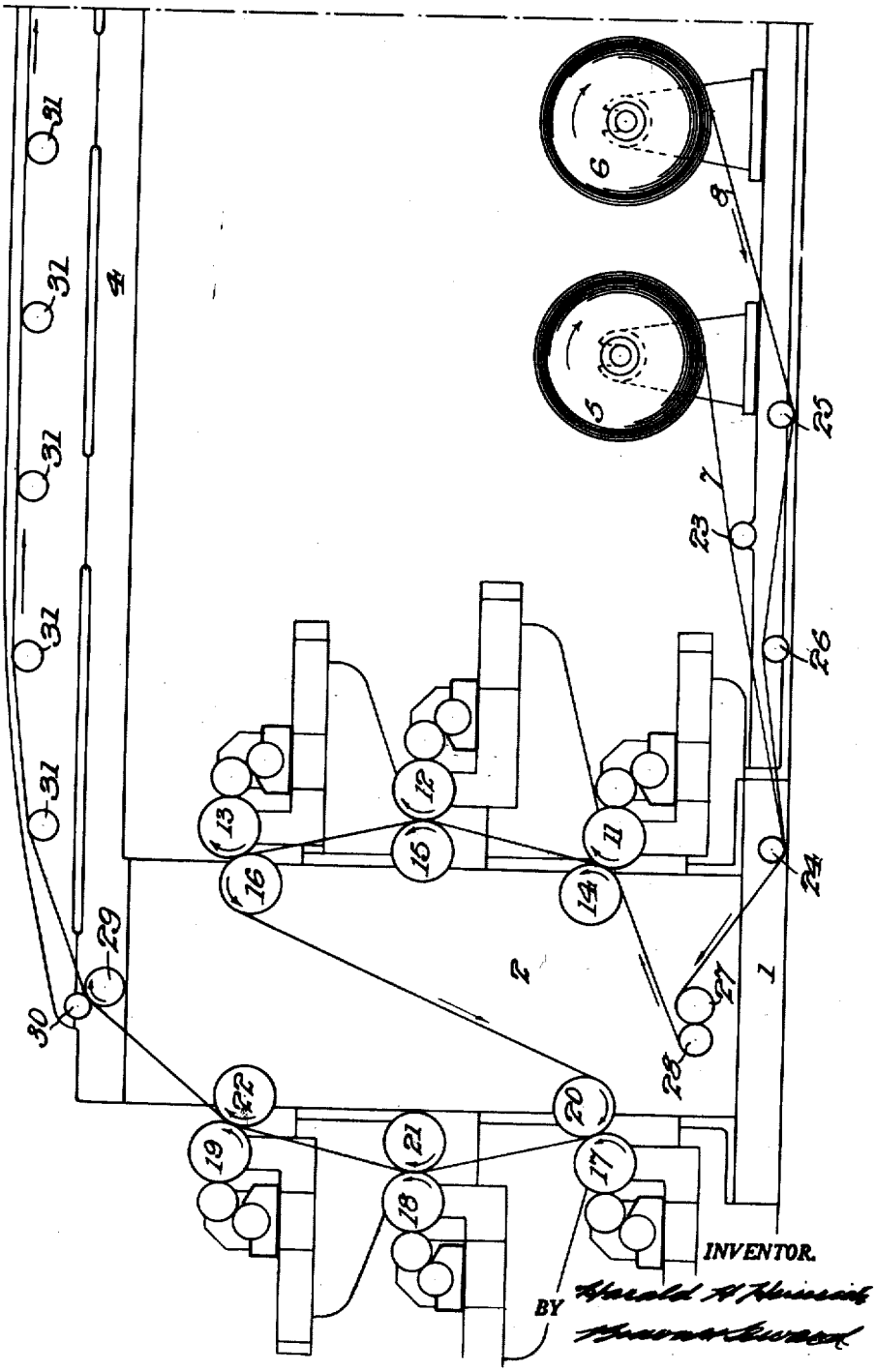
April 11, 1950 H. H. HEINRICH 2,504,021

MEANS FOR AND METHOD OF PLURAL WEB PRINTING

Filed June 27, 1946

3 Sheets-Sheet 1

Fig. 1.



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Filed June 27, 1946 3 Sheets-Sheet 2

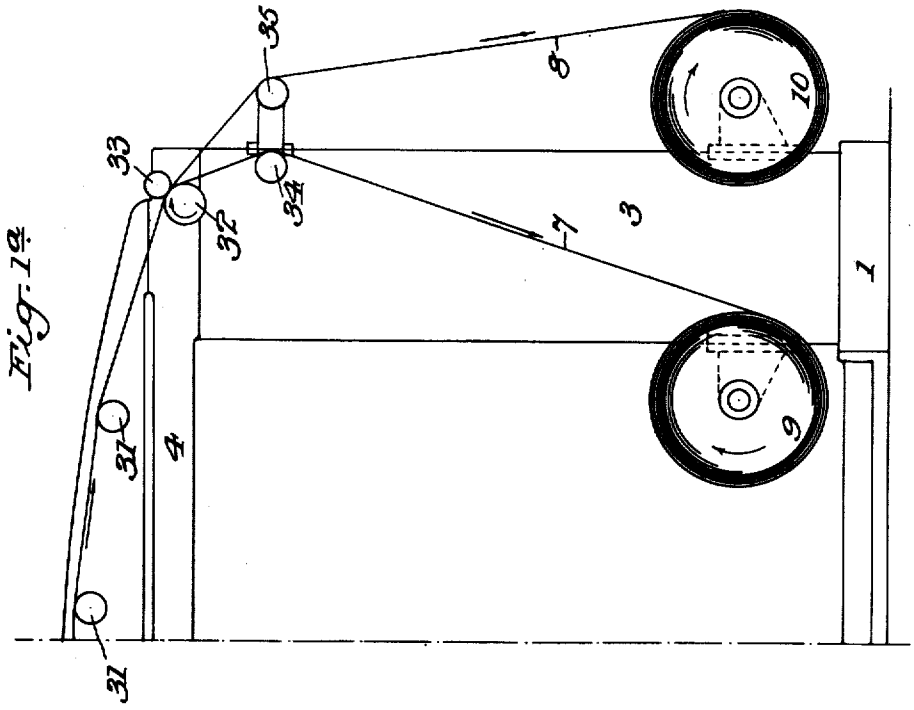

Fig. 1a

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Filed June 27, 1946 3 Sheets-Sheet 3

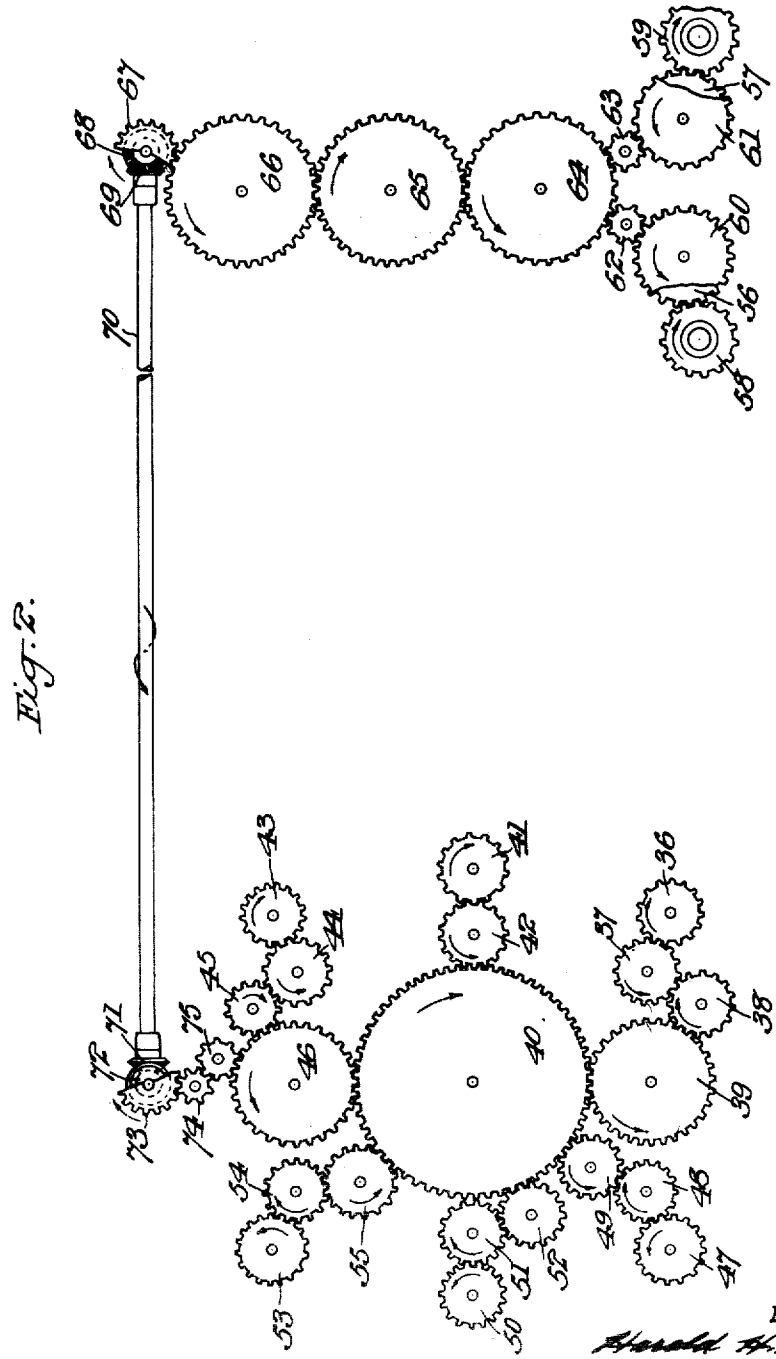

Fig. 2.

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MEANS FOR AND METHOD OF PLURAL WEB PRINTING

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8 Claims. (Cl. 101—180)

1

My invention consists in novel means for and method of plural web printing by which two superimposed webs may be printed on the exposed sides thereof.

My invention includes means for and method of superimposing two webs fed from different supply sources, as, for instance, web supply rolls; passing the superimposed webs along a predetermined path through printing units to be printed on the exposed sides of the webs; separating the so printed webs; and delivering them to two separate points, as, for instance, to rewind rolls.

My invention also includes means for and method of first printing on the exposed side of one of the superimposed webs and then printing on the exposed side of the other superimposed web; each web serving as a traveling blanket for the other web as it is being printed.

In the accompanying drawings;

Figs. 1 and 1ª represent diagrammatic side views of so much of a multicolor plural web rotary printing press as will give a clear understanding of my invention; and

Fig. 2 represents a side view of the gearing for operatively connecting the several driven parts of the press.

The printing press frame is shown as comprising a base 1; uprights 2 and 3 and their connecting top frame 4. The two web supply rolls are denoted by 5 and 6, the webs supplied thereby by 7 and 8 and the printed web rewind rolls by 9 and 10.

Two sets of three printing units each, of any desired form, are shown, those herein being adapted for aniline ink printing. In the first set three form cylinders of the lower, intermediate and upper printing units for printing on the exposed side of the superimposed web 7 are denoted by 11, 12 and 13 and their respective impression cylinders by 14, 15 and 16. In the second set the three form cylinders of the lower, intermediate and upper printing units for printing on the exposed side of the superimposed web 8 are denoted by 17, 18 and 19 and their respective impression cylinders by 20, 21 and 22.

The paths of the webs 7 and 8 from the web supply rolls 5 and 6 through the printing units to their respective rewind rolls 9 and 10 is as follows: the web 7 is shown as led from the web supply roll 5 over a guide roll 23 to a guide roll 24 and the web 8 is shown as led from the web supply roll 6 under the guide roll 25 and over the guide roll 26 to the said guide roll 24. The two webs 7 and 8 are superimposed by the guide roll

2

24. The superimposed webs may then be passed under and over the feed rolls 27 and 28 to the lower printing unit of the first set and upwardly between the successive pairs of form and impression cylinders of the first set of printing units to permit the exposed side of the superimposed web 7 to be printed in three colors; the web 8 serving as a traveling blanket for the web 7 during these printings. The superimposed webs are then led downwardly from the impression cylinder 16 of the first set to the impression cylinder 20 of the second set of printing units. The superimposed webs are then passed upwardly between the successive pairs of form and impression cylinders of the second set to permit the exposed side of the web 8 to be printed in three colors; the printed web 7 serving as a traveling blanket for the web 8 during these printings.

The two superimposed webs which have been printed on their exposed sides are then led between the feed rolls 29 and 30 and over the series of guide rolls 31 and between the feed rolls 32 and 33 to their respective guide rolls 34 and 35. From thence the separated webs are led to their respective rewind rolls 9 and 10.

Suitable means, such as that shown in Fig. 2, may be provided for operatively connecting the several moving parts of the press, said means comprising the following elements. In the first set of printing units the intermeshing gears 36 and 37 of the lower pair of form and impression cylinders are operatively connected through the gears 38 and 39 to the large central gear 40. The intermeshing gears 41 and 42 of the intermediate pair of form and impression cylinders are directly connected to the said gear 40. The intermeshing gears 43 and 44 of the upper pair of form and impression cylinders are operatively connected to the gear 40 through the gears 45 and 46.

In the second set of printing units the intermediate gears 47 and 48 of the lower pair of form and impression cylinders are operatively connected to the gear 40 through the gear 49. The intermeshing gears 50 and 51 of the intermediate pair of form and impression cylinders are operatively connected to the gear 40 by the gear 52. The intermeshing gears 53 and 54 of the upper pair of form and impression cylinders are operatively connected to the gear 40 by the gear 55.

The printed web rewind rolls 9 and 10 may be driven at a gradually decreasing speed as the rolls build up, by any well known or approved means, such, for instance, as slip clutches. The output gears 56 and 57 of the said slip clutches

are operatively connected to their respective rewind roll gears 58 and 59. The input gears 60 and 61 of the two slip clutches are operatively connected through intermediate gears 62 and 63 with the train of gears 64, 65 and 66 to the gear 67. This gear 67 is operatively connected through the bevel gears 68, 69, the longitudinally disposed shaft 70 and the bevel gears 71, 72 to the gears 73. This gear 73 is operatively connected through the gears 74, 75 and 46 to the large central gear 40.

While I have described my invention in connection with a press arranged to print three colors on the exposed side of each of the two superimposed webs it will be understood that I wish to include the printing in any desired number of colors on the said sides of the superimposed webs.

Also, while I have shown this press as adapted for aniline ink printing it is to be understood that I do not wish to limit myself to any particular type of printing.

It is also to be understood that various changes in the construction, form and arrangement of the several parts of the press may be made without departing from the spirit and scope of my invention.

What I claim is:

1. In a plural web rotary non-perfecting printing press, means for bringing two traveling webs into superimposed contact, a plurality of printing units, each unit consisting of a pair of coacting form and impression cylinders, and means for passing the two superimposed contacting webs therethrough along a single path, the form cylinder or cylinders of, one or more printing units being arranged to print on the exposed side only of one of the superimposed webs with the other superimposed web serving as a traveling blanket therefor and the form cylinder or cylinders of the remaining printing unit or units being arranged to thereafter print on the exposed side only of the said other superimposed web with the first named web serving as a traveling blanket therefor.

2. In a plural web rotary non-perfecting printing press, means for bringing two traveling webs into superimposed contact, a plurality of printing units, each unit consisting of a pair of coacting form and impression cylinders, means for passing the two superimposed contacting webs therethrough along a single path, the form cylinder or cylinders of, one or more printing units being arranged to print on the exposed side only of one of the superimposed webs with the other superimposed web serving as a traveling banket therefor and the form cylinder or cylinders of the remaining printing unit or units being arranged to thereafter print on the exposed side only of the said other superimposed web with the first named web serving as a traveling blanket therefor, and means for separating the non-perfected webs and rewinding them.

3. In a multicolor plural web rotary non-perfecting printing press, means for bringing two traveling webs into superimposed contact, two sets of multicolor printing units, each set consisting of pairs of coacting form and impression cylinders, and means for passing the two superimposed contacting webs therethrough along a single path, the form of cylinders of, one set of printing units being arranged to print in multicolor on the exposed side only of one of the superimposed webs with the other superimposed web serving as a traveling blanket therefor, and the form cylinders of the other set of printing units being arranged to thereafter print in multicolor on the exposed side only of the said other superimposed web with the first named web serving as a traveling blanket therefor.

4. In a multicolor plural web rotary non-perfecting printing press, means for bringing two traveling webs into superimposed contact, two sets of multicolor printing units, each set consisting of pairs of coacting form and impression cylinders, means for passing the two superimposed contacting webs therethrough along a single path, the form cylinders of, one set of printing units being arranged to print in multicolor on the exposed side only of one of the superimposed webs with the other superimposed web serving as a traveling blanket therefor, and the form cylinders of the other set of printing units being arranged to thereafter print in multicolor on the exposed side only of the said other superimposed web with the first named web serving as a traveling blanket therefor, and means for separating the non-perfected webs and rewinding them.

5. The herein described method of plural web printing consisting in bringing two traveling webs into superimposed contact, passing the two superimposed contacting webs along a single path through the coacting form and impression cylinders of a plurality of non-perfecting printing units, first printing on the exposed side only of one of the superimposed webs with the other superimposed web serving as a traveling blanket therefor and thereafter printing on the exposed side only of the said other superimposed unprinted web with the first named superimposed non-perfected web serving as a traveling blanket therefor.

6. The herein described method of plural web printing consisting in bringing two traveling webs into superimposed contact, passing the two superimposed contacting webs along a single path through the coacting form and impression cylinders of a plurality of non-perfecting printing units, first printing on the exposed side only of one of the superimposed webs with the other superimposed web serving as a traveling blanket therefor and thereafter printing on the exposed side only of the said other superimposed unprinted web with the first named superimposed non-perfected web serving as a traveling blanket therefor, and then separating the superimposed non-perfected webs and delivering them.

7. The herein described method of multicolor plural web printing which consists in bringing two traveling webs into superimposed contact, passing the two superimposed webs along a single path through the coacting form and impression cylinders of two sets of non-perfecting printing units, first printing in multicolor on the exposed side only of one of the superimposed webs while passing through the first set of printing units with the other superimposed web serving as a traveling blanket for the web being printed, and thereafter printing in multicolor on the exposed side only of the said other superimposed unprinted web while the superimposed webs are passing through the second set of printing units with the first printed non-perfected web serving as a traveling blanket therefor.

8. The herein described method of multicolor plural web printing which consists in bringing two traveling webs into superimposed contact, passing the two superimposed webs along a single path through the coacting form and impression

cylinders of two sets of non-perfecting printing units, first printing in multicolor on the exposed side only of one of the superimposed webs while passing through the first set of printing units with the other superimposed web serving as a traveling blanket for the web being printed, thereafter printing in multicolor on the exposed side only of the said other web while the superimposed webs are passing through the second set of printing units with the first printed non-perfected web serving as a traveling blanket therefor, and then separating the superimposed non-perfected webs and rewinding them.

HARALD H. HEINRICH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
528,233	Michaud	Oct. 30, 1894
640,633	Corbin	Jan. 2, 1900
724,459	Firm	Apr. 7, 1903
1,310,658	Hope	July 22, 1919
1,451,045	Long	Apr. 10, 1923
1,698,544	Hicks	Jan. 8, 1929
2,242,045	Scott	May 13, 1941
2,244,593	Zuckerman	June 3, 1941