July 27, 1926. 1,593,563

J. R. BLAINE

PRINTING PRESS FEEDER MEANS

Filed May 3, 1924 2 Sheets-Sheet 1

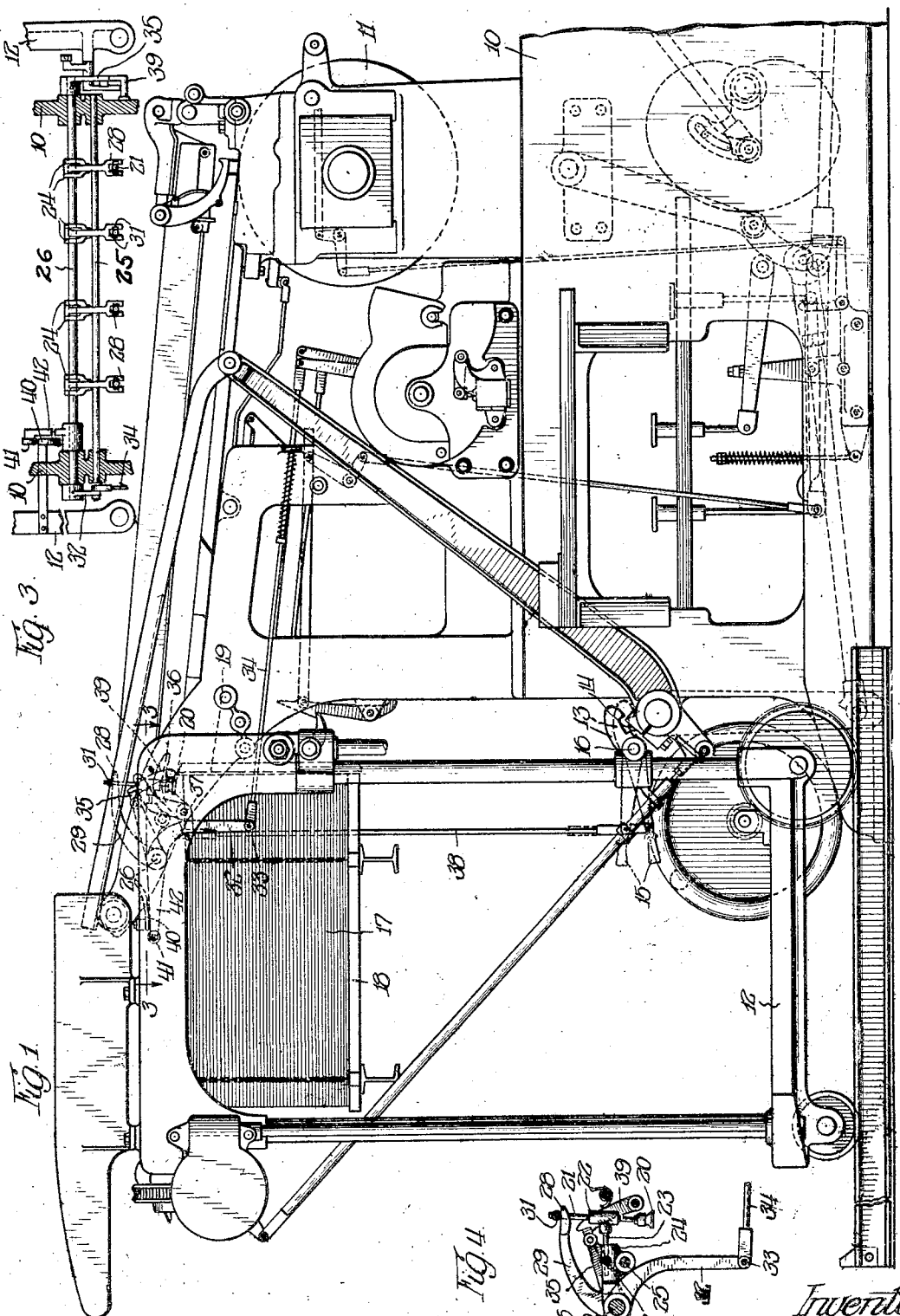


Fig. 3.

Fig. 1.

Fig. 4.

Witness:
R. Burkhardt.

Inventor:
Joseph R. Blaine,
By Wilkinson, Huxley, Byron & Knight

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Filed May 3, 1924 2 Sheets-Sheet 2

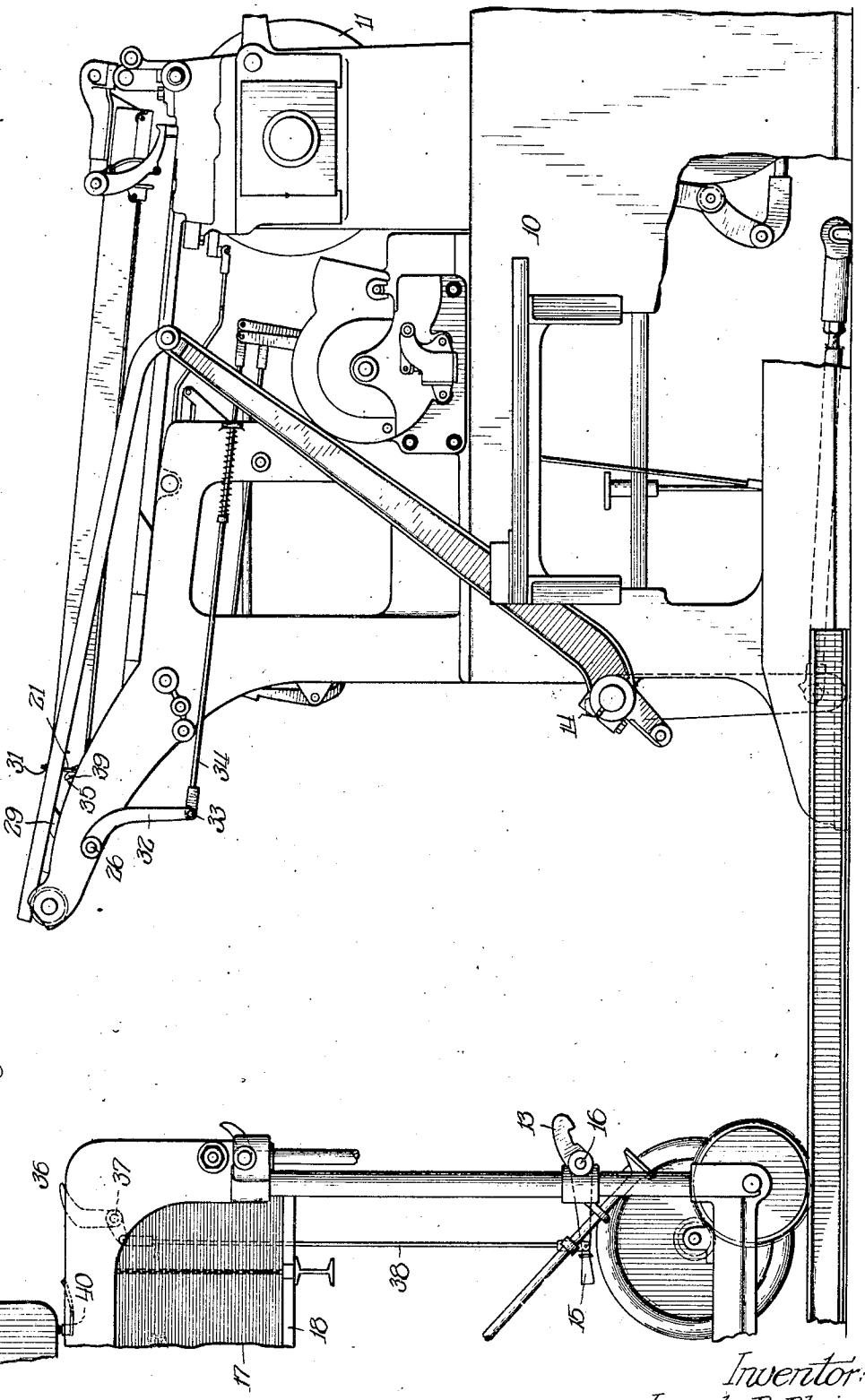


Fig. 2.

Witness:
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UNITED STATES PATENT OFFICE.

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PRINTING-PRESS FEEDER MEANS.

Application filed May 3, 1924. Serial No. 710,756.

This invention relates to a printing press and more particularly to sheet separator mechanism and control means therefor.

The invention is illustrated in connection with what is known as a flat bed press in which the bed reciprocates in a horizontal plane and cooperates with an impression cylinder, the feed pile being carried in a frame which is separably connected to the main frame of the press. The feeder pile frame is separably connected from the main frame and movable away from said main frame for the purpose of giving access to the bed of the press, particularly to facilitate the operation of "make ready."

The feeder pile frame is provided with front guide means for the sheet material in the pile and during the operation of the sheet separators the latter are caused to move downwardly behind said front guide means. If, when the separators are down the feeder pile frame were moved rearwardly for the purpose of separating it from the main frame, the front guide means would pass into engagement with the separators and damage same.

Accordingly, one object of the present invention is to control the position of the separators more particularly during the movement of the feeder pile frame away from and toward the main frame of the press to prevent any damage being done to said separators.

Another object of the invention is to provide separator mechanism and control means therefor adapted to meet the various requirements under service conditions.

These and other objects are accomplished by means of the arrangement disclosed on the accompanying sheets of drawings, in which—

Figure 1 is a fragmentary side elevation of a printing press embodying my invention and showing the feeder pile frame in its normal operative association with respect to the main frame of the press;

Figure 2 is a similar side elevation of the press, but showing the feeder pile frame moved out of operative association with the main frame of the press for the purpose of facilitating the "make ready" operation;

Figure 3 is a fragmentary top plan view, parts being in section, and taken in the plane of line 3—3 of Figure 1, showing various cooperative elements including the separator parts and control mechanism therefor; and

Figure 4 is a detail fragmentary side elevation of the parts shown in Figure 3.

The various novel features of the invention will be apparent from the following description and drawings and will be particularly pointed out in the appended claims.

Referring to the figures of the drawings, it will be noted that the invention is illustrated in connection with a printing press including a main frame 10, in which an impression cylinder 11 is rotatably mounted, which impression cylinder cooperates with type or plates carried on the horizontal reciprocatory bed (not shown). A feeder pile frame 12 may be moved away from and toward the main press frame 10 by any suitable mechanism, the feeder pile frame normally being locked to the main frame by any suitable mechanism including one or more hooks 13, preferably one at each side of the press, which are adapted to latch over tongues or projections 14 carried on the main frame 10. Preparatory to moving the feeder pile frame away from the main frame it is merely necessary to depress a hand lever 15 which is connected to a rock shaft 16, to which the hook or hooks 13 are secured, whereupon the latter are lifted out of engagement with the projections 14.

Movably mounted in the feeder pile frame is a pile of sheet material 17 which is suitably supported upon a table 18 which may be raised step by step in any suitable manner as the sheet material is fed therefrom preparatory to receiving an impression. The pile of sheet material is guided in its vertical movement by any suitably supported front guide means 19 which, in this instance, comprises a plurality of vertically extending bars, only one of which is shown. The sheet material is separated sheet by sheet from the pile and raised slightly therefrom by a plurality of separators 20 each mounted upon the lower end of one of a plurality of rods 21 slidably and guidedly carried in a barrel member 22 having a shank 23 horizontally adjustably mounted in a bracket 24 carried and supported by supports or shafts 25 and 26. It is found that sheet material of different weights, quality, etc., are separated best under different conditions, including the relative po-

sition of the separators with respect to the front edge of the sheet. Accordingly, the horizontal adjustment of the separators accomplishes this purpose. When the separators are adjusted to the proper positions under the particular conditions imposed, each is secured in its adjusted position by any suitable means, such as a set screw 27.

Referring further to the slidably mounted rods 21, it will be noted that the upper portion of each of said rods passes through a forked portion 28 of an associated arm 29, each of which arms 29 is secured to a cross shaft 26. The upper end of each rod is provided with rollers 31, which ride upon the upper surface of the forked portion 28 of each arm 29 to facilitate relative movement which may be occasioned between said rods 21 and the arms 29 during an up and down movement of the separators. Normally these separators 20 are reciprocated vertically by a rocking of shaft 26 which is automatically rocked through mechanism including an arm 32 secured to one end of the shaft, said arm in turn being pivotally connected at 33 to any suitable operating rod 34.

As mentioned hereinabove, during the operation of the separators 20, the latter are caused to move behind the front sheet guide means 19 and below and within the horizontal path of movement of the top of said guide means when the latter is moved rearwardly with the feeder pile frame 12 away from the main frame 10. It is apparent that if the separators 20 are permitted to remain in such position as just described, during the rearward movement of the feeder pile frame 12, that the guide means 19 will pass into engagement with said separators 20 and probably cause damage to the latter. In order to prevent damage being done to said separators and to insure safety of said separators, means is provided for automatically raising said separators 20 to a safety position out of the path of rearward horizontal movement of said front guide means.

The means for thus raising the separators 20 out of the path of movement of said front guide means 19 includes an arm 35 secured to the shaft 26, which arm is adapted to be rocked upwardly for causing the shaft 26 to rotate a given amount in a counterclockwise direction, as viewed in Figures 1, 2 and 4, for lifting the separators through the arms 29, which are also secured to the shaft 26. The arm 35 is actuated by a cam 36 formed on one arm of a bell crank lever 37, the other arm of which is pivotally connected to a rod 38 in turn pivotally connected to the lever 15 which controls the unlocking movement of the latch or latches 13 from the associated locking projections 14. Accordingly, when the lever 15 is depressed for raising the latches 13 out of locking association with the projections 14 preparatory to moving the feeder pile frame 12 away from the main frame 10, the separators 20, through the connections hereinabove described, automatically are raised out of the path of horizontal movement of the front pile guide means 19, which is mounted on and moves with the feeder pile frame 12. After the separators 20 are thus raised to a safe position through the arm 35 it becomes essential that said separators should be maintained in said elevated position. This is done by a spring pressed latch 39 which passes under the arm 35 for holding the latter and, accordingly, the separators 20 in elevated position.

However, it is conceivable that the latch 39 might possibly become detached from the arm 35, as for example, if it is desired to adjust the horizontal positions of the separators 20. In such event it becomes important to again raise the separators 20 out of the path of horizontal movement of the front pile guide means 19 before said guide means with the feeder pile frame 12 is moved into its normal position with respect to the main frame 10. To accomplish this result, a cam 40 is provided which is secured to the feeder pile frame 12. This cam cooperates with a roller 41 mounted in the rear end of an arm 42 also secured to the shaft 26. Accordingly, as viewed in Figures 1 and 2, it will be apparent that as the feeder pile frame 12 is moved from its position away from the main frame, as shown in Figure 2, to its normal position in operative association with the main frame 10 of the press, as shown in Figure 1, the roller 41 will ride on the cam 40 in a manner to depress the arm 42 and cause the separators 20 to be raised out of the path of horizontal movement of the front guide means 19.

It will be noted that the shaft 26 is always rotated a small amount in a counterclockwise direction, as viewed in the figures of the drawing, for raising the separators 20 whether said separators 20 are raised automatically through the arm 32 during the normal operation of the press, or automatically as the feeder pile frame 12 is unlocked from the main frame 10, or automatically when said feeder pile frame 12 is moved from the position shown in Figure 2, into its position of operative association with the main frame shown in Figure 1.

It is my intention to cover all modifications of the invention falling within the spirit and scope of the following claims.

I claim:

1. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame and having a front guide for sheets in the pile, a sheet separator which during its operation

moves behind said guide and in the path of movement of said guide, and means for insuring movement of said separator from the path of movement of said guide when the latter with said feeder pile frame is moved.

2. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame and having a guide for sheets in the pile, a sheet separator carried by said main frame and which, during its operation moves into a position with respect to said guide which lies in a path of movement of said guide, and means for insuring movement of said separator from the path of movement of said guide before said feeder pile frame is moved to a position in which the separator might be damaged.

3. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame, a sheet separator carried by said main frame which, during its operation, moves into the path of movement of a part of said feeder pile frame, and means for insuring movement of said separator out of the path of movement of any of the parts of said feeder pile frame preparatory to a movement of the latter.

4. In a printing press, the combination of a movably mounted feeder pile frame, a guide for sheets in the pile, a sheet separator which, during its operation, moves into the path of movement of said guide, and means for insuring movement of said separator from the path of movement of said guide before the latter is moved.

5. In a printing press, the combination of a movably mounted feeder pile frame, a sheet separator which during its operation moves into a position included in the path of movement of a part carried by said frame, and means for positively moving said separator out of the path of movement of said part to prevent damage to said separator.

6. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame, lock means for locking said frames together, a sheet separator carried by said main frame, and means incident to the operation of said locking means for controlling the position of said separator.

7. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame, a locking member for locking said frames together, and a sheet separator carried by said main frame operatively connected to said locking member whereby said separator is automatically moved into a predetermined position when said locking member is moved.

8. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame, a locking member by means of which said frames are locked together, and a sheet separator carried by said main frame operatively connected to said locking member whereby said separator is moved into a safety position upon a predetermined movement of said locking member.

9. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame, a locking member by means of which said frames are locked together, a sheet separator carried by said main frame operatively connected to said locking member whereby said separator is moved into a safety position upon a predetermined movement of said locking member, and means for holding said separator in said safety position.

10. In a printing press, the combination of a main frame, a feeder pile frame movable away from and toward said main frame, a locking member by means of which said frames are locked together, a sheet separator operatively connected to said locking member whereby said separator is moved into a safety position upon a predetermined movement of said locking member, means for holding said separator in said safety position, and means for returning said separator to its safety position if it is moved therefrom.

11. In a printing press, the combination of a main frame, a feeder pile frame movable away from and towards said main frame, a locking member for locking said frames together, a sheet separator which during its operation moves into the path of movement of a part carried by said feeder pile frame, said separator being operatively connected to said locking member whereby said separator is moved into a safety position when said locking member is given an unlocking movement preparatory to a movement of said feeder pile frame away from the main frame, and means for returning said separator to said safety position upon movement of said feeder pile frame towards said main frame if said separator in the meantime has moved from its safety position.

12. In a printing press, the combination of a sheet separator, a shaft through which said sheet separator is moved, means connected to said shaft for actuating same during the normal operation of the machine, and means connected to said shaft for moving said separator into a safety position under certain predetermined conditions.

13. In a printing press, the combination of a sheet separator, a shaft through which said sheet separator is moved, means connected to said shaft for actuating same during the normal operation of the machine,

means connected to said shaft for moving said separator into a safety position under certain predetermined conditions, and other means for moving said separator into its safety position if it has been moved therefrom.

14. In a printing press, a sheet separator, a barrel member through which the stem of said separator reciprocates, a support, and a bracket mounted on said support and operatively connected to said barrel portion, said barrel portion and bracket being adjustable with respect to each other for adjusting the position of said separator.

Signed at Chicago, Illinois, this 8th day of April, 1924.

JOSEPH R. BLAINE.