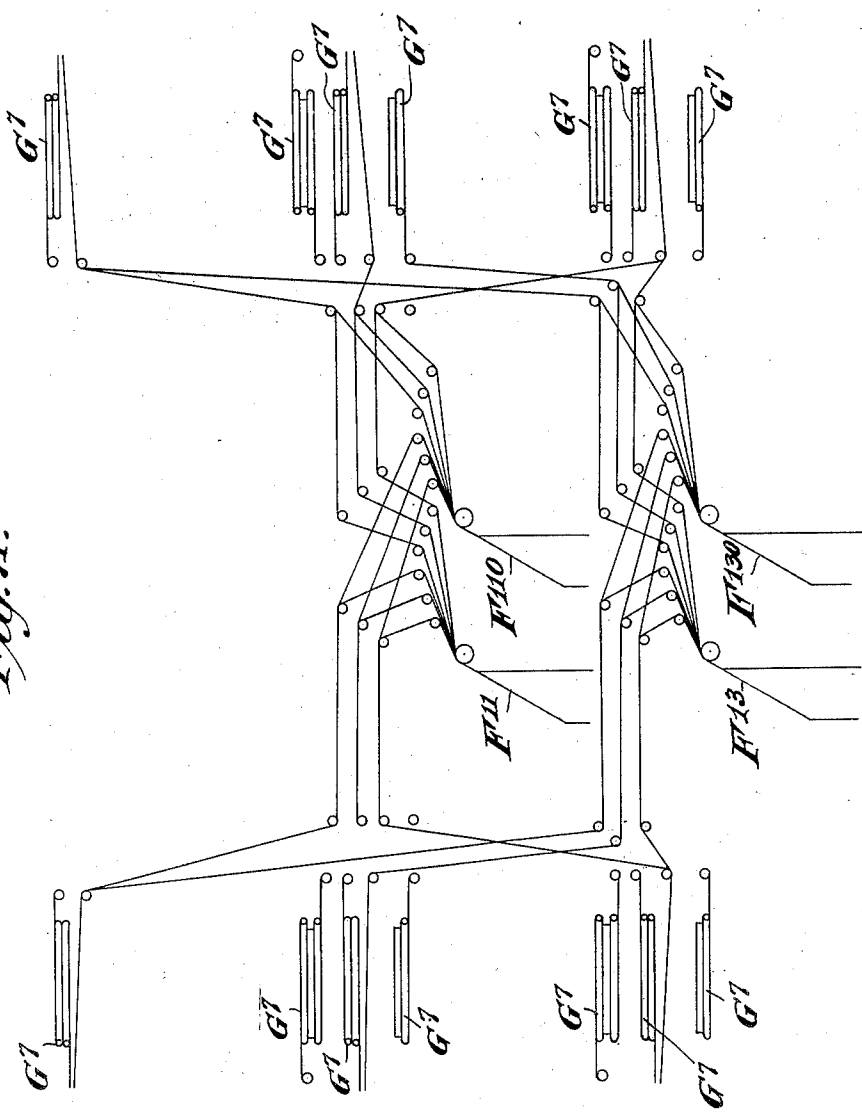
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Fig. 71.



INVENTOR
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Dec. 3, 1929.

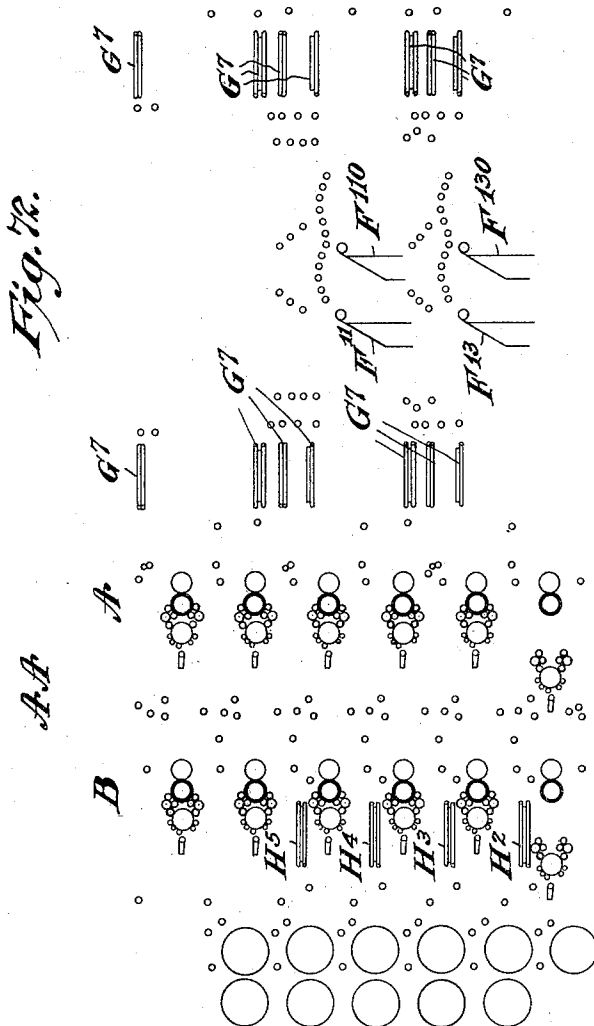
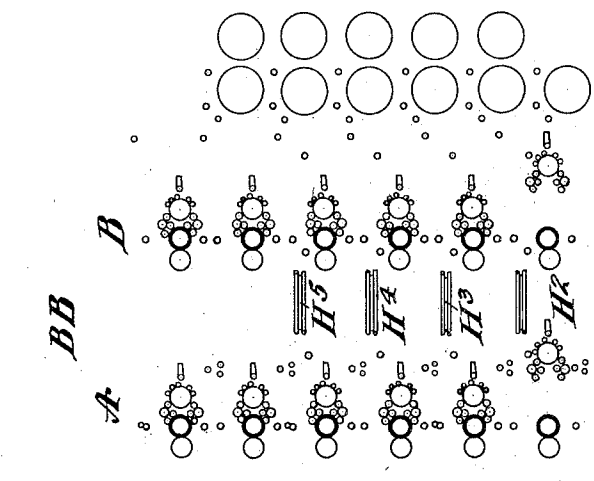
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INVENTOR
David J. Scott
BY *Walter Becken*
ATTORNEY

UNITED STATES PATENT OFFICE

DAVID J. SCOTT, OF PLAINFIELD, NEW JERSEY, ASSIGNOR 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 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 printing and for "tabloid" printing or for a combination of the two, and the invention consists of the features hereinafter pointed out in the claims.

In the accompanying drawings the invention is disclosed in several concrete and preferred forms in which

Fig. 1 is a view in side elevation of a multi-color rotary machine embodying one form of the invention:

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

Fig. 3 is a diagrammatic view showing a 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 slitting, 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:

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 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 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 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 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 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 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 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 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 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 impression 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 thereby:

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 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-

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 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 diagrammatic 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 machine:

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 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 indicated 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 thereby:

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 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 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 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 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 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 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 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 printed 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 impression 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 thereby:

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

Fig. 40 is a vertical sectional diagrammatic 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:

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 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 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 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 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 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:

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 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

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direction of rotation of two printing couples of the first set being reversed:

Fig. 51 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. 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 impression 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 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 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 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 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:

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 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 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 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 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:

Fig. 68 is a view similar to Fig. 66 but

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:

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 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 slightly 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 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 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 A^1 , A^2 , A^3 and A^4 while the couples in set B are indicated respectively by B^1 , B^2 , B^3 and B^4 . The impression cylinders of the couples in set A are denoted by a^1 , a^2 , a^3 and a^4 , the design cylinders of set A being indicated by a^2 , a^4 , a^6 and a^8 . 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. 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. 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^1 and d^2 ; and gears d^2 may be slidable on the upright shafts in a manner well understood 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 direction of rotation of some of the couples,

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 folder 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 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-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 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 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 being 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 plating arrangement for the design cylinders when running "tabloid" forms. As there shown there are four plates J extending lengthwise of the cylinder and four plates around the cylinder, or sixteen plates in all, with the columns running lengthwise of the 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 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 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, 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 J³ and J⁴ so that four half-width webs are produced. The

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 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 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 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 printed and perfected product is then led to the folder, being again slitted, to produce two eight (tabloid) page sections from each former F² and F³, each section being printed in four colors. The eight (tabloid) page sections delivered by formers F² and F³ may, if desired, be duplicate products, or they may not be duplicate products in which latter case two eight (tabloid) page sections from F² 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 through the machine, in which case the web from E' would pass down through couple B⁴ and then up through couple A⁴, the web from E² would pass down through couple B³ and up through couple A³, the web from E³ would 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 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 duplicate 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 understood 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 perfected 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 printed and perfected in two colors, or each

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 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 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 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 E² is run down through couple B³ and then up through couples A' and A² thereby also printing that web in one 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 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 F² only has been considered. Webs F⁶, coming from former F², 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 extended 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 toward the top of the product as defined by head J' (Figs. 2, 3 and 4). The webs coming over former F² are eventually led between cylinders F⁷ where transverse cuttings are made along the lines J⁵ (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 F², and it will be seen that this product has its outer cover and the inside center both in two colors and various other color combinations in between. 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 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 caused to travel back and forth a number of

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 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. 5; and Fig. 5 further illustrates the fact that even where one couple, as B², 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 preferably 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 B², for example, it is easy to see that the web from E² could be led from couple B³ to couple A² thus being printed and perfecting 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. 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 web is led from E' down through couple B⁴ and then up through couples A', A², A³ and A⁴ 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 E² up 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 F² consists of a sixteen (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 rotation of couples B² and B³ is reversed. Here a web is led from roll E' down through couple B⁴ and then up through couples A², A³ and A⁴. A second web is led from E⁴ up through couples B² and B³ and then 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 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.

In the examples of runs previously illustrated, we have regarded the machine as supplying duplicate products, although, in the discussion accompanying the description, this condition has not necessarily been as-

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 single-width 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 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 up through the couples of set A at the far side of the machine, thus printing and perfecting 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 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 E^4 down through B' and up through A' also on the 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 F^3 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 F^2 and consist of a sixteen (tabloid) page section, with the cover and center pages printed in three colors and with the other pages variously printed. Various other web leads under these conditions will be apparent. For instance 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 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 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 folder F^3 . Formers F^2 and F^3 may be regarded as separate folders. A second single-width web is also shown as coming from roll E^3 passing thence down through couple B^2 , thence over turner bars H, and then back and down through couple B' . The turner bar is, in this instance, adjusted as shown in Fig. 21, the web coming down from couple B^2 around guide bar h' , thence over turner bar h^2 , thence over guide bar h^3 , thence over turner bar h^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 B^2 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^3 in superposed relation with the web coming from roll E' so as to be associated therewith. In the particular example 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 B^4 and then up through couples A^3 and A^4 . A second single-width web is led from roll E^2 down through couple B^3 and then up through couple A^2 . A third single-width web is led from roll E^4 down through couples B^2 and 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 B^2 and B' with the product on the near side of the machine and angle bars G are therefore brought into play. It will be understood, however, that it would not be desirable to associate this web from the far side of 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 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 invention, to show how the web from the far side of the machine may not only be cross-associated 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 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 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, 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 is now interposed between webs x and x' . As the web from the far side of the machine, after passing over guide g^6 , is flowing in the same direction, and located in the same plane, as the webs on the near side of the

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 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^6 , which may be any guide bar so located as to properly direct the web to 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 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 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 together—we have merely selected an intricate example for illustration. So also it will be understood that a web can be brought from the near side of the machine and be cross-associated, before folding, with the product of the far side of the machine. The products 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 F^3 and results in an eight (tabloid) page section having the outer cover and the center pages printed in four colors and the other pages printed in two colors. As will be seen from Fig. 20 the three webs from the near side and the one web from the far side are led to folder F^2 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' 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' , A^2 , A^3 and A^4 . Another single-width web is led from roll E^2 on the far side of the machine and down through couple B^3 , then through angle bars H' , which can be arranged or adjusted to the position shown in Fig. 21, and then down through couples B^2 and B' thus printing the web in one color and perfecting it in two colors. Obviously this web from E^2 can be run to former F^3 and be associated with the web from E' but it may be desired to cross-associate the web from E^2 with the product on the near side of the machine.

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 B^4 and then up through couples A^3 and A^4 , another single-width web from roll E^3 that passes down through couple B^3 and up through couple A^2 , and a third single-width web that passes from roll E^4 down through couples B^2 and B' and then up through 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 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 F^3 consists of an eight (tabloid) page section with the cover 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 F^2 consists of a thirty-two (tabloid) page section with the 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-width web is led from roll E' on the far side of the machine and passes down through couple B^4 and up through couples A' , A^2 , A^3 and A^4 . A second single-width web passes from roll E^2 down through couple B^3 on the far side of the machine, then through the angle bars H' , then through couple B^2 on the near side of the machine and then to folder F^2 also on the near side of the machine. This web is thus printed and perfected in 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 E^3 on the far side of the machine and passes down through couple B^2 on the 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 single color can then be passed to former F^3 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 machine a single-width web is led from roll E' down through couples B^4 and B^3 and thence up through couples A^2 , A^3 and A^4 , while a second single-width web is led from roll E^4 down through couple B' and then up

through couple A'. The products coming from the arrangement shown in Figs. 30 and 31 are disclosed in Figs. 33 and 34, from which it will be seen that the product from the far side of the machine coming over former F³ 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 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 bars H and H' as well as turner bars G are used is shown in Figs. 35 to 39. Here a single-width 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 B² and B'. The web thus printed in one color and perfected in two colors can then be associated with the first web by passing it over former F³ or it can be passed over turner bars G, adjusted as shown in Fig. 22, 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 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 down through couple B' and to the folder being threaded over guides below turner bars G. The product coming over former F³ from the far side of the machine consists of an 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 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 obtained 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 B⁴ and B³ and up through couples A', A², A³ and A⁴ and a second single-width web is led from the far side of roll E³ up through reversely rotated couple B², then down through couple B' thus printing and perfecting the web in a single color, after which

it is passed over angle bars G adjusted as in Fig. 22 and brought 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 E² down through couple B³ and then up through couples A' and A²; and a third single-width web is passed from roll E⁴ up through reversely rotated couple B² 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 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 pages 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 couple 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 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 machine. At the near side of the machine (Fig. 46) a single-width web is led from roll E² down through couple B⁴ and then up through couples A², A³ and A⁴, and a second single-width web is led from roll E⁴ up through reversely rotated couple B³, then down through couples B² and B' and then up through couple A'. The product from the far side of the machine coming over former F³ is an eight (tabloid) page section having its outer 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 center 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 from roll E' at the far side of the machine (Fig. 50) down through couple B⁴ and then up through couples A', A², A³ and A⁴, and a second single-width web is led from roll E⁴ at the far side of the machine up through reversely rotated couples B² and B³ 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 the near side of the machine a single-width

web is led from roll E^2 down through couple B^4 and then up through couples A^3 and A^4 , and a second single-width web is led from roll E^3 up through reversely rotated couples B^2 and B^3 , then down through couple B^1 and then up through couples A^1 and 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 F^3 is an eight (tabloid) page section having four 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 center 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 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 could then pass around a guide bar h^7 , 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 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 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 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 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 used: (Figs. 59, 60 and 61) assume that a web w^2 at the far side of the machine in line with former F^3 is to be brought over to the near side in line with former F^2 , then said web w^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} , guide bar g^{12} and thence to former F^2 . In traversing this path web w^2 will have crossed from the far to the near side, will have passed around one or more webs as w and will present the same side up as previously.

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

however, that regular newspaper size assemblies 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 printing 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 J^3 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 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 regular 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^1 could be printed regular newspaper size and the web from E^2 could be 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 roll E^1 could be printed regular newspaper size and the web from roll E^2 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 E^3 on 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 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 marked A^5 to A^{10} inclusive and the couples of set B being marked B^5 to B^{10} inclusive. With this arrangement four of the couples (B^6 to B^9 inclusive) in set B are preferably made reversible as to rotation by being provided with pinions D^3 as well as with pinions D^2 , and, instead of two angle bar equipments as H and H' in Fig. 1, we have four angle bar equipments H^2 to H^5 inclusive. By these means a much greater variety of products can 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 F^{10} , F^{11} , F^{12} and F^{13} , 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

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 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 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 F^{10} , F^{11} , F^{12} , F^{13} and F^{100} , F^{110} , F^{120} and F^{130} and three sets of angle bars G^1 , G^2 , G^3 , G^4 , G^5 , G^6 , 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 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 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 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 g^{20} in which case it would be slitted as is customary before reaching a set 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 bars g^{27} for cross-associating the products of various folders so that the webs can be associated before or after folding.

In Figs. 70 and 71 the two groups AA and BB, each comprising a set of couples A and 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 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 bar equipments G^r 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 Figs. 70 and 71 except that here the impres-

sion cylinders of the couples of group AA face 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 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 October 2, 1928.

I claim:

1. 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, 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 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.

2. 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, 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 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 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 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 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-

5 rality of couples in each set, the impression
cylinders of all the couples of both sets fac-
ing 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 to direct a web
through one or more couples of one set and
thereafter, without reversal of the web or
webs between sets, through one or more cou-
ples of the other set to thereby print and
perfect the web or the plurality of webs in
one or more colors.

15 5. A printing machine including: a plu-
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,
20 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 pass-
ing from one set to the other without reversal
thereof between sets.

35 6. A printing machine including: a plu-
rality of printing couples, each couple includ-
ing an impression and a design cylinder, said
couples arranged in two sets, spaced apart,
with a plurality of couples in each set, the im-
pression cylinders of all the couples of both
sets facing in the same direction, driving
40 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 web to travel through the machine in
45 a substantially U-shape path, while printing
and perfecting it in one or more colors, con-
sisting of guides to direct the web through
one or more couples of one set and thereafter
50 through one or more couples of the other set,
the web in leaving one set traveling in a di-
rection 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.

55 7. A printing machine including: a plu-
rality of printing couples, each couple includ-
ing 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
U-shape path, while printing and perfecting
65 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 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 with-
out reversal thereof between sets.

8. A printing machine including: a plu-
rality of printing couples, each couple includ-
ing 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 oppo-
site 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-
rality of printing couples, each couple includ-
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
100 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
105 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 in leaving one set traveling in a di-
110 rection opposite to that in which they enter
the other set and the webs passing from one
set to the other without reversal thereof be-
tween sets.

10. A printing machine including: a plu-
rality of printing couples, each couple includ-
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
120 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 means to
cause a plurality of webs to travel through the
125 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 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 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 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 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 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 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 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 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 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 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 other without reversal thereof between sets.

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, the 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 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.

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 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 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 between sets, through one 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 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 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 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 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 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 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 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 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 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 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 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.

18. 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 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 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 webs in one 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.

19. 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 of couples in each set, the 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 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 which they enter the other set and the web or webs passing from one set to the 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, 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 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 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 which they enter the other set and the web or

webs passing from one set to the other without reversal thereof between sets.

21. 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, 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 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.

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, 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 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 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 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, 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 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, 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.

24. 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, 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 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 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, 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.

25. 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 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 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 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 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 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 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.

27. 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 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 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, 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.

28. 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 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 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 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, 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.

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, 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 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 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, 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 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 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 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, 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 direct each of the webs through one or more

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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.

32. 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, 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 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 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, 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.

33. 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 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 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 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 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 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 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 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.

35. 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 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 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 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 passing 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 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 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 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 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 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 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 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 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, and 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.

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 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 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 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, 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.

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 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 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 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 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 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.

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 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 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 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 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 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 printing 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 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 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 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, 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 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 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

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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.

65. 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 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 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 thereof to thereby impart a plurality of impressions to the web by means of the same couple.

66. 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 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 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 means of couples in the same set.

67. 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 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 and perfect one or more webs by couples 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 couple of the same set with the same side of the web up to thereby print a web in several colors.

68. 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 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 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.

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, 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 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 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 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 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 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 the web up to thereby print a web in several colors by the same couple.

71. 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 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 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 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.

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 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 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 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 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 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 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 web from one end of a printing couple to the other end of another printing couple of the same set with the same side 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 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 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 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 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 impression 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 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 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 plurality 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 impression 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 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 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 in the form of a variable number of assemblies variably combined.

77. 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, the impression cylinders of all the couples of 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 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 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 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 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 and perfect the web or the plurality of webs

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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 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, 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 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 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, 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.

80. 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, the impression cylinders of all the couples of 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 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, 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 form of a variable number of assemblies variably combined.

81. 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 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-

pressed 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 receiving impressions at opposite ends of the couples of the first set.

82. 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 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 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 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 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 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 at one end of the couples of the first set and being 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

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 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 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 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 to bring into variably superimposed relation products from opposite sides of the machine before 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 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 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.

88. 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 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 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 relation products from opposite sides of the machine before 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.

89. 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 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 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 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 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 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 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, 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 oppo-

site sides of the machine before 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.

5 91. A printing machine including: a plu-
rality of printing couples, each couple in-
cluding an impression and a design cylinder
the opposite ends of which impress webs dif-
10 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
15 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-
20 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
25 colors, a plurality of dissimilarly impressed
webs, at opposite sides of the machine, to be
delivered to the folders, and angle bars asso-
ciated with the couples of the first set to bring
into variably superimposed relation products
30 from opposite ends of the couples of the first
set and to admit of both printing and per-
fecting a web by couples of the first set.

92. A printing machine including: a plu-
rality of printing couples, each couple in-
cluding 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 plu-
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
40 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 dissim-
45 ilarly impressed webs at opposite sides of the
machine, and alternative 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
50 set and angle bars associated with the cou-
ples of the first set.

93. A printing machine including: a plu-
rality of printing couples, each couple in-
cluding 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 plu-
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
60 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 dissim-
65 ilarly impressed webs at opposite sides of the
machine, and alternative 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 plural-
ity of couples of the first set and angle bars
associated with the couples of the first set. 70

94. A printing machine including: a plu-
rality of printing couples, each couple in-
cluding an impression and a design cylinder the
opposite ends of which impress webs differ-
75 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,
80 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
85 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
90 delivered to the folders, and alternative
means to admit of both printing and perfect-
ing a web by couples of the first set consist-
ing of reversible driving connections for one
of the couples of the first set and angle bars
95 associated with the couples of the first set.

95. A printing machine including: a plu-
rality of printing couples, each couple in-
cluding an impression and a design cylinder
the opposite ends of which impress webs dif-
100 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 machine,
105 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
110 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
115 delivered to the folders, and alternative
means to admit of both printing and perfect-
ing one or more webs by couples of the first
set consisting of reversible driving connec-
tions for a plurality of couples of the first set
120 and angle bars associated with the couples of
the first set.

96. A printing machine including: a plu-
rality of printing couples, each couple in-
cluding 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
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 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 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 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.

97. 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 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 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 alternative 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 the first set.

98. 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 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 means to variably associate products from opposite sides of the machine before the webs have received their final impression.

99. 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 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 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 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 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 means adjacent the couples of the 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 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 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 adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first 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 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 means to bring into variably

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

103. 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 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 to bring into variably superimposed relation products from opposite sides of the machine before the webs have received their final impression.

104. 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 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 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 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 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 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 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 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 means to variably associate products from opposite sides of the machine before the webs reach the couples of the second set.

107. 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 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 to variably associate products from opposite sides of the machine before the webs reach the couples of the second set.

108. 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 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 means to bring into variably superimposed relation products from opposite sides of the machine before the webs 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 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 to bring into variably superimposed relation products from opposite sides of the machine before the webs reach the couples of the second set.

110. 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 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 both in side by side and superimposed relation to pass each web through one or more
 15 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, 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.

25 111. 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
 30 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
 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 machine, to be delivered to the folders, and angle bars to variably associate products
 40 from opposite sides of the machine either before or after the webs have received their final impression but before folding them.

45 112. 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
 50 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
 55 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, and means to variably associate products from opposite sides of the machine before the webs have received their final impression.

70 113. 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 set and a second set, spaced apart, with a plurality of couples in each set, two former
 75 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
 80 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, and angle
 85 bars to variably associate products from opposite sides of the machine before the webs have received their final impression.

90 114. 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
 95 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
 100 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, and
 105 means adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first set.

110 115. 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 differently, said couples arranged in a first set and a second set, spaced apart, with a plurality of couples in each set, two former
 120 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
 125

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, 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 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 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 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 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 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 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 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 relation 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 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 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 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 means to bring into variably superimposed relation products from opposite sides of the machine before the webs have received their final impression.

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

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125. 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 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 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 variably associate products from opposite sides of the machine before the webs have received their final impression.

126. 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 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 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 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 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 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, 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 either before or after the webs have received their final impression but before folding them.

128. 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 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 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 means to bring into variably superimposed 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 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 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, 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 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 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 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, 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 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.

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 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 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

5 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 folding them.

10 132. 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 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 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, 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 means to variably associate products from opposite sides of the machine before the webs reach the couples of the second set.

35 133. 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 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 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 variably associate products from opposite sides of the machine before the webs reach the couples of the second set.

60 134. 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 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 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 means adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first set.

70 135. 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 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 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 adjacent the couples of the first set to variably associate products from opposite ends of the couples of the first set.

85 136. 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 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 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, 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 means to bring into variably superimposed relation products from opposite sides of the machine either

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before or after the webs reach the couples of the second set.

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 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 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 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 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 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, 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 means to bring into variably superimposed relation products 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 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 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, 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 reach the couples of the 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 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 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, 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 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 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 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 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 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 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 plu-

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

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

15 144. 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 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 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 plu-

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

20 145. 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 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, 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 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.

25 146. 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 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 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 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 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 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.

147. 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 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 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 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 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 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 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 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 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 machine 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 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 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 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 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 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 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 machine 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 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 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 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 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 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, 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 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 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 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, 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 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.

152. 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 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 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, 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 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.

153. 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 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, 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 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, 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.

154. 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 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 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 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

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 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 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 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, 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, 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 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, 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.

156. 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 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 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 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 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 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 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 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 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 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, 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 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, 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 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.

158. 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 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 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 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 the first set.

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

15 163. 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 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 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, 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 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 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.

50 164. 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 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 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 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, 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 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 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 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 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, 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, 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 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 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 intermediate the couples of the second set and the folders to bring a web printed and perfected 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-

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 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 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 more other webs in one or more colors, arranged 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 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 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 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 sets, 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 products of the additional printing couples.

174. 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 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, additional printing couples, to print and perfect one or more other webs in one or more colors, arranged in tandem 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 bring into variably superimposed relation

products from opposite ends of the couples of the first set before the webs reach the second set, and other angle bars and guides intermediate the folders and the second set and intermediate the folders and the additional 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.

175. A printing machine including: a plurality of printing couples, each couple including 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 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, 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 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 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 superimposed 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 including 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 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, 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 superimposed 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 relation 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 superimposed relation products from opposite

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 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 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 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 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 two groups, to bring into variably superimposed relation products 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 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 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 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, 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, 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, and other angle bars and guides, intermediate the two groups, to bring into variably superimposed 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 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 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 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, folders intermediate the two groups to deliver the products of the two groups separately or together, means 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, means 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, and other means, 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 products of both groups.

180. 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 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 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, folders intermediate the two groups to deliver the products of the two 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, 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, 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 products 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. 136

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.