Aug. 7, 1945. G. BABICZ 2,381,713

PAPER ELEVATING DEVICE FOR PRINTING MACHINES

Filed April 3, 1944

Fig. 1.

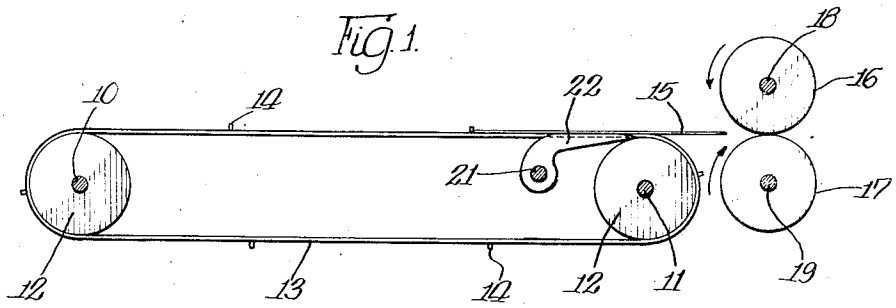


Fig. 2.

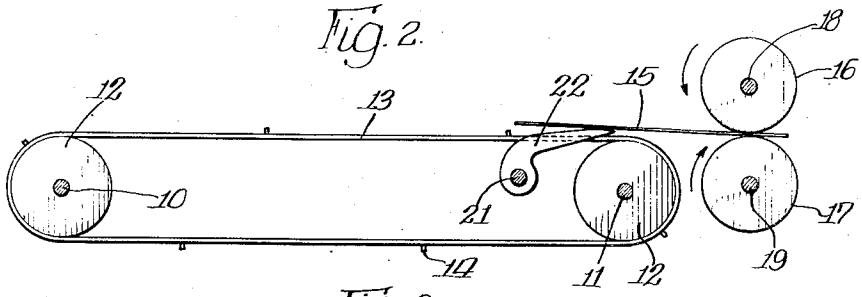


Fig. 3.

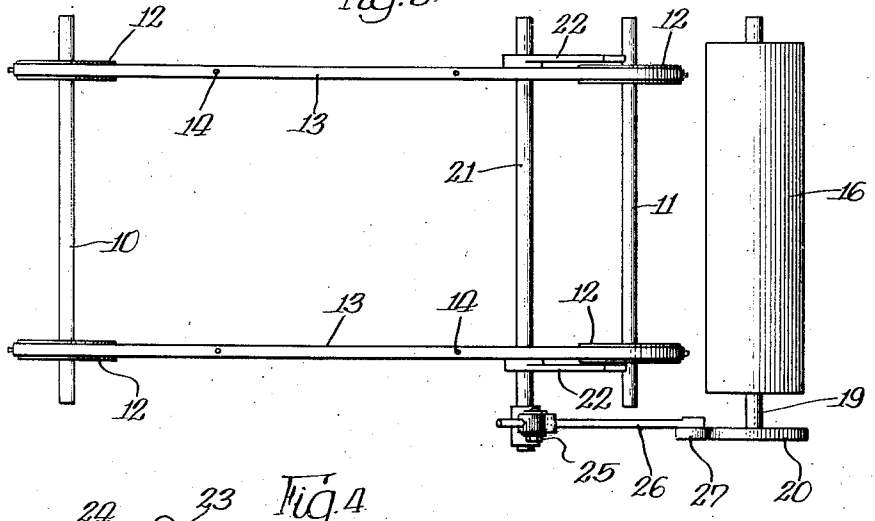
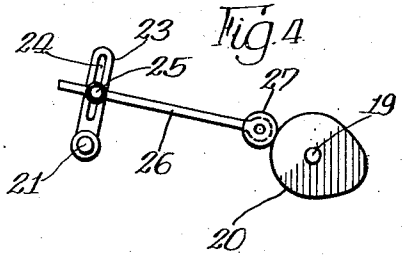


Fig. 4.



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Patented Aug. 7, 1945

2,381,713

UNITED STATES PATENT OFFICE

2,381,713

PAPER ELEVATING DEVICE FOR PRINTING MACHINES

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Application April 3, 1944, Serial No. 529,276

4 Claims. (Cl. 271—45)

The present invention relates to printing machines of the type wherein the paper to be printed is carried by a conveyor towards a pair of contacting printing rollers, and has for its principal object the provision of a device for elevating the rear edge of the paper and above the conveyor, as the front edge of the paper is picked up by the printing rollers.

In printing machines of the type having an endless conveyor set upon a pair of spaced pulleys, and wherein the rear edge of the paper is engaged by pins as the paper is carried by the conveyor towards a pair of printing rollers, it frequently occurs that as the front edge of the paper is picked up by the printing rollers the rear edge thereof due to the gravity of paper has a tendency to bend downwardly and below the plane of the conveyor and as a consequence thereof the pins riding downwardly upon the pulley adjacent the printing rollers, catch the rearmost edge of the paper and injure the same. Therefore another object of the present invention is the provision of a device in a printing machine for elevating the rear portion of the paper as the front edge thereof is being picked up by the printing rollers so as to bring the rear edge of the paper above the plane of the conveyor and elevate the same above the plane of the paper engaging pins upon the conveyor, for the purpose of obviating any injury to the paper by the pins as they pass over the pulley which remains adjacent the printing rollers.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawing forming a part of this application and in which like designating characters refer to corresponding parts throughout the several views;

Fig. 1 is a side elevational view of the printing machine with the present device shown in an inoperative condition;

Fig. 2 is a similar view with the present device shown in an operative condition;

Fig. 3 is a top plan view of the printing machine; and

Fig. 4 is a side elevational view of a cam mechanism for actuating the present device.

Referring in detail to the present drawing there is shown a pair of shafts 10 and 11, each having a pair of oppositely disposed pulleys 12, upon which a pair of endless conveyors 13 is set for longitudinal movement and transversely of shafts 10 and 11. Each of said conveyors has a plurality of paper engaging pins 14, each pair of oppositely disposed pins in the two conveyors coacting to engage the rear edge of paper 15 for pushing the same forwardly and towards a pair of printing rollers 16 and 17. The contacting point of the two printing rollers is on the plane of the upper level of conveyors 13 so as to facilitate picking up the front end of the paper as the same is carried towards said rollers 16 and 17 by upper level of conveyors 13, and as said rollers 16 and 17 rotate in the directions indicated by arrows in Figs. 1 and 2. Said rollers 16 and 17 are set upon shafts 18 and 19. The end of one of said shafts is extended beyond the adjacent ends of said rollers for receiving thereon in a rigid relation a heart-shaped cam 20 for the purpose hereinafter described.

The machine further includes rockshaft 21 suitably supported in the machine for oscillating movement and set between two levels of conveyors 13 rearwardly of shaft 11 and in the proximity of front pulleys 12. Keyed to said rockshaft 21 is a pair of L-shaped fingers 22, the horizontal portions of which remain substantially on the plane of the upper level of conveyors 13. Said fingers 22 are set upon said rockshaft 21 immediately outwardly of the vertical plane of said conveyors 13 as is clearly seen in Fig. 3.

Keyed to one end of said rockshaft 21 is a rocker arm 23 having a longitudinal slot 24 for receiving therewithin in an adjusted relation bolt 25, which bolt is in rigid engagement with one end of bar 26. The other end of said bar 26 has an idler 27 journaled thereon which remains in contact with cam 20. Any suitable means, such as a spring or the like, in the support of the rockshaft 21, may be used in normally urging the rockshaft and the idler 27 into the positions shown in Figure 1 and Figure 4, with the idler held in engagement with cam 20.

From the hereinabove description it will be seen that rocker arm 23 is actuated in its angular reciprocating movement by means of bar 26 as the latter is longitudinally reciprocated by cam 20 as it rides upon idler 27. The angular reciprocating movement of rocker arm 23 will impart oscillating movement to rockshaft 21 for the purpose of intermittently elevating fingers 22 to their operative position shown in Fig. 2 and to lower them to their inoperative position illustrated in Fig. 1.

The oscillation of rockshaft 21 is timed to the movement of the upper level of conveyors 13 and pins 14, as the same carry paper 15 towards the

printing rollers 16 and 17, namely when the front end of the paper sheet 15 has been picked up by said rollers 16 and 17, rocker arm 23 shifts towards shaft 10 for oscillating rockshaft 21 in the same direction for elevating fingers 22 above the plane of the upper free ends of pins 14, and thereby for elevating the rear end of paper sheet 15 thereabove, and maintaining the rear end of paper sheet 15 in the elevated condition until it is well passed beyond the vertical center of front pulleys 12 as the same is carried by rollers 16 and 17. Thus, any possibility of the rear edge of the paper being caught by pins 14 as the same descends along the peripheral course of front pulleys 12, and the consequent injury to the rear edge of the paper is eliminated.

None of the various drives for the several shafts is shown in the drawing, because these are well known in the art.

While there is described herein a preferred embodiment of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:

1. A printing machine comprising a pair of printing rollers, a conveyor whose supporting surface is in the plane of the point of entrance of the sheets between the rollers, pins upon said conveyor for engaging the rear edge of a paper sheet for carrying the same towards the said rollers and feeding the same therebetween, and means beneath the sheet and operative when the medial point between the front and back of the sheet passes said means for elevating the rear end of the paper sheet above the plane of the surface of the conveyor and the free ends of said pins as the front end of the paper sheet is received by said rollers.

2. A printing machine comprising a pair of printing rollers between which sheets to be printed are fed, a conveyor whose supporting surface is in the plane of the point of entrance of the sheets between the rollers, pins upon said conveyor for engaging the rear edge of a paper sheet for carrying the same towards the said rollers and feeding the same therebetween, a rockshaft, a finger keyed thereto, and cam means for oscillating said rockshaft for angularly shifting said finger for shifting the rear end of the paper sheet out of the plane of said conveyor and pins as the front end of the paper sheet is being received by said rollers.

3. A printing machine comprising a pair of printing rollers between which sheets to be printed are fed, an endless conveyor, a pair of pulleys upon which said conveyor is set, one of said pulleys being in proximity of said rollers, the operative level of said conveyor being substantially on horizontal plane extending through the meeting point of said rollers, pins upon said conveyor for engaging the rear end of a paper sheet for feeding the same between said rollers, a rockshaft, a finger keyed thereto, and cam means for oscillating said rockshaft for actuating said finger for shifting the rear end of the paper sheet out of the plane of said pins, said cam means being operable at the instant when the front end of the paper sheet is received by said rollers.

4. A printing machine comprising a pair of printing rollers in mutual contact for receiving a sheet of paper therebetween, a horizontal conveyor upon a plane extending through the contact point in said printing rollers, said conveyor being adapted to carry paper towards said printing rollers and to be picked up thereby by its front end, and means for lifting the rear end of the paper sheet and above the horizontal plane thereof as the front end thereof is being picked up by said printing rollers.

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