

Oct. 6, 1953

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2,654,600

STRIPPER PIN FOR SHEET FEEDING MACHINES

Filed July 14, 1950

2 Sheets-Sheet 1

FIG. 1.

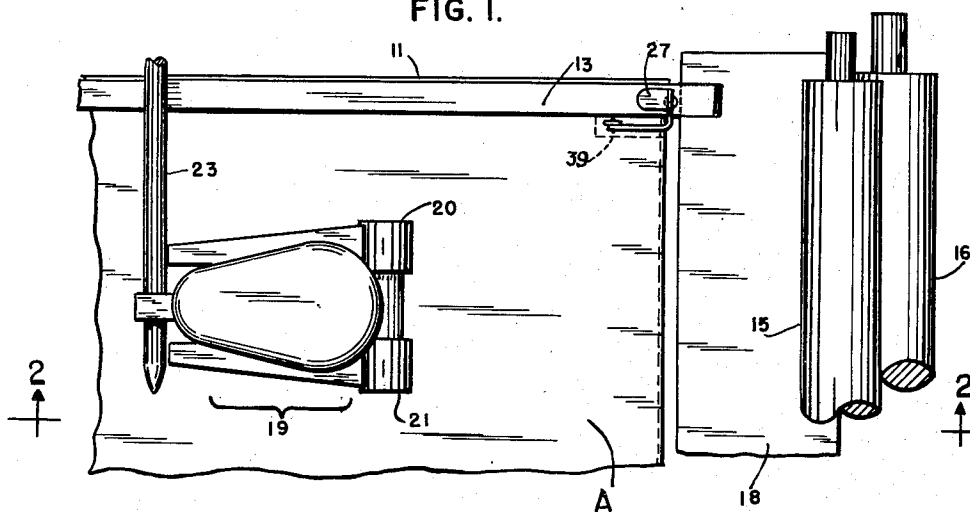


FIG. 2.

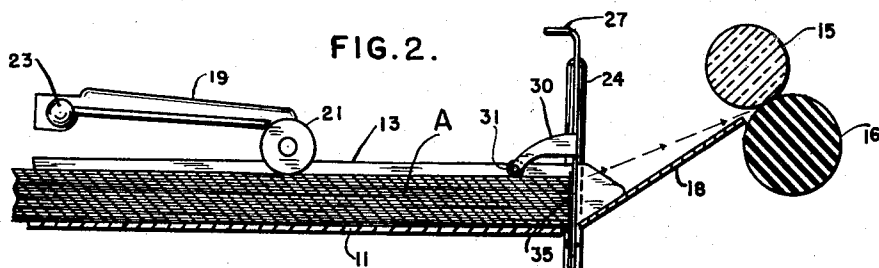


FIG. 3.

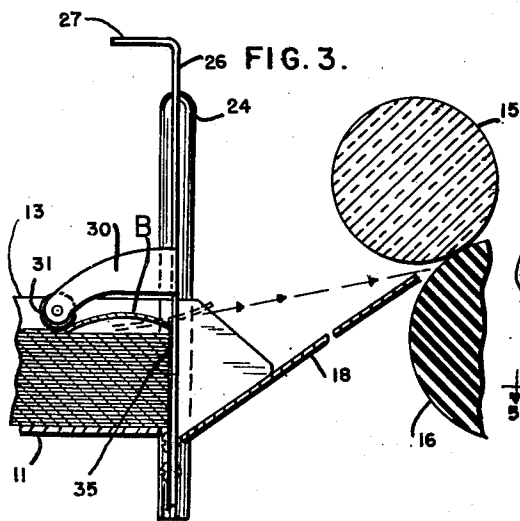
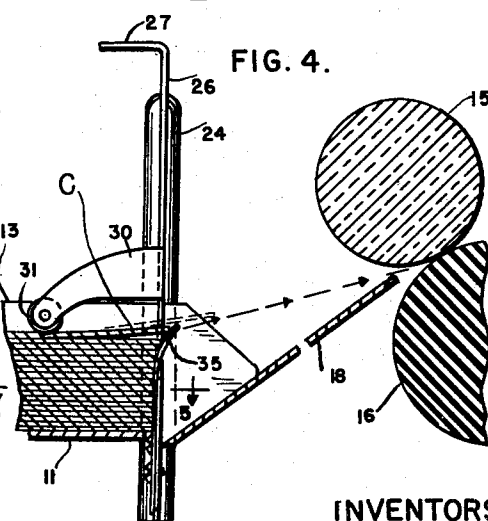


FIG. 4.



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FIG. 5.

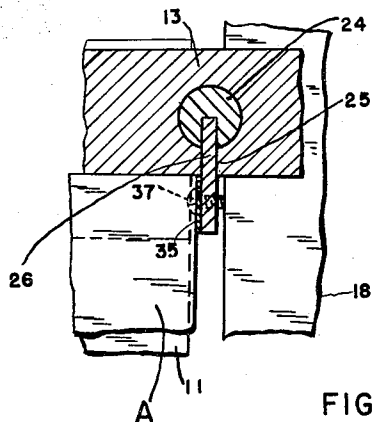


FIG. 6.

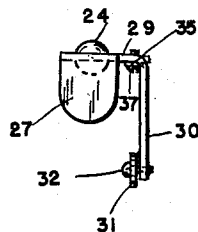


FIG. 7.

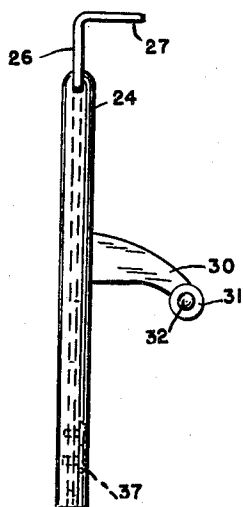


FIG. 8.

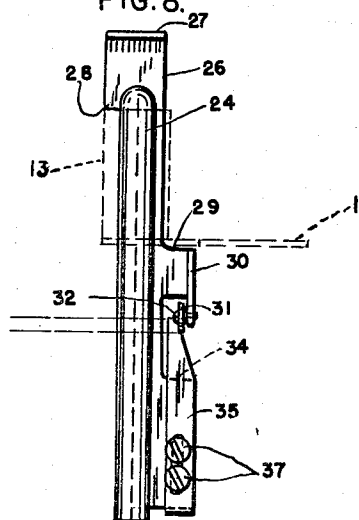
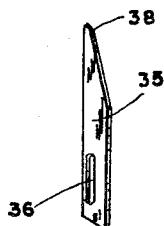


FIG. 9.



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STRIPPER PIN FOR SHEET FEEDING
MACHINES

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Application July 14, 1950, Serial No. 173,774

4 Claims. (Cl. 271-18)

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The present invention relates to devices, conveniently referred to as "stripper pins," which are used with machines in which the sheets of a pack or pile of sheets are fed from the top one by one, the feeding being done ordinarily by an automatic feeder having a feed foot resting on the top sheet of the pack. The function of the stripper pin is to assist in separating the top sheet from the pack and to prevent more than one sheet at a time being fed forward.

In the past a considerable variety of devices for this purpose have been used but they have been defective in one respect or another and have failed to perform their intended function satisfactorily or have not been adaptable to different conditions, for instance, differences in quality, thickness, stiffness, and weight and surface of the paper, and have been easily effected by variations in moisture and static.

The present invention therefore has for its object to provide a stripper pin which will be less effected by such variations and which will be satisfactory in use under widely varying conditions. In particular the invention provides a device which will work satisfactorily and without any adjustment by the operator with paper varying in weight from letter paper to cardboard even when sheets of different weight are included in the same pack. As far as we are aware this has never been accomplished before.

The invention will be understood by reference to the accompanying drawings in which the device is shown in connection with the essential parts of a fluid duplicating machine, this being a convenient way to illustrate the construction and mode of operation of the device, but it will be understood that the device may be usefully employed in connection with other machines in which sheets are fed one-by-one from the top of a pile or pack.

In the drawings:

Fig. 1 is a plan view of a portion of a duplicating machine showing the stripper pin embodying my invention in relation to the essential parts of the machine, the front of the machine being at the right.

Fig. 2 is a section on line 2-2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is an enlarged view similar to Fig. 2 to illustrate the action of the stripper pin when a relatively thin sheet is being fed, the thickness of the sheet being exaggerated for clarity of illustration.

Fig. 4 is a view similar to Fig. 3 showing the action of the stripper pin when a sheet of cardboard or tag stock is being fed.

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Fig. 5 is a section on line 5-5 of Fig. 4 looking down.

Fig. 6 is a top plan view of the stripper pin.

Fig. 7 is a side elevation of the stripper pin looking from the left side of the machine.

Fig. 8 is a rear elevation of the stripper pin.

Fig. 9 is a view in perspective of the flexible blade or gate forming part of the stripper pin.

Referring now to the drawings and particularly to Figs. 1 and 2, at A is shown the pack of paper resting in the feed tray 11, and at 13 is shown the side guide against which the edge of the paper rests and by which it is guided as it moves forward. At 15 and 16 are shown the feed rolls and at 18 a guide for the paper leading from the bottom of the feed tray 11 to the bite of the feed rolls 15 and 16. The paper is fed forward sheet by sheet by a reciprocating feed foot 19 including rubber feed rolls 20 and 21 which do not rotate when the feed foot is moving forward, i. e. toward the right in Figs. 1 and 2 but are free to rotate when the feed foot 19 is being drawn back, i. e. to the left in Figs. 1 and 2. The feed foot 19 is moved forward and back by suitable actuating mechanism attached to arm 23. It will be understood that these parts are of ordinary construction and form no part of the present invention.

The stripper pin embodying the present invention is shown in detail in Figs. 5-9. It includes a round shaft 24 having a longitudinal slot 25 milled in one side. In this slot is secured a body 26 having on the top a horizontal handle 27 by which the entire stripper pin may be lifted as required. Just below the handle 27 is a lug 28 in the plane of the body. About midway of its length the body 26 is offset as shown at 29 to form an arm 30 which lies over the side margin of the paper A and extends rearwardly as will be seen from the plan view, Fig. 6. This arm 30 is also bent downwardly as shown in Fig. 7. At the rear end of the arm 30 is a roller 31 carried on a pin 32 on the arm. This roller is free to rotate on the pin. Directly below the offset portion 29 of the body 26 is a projective 34 to which is secured a flexible blade 35. This blade is shaped as shown in Fig. 9 and is thin and preferably of spring steel so that it can bend under pressure from the top sheet when required but will return at once to its original position. The blade is also narrowed toward the top to increase its flexibility. A slot 36 is formed in the blade and the blade is secured to the projection 34 by two screws 37, 37 and thus may be adjusted vertically. The blade is adjusted so that its upper end or tip 38 lies slightly above the bottom of the roller 31 on the

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offset arm 30. This difference in level is indicated by dash lines in Fig. 8 and in practice is usually about $\frac{3}{8}$ of an inch.

The stripper pin is located in a suitable hole in the side guide 13 adjacent the pack of paper A, with the roller 31 resting on the top sheet. The stripper pin is free to slide vertically in the hole in the side guide 13, but is prevented from turning about its longitudinal axis by the body 26 which is in the slot which intercepts the hole in which the pin slides. The front edge of the pack A rests against the back face of the blade 35 with its tip 38 slightly above the level of the top sheet of the pack and, as already explained, slightly above the lowest point of the roller 31. When the top sheet B (see Fig. 3) is a thin sheet of stock such as letter paper, and is fed forward by the rubber rollers 20 and 21 of the feed foot 19, the front edge of the sheet strikes the tip 38 of the blade 35 and the further forward movement of the sheet buckles the portion of the sheet between the roller 31 and the blade 35 without any appreciable bending of the blade until the front edge of the sheet snaps over the blade and allows the sheet to be fed into the bite of the feed rolls 15 and 16, the position of the sheet at this time being indicated by the dotted lines in Fig. 3. When the top sheet C (see Fig. 4) is a thick one, for instance card or tag stock, and therefore stiffer, it buckles little or not at all and the pressure of the front edge of the sheet against the tip 38 of blade 35 bends the blade forward slightly so the rear surface has a slight upward inclination which assists the sheet to snap over the tip of the blade. In this manner the sheets comprising the stack will be fed one at a time, even if the stack is composed of thin sheets or thick sheets or of sheets of different thicknesses, and no adjustment is required for different thicknesses of sheets. As the stack is reduced in thickness, the stripper pin lowers itself little by little with the roller 31 resting on the top sheet of the pack, but the relation of the blade tip 38 to the bottom of the roller 31 and hence to the level of the top sheet in the pack always remains the same.

When for any reason, the stripper pin is not required, as for instance when the operator wishes to feed the sheets by hand, the stripper pin is allowed to drop through the cut-out 39 in the corner of the feed tray (see Fig. 1) and lug 28 comes to rest on guide 13 as shown dotted in Fig. 8. This removes the pin from the front of the pack of paper.

We claim:

1. The stripper pin for machines in which the sheets of a pack of sheets are fed one by one from the top which includes in combination a

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member slidable vertically in a fixed portion of the machine adjacent the side of the pack, a portion of said member resting on the top sheet of the pack at a point in the rear of the leading edge of the sheet, and a flexible blade carried by the vertically sliding member and located in contact with the front face of the pack, the top edge of the flexible blade being slightly above the point of contact of that portion which rests on the top sheet of the pack.

2. In a duplicating machine having a feed tray for a pack of sheets, a fixed side guide, therefore, and a reciprocating feed foot, and in combination therewith a stripper pin to separate the top sheet of said pack, said stripper pin comprising a post vertically slidable in said side guide, a contact finger resting on the top sheet of said pack at a point at the rear of the leading edge of the pack, and a flexible gate carried by said post and in contact with the front face of the pack, the top edge of the gate being slightly above the point of contact of the contact finger with the top sheet of the pack.

3. In a machine for feeding sheets one by one from the top of a pack, the improved stripper pin having a roller resting on the top sheet of the pack at a point in the rear of the leading edge of the sheet and a blade resting against the front of the pack with its tip slightly above the bottom of said roller and capable of being bent forward by the pressure of the top sheet as the sheet is fed forward, said stripper pin being slidable vertically and being supported by the contact of the roller with the pack of sheets.

4. The stripper pin for machines in which the sheets of a pack of sheets are fed one by one from the top which includes in combination a member slidable vertically in a fixed portion of the machine adjacent the side of the pack at the forward corner thereof, a portion of said member resting on the top sheet of the pack at a point in the rear of the leading edge of the sheet, and a flexible blade carried by the vertically sliding member and located in contact with the front face of the pack, the top edge of said blade being slightly above the point of contact of that portion which rests on the top sheet of the pack.

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