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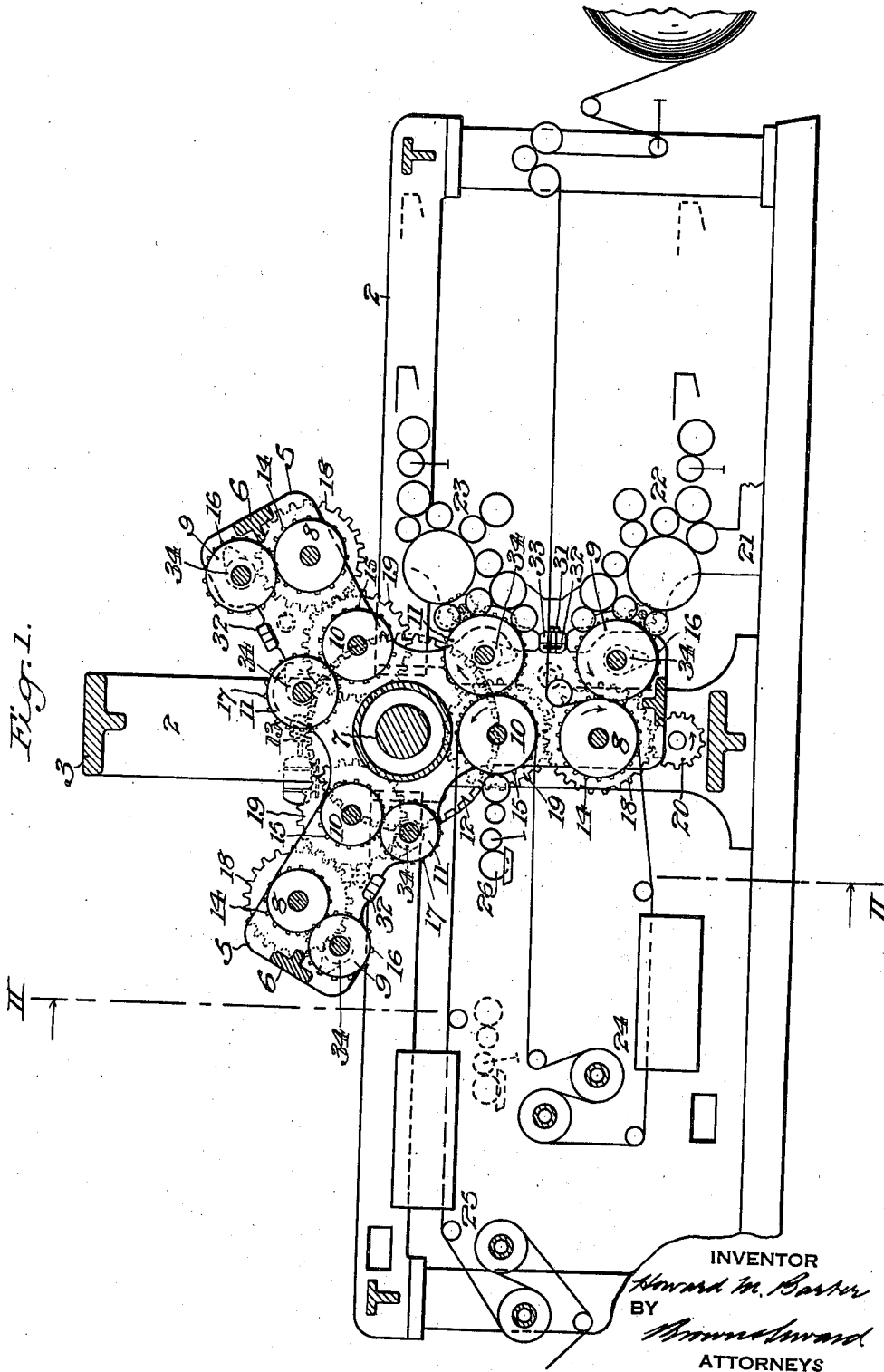
H. M. BARBER

2,216,562

ROTARY WEB PRINTING PRESS

Filed Oct. 26, 1939

2 Sheets-Sheet 1



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ROTARY WEB PRINTING PRESS

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2 Sheets-Sheet 2

Fig. 3.

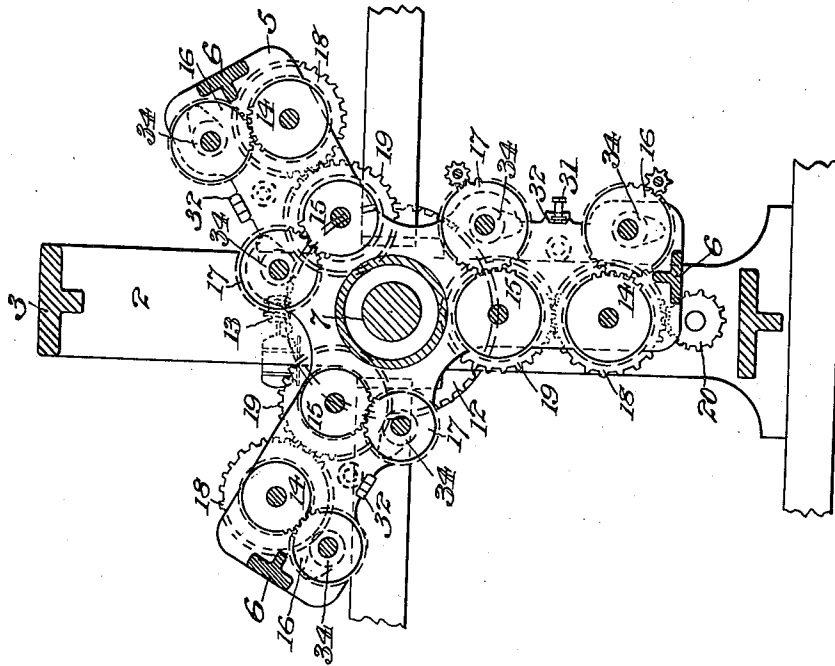
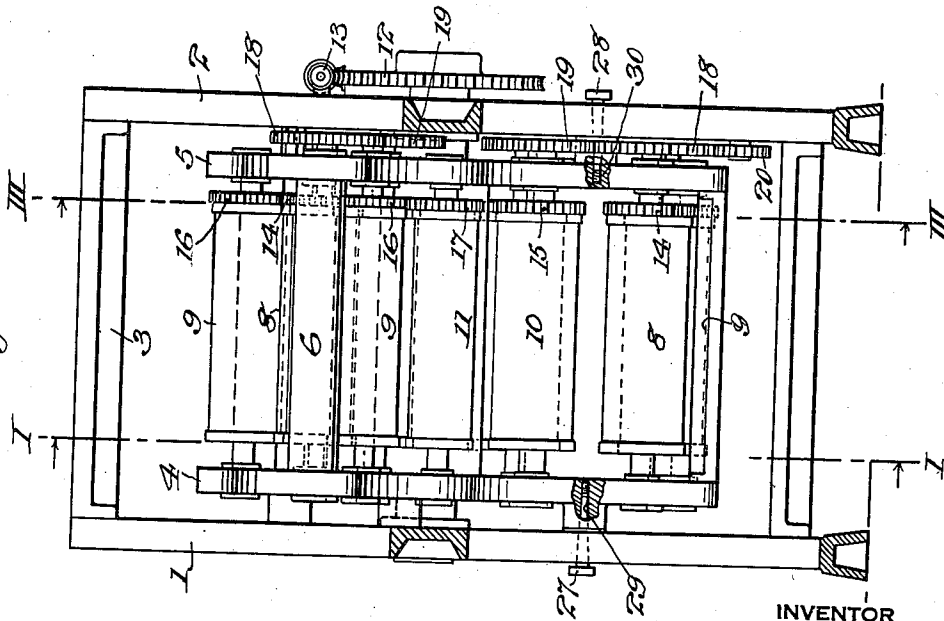


Fig. 2.



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## UNITED STATES PATENT OFFICE

2,216,562

## ROTARY WEB PRINTING PRESS

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a corporation of Delaware

Application October 26, 1939, Serial No. 301,340

15 Claims. (Cl. 101—220)

In printing products of different sizes it has heretofore been usual to substitute form and impression cylinders of the required sizes or to use another press when such a change was to be made. When form and impression cylinders were to be substituted it was necessary to stop the press while the cylinders were being taken out and replaced and this involved not only delay but added expense in press operation. Also, where another press had to be used this also involved added expense.

The object of my invention is to provide a rotary printing press with a plurality of different sized printing units and to provide means for bringing a selected printing unit of a predetermined size into printing position, thus enabling the press to print various size products.

My invention comprises, generally, a rotary web printing press having an auxiliary frame which carries a plurality of different sized printing units arranged in pairs where the web is perfected; said auxiliary frame being movable to bring a selected printing unit or pair of printing units into printing position. Means are also employed for drying the ink after one selected printing unit is used or after the first or both impressions when a pair of selected printing units is used for perfecting the web.

My invention comprises, more specifically, a rotary web printing press in which the auxiliary frame is pivotally mounted in the main frame and the supported printing units are carried by the auxiliary frame concentric with its axis so that the selected printing units may be brought into proper position with respect to the common inking mechanism which is used for any selected printing unit.

My invention also provides a common drive for use with any selected printing unit for driving it. My invention also provides for the use of a drying unit with any selected printing unit when in printing position.

A practical embodiment of my invention is represented in the accompanying drawings, in which

Fig. 1 represents a longitudinal vertical section of a rotary printing press embodying my invention, taken in the plane of the line I—I of Fig. 2, looking in the direction of the arrows; one pair of printing units being shown in operative position in contact with the inking mechanisms, for printing on both sides of the web;

Fig. 2 represents a transverse vertical section, taken in the planes of the line II—II of Fig. 1

with the oil offset and inking mechanisms removed; and

Fig. 3 represents a longitudinal vertical section, taken in the plane of the line III—III of Fig. 2, looking in the direction of the arrows and showing more clearly the gears for driving the several units.

The main frame of the printing press is shown as comprising the two side frames 1 and 2 and the connecting crossbars 3.

An auxiliary frame is shown as comprising two three armed side plates 4, 5 and their connecting crossbars 6, which auxiliary frame is pivotally mounted in the main frame side bars by a cross shaft 7.

Different sized pairs of first and second side web printing units are carried by the auxiliary frame concentric with its pivotal axis. Each first side web printing unit is shown as comprising an impression cylinder 8 and its form cylinder 9; and each second side printing unit being shown as comprising an impression cylinder 10 and its form cylinder 11.

The means which I have shown for swinging the auxiliary frame to bring a selected sized pair of printing units into printing position includes a gear 12 on the auxiliary frame shaft and a motor driven worm 13 meshing with the said gear.

The form cylinders 9 and 11 of each pair of printing units may be driven from their respective impression cylinders 8 and 10 through the gears 14, 15 and 16, 17 respectively.

The impression cylinder 10 of the second side printing unit may be driven from the first side impression cylinder 8 through the gears 18, 19.

The common drive for the selected pair of printing units is shown as a gear 20 with which the impression cylinder gear 18 is brought into mesh as the selected pair of printing units is swung into printing position. This gear 20 may be driven from any suitable source of power, not shown herein.

The ink stand 21 carries the necessary inking mechanisms 22, 23 for the form cylinders of the selected pair of printing units, which stand may be moved in the usual manner, not shown herein, to bring the inking mechanisms into coaction with the form cylinders 9 and 11 of the selected pair of printing units when the auxiliary frame is swung to bring the pair of printing units into printing position.

Two ink drying units 24, 25 of well known or approved form are shown; one for use in drying the ink as the web passes from the first side

printing unit, and the other for use in drying the ink as the web passes from the second side printing unit. These drying units may be carried by the main frame in a fixed position by any suitable means, not shown herein. One or both of these ink drying units may be used.

An oil offset mechanism 26 of well known or approved form may be used for contacting and keeping clean the surface of the impression cylinder 10 of the second side printing unit; said oil offset mechanism being movably supported in the main frame in any suitable manner, not shown, so that the oil offset mechanism may be moved into and out of the path of the printing units as the auxiliary frame is swung to bring a pair of printing units of the desired size into printing position.

The pivotally mounted auxiliary frame may be locked against movement when a selected pair of printing units is brought into printing position; as, for instance, by means of laterally disposed movable pins 27, 28 passing through the main side frames 1, 2 into screw-threaded engagement with the holes 29, 30 in the side plates 4, 5 respectively, of the auxiliary frame.

The ink stand 21 may be locked to the auxiliary frame when the inking mechanisms 22, 23 are moved into position to coact with the printing units which have been brought into printing position. The locking means are here shown as bolts 31 removably engaging lugs 32, 33 respectively, on each side of the ink stand and auxiliary frame.

The usual eccentric mountings 34 may be provided for all of the form cylinders so that either of the selected pair of printing units may be silenced if one side only of the web is to be printed.

From the above description it will be seen that in operation the desired sized pair of printing units is swung into printing position by the operation of the worm 13 and its gear 12. The auxiliary frame may then be locked to the main frame. The ink stand may then be locked to the auxiliary frame. The web may then be passed from its supply roll through the first side printing unit where the web is printed on one side. Then the web may be passed through the first drying unit and from thence through the second printing unit where it is perfected on the second side. The web may then be passed through the second drying unit and from thence to any desired delivery point.

When it is desired to use another sized pair of printing units the auxiliary frame is unlocked; the ink stand is unlocked and moved back out of the path of the auxiliary frame; and the oil offset mechanism is moved back out of the path of the auxiliary frame. The auxiliary frame may then be swung to bring the desired sized pair of printing units into printing position and there locked. The ink stand and the oil offset mechanism may then be moved back into their operative positions and the ink stand locked therein.

From the above description it will be understood that any one printing unit or pair of printing units may be used as desired. It will also be understood that any well known or approved quick drying ink may be used and that any well known or approved ink drying devices may be used.

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 embodiment herein shown and described, but

What I claim is:

1. In a rotary web printing press, a main frame, an auxiliary frame, a plurality of different sized printing units carried thereby, each of said printing units comprising impression and form cylinders, and means for moving the auxiliary frame to bring a selected printing unit into printing position.

2. In a rotary web printing press, a main frame, an auxiliary frame, a plurality of different sized pairs of printing units carried thereby, and means for moving the auxiliary frame to bring a selected pair of printing units into printing position.

3. In a rotary web perfecting printing press, a main frame, an auxiliary frame, a plurality of different sized pairs of first and second side printing units carried thereby, and means for moving the auxiliary frame to bring a selected pair of printing units into printing position.

4. In a rotary web printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized printing units carried by the auxiliary frame concentric with its axis, each of said printing units comprising impression and form cylinders, and means for swinging the auxiliary frame to bring a selected printing unit into printing position.

5. In a rotary web printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of printing units carried by the auxiliary frame concentric with its axis, and means for swinging the auxiliary frame to bring a selected pair of printing units into printing position.

6. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, and means for swinging the auxiliary frame to bring a selected pair of printing units into printing position.

7. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, and means for locking the auxiliary frame.

8. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, and inking mechanisms movable into cooperation with the selected pair of printing units.

9. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, inking mechanisms movable into cooperation with the selected pair of printing units, and means for locking the inking mechanisms to the auxiliary frame.

10. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mount-

ed therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, inking mechanisms movable into cooperation with the selected pair of printing units, and means for drying the ink after the web leaves the first side printing unit.

11. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, inking mechanisms movable into cooperation with the selected pair of printing units, and means for drying the ink after the web leaves both the first and second side printing units.

12. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, means for locking the auxiliary frame, inking mechanisms, and a stand therefor movable to

bring the inking mechanisms into cooperation with the printing units.

13. In a rotary web perfecting printing press, a main frame, an auxiliary frame pivotally mounted therein, a plurality of different sized pairs of first and second side printing units carried by the auxiliary frame concentric with its axis, means for swinging the auxiliary frame to bring a selected pair of printing units into printing position, means for locking the auxiliary frame, inking mechanisms, and a stand therefor movable to bring the inking mechanisms into cooperation with the printing units, and means for locking the ink stand to the auxiliary frame.

14. In a rotary web printing press, a drive, a main frame, an auxiliary frame, a plurality of different sized printing units carried thereby, each of said printing units comprising impression and form cylinders, and means for moving the auxiliary frame to bring a selected printing unit into printing position and into operative connection with said drive.

15. In a rotary web printing press, a drive, a main frame, an auxiliary frame, a plurality of different sized pairs of printing units carried thereby, and means for moving the auxiliary frame to bring a selected printing unit into printing position and into operative connection with said drive.

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