Dec. 18, 1951 F. LAMATSCH 2,579,264

ROTARY PRINTING MACHINE FRAME STRUCTURE

Filed Jan. 28, 1947 2 SHEETS—SHEET 1

FIG. 1

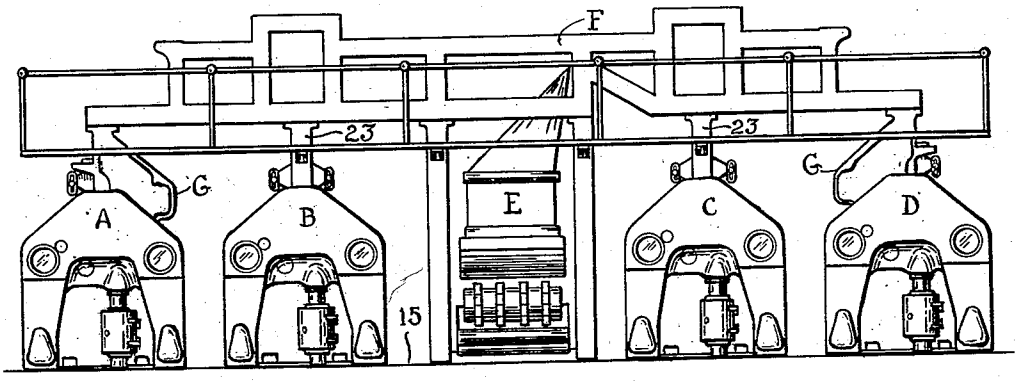


FIG. 7

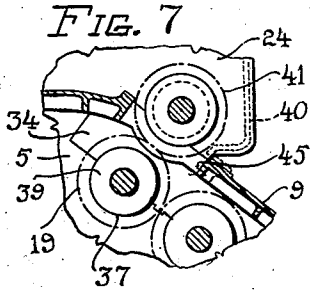
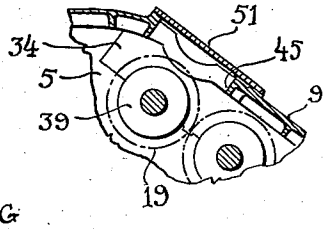


FIG. 2

FIG. 7-A



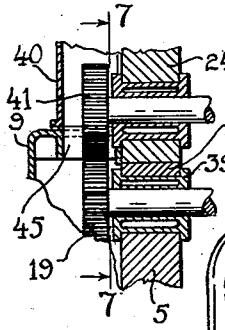


FIG. 6

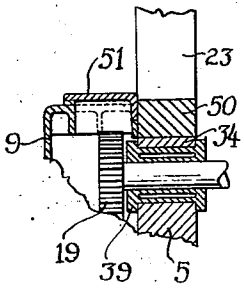


FIG. 6-A

INVENTOR
Frederick Lamatsch
BY
Langner & Kennedy
ATTORNEYS

Dec. 18, 1951 F. LAMATSCH 2,579,264

ROTARY PRINTING MACHINE FRAME STRUCTURE

Filed Jan. 28, 1947 2 SHEETS—SHEET 2

FIG. 4

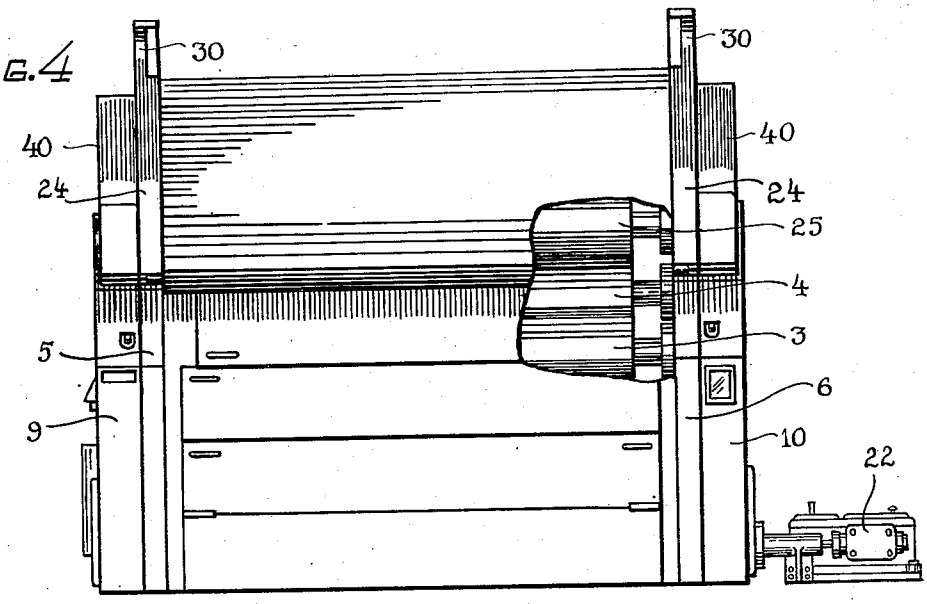


FIG. 3

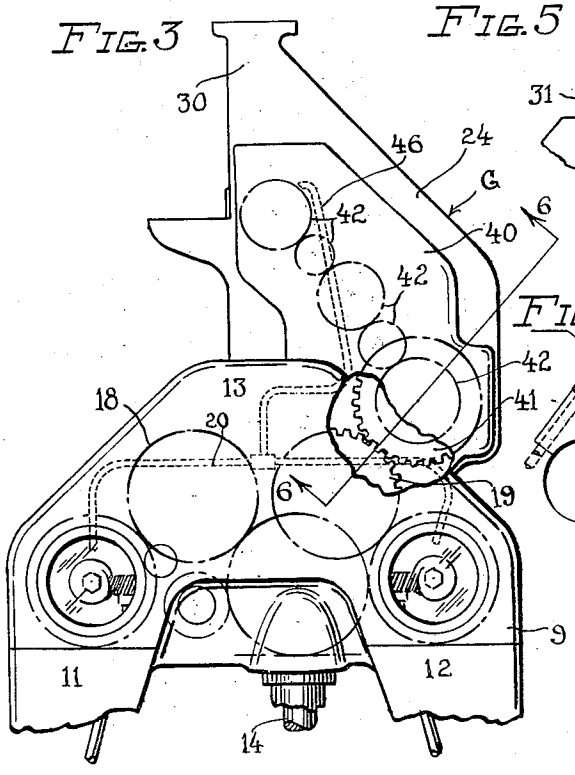


FIG. 5

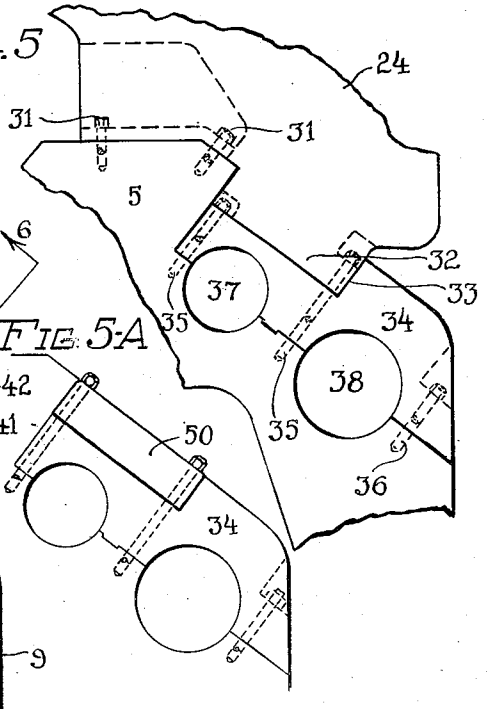


FIG. 5A

INVENTOR
Frederick Lamatsch
BY
ATTORNEYS

Patented Dec. 18, 1951 2,579,264

UNITED STATES PATENT OFFICE

2,579,264

ROTARY PRINTING MACHINE FRAME STRUCTURE

Frederick Lamatsch, Grantwood, N. J., assignor to R. Hoe & Co., Inc., New York, N. Y., a corporation of New York

Application January 28, 1947, Serial No. 724,782

4 Claims. (Cl. 101—180)

1

This invention relates to improvements in printing machines.

In multiple unit printing machines it is frequently desirable to make provision for additional color by adding one or more printing cylinders.

It is an object of the present invention to provide an improved structure permitting or containing such provision for additional color.

A further object of the invention is to provide an improved frame structure for supporting upper cylinders in a machine having also lower cylinders.

With these and still other objects which will appear in the following description in mind, the invention consists in the combinations and arrangements of parts, and details of construction, which will now first be fully described in connection with the accompanying drawing and then be more particularly pointed out in the appended claims.

In the drawing:

Figure 1 is an elevation view, from the drive side, of a printing press embodying the invention in a preferred form;

Figure 2 is an enlarged side elevation of a single unit of the press of Figure 1, showing, among other things, certain cylinder and inking roller locations;

Figure 3 is a fragmentary view similar to Figure 2 but showing more particularly gear locations;

Figure 4 is an elevation of the unit of Figure 2, looking in the direction of the arrows 4 of Figure 2;

Figure 5 is a frame detail on an enlarged scale, showing the connection of the added color attachment frame to the main unit frame;

Figure 5–A is a partial detail view similar to Figure 5, but showing the main frame with the color unit removed;

Figrue 6 is a section on the line 6—6 of Figure 3;

Figure 6–A is a partial view similar to Figure 6, but showing the parts with the added color unit removed;

Figure 7 is a section on the line 7—7 of Figure 6; and

Figure 7–A is a view similar to Figure 7, but showing the parts with the added color unit removed.

Referring to Figure 1, the machine shown comprises double printing units A, B, C and D, a folder and delivery mechanism E and superstructure F. Added color attachments G are

2

shown in position on units A and D, but not in the other units.

The double units A, etc., are of a form which is well known in itself, suitable structure and operation thereof being fully described, for example, in Huck Patent No. 2,383,970 and Horton Patent 2,356,160. Suitable press superstructure arrangements and various web leads for a press of the type shown are shown in Dressel Patent No. 2,298,094.

Referring to Figures 2 and 4, each main unit is a double unit comprising a first printing couple, having a printing cylinder 1 cooperating with an impression cylinder 2, and a second printing couple having the printing cylinder 3 cooperating with impression cylinder 4. Each printing couple is diagonally arranged, as indicated. The impression cylinders 2 and 4 are arranged side by side and in parallelism while the printing cylinders 1 and 3 cooperating therewith are positioned below and outwardly of their impression cylinders so that a plane through the axes of cylinders 1 and 2 and a plane through the axes of cylinders 3 and 4 will diverge downwardly and outwardly from each other. These elements are carried in bearings in unit frames 5 and 6, of inverted U-shape, and the outlines of which correspond to the outer line 7 and inner line 8 of Figure 2. The outer faces of the frames 5 and 6 form one wall of housings 9 and 10 at the two ends of the unit (Figure 4). The structure of the housing 10 and associated parts, so far as relevant to the present invention, may be the same as that of the housing 9 and its associated parts although the mechanism contained therein is different. Accordingly, the description will be confined to a description of the housing 9, indicating at the appropriate points, the structure at the other end of the housing. The housing 9 is completed by casing or closure elements 11, 12 and 13, forming together with the frame 5 an oil tight closure for the gearing. Each section 11, 12 or 13 may be formed in any desired way, provided the necessary enclosure is obtained. The drive shaft 14 for the unit passes vertically upward through the floor level 15 from the gear box 16, indicated in phantom, and thus drives the unit from the main drive shaft 17 located below the floor. Within the upper part of the housing, the drive shaft 14 connects to suitable gearing and drives the cylinders of the two printing couples within the unit and also the ink motions and other parts. Some of the principal gear elements within the housing are indicated in phantom in Figure 3. However, only the impression

cylinder drive gears 18 and 19 are of importance in connection with the present invention. An oil system is contained within the housing and connected therewith and with the subjacent gear box 16 for circulating oil upwardly over the gearing and returning it to a low point for recirculation. This oil system is indicated in phantom in Figure 2 and is identified by the reference numeral 20. The two couples of a unit of this type may be employed for printing separately, for perfecting, or for printing in two colors upon the same web and, accordingly, it may be desired to reverse a unit. Provision for reversing the ink pump drive is, accordingly, made by means of the coupling 22. Turning this coupling end for end will reverse the direction of drive of the ink pump relative to the printing couple, as described in Lamatsch application Serial No. 612,328, filed August 24, 1945, for Inking Mechanism for Printing Machines, which has matured to Patent No. 2,444,656 on July 6, 1948.

The unit frames 5 and 6, where an added color attachment is not used, support the superstructure by means of short columns 23 which carry the proper guide rollers for the paper and are bolted at their upper ends to the superstructure F so as to support the same, as indicated in Figure 1.

When it is desired to add an additional color to the unit, the structures 23 are removed and the added color attachment, described below, is substituted therefor. The added color unit comprises side frames 24, as indicated in Figure 2, which support a printing cylinder 25, vibrator drums 26 and 27 and distributing, transfer and form rollers 28 cooperating therewith, to ink the form cylinder 25 from the ink pump 29. The specific form of ink motion employed forms no part of the present invention.

The frame 24 comprises an upper vertical column element or section 30 which supports the superstructure F in the same way as the short columns 23, previously referred to. Below the section 30, the frame 24 is fastened to the unit main frame 5 by means of the bolts 31. The frame 24 also has a rectangular extension 32 adapted to seat within a recess 33 formed in the main unit bearing cap 34 and to be fastened thereto and to the main unit frame 5 by means of bolts 35. When the added color unit is in position, the bearing cap 34 is held in position by these bolts and also by bolts 36, as shown. The bearing cap and adjacent portion of the frame 5 form openings 37 and 38, the bearing 39 for the shaft of impression cylinder 4 being received in and held by the opening 37, and the bearing for the shaft of printing cylinder 3 being similarly received and held by the opening 38.

The frame 24 of the added color attachment forms one wall of a gear housing, which is completed by casing structure 40 and which contains the major part of the drive gear 41 for the added color printing cylinder 25, and also contains gearing designated generally by the numeral 42 which drives the ink motion 26—29. The gear 41 of the added cylinder extends into the housing 9 and meshes with the impression cylinder drive gear 19, thus converting the right hand printing couple of the unit into a two color unit. With the gear in this position, the printing cylinder 25 will be in printing relation to the impression cylinder 4, so that a web may be carried around the impression cylinder and printed on successively by cylinders 3 and 25. Frame 24 continues the main unit frame for forming therewith one wall of an enclosed space or housing, which is completed by the color attachment casing structure 40 and main unit casing elements 11, 12 and 13.

The color attachment housing 40 makes a joint with the unit housing 9, as indicated best in Figures 6 and 7. Figure 6 shows the widthwise form of an opening 45 in the casing 9 and the outer wall of the color attachment casing 40 seated upon the casing 9 adjacent the edge of this opening. It will be understood that the opening 45 is long enough to accommodate the gear 41 and the other walls of the casing 40 seat, adjacent the edges of the opening, upon the casing 9. The joint between the casings 40 and 9 is readily made oil tight by means of a suitable sealing compound applied thereto.

The added color unit is provided with an oil line leading upward and designated by the numeral 46, which passes through the opening 45 and is connected to the oil system 20 of the unit, as indicated in Figures 2 and 3. Oil is thus pumped upward through the oil system 46 and passes downwardly over the gearing 41 and 42, and through the opening 45 where it rejoins the oil circulation of the main unit.

When the added color attachment is not in use, the bearing cap recess 33 is filled in by a removable part 50, as indicated in Figure 5–A, and the opening 45 is closed by a closure element or cover 51, as indicated in Figures 6–A and 7–A.

The frame structure and housing structure of the color attachment and their cooperation with the frame and housing structure of the unit have been described with reference to the drive end of the unit. At the other end of the unit, the casing outlines may be similar and the manner of joining the frames will be similar, although the mechanism contained in the housing will be different.

The invention has been described with reference to the addition to the main unit of a color attachment cooperating with the impression cylinder 4, the position being as indicated in connection with the unit A of Figure 1. The main unit structure will however normally be symmetrical, providing for the addition of an added color attachment cooperating with the impression cylinder 2, which in this case will be facing in the opposite direction as indicated in Figure 1 in connection with unit D. In such case, the added color unit will be the same as that previously described, but the parts will be reversed left for right, thus making provision for right and left hand added color attachments.

What I claim is:

1. In a printing press, a double printing unit comprising frames of inverted U-shape supporting the bearings for a pair of printing couples comprising two impression cylinders arranged side by side in parallelism and a printing cylinder for each impression cylinder arranged below and outwardly of the same so that the planes through the axes of the cylinders of the respective printing couples diverge downwardly and outwardly, vertical columns supported by the frames between the printing couples and in turn supporting a press superstructure, bearing caps for the printing couples, the bearing caps for one of said couples comprising parts removable to form recesses, and an added color attachment comprising frames including vertical column elements for replacing the first said vertical columns and further frame elements supporting the bearings for a printing cylinder and adapted to fit into the recesses and be attached to the printing couple bearing caps and to be supported thereby while holding a print-

ing cylinder in printing relation to the impression cylinder of such printing couple.

2. In a printing press, a double printing unit comprising frames of inverted U-shape supporting the bearings for a pair of printing couples comprising two impression cylinders arranged side by side in parallelism and a printing cylinder for each impression cylinder arranged below and outwardly of the same so that the planes through the axes of the cylinders of the respective printing couples diverge downwardly and outwardly, vertical columns supported by the frames between the printing couples and in turn supporting a press superstructure, bearing caps for the printing couples, the bearing caps comprising parts removable to form recesses, and right and left hand added color attachments, each comprising frames including vertical column elements for replacing the first said vertical columns and frame elements supporting the bearings for a printing cylinder and adapted to fit into the recesses and be attached to the bearing caps for one of the said printing couples and to be supported thereby while holding a printing cylinder in printing relation to the impression cylinder of such printing couple.

3. In a printing press, a double printing unit comprising a frame of inverted U-shape supporting bearings for a pair of printing couples, bearing caps for each such couple, closure elements cooperating with said frame and bearing caps to form a gear housing and including a part removable to expose an impression cylinder drive gear, the bearing cap adjacent the said removable closure element comprising a part removable to form a recess, a vertical column supported by the frame between the bearing caps and in turn supporting press superstructure, an added color attachment comprising a frame including a vertical column element for replacing the first said column element and a further frame element supporting a bearing for a printing cylinder and adapted to fit into the recess and be attached to the bearing cap and to be supported thereby while holding a printing cylinder and its drive gear, respectively, in operating relation to the unit impression cylinder and drive gear, the said attachment comprising also closure elements cooperating with its frame and with the bearing cap and unit gear housing to form a gear housing for the combined unit and attachment.

4. In a printing press, a printing unit comprising frames supporting the bearings for a printing couple comprising an impression cylinder and a printing cylinder disposed below and to one side thereof, bearing caps for the printing couple, the said bearing caps comprising parts removable to form recesses, and an added color attachment comprising frames supporting bearings for a printing cylinder and adapted to fit into the recesses and be attached to the printing couple bearing caps and to be supported thereby while holding a printing cylinder in printing relation to the impression cylinder of such printing couple.

FREDERICK LAMATSCH.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,028,485	Pancoast	June 4, 1912
1,883,227	Wood	Oct. 18, 1932
1,898,034	Crafts	Feb. 21, 1933
1,993,874	Crafts	Mar. 12, 1935