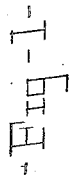


1,025,894.

2 SHEETS—SHEET 1.



ATTEST
J. M. Maguire.
C. F. Bryan.

INVENTOR

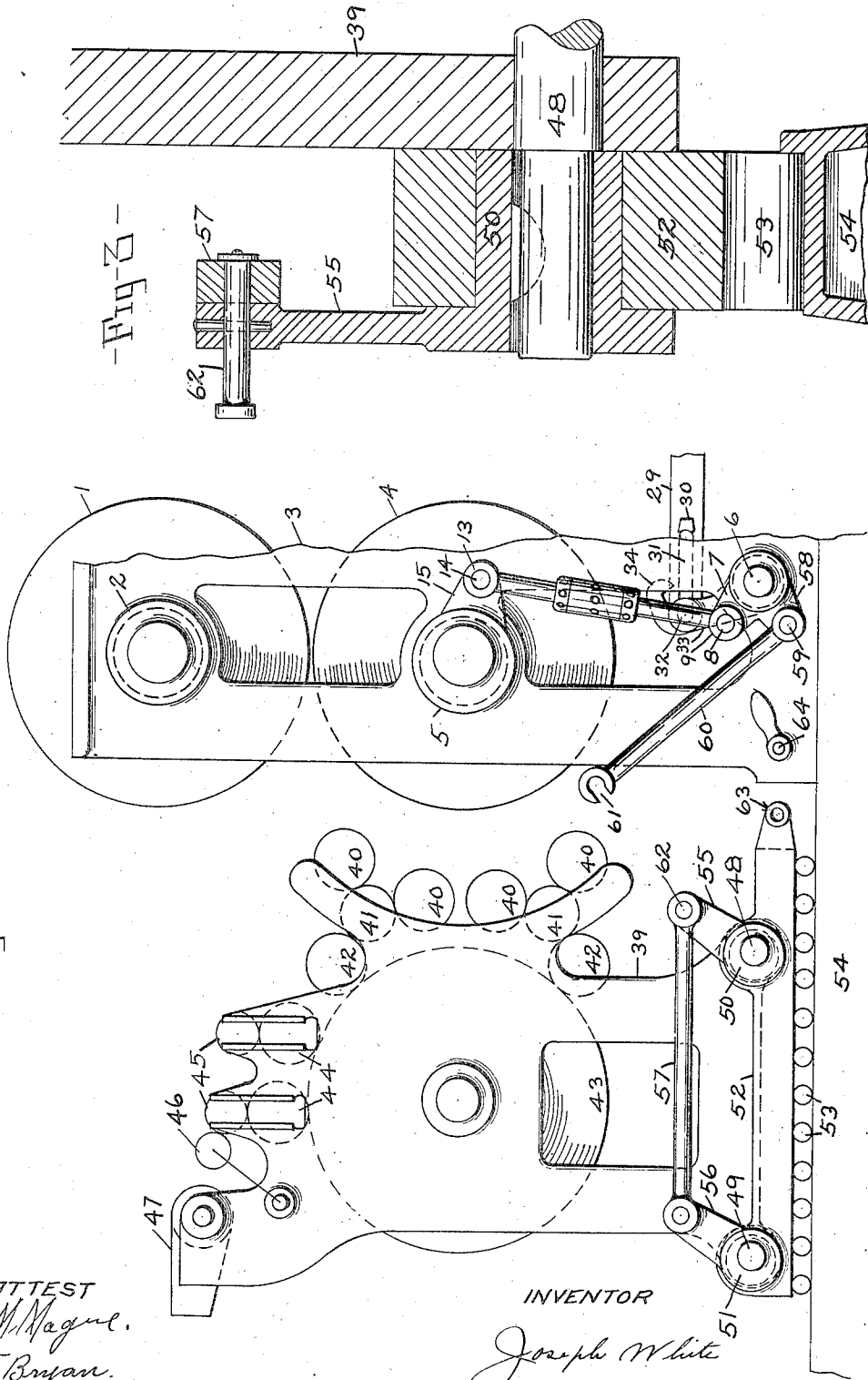
Joseph White

J. WHITE.
 PRINTING PRESS.
 APPLICATION FILED AUG. 9, 1910.

1,025,894.

Patented May 7, 1912.

2 SHEETS-SHEET 2.



ATTEST
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UNITED STATES PATENT OFFICE.

JOSEPH WHITE, OF BEECHWOOD HEIGHTS, NEW JERSEY, ASSIGNOR TO HALL PRINTING PRESS COMPANY, OF DUNELLEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PRINTING-PRESS.

1,025,894.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed August 9, 1910. Serial No. 576,418.

To all whom it may concern:

Be it known that I, JOSEPH WHITE, a citizen of the United States, residing at Beechwood Heights, Middlesex county, State of New Jersey, (whose post-office address is Bound Brook,) have invented certain new and useful Improvements Relating to Printing-Presses, which are described in the following specification and illustrated in the accompanying drawings, forming part of the same.

This invention relates to that type of press which includes a form carrying cylinder and an impression cylinder wherein these printing cylinders make a plurality of revolutions to one impression; the impression cylinder taking the sheet on one revolution and delivering it on another revolution, and the plate cylinder in its revolutions causing the form to pass over the ink rollers twice for the purpose of inking the same. In this type of machine during one revolution the sheet is presented to the cylinder surface and an impression taken thereon in which case the cylinders are in printing relation with one another, and in the next revolution the sheet is delivered; and the impression surface passes the form surface with the printing cylinders slightly apart. This makes it necessary to cause one or both of the cylinders to be moved into and out of impression relation once for each printing operation. It is usual to move the impression cylinder, but this has its disadvantages due to the relation of the parts composing the gripper-taking mechanism being altered relatively and causing inaccuracies and difficulty in registering the sheets to be printed.

I have arranged this machine so that the plate cylinder is moved instead of the impression cylinder, and in order to keep the inking rollers in proper relation to the form, I have arranged the mechanism so that the form rollers will remain fixed relatively to the form cylinder as it is caused to move to and from the impression cylinder. By this arrangement inking of the form is properly accomplished and at the same time the impression cylinder can be located in fixed bearings, thus admitting of greater accuracy of register than if placed in movable bearings.

The machine embodying these improve-

ments is illustrated in the accompanying drawings of which—

Figure 1 is a front elevation showing the parts in proper printing relation. Those parts of the machine necessary to illustrate this invention being shown in detail, and other parts being diagrammatically shown. Fig. 2 is a front elevation of the same machine, showing the cylinders tripped and the form roller carriage moved away from the form cylinder. Fig. 3 is a sectional elevation showing the roller carriage moving mechanism.

Impression cylinder 1 is journaled in the bearings 2 which are mounted in the side frames 3 of the machine. These bearings are preferably fixed and non-adjustable. The form cylinder 4 is mounted in the side frames 3 of the machine in movable bearings which may be of any usual or well-known type, but are preferably the eccentric bearings 5, which are rocked to raise and lower the plate cylinder to and from the impression cylinder. The mechanism for moving these boxes may be varied widely, but as illustrated it preferably consists of a rock-shaft 6 upon either end of which are fastened rock levers 7, upon which is fastened the stud 8 which passes through the eye 9 on the end of the connecting rod 10, said connecting rod having a turn-buckle 11 (which has the usual right and left handed screw), the other end of which is fastened in the connection 12, on which is formed the eye 13 which moves on the stud 14, which is fastened on the arms 15, which are formed on the eccentric journal boxes 5, which move the plate cylinder.

The turn-buckle herein mentioned is for the purpose of regulating the amount of printing pressure between the two cylinders. This method is preferably employed, although pressure-controlling means might otherwise be devised without departing from the principles of the invention.

The driving mechanism of the machine consists of the shaft 16 to which is applied the usual pulley (not shown), and upon this shaft is pinion 17 meshing with an intermediate gear 18 mounted on the stud 19 in the rear side frame of the machine. This gear 18 meshes with a gear 20 fastened to the impression cylinder, and the gear 20

meshes with a gear 21 fastened to the form cylinder. The gear 18 has a gear 22 fastened to it which meshes with a gear 23 which is fastened to the cam shaft of the machine. These gears are so proportioned that the cam shaft makes one revolution to two revolutions of the printing cylinders.

The manner in which the rockshaft is operated may be varied widely; but as illustrated consists of a cam 24 which actuates a lever 25 which is pivoted on the stud 26 mounted in the side frame, one end of said lever holding the roller 27 which is held in the cam path, and the other end has a pin 28 upon which is pivoted a connection 29 which has formed upon it a lug 30, and in it a slot 31, through which is placed a pin 32 which is mounted in lever 33 which is fastened on the rockshaft 7. This pin 32 also has mounted on it a hook 36 which normally passes over the lug 30. As the connection 29 is reciprocated to and fro, the hook 36, engaging the lug 30 causes the lever 33 to be oscillated, which rocks the shaft 6 and thereby moves the connections to the eccentric cylinder boxes, causing the cylinder to rise and fall into and out of impression.

The machine is provided with a feed board 35 upon which the sheets are placed. These sheets are presented to grippers 36 in the impression cylinder and on the first revolution of the cylinder the sheet is taken from the feed board and at the contact point of the two cylinders receives its impression. During this revolution the form cylinder is raised and in printing contact with the impression cylinder. When the grippers pass the delivery point they open up and allow the sheet to pass over the strippers 37 on to the delivery tapes 38. In the next revolution of the cylinders before the leading end of the impression cylinder reaches the impression point, the plate cylinder by means of the mechanism previously described, has been moved out of contact with the impression cylinder, and the impression surface passes the form surface out of contact and therefore does not receive an impression during this revolution of the cylinder.

It is desirable to keep the form rollers in contact with the plate cylinder during the entire operation of printing. This is accomplished by moving the ink roller supports so as to keep a relatively fixed distance between the form cylinder and the ink rollers. These rollers may be carried on one or more carriers and receive the required motion in various ways, but they are preferably mounted upon a pair of ink frames which in addition to holding the form rollers 40 also hold the distributing rollers and mechanism, which is of any usual or well-known type, which as shown,

consists of form distributors 41, feed rollers 42, distributing cylinder 43, cylinder riders 44 and 45, ductor roller 46, and ink fountain 47.

The motion imparted to the form rollers keeping them in relatively fixed relation to the plate cylinder while it moves to and from the impression cylinder, is as follows: The frames 39 are supported on a pair of shafts 48 and 49 which pass through holes formed in the frames. These shafts 48 and 49 are fastened to eccentric sleeves, said sleeves being duplicated on the other side of the machine. These sleeves are in turn mounted on carriers 52 which are supported on a bed of rollers 53, said bed of rollers in turn resting on the base 54 of the machine.

On the front side of the machine as shown, the eccentric sleeves have arms 55 and 56 formed on them, which are joined together by means of the connection 57. The rock lever 7 on the front side of the machine has an arm 58 formed on it to which is fastened a stud 59 in which is pivoted a connection 60 which has a hook 61 formed on its other end, which normally engages a pin 62 fastened in the arm 55; by means of the parts previously described it can be seen that when the rockshaft 6 is moved, it will operate the eccentric boxes of the form cylinder, causing the cylinder to rise and lower, and will also operate the shafts 48 and 49 of the roller carrier, causing the form rollers to rise and lower.

The eccentric boxes 15 and the eccentric sleeves 55 and 56 have the same amount of eccentricity. The cylinder box arms 15 and the ink frame carrier eccentric sleeve arms 55 and 56 are of the same length, and the angular relation of the eccentric centers to the shaft centers being made alike, it can be seen that the axis of the plate cylinder and the axes of the form rollers will move through arcs of the same length and parallel to each other and thereby maintain their relative distances, thus keeping the form rollers in proper contact with the form.

As is well known, it is necessary to throw off the impression at times, one of the objects being to ink the form before printing operation begins. This is accomplished by disconnecting the rockshaft from its actuating mechanism so that the movement imparted by the cam will be inoperative upon it. By means of manual connections not shown, the hook 36 is raised out of the path of the lug 30 so that when the connection 29 oscillates forward, instead of moving the rockshaft, it slides upon the pin 32, leaving the rockshaft and all its connections stationary.

In order to remove the rollers from the machine for the purpose of cleaning them or for other purposes, the carriers 52 are mounted on the bed of rollers 53, and when

these carriers are disconnected from the frame by removing the pin 64 from the eyes 63 formed on the carriers, and lifting the hook 61 off the pin 62, the ink frame can be pushed back away from the form; the position of the press at such time being as shown in Fig. 2.

What I claim is:

1. In a printing machine, the combination of an impression cylinder, a form carrying cylinder, an ink roller adjacent to the form cylinder, a support for said ink roller; means for moving said form cylinder into and out of printing relation with the impression cylinder during each printing operation, means for moving said ink roller support so as to maintain a relatively fixed axial relation between the form cylinder and the ink roller; and actuating means for operating the cylinder and the ink-roller-support-moving means so arranged that said actuating means may be disconnected for the purpose of maintaining the form cylinder in tripped position and the ink form roller in inking relation to the form.
2. In a printing machine, the combination of an impression cylinder, a form carrying

cylinder, an ink roller adjacent to the form cylinder, a frame for said ink roller, eccentric supports for the form cylinder and eccentric supports for the ink frame so arranged as to move the form cylinder and the ink roller but maintain a relatively fixed axial relation between them.

3. In a printing machine, the combination of a form cylinder, a pair of eccentric bearings for said form cylinder, an ink frame, an ink frame carriage, ink rollers for said ink frame, eccentric bearings mounted in said carriage, a pair of shafts for supporting the ink frames fastened to said eccentrics, means for rocking all the said eccentric bearings for the purpose of moving the form cylinder and the form rollers, and maintaining an axial fixed relation to each other.

In witness whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH WHITE.

Witnesses:

LEWIS R. SCHOFIELD,
PHILIP W. HALL.