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J. J. MOSHER.

SHOO-FLY FOR PRINTING PRESSES.

APPLICATION FILED JAN. 29, 1903.

NO MODEL.

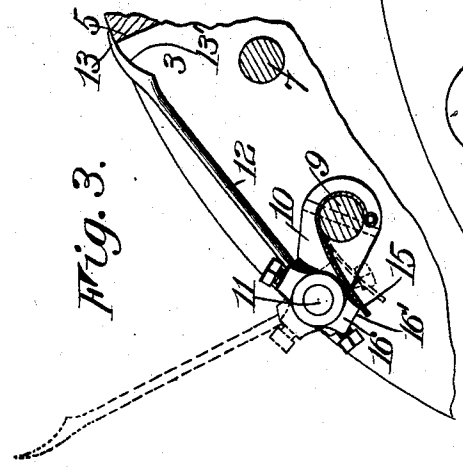


Fig. 3.

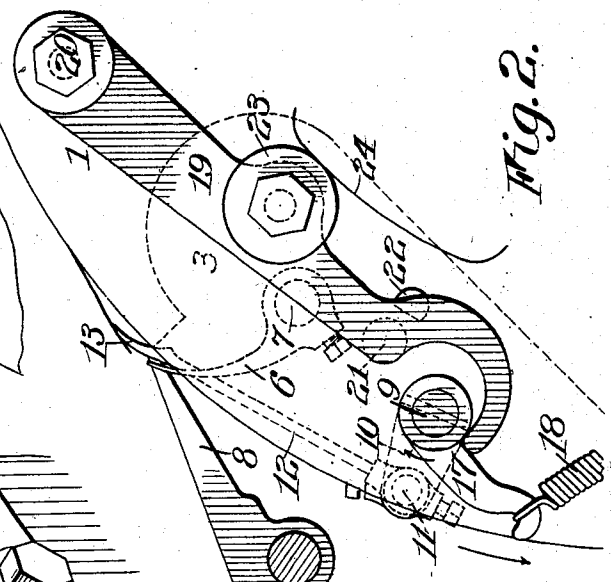


Fig. 2.

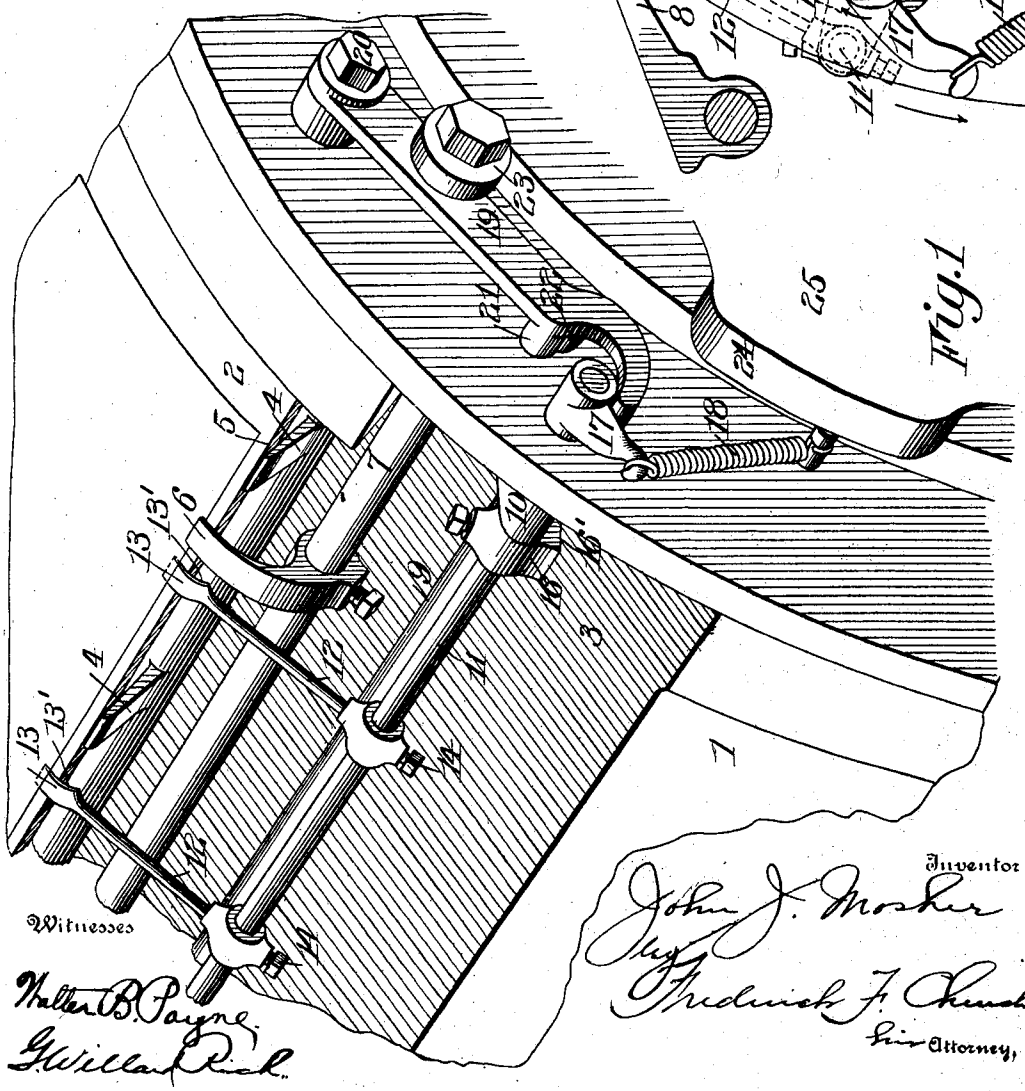


Fig. 1.

Witnesses

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No. 746,124. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

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SHOO-FLY FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 746,124, dated December 8, 1903.

Application filed January 29, 1903. Serial No. 141,005. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. MOSHER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Shoo-Flys for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to printing-presses or other machines having a movable support or impression-surface adapted to carry sheets of material, such as paper for printing or similar operations; and it has for its object to provide a device, commonly known as a "shoo-fly," for lifting or elevating the forward or advancing edge of a sheet, so that its passage onto the fly, stripper-fingers, or other sheet-delivering mechanism is facilitated.

My invention has for its further object to provide a mechanism adapted to be mounted upon the support or impression-surface and operated relatively thereto by the movement of the latter, whereby sheets with either narrow or wide margins may be successfully delivered.

To these and other ends the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings, Figure 1 is a perspective view showing a portion of the cylinder of a printing-press. Fig. 2 is an end elevation thereof, and Fig. 3 is a detail view.

Similar reference-numerals in the three figures indicate similar parts.

In illustrating my invention I have shown it applied to a printing-press embodying a rotary cylinder 1, having the impression-surface or support 2, on which is carried the sheet of paper during the printing operation. At one side of the cylinder is provided a recess 3, and arranged therein are the usual blanket-clamps 4, engaging with the edge 5 of the support to secure the blanket in the usual manner, and also arranged in this recess are the grippers 6, attached to the shaft 7 and operated in the usual or any preferred manner to engage the forward edge of a sheet of paper to hold it upon the cylinder. The sheets are removed from the latter by the usual strippers or corresponding devices, (indicated by 8,) which engage beneath the edge of the sheet when it is elevated.

In the printing operation considerable difficulty has been experienced in elevating or moving the forward end of the sheet away from the cylinder after it is released by the grippers to cause it to be engaged by the strippers and to run off onto the fly or other sheet-delivering mechanism. This is especially true when the sheets are being printed with narrow margins, as the fingers upon the shoo-fly lift out from beneath the sheet, allowing it to drop back and follow the cylinder instead of passing out on the stripper-fingers. To remedy this difficulty, I provide elevating devices which are adapted not only to move away from the support, but to move back under the sheet thereon. Mechanism for accomplishing this result may be constructed in various ways to accommodate it to the particular apparatus upon which it is to be employed, and the construction which I have illustrated in the drawings is one applicable to a two-revolution cylinder printing-press, as before mentioned. Located in the recess 3 is a rock-shaft 9, journaled at the ends of the cylinder and having arranged thereon short outwardly-extending crank-arms 10, in which is rotatably supported a shaft 11, carrying the shoo-fly fingers 12, the ends of which are preferably flattened and made thin, as indicated at 13. The fingers 11 are adapted to be moved toward the impression-surface 2, as will be further described, and I also provide means for causing them to be moved outward relatively thereto. The latter movement may be conveniently accomplished by providing the forward ends of the fingers with the curved lower sides 13′, forming cam-surfaces, which engage with the edge of the support 5 to raise the fingers, as will be understood. As the several fingers are rigidly attached to the shaft 11 by means of the set-screws 14, the cam-surfaces 13′ might be dispensed with, except upon those

fingers at the ends of the shafts, as the operation of one will cause the shaft to be rotated and the other fingers to be raised. This operation, however, may be accomplished in a different manner; but the one I have shown is simple, and as all of the fingers are made alike they may be adjusted at any desired point on the shaft 11, and the cam-surface being on the fingers and engaging the edge of the support the effect of their operation will be the same, irrespective of the thickness of the blanket. The fly-fingers are held in the normal position, with their outer ends 13 in engagement with the support, by means of a leaf-spring 15, which engages a lug or projection 16 on a hub secured to the shaft 11. In order to support the fingers out of the normal or operative position, the lug 16 is provided with a flat face 16′, which engages with the spring, as shown in dotted lines in Fig. 3, enabling the operator to obtain convenient access to the blanket-clamps 4 or the grippers 6. At one end of the shaft 9 is provided an operating-lever 17, actuated in one direction by a retractile spring 18, which holds the lever in engagement with the lever 19, pivoted to the cylinder at 20, the movement of said lever being limited in one direction by a lug or projection 21 thereon engaging a pin or stud 22 on the cylinder, as shown in dotted lines in Fig. 2, and the end of the lever extending beyond the shaft 8 is curved, as shown, to permit its free outward movement. The sheet-elevating devices or shoo-fly fingers are operated by the movement of the support or cylinder 1 by means of a roller 23, arranged on the lever 19, adapted to engage a relatively stationary abutment or cam 24, arranged upon the frame of the machine, (indicated by 25.) The construction of the printing-press whereby a relative movement of the cylinder and cam is effected has not been shown, as this is accomplished in some manner in all two-revolution presses either by a raising and lowering of the cylinder or by a movement of the coöperating parts whereby the various devices on the cylinder are only operated upon alternate revolutions thereof.

The operation of the device will be readily understood. The sheets to be printed or otherwise operated upon are fed upon the support and engaged by the grippers 6 in the usual manner, with its forward edge extending slightly over the ends 13 of the fingers 12. The cylinder being revolved in the direction indicated by the arrow, Fig. 2, until after the printing operation has been completed, it is brought to the point at which the sheet is to be delivered, when the gripper-fingers 6 are released and the roller 23 engages the cam 24, elevating the arm 19 and rocking the shaft 9. This movement of the shaft in the direction indicated by the arrow causes the fingers 12 to be moved backwardly beneath the sheet, when the cam-surface 13′ thereon, engaging the edge 5 of the cylinder, will cause the ends of the fingers to rise or move away from the support, as indicated in dotted lines in Fig. 2, so that the sheet must positively pass out upon the stripper-fingers or other delivery mechanism. In the mechanism which I have shown and described, the parts being located at one side of the impression-surface or forward of the advancing edge of the sheet, they do not interfere with the surface, and they may therefore be employed in printing either with wide or narrow margins. As the fingers are moved toward the sheet they may also be elevated a considerable distance above the support or surface of the cylinder, thus facilitating the stripping operation. While I have described the shoo-fly as applied particularly to a two-revolution cylinder-press, it will be understood that it is equally applicable to other forms of printing-presses and to all machines for handling or operating upon sheet material for whatever purpose.

I claim as my invention—

1. The combination with a movable support adapted to carry sheet material, of a finger arranged forward of the advancing edge of the sheet and means for operating it rearwardly relatively to the direction of movement of the support, to elevate the edge of the sheet.

2. The combination with a movable device adapted to carry sheet material, of a finger arranged in advance of said sheet and having the end engaging beneath it, and means for elevating the finger and operating it rearwardly relatively to the movement of said device to raise the sheet thereon.

3. The combination with a device adapted to carry sheet material embodying a movable support, of a finger mounted on said device in front of the support and means for moving the finger upward and rearwardly relatively to the support.

4. In a printing-press, the combination with a movable cylinder having an impression-surface and fingers on the cylinder arranged at one side of said surface, of means operating to move the fingers in a direction opposite to the movement of the cylinder and outwardly therefrom.

5. In a printing-press, the combination with a rotary cylinder having an impression-surface and a rock-shaft arranged at one side thereof, of fingers having the end engaging over the edge of the impression-surface and attached to the shaft, means for operating the shaft to move the fingers rearwardly relatively to the movement of said device to raise the sheet thereon and a cam for raising the fingers.

6. In a printing-press, the combination with a rotary cylinder having the impression-surface and a rock-shaft, of a fly-finger secured thereto and provided with the end extending over the impression-surface and provided with a cam coöperating therewith and means for operating the shaft.

7. In a printing-press, the combination with a frame, a cylinder thereon having the im-

pression-surface and a rock-shaft on the cylinder provided with a crank-arm, of a fly-finger attached to the latter and extending over the impression-surface, a cam on the frame, a lever engaging therewith to rock the shaft and means for simultaneously elevating the finger.

8. In a printing-press, the combination with a frame, a cylinder thereon having a blanket-support and a rock-shaft on the cylinder provided with a crank-arm, of a fly-finger journaled thereon having the end extending over the support and provided with a cam-surface adapted to coöperate with the support to raise the end of the finger, a cam on the frame and a lever-arm coöperating therewith to operate the rock-shaft.

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