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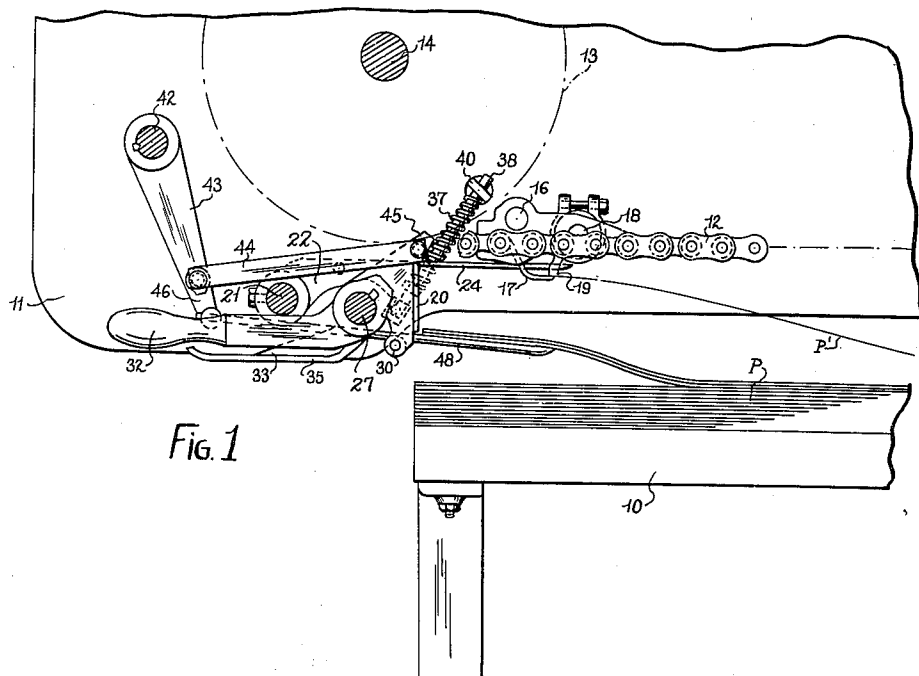
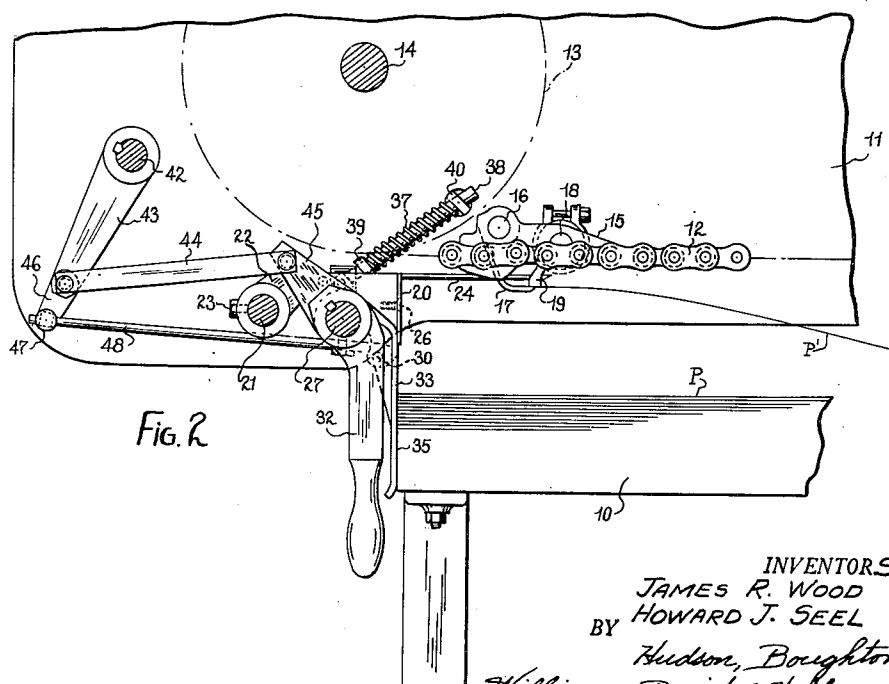
J. R. WOOD ET AL

2,631,038

SHEET DELIVERY MECHANISM

Filed June 15, 1948

2 SHEETS—SHEET 1



INVENTORS
JAMES R. WOOD
BY HOWARD J. SEEL
Hudson, Boughton,
me, David & Hoffmann
ATTORNEYS

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2 SHEETS—SHEET 2

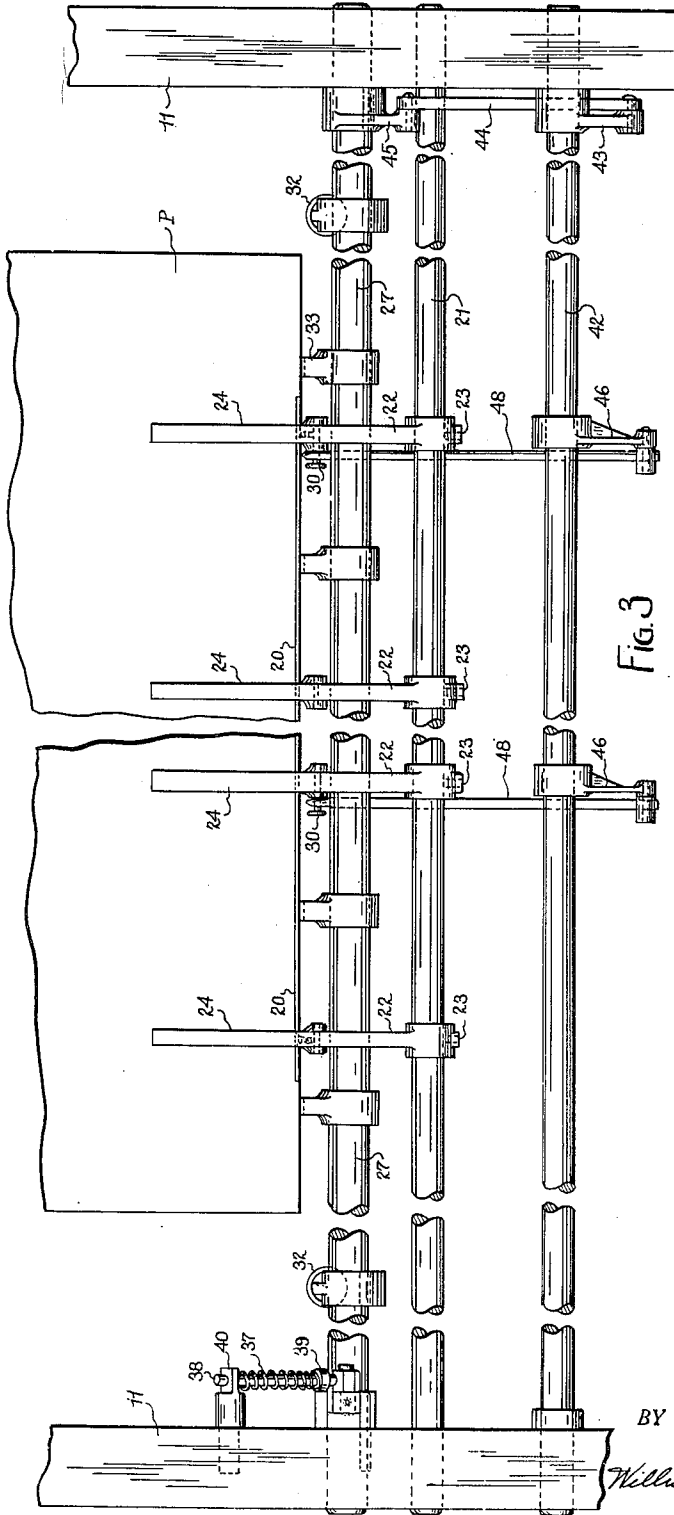


Fig. 3

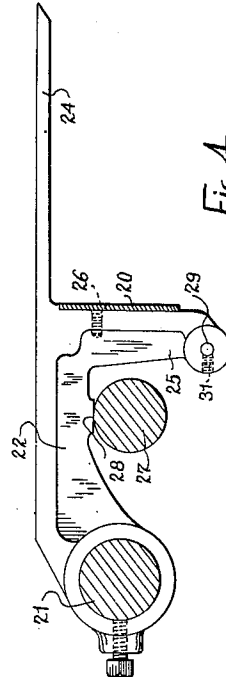


Fig. 4

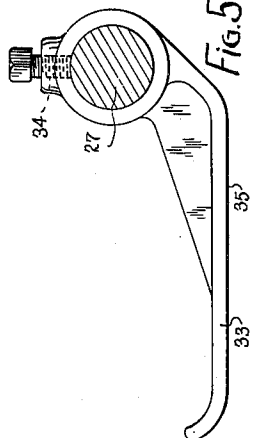


Fig. 5

INVENTORS
JAMES R. WOOD
HOWARD J. SEEL
BY
Hudson, Boughton,
Williams, David & Hoffmann
ATTORNEYS

UNITED STATES PATENT OFFICE

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SHEET DELIVERY MECHANISM

James R. Wood, Cleveland, and Howard J. Seel,
Beachwood, Ohio, assignors to Harris-Seybold
Company, Cleveland, Ohio, a corporation of
Delaware

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6 Claims. (Cl. 271—86)

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This invention relates to improvements in sheet delivery mechanism, more particularly mechanism for enabling a press operator to withdraw a sheet from the delivery pile for inspection of the printing, it being necessary to make such inspection at intervals in order that adjustments required to correct possible faults may be made and a high quality of printing maintained.

When the size of sheet printed is moderate and the speed of the press is not too high it is possible for a skilled operator to swing the end gates out of the way, withdraw the top sheet of the pile and return the end gates to operative position before the next sheet is dropped onto the pile. With large sheets and especially with high speed presses the operation is difficult if not impossible, and to withdraw a sheet it may be necessary to slow down the press.

In accordance with the present invention means is provided for holding up or supporting the forward portions of one or several sheets while the operator removes the sheet next below those which are thus supported. He may therefore take all the time required to withdraw a sheet and lay it on a table for inspection before he again returns the end gates to operative position. The invention also provides a single control for swinging the end gates to inoperative position and simultaneously projecting the sheet supporting fingers over the forward end of the pile, as well as for withdrawing those fingers and returning the end gates to operative position when the sheet to be inspected has been withdrawn.

One of the objects of the invention therefore is the provision of means for enabling an operator to withdraw a sheet from a delivery pile without stopping the press.

Another object is the provision of means actuated by a single control for lifting the end gates and projecting supporting fingers over the pile.

Other objects and features of novelty will appear as we proceed with the description of that embodiment of the invention which, for the purposes of the present application, we have illustrated in the accompanying drawings, in which

Fig. 1 is a side elevational view, partly diagrammatic, of mechanism for withdrawing the end gates at the forward end of a paper pile and inserting supporting fingers into the space above the pile, the view showing the mechanism in the position which it occupies when the operator is about to withdraw a sheet.

Fig. 2 is a similar view with the mechanism in the normal position, that is with the end gates in operative position and the sheet supporting fingers withdrawn.

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Fig. 3 is a plan view of the same with the parts in the Fig. 2 position and with certain parts of the mechanism removed.

Fig. 4 is a detail elevational view of a casting in which a stripper is incorporated, and

Fig. 5 is a detail elevational view of an end gate.

In the drawings 10 is a pile board upon which the sheets are collected as they are dropped from the delivery conveyor. The pile board may be mounted upon and moved up and down by a conventional means designed for that purpose. The pile of paper sheets is marked P. Frame members 11 support the operating mechanism. In the illustrated case the delivery conveyor is a chain conveyor of more or less conventional form comprising a pair of endless chains 12, not shown in Fig. 3, which at the forward end of the frame travel over sprocket wheels, one of which is indicated at 13, these wheels being rotatably supported on a tie rod 14 mounted in the frame.

At opposite points the two chains 12 carry brackets 15 in each pair of which are mounted a gripper finger shaft 16 carrying gripper fingers 17 and a bar 18 carrying gripper pads 19. Each sheet as it leaves the press is taken by one of these gripper units and drawn over the pile P as indicated by the sheet P' in Figs. 1 and 2. When the sheet reaches a position at or somewhat beyond the point shown in those figures the gripper fingers 17 are swung away from the pads 19 by conventional means, releasing the forward edge of the sheet which, because of its inertia, continues to move forward until its front edge engages plates 20. Its forward movement is thus stopped and it drops onto the pile.

Mounted in frame members 11 there is a fixed rod 21 upon which are secured a series of light weight castings 22 which are fixed to the rod at selected points by means of set screws 23. The rear ends of these castings 22 consist of thin strips 24 which constitute sheet strippers for confining the forward edges of the moving sheets and preventing the accidental movement of the same over the upper edges of plates 20.

These castings 22 also comprise depending arms 25 which have machined flats on their rear surfaces to receive the plates 20, each plate being secured to two consecutive castings by screws 26 or the like. The weight of these castings is borne partly by a rock shaft 27 upon which a machined flat 28 of each casting rests. At the lower end of each arm 25 of the castings, a horizontal hole 29 is bored, and in certain of these holes are mounted headed pins 30 the function of which will presently appear. These pins may be held with their heads spaced from the adja-

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cent sides of the arms 25 by means of set screws mounted in threaded openings 31 in the castings.

Near each end of rock shaft 27 a handle 32 is keyed to the shaft, by means of which the shaft may be turned through an angle of 90° approximately. A plurality of end gates 33 are secured to this shaft at intervals, as by means of set screws 34. In their normal position they hang from the shaft 27 as indicated in Fig. 2, their rear surfaces 35 being polished flats and determining the position of the forward edges of the sheets in the pile. When the operator by means of a handle 32 turns shaft 27 through an angle of approximately 90° from the Fig. 2 position to that of Fig. 1, end gates 33 are swung up to substantially horizontal position, leaving the front of the pile entirely unobstructed. In order that shaft 27 may be held releasably in either of its two extreme positions, we employ a compression spring 37 surrounding a rod 38 which is pivotally carried by a projection on the shaft at one end of the latter. The spring bears at one end against a collar 39 fixed to the rod and at its other end against a wobble pin 40 mounted to turn in a frame member 11, the rod 38 passing through a hole in the wobble pin. As will be apparent from an inspection of Figs. 1 and 2 the end of rod 38 that is associated with the shaft moves over center from one side to the other in the extreme positions of the shaft, and thus maintains the shaft releasably in either position.

A second rock shaft 42 oscillatably mounted in bearings in the frame members carries an arm 43 which is pivotally connected with a link 44, the rear end of this link being in turn pivoted to an arm 45 projecting upwardly from rock shaft 27. Since the arm 45 extends upwardly from its shaft and the arm 43 extends downwardly the rotation of shaft 27 in one direction will be communicated to shaft 42 in the opposite direction. Rock shaft 42 also carries a plurality of depending cranks 46 in the lower ends of which are noodle pins 47 in which are secured the forward ends of rods 48, hereinafter referred to as sheet supporting fingers. These fingers are directed over the pins 30 between the castings 22 and the heads of the pins, and are slidably guided thereby. While but two of these supporting fingers are shown in the drawings, it will be apparent that any number sufficient to properly support the forward portions of the sheets may be employed.

Assuming that the parts of the mechanism are in the position of Fig. 2, which is the normal running position, and that the operator desires to make an inspection of the printing, he grasps a handle 32 and swings it through 90° to the Fig. 1 position. This causes the end gates 33 to swing up out of the way to the position of Fig. 1, and at the same time causes the cranks 46 to swing rearwardly to the position of that figure, thereby sliding the fingers 48 rearwardly into the space above the paper pile but beneath the path of travel of the grippers 17. Thereafter the forward portions of the sheets dropped by the conveyor will rest upon the fingers 48, as indicated in Fig. 1, and the operator may proceed as leisurely as desired to withdraw the top sheet of the pile from under the fingers 48. As soon as he has done so he grasps handle 32 again and pulls it down to the Fig. 2 position, thereby withdrawing fingers 48 and swinging end gates 33 down to operative position.

Having thus described our invention, we claim:

1. In sheet delivery mechanism, a pile adapted

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to be automatically lowered by conventional means to maintain the top of the pile at a substantially constant height, an endless conveyor carrying sheet grippers by means of which the forward edges of the sheets are advanced over the pile as the grippers move along the lower run of the conveyor, the axis of the forward sprockets of the conveyor being disposed approximately above the forward end of the pile, end gates against which the forward edge of each sheet impinges as it settles on the pile, a rock shaft on which said gates are secured, a set of horizontal sheet supporting fingers slidably disposed between the gates adapted to move into position over the pile and under the forward edge of the next sheet delivered, cranks spaced forwardly of the sprockets beneath the level of the top thereof to which said fingers are attached and by which they may be moved back and forth, operative connections between said rock shaft and said cranks and a handle for said rock shaft, said connections being such that when said gates are swung forward out of the way said fingers are projected longitudinally over the pile.

2. Sheet delivery mechanism as defined in claim 1, comprising spring means for releasably holding said gates in either the operative or inoperative position.

3. In sheet delivery mechanism, a pile adapted to be automatically lowered by conventional means to maintain the top of the pile at a substantially constant height, an endless conveyor carrying sheet grippers by means of which the forward edges of the sheets are advanced over the pile as the grippers move along the lower run of the conveyor, the axis of the forward sprockets of the conveyor being disposed approximately above the forward end of the pile, a rock shaft, means for manually swinging said shaft through an angle of 90° approximately, end gates secured near their upper ends to said rock shaft against which the forward edges of sheets impinge as they settle on the pile, a second rock shaft disposed forwardly of said conveyor beneath the level of the top thereof, cranks attached to and depending from said second shaft, fingers attached to the lower ends of said cranks guided to slide horizontally over the top of the pile and under the forward edge of the sheet next delivered, and operative connections between said rock shafts for turning said second shaft simultaneously with the first but in the opposite direction, whereby as the gates swing forward out of the way said fingers slide into position above the pile.

4. In sheet delivery mechanism, a pile support adapted to be automatically lowered by conventional means to maintain the top of the pile at a substantially constant height, an endless conveyor carrying sheet grippers by means of which the forward edges of sheets are advanced over the pile as the grippers move along the lower run of the conveyor, the axis of the forward sprockets of the conveyor being disposed approximately above the forward end of the pile, plurality of strippers mounted above the forward end of the pile, an abutment plate extending downwardly from said strippers, a rock shaft disposed forward of said plate, end gates secured to said rock shaft and adapted in one position of the rock shaft to form a downwardly extending continuation of said plate, a second rock shaft beneath the level of the top of said conveyor disposed forwardly of the first said shaft, cranks attached to and depending from said second

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shaft, elongated fingers the forward ends of which are attached to the lower ends of said cranks, slide guides for said fingers disposed forwardly of the pile beneath said abutment plate, and manually operative connections for turning said rock shafts simultaneously whereby as the gates swing forward out of the way said fingers slide horizontally over said guides into position above the pile and under the sheet next to be delivered.

5. In delivery mechanism substantially as described in claim 4, yieldable means for holding said end gates in operative position and said supporting fingers retracted or for holding said end gates in lifted position and said supporting fingers projected rearwardly into position above the paper pile.

6. In sheet delivery mechanism, a pile adapted to be automatically lowered by conventional means to maintain the top of the pile at a substantially constant height, an endless conveyor carrying sheet grippers by means of which the forward edges of the sheets are advanced over the pile as the grippers move along the lower run of the conveyor, a rock shaft, means for manually swinging said shaft through an angle of 90° approximately, end gates secured to said rock shaft against which the forward edge of each sheet impinges as it settles on the pile, a second rock shaft, cranks attached to said second shaft,

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fingers pivotally connected with said cranks and guided to slide over the top of the pile and under the forward edge of the sheet next delivered, and means comprising operative connections between said rock shafts for turning said second named shaft simultaneously with the first to swing the gates away from the pile and slide said fingers into position above the pile or vice versa.

JAMES R. WOOD.
HOWARD J. SEEL.

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