

Oct. 13, 1936.

H. M. BARBER

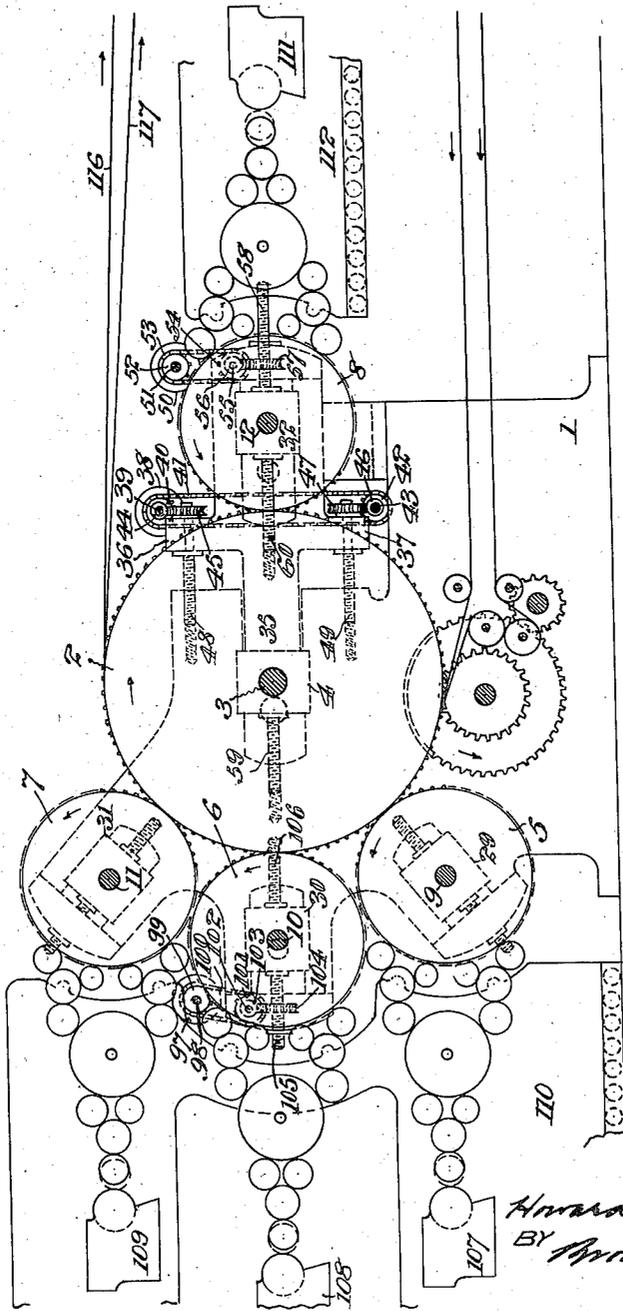
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ROTARY WEB PRINTING PRESS

Filed Jan. 4, 1935

4 Sheets-Sheet 1

Fig. 1.



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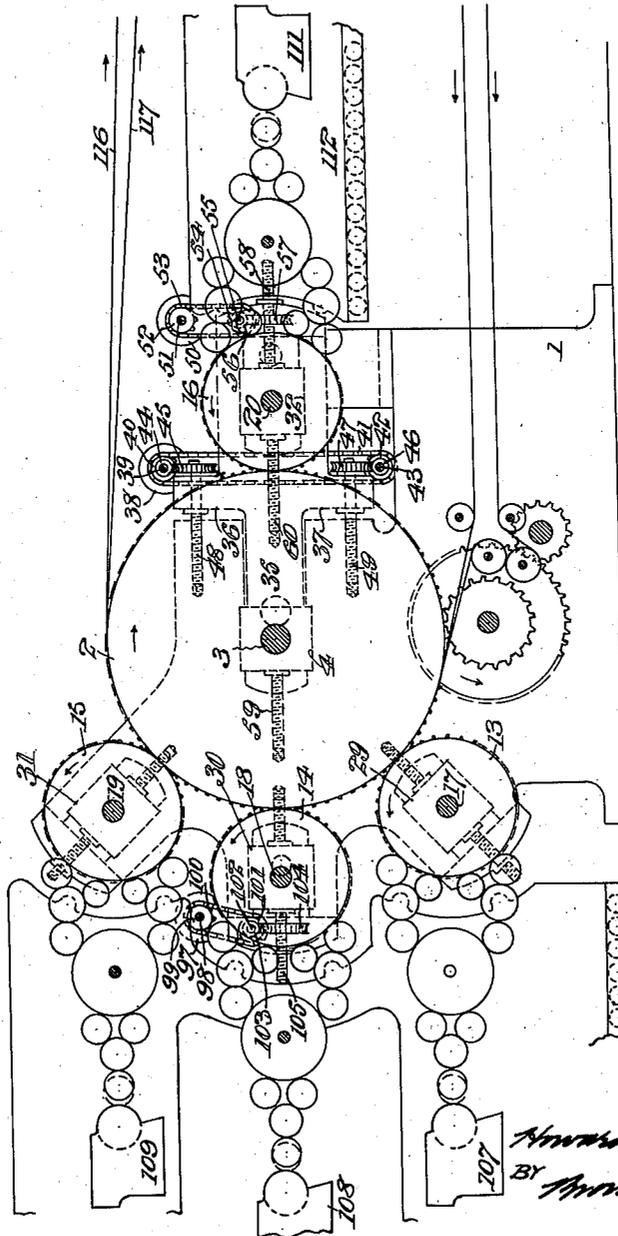
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ROTARY WEB PRINTING PRESS

Filed Jan. 4, 1935

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Fig. 2.



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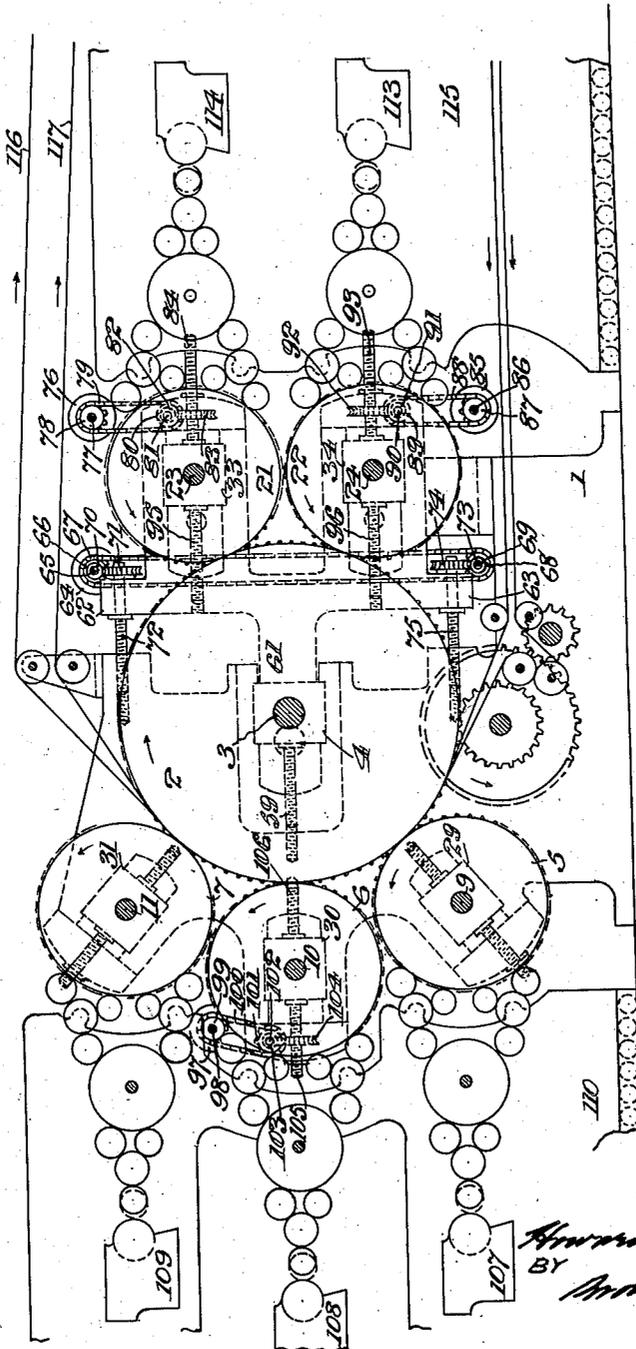
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ROTARY WEB PRINTING PRESS

Filed Jan. 4, 1935

4 Sheets-Sheet 3

Fig. 3.



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2,057,360

ROTARY WEB PRINTING PRESS

Howard M. Barber, Pawcatuck, Conn., assignor
to C. B. Cottrell & Sons Company, Westerly,
R. I., a corporation of Delaware

Application January 4, 1935, Serial No. 345

12 Claims. (Cl. 101—178)

My invention relates to that class of multi-color rotary web printing presses in which change form cylinders are used, so that form cylinders of different corresponding diameters may be used with a minimum amount of change, adjustment and substitution of parts.

My invention comprises generally an impression cylinder and a plurality of change form cylinders located upon opposite sides thereof, the impression cylinder and certain of the change form cylinders being bodily movable, preferably in a horizontal plane or planes, to bring the impression cylinder and said last named change form cylinders into and out of operative position.

My invention comprises, in one embodiment, an impression cylinder having three change form cylinders located upon one side and a single change form cylinder located upon the opposite side, the impression cylinder and a change form cylinder on one side and the change form cylinder on the opposite side of the impression cylinder being bodily movable to bring the impression and change form cylinders into and out of operative position.

My invention also comprises, in another embodiment, an impression cylinder having three change form cylinders located upon one side and two change form cylinders upon the other side, the impression cylinder and a change form cylinder on one side and the two change form cylinders on the other side being bodily movable into and out of operative position.

Practical embodiments of my invention are represented in the accompanying drawings, in which

Fig. 1 represents a detail side elevation, partly in section, showing an impression cylinder having four change form cylinders, three being located upon one side and one upon the other side of the impression cylinder, the change form cylinders being of relatively large corresponding diameters;

Fig. 2 represents a similar view in which the change form cylinders are of smaller corresponding diameters;

Fig. 3 represents a detail side elevation, partly in section, showing an impression cylinder having five change form cylinders, three being located upon one side and two upon the other side of the impression cylinder, the change form cylinders being of relatively large corresponding diameters; and

Fig. 4 represents a similar view in which the

change form cylinders are of smaller corresponding diameters.

The main frame of the press is denoted by 1, in each side of which the impression cylinder 2 has its shaft 3 mounted in a horizontally movable bearing 4.

In Fig. 1 I have shown a group of three relatively large change form cylinders 5, 6, 7, located upon one side of the impression cylinder 2 and a single change form cylinder 8 located upon the other side of the impression cylinder; all of said change form cylinders being of corresponding diameters and their shafts being denoted by 9, 10, 11 and 12 respectively.

In Fig. 2 I have shown a group of three relatively small change form cylinders 13, 14, 15, located upon one side of the impression cylinder 2 and a single change form cylinder 16 located upon the opposite side of the impression cylinder; all of the said change form cylinders being of corresponding diameters and their shafts being denoted by 17, 18, 19 and 20 respectively.

In Fig. 3 I have shown the group of three relatively large change form cylinders 5, 6, 7 and their shafts 9, 10, 11, located upon one side of the impression cylinder 2, while upon the other side of the impression cylinder I have shown two change form cylinders 21, 22 of the same diameters and their shafts 23, 24.

In Fig. 4 I have shown the group of three relatively small change form cylinders 13, 14, 15 and their shafts 17, 18, 19, located upon one side of the impression cylinder, while upon the other side of the impression cylinder I have shown two change form cylinders 25, 26 of the same diameters and their shafts 27, 28.

Bearings 29, 30, 31 are provided in each side of the main frame for mounting either the shafts 9, 10, 11 of the larger change form cylinders 5, 6, 7 or the shafts 17, 18, 19 of the smaller change form cylinders 13, 14, 15.

A bearing 32 is provided in each side of the main frame for mounting either the shaft 12 of the larger change form cylinder 8 or the shaft 20 of the smaller change form cylinder 16.

Bearings 33, 34 are provided in each side of the main frame for mounting either the shafts 23, 24 of the larger change form cylinders 21, 22 or the shafts 27, 28 of the smaller change form cylinders 25, 26.

In the embodiment illustrated in Figs. 1 and 2, each bearing 4 for the impression cylinder shaft 3 is provided with a loop extension 35, in which the bearing 32 for either the shaft 12 of the larger change form cylinder 8 or the shaft 20

of the smaller change form cylinder 16 is movable in a horizontal plane. This loop bearing extension 35 is further provided with upper and lower arms 36, 37.

5 Means are shown for moving the impression cylinder 2 and either the change form cylinder 8 or change form cylinder 16 bodily together, said means being as follows:

A hand wheel 38 on an upper cross shaft 39 has at each side of the machine frame a sprocket wheel 40 connected by a chain 41 with a lower sprocket wheel 42 on a cross shaft 43. These cross shafts 39 and 43 have worm and gear connections 44, 45 and 46, 47 with screw shafts 48, 15 49, carried by the upper and lower arms 36, 37 of the bearing extension 35, said screws engaging the main frame 1.

Means are provided for independently moving the bearing 32 for either the shaft 12 of the 20 larger change form cylinder or the shaft 20 of the smaller change form cylinder in a horizontal plane in the loop extensions 35 of the impression cylinder shaft bearings 4, which means comprises the following elements:

25 A hand wheel 50 on a cross shaft 51 is provided at each side of the main frame with a sprocket wheel 52 connected by a chain 53 with a sprocket wheel 54 on a stud shaft 55, which stud shaft has a worm and gear connection 56, 30 57 with a screw shaft 58 connected to the bearing 32.

A screw shaft 59 serves to lock the impression cylinder shaft bearing 4 in its adjusted position and a screw shaft 60 serves to lock the change 35 cylinder shaft bearing 32 in its adjusted position.

In the form shown in Figs. 3 and 4, the bearing 4 for the impression cylinder shaft 3 at each side of the main frame is provided with a 40 double loop extension 61 in which the upper and lower bearings 33, 34 for either the shafts 23, 24 of the larger change form cylinders 21, 22 or the shafts 27, 28 of the smaller change form cylinders 25, 26 are movable in horizontal planes. 45 Each bearing extension 61 is provided with an upper arm 62 and a lower arm 63.

Means are provided for moving the impression cylinder bearings 4 and the change form cylinder bearings 33 and 34 bodily together, 50 which means is herein shown as comprising the following elements:

A hand wheel 64 on an upper cross shaft 65 is provided at each side of the main frame with a sprocket wheel 66 connected by a chain 67 55 with a sprocket 68 on a lower cross shaft 69. The upper cross shaft 65 has a worm and gear connection 70, 71 with a screw shaft 72 carried by the upper arm 62 of the bearing extension 61 and engaging the main frame. The lower cross shaft 69 has a worm and gear connection 73, 74 60 with a screw shaft 75 carried by the lower arm 63 of the bearing extension 61 and engaging the main frame.

The bearings 33 for either the shaft 23 of 65 the larger change form cylinder 21 or the shaft 27 of the smaller change form cylinder 25 are bodily movable in a horizontal plane in the impression cylinder bearing extensions 61, as follows:

70 A hand wheel 76 on a cross shaft 77 has at each side of the main frame a sprocket wheel 78 connected by a chain 79 with a sprocket 80 carried by a stud shaft 81, which stud shaft has a worm and gear connection 82, 83 with a 75 screw shaft 84 connected to the bearing 33.

Similarly, the bearings 34 for either the shaft 24 of the larger change form cylinder 22 or the shaft 28 of the smaller change form cylinder 25 are bodily movable in a horizontal plane in the impression cylinder bearing extensions 61, as 5 follows:

A hand wheel 85 on a cross shaft 86 has at each side of the main frame a sprocket wheel 87 connected by a chain 88 with a sprocket wheel 89 on a stud shaft 90, which stud shaft has a 10 worm and gear connection 91, 92 with a screw shaft 93 connected to the bearing 34.

The screw shaft 59 serves also in this form to lock the impression cylinder shaft bearing 4 15 in its adjusted position. A screw shaft 95 serves to lock the change form cylinder bearing 33 in its adjusted position. A screw shaft 96 serves to lock the change form cylinder bearing 34 in its adjusted position.

In both of the forms illustrated the change 20 form cylinder bearings 30 are moved bodily in a horizontal plane, the means for accomplishing this result being shown as follows:

A hand wheel 97 on a cross shaft 98 is provided at each side of the machine with a sprocket wheel 25 99 connected by a sprocket chain 100 with a sprocket wheel 101 on a stud shaft 102, which stud shaft has a worm and gear connection 103, 104 with a screw shaft 105 engaging each bearing 30. A screw shaft 106 is provided for locking 30 each bearing 30 in its adjusted position.

The bearings 29 and 31 for the lower and upper change form cylinders 5 and 7 at each side of the machine are provided with the usual individual 35 adjusting means for alining the change form cylinder shafts 9 and 11 permanently with respect to the impression cylinder shaft 3.

Inking mechanisms 107, 108, 109 are mounted in a frame 110 in position to be brought into and 40 out of coaction with either the larger change form cylinders 5, 6, 7 or the smaller change form cylinders 13, 14, 15, located upon one side of the impression cylinder.

In the form shown in Figs. 1 and 2, I have 45 provided an inking mechanism 111 mounted in a frame 112 in position to be brought into and out of coaction with either the larger change form cylinder 8 or the smaller change form cylinder 16, located upon the opposite side of the impression 50 cylinder.

In the form illustrated in Figs. 3 and 4, I have shown inking mechanisms 113, 114 mounted in a 55 frame 115 in position to be brought into and out of coaction with either the two larger change form cylinders 21, 22 or the two smaller change form cylinders 25, 26.

The web to be printed is denoted by 116 and the impression web is denoted by 117. Any well known or approved means, not shown herein, may 60 be provided for imparting the proper movements to the web to be printed and the impression web. Any well known or approved means may also be provided for driving the impression and change form rolls as well as the inking mechanisms.

The impression web shown and described, but 65 not claimed herein, forms the subject matter of my copending application filed of even date herewith, Serial No. 343.

While I have shown change form cylinders of 70 two corresponding diameters it is to be understood that these change form cylinders may be of any desired diameter.

From the above description it will be seen that in both forms illustrated I have provided means 75 whereby a selected change form cylinder upon

one side of the impression cylinder may be moved independently thereof. In the form shown in Figs. 1 and 2 the impression cylinder may not only be moved together with its change form cylinder on the other side thereof but said change form cylinder may be moved independently of the impression cylinder. In the form shown in Figs. 3 and 4 the two change form cylinders may not only be moved with the impression cylinder but also independently thereof and independently of each other.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiments herein shown and described, but what I claim is:

1. In a multi-color rotary web printing press, an impression cylinder, a change form cylinder for coaction therewith, means for bodily moving the impression cylinder and change form cylinder together and means for bodily moving the change form cylinder independently of the impression cylinder.

2. In a multi-color rotary web printing press, an impression cylinder, two change form cylinders for coaction therewith, means for bodily moving the impression cylinder and change form cylinders together and means for bodily moving the change form cylinders independently of the impression cylinder.

3. In a multi-color rotary web printing press, an impression cylinder, two change form cylinders for coaction therewith, means for bodily moving the impression cylinder and change form cylinders together and means for bodily moving the change form cylinders independently of the impression cylinder and independently of each other.

4. In a multi-color rotary web printing press, an impression cylinder, a plurality of change form cylinders for coaction therewith, located upon opposite sides of the impression cylinder, means for bodily moving the impression cylinder and a change form cylinder upon one side thereof together, means for bodily moving said change form cylinder independently of the impression cylinder and means for bodily moving a change form cylinder upon the opposite side of the impression cylinder independently thereof.

5. In a multi-color rotary web printing press, an impression cylinder, a plurality of change form cylinders for coaction therewith, located upon each side of the impression cylinder, means for bodily moving the impression cylinder and two change form cylinders upon one side thereof together, means for bodily moving said two change form cylinders independently of the impression cylinder, and means for bodily moving a change form cylinder upon the opposite side of the impression cylinder independently thereof.

6. In a multi-color rotary web printing press, an impression cylinder, a plurality of change form cylinders for coaction therewith, located upon

each side of the impression cylinder, means for bodily moving the impression cylinder and two change form cylinders upon one side thereof together, means for bodily moving said two change form cylinders independently of the impression cylinder and independently of each other and means for bodily moving a change form cylinder upon the opposite side of the impression cylinder independently thereof.

7. In a multi-color rotary web printing press, an impression cylinder, four change form cylinders, three located upon one side and one upon the other side of the impression cylinder, means for bodily moving the impression cylinder and said one change form cylinder together, and means for bodily moving the last named change form cylinder independently of the impression cylinder.

8. In a multi-color rotary web printing press, an impression cylinder, four change form cylinders, three located upon one side and one upon the other side of the impression cylinder, means for bodily moving the impression cylinder and said one change form cylinder together in the same horizontal plane, and means for bodily moving the last named change form cylinder independently of the impression cylinder.

9. In a multi-color rotary web printing press, an impression cylinder, five change form cylinders, three located upon one side and two upon the other side of the impression cylinder, means for bodily moving the impression cylinder and said two change form cylinders together, and means for bodily moving the last named two change form cylinders independently of the impression cylinder.

10. In a multi-color rotary web printing press, an impression cylinder, five change form cylinders, three located upon one side and two upon the other side of the impression cylinder, means for bodily moving the impression cylinder and said two change form cylinders together, and means for bodily moving the last named two change form cylinders independently of the impression cylinder and independently of each other.

11. In a multi-color rotary web printing press, an impression cylinder, five change form cylinders, three located upon one side and two upon the other side of the impression cylinder, means for bodily moving the impression cylinder and said two change form cylinders together in the same horizontal plane, and means for bodily moving the last named two change form cylinders independently of the impression cylinder.

12. In a multi-color rotary web printing press, an impression cylinder, five change form cylinders, three located upon one side and two upon the other side of the impression cylinder, means for bodily moving the impression cylinder and said two change form cylinders together in the same horizontal plane, and means for bodily moving the last named two change form cylinders independently of the impression cylinder and independently of each other.

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