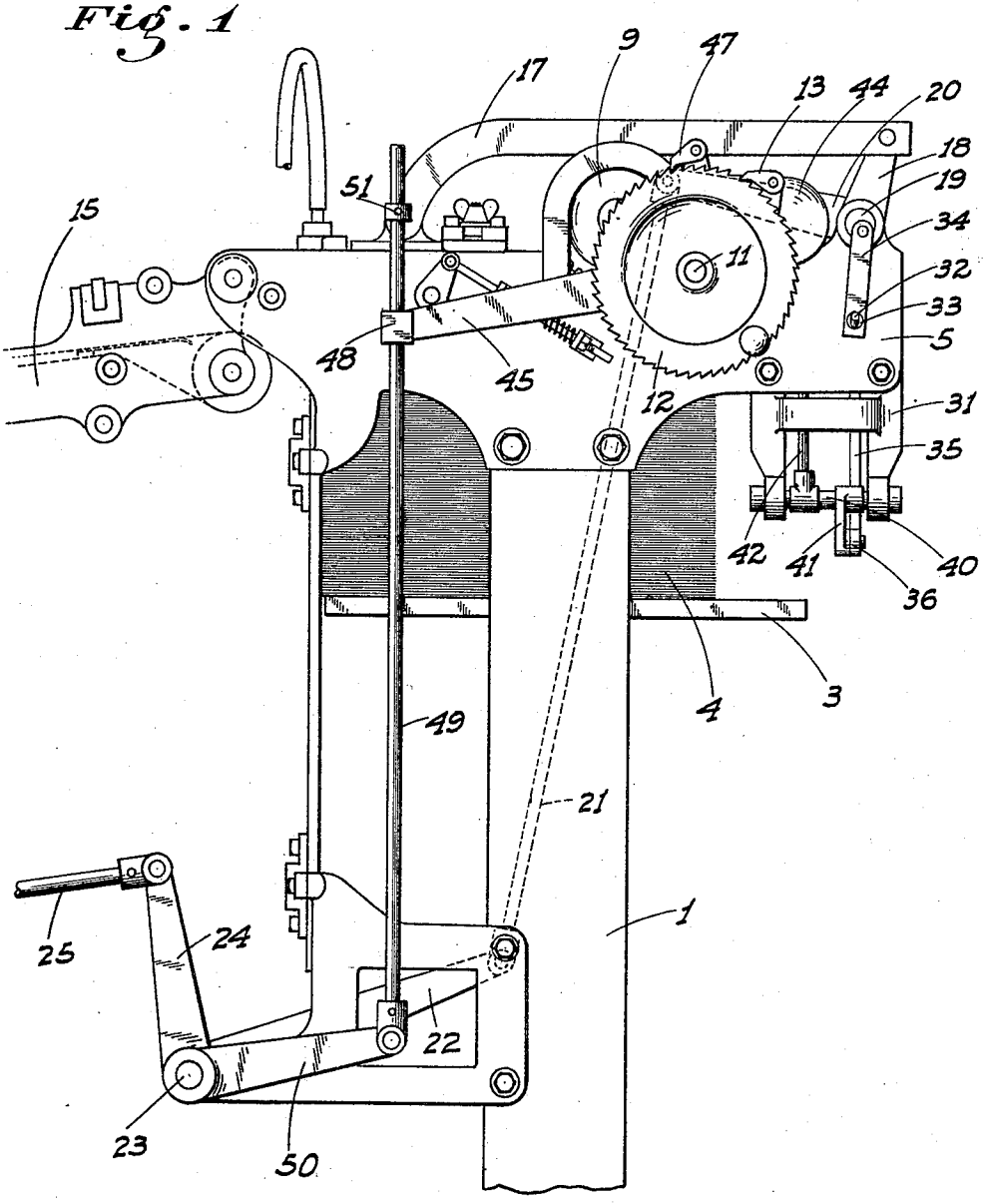
Nov. 1, 1932. C. L. LOW 1,886,282

ELEVATOR CONTROL MECHANISM FOR PRINTING PRESSES

Original Filed March 25, 1929 4 Sheets-Sheet 1

Fig. 1



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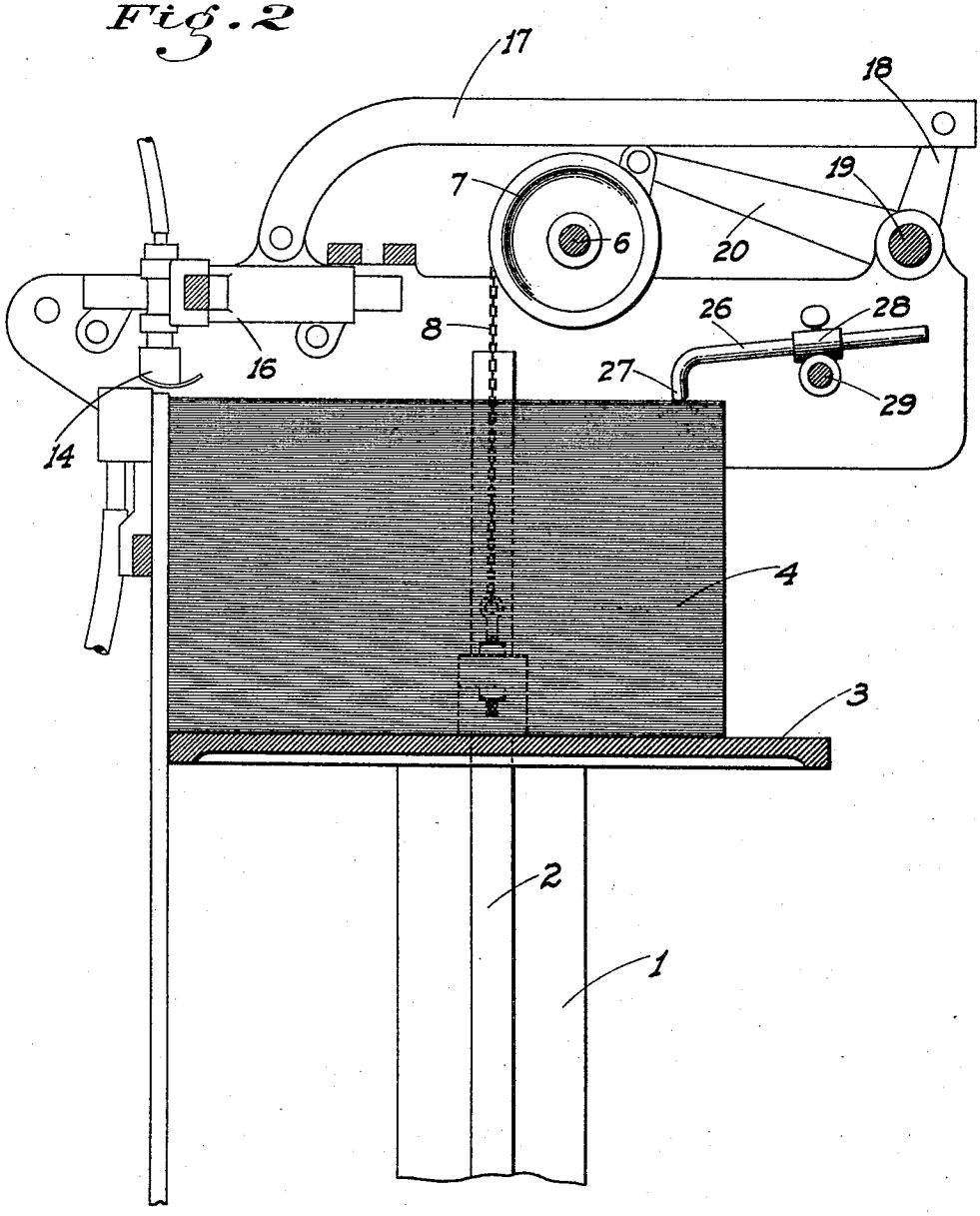
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ELEVATOR CONTROL MECHANISM FOR PRINTING PRESSES

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Fig. 2



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ELEVATOR CONTROL MECHANISM FOR PRINTING PRESSES

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Fig. 5

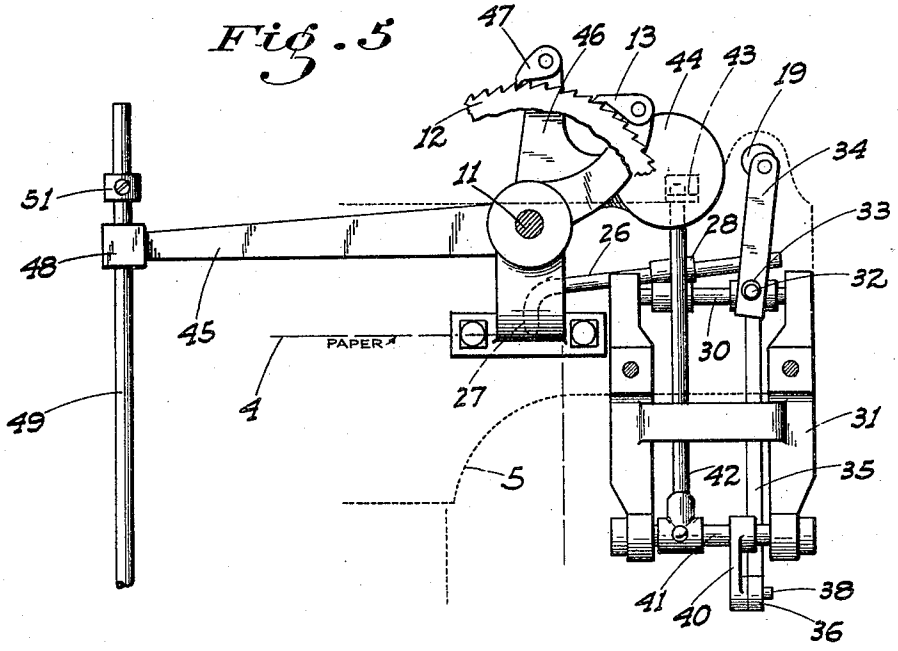
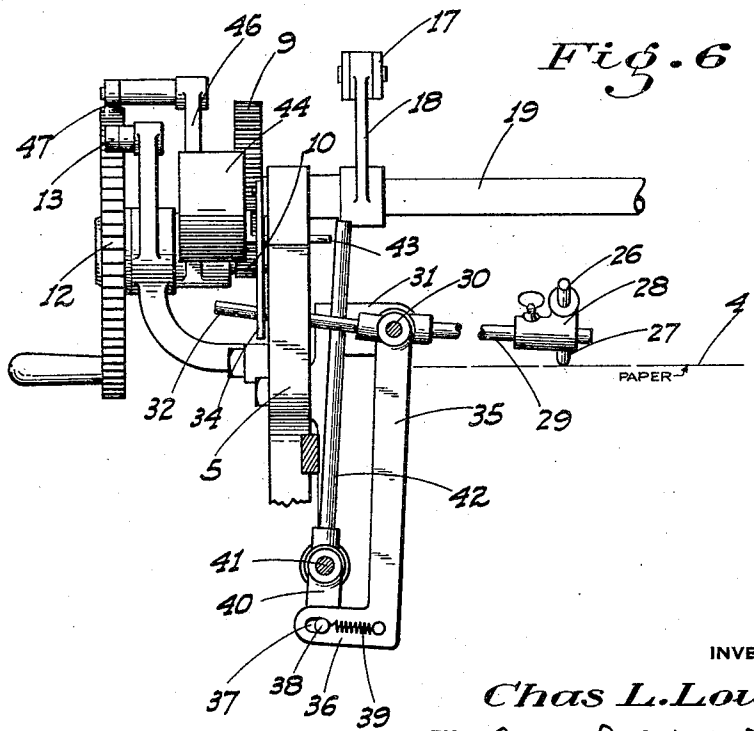


Fig. 6



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ELEVATOR CONTROL MECHANISM FOR PRINTING PRESSES

Original Filed March 25, 1929 4 Sheets-Sheet 4

Fig. 3

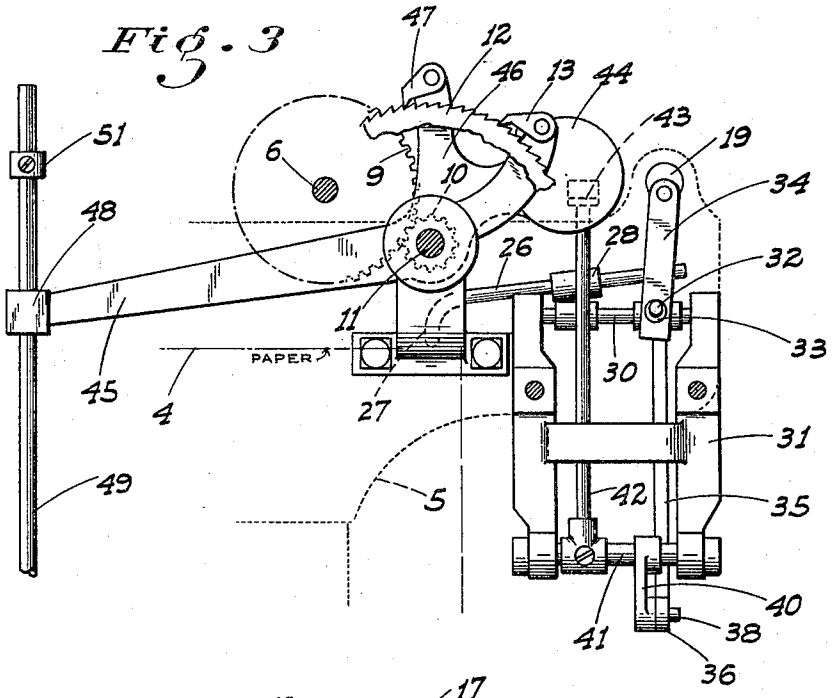
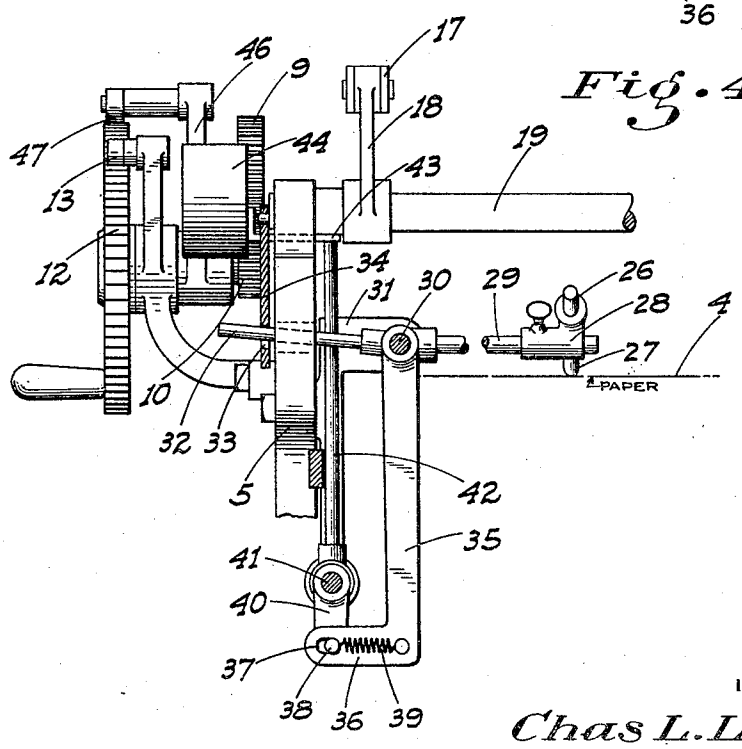


Fig. 4



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Patented Nov. 1, 1932

1,886,282

UNITED STATES PATENT OFFICE

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ELEVATOR CONTROL MECHANISM FOR PRINTING PRESSES

Original application filed March 25, 1929, Serial No. 349,637, now Patent No. 1,762,661, dated June 10, 1930. Divided and this application filed January 27, 1930. Serial No. 423,625.

This invention relates to paper elevating mechanism for printing presses, and particularly represents a divisional application of my Patent No. 1,762,661, dated June 10, 1930.

In the operation of the press the paper feeding mechanism successively removes individual sheets of paper from the stack on the elevator, and the principal object of the present invention is to provide a novel structure for automatically causing the elevator, and consequently the stack of paper, to be automatically raised as said stack becomes depleted, so that the topmost sheet is always maintained within the sphere of action of the paper withdrawing or feeding means.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side elevation of the paper feeding and elevating structure, the latter being emphasized.

Fig. 2 is an enlarged sectional elevation of the upper portion of the device showing certain features of elevating control mechanism.

Fig. 3 is a side elevation of the control mechanism of the paper elevating means in the positions normally occupied thereby or when the paper is at or substantially at a normal level.

Fig. 4 is an end elevation of said mechanism with the parts in the positions as shown in Fig. 3.

Fig. 5 is a view similar to Fig. 3 showing the positioning of the parts when the pawl lever has been tripped by the lowering of the pile or stack to a predetermined extent.

Fig. 6 is an end elevation of the above mechanism with the parts in the positions as shown in Fig. 5.

Referring now more particularly to the characters of reference on the drawings, the structure comprises a pair of transversely spaced standards 1 having vertical guides 2 on their inner faces engaging the table or elevator 3 on which the pile of individual sheets of paper 4 is supported. Supported by the standards are spaced side frames 5 journaled on and extending across which is a transverse shaft 6.

Drums 7 fixed on said shaft just inside the frames 5 have one end of chains 8 or the like secured thereto, the other end of which chains depend to connections with the table at the sides thereof and in alinement with the guides. On one end of the shaft a fixed gear 9 meshes with a pinion 10 secured on a stud shaft 11 journaled in connection with the adjacent frame 5. Secured on the outer end of the shaft 11 is a ratchet wheel 12 engaged by a fixed pawl 13 which prevents rotation of the wheel in that direction such as would cause the table to be lowered.

Associated with the above structure is the paper feeding means featured in said copending application, which includes a horizontally movable suction nozzle 14 adapted to engage the topmost sheet at the end thereof nearest the conveyor 15, and to feed said sheet from the stack onto the conveyor. This nozzle is mounted in connection with slide members 16 from which horizontal bars 17 extend to the end of the frames 5 opposite the nozzle. Arms 18 pivoted on the outer end of the bars project radially from a transverse shaft 19 journaled in said frames.

The shaft 19 is oscillated through a certain arc by means of a radial arm 20 from which a rod 21 depends to a connection with the outer end of a substantially horizontal radial arm 22 pivoted on a counter-shaft 23 journaled in connection with the standards 1.

The shaft 23 has another radial arm 24 secured thereto, substantially at right angles to the arm 22, from which a rod 25 extends to a connection with the bed reciprocating lever or other operating member of the press, so that the parts above described will be oscillated in coordinated relation with the operation of the press.

Raising of the table 3 with the lowering of the level of the paper on the pile is accomplished in connection with the operation of the paper feeding mechanism as follows: A longitudinally extending rod 26 is disposed between the frames 5 above the pile of paper

and terminates in a downwardly bent finger 27 normally engaging the topmost sheet of paper adjacent the end thereof opposite the nozzle. This rod is mounted in longitudinally adjustable relation in a support 28 which is mounted for adjustment along a transverse rod 29. This rod 29 projects laterally from and is rigidly fixed in connection with a longitudinal shaft 30 which is journaled in a bracket 31 depending from and secured to that one of the side frames 5 on which the ratchet wheel 12 is located.

A trip rod 32 is secured to and projects laterally from the shaft 30 away from the rod 29 and through an opening in the adjacent frame 5. This rod also projects through a vertical slot 33 provided in a vertical strap 34 which is pivoted eccentrically on the adjacent end of the shaft 19. This eccentric connection is disposed so that when the shaft oscillates to a position at which the nozzle is depressed into engagement with the paper, the rod 32 will be depressed by the strap 34 at the top of the slot, and the finger 27 will be raised from the paper. This releases the dragging and holding back tendency of the finger on the paper and enables the nozzle to pick up and move the topmost sheet of paper from under the finger without any interference thereby.

Depending from and secured to the shaft 30 is an arm 35 which terminates at its lower end in a right angled outwardly facing extension 36 which adjacent its outer end has a longitudinal slot 37 through which a pin 38 projects. A spring 39 acts to normally hold the pin at the inner end of the slot. This pin is fixed on an arm 40 which depends from a longitudinal shaft 41 journaled in the bracket 31 below the shaft 30. A rod 42 projects upwardly from the shaft 41 and is adapted to normally pass under and engage a lip 43 projecting inwardly from a counterweight 44. This counterweight is formed on one end of a lever member 45 which is turnably mounted intermediate its ends on the shaft 11 back of the ratchet wheel 12, said lever having a vertical arm 46 carrying a pawl 47 engaging said wheel. The end of this lever opposite the counterweight has a swiveled block 48 through which a rod 49 is freely slidable. This rod on its lower end is connected to an arm 50 projecting from the shaft 23 and above the block 48 has a stop 51 to engage and depress said block and the lever to which it is attached when the arm 50 is depressed.

In operation the rod 32 is depressed with each oscillation of the feed control shaft 19 as above stated, raising the finger 27 from the paper but not affecting the rod 42 owing to the slot 37 which allows the arm 35 (connected to said rod 29 and the finger member) a certain freedom of movement. As the finger 27 is lowered with the lowering of the paper level as the sheets are successively removed, the increased tilting of the rod 29 and the consequent movement of the arm 35 causes the rod 42 to gradually move from under the lip 43 between successive depressions of the trip rod 32, until said rod 42 finally clears the lip. The counterweight is then free to drop a certain distance, causing the lever 45 to rock relative to the ratchet wheel and therefore causing the pawl 47 to move back around the wheel a certain distance.

The opposite end of the lever 45 therefore becomes raised somewhat, so that when the rod 49 is lowered to the bottom of its stroke with the operation of the paper feeding means, the stop 51 will engage the block 48 and pull the lever down the same distance that it was previously raised. This pulls the ratchet wheel around a short distance, causing the chain drums to be rotated by reason of the gearing connections therebetween, and the elevator table 3 will consequently be raised. When the lever 45 is thus engaged and fully depressed by the stop 51 the rod 42 again passes under the lip 43 so that the counterweight will be held in its original raised position when the stop moves up from the block with the return or forward movement of the rod 49; the spring 39 then acting to pull the rod 42 back into place under the lip.

The operations are then repeated as the supply of paper is depleted still further, the lever 45 being only given one depressing movement for each intermittent table raising operation. As previously stated, the ratchet wheel is held from rotation in the opposite direction at any time by the fixed pawl 13 which is independent of the pawl 47.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. In combination with a vertical movable support for a pile of sheets adapted to be individually withdrawn therefrom and means to thus withdraw the sheets; a pivoted lever, means to raise the support by the turning of the lever in one direction, means for thus turning the lever only when the latter assumes a predetermined position, means tending to turn the lever to such position, a lip projecting laterally from the lever, a member normally engaging the lip from that side which will prevent the lever from thus

turning, a turnable shaft from which the member projects, a second shaft parallel to the first shaft, a horizontal rod projecting from said second shaft over the support and the pile thereon, a finger mounted on said rod to engage the topmost sheet of the pile, connections between said shafts whereby a downward swinging of the rod a certain distance as governed by the lowering of the pile will rotate said first shaft sufficiently to cause the lip engaging member to clear the lip, means incorporated with said connections to permit of a limited upward swing of the rod without moving the lip engaging member, and means applied to the second shaft and functioning in co-ordinated conjunction with the operation of the sheet withdrawing means to intermittently rotate said second shaft to lift the rod.

2. In combination with a vertically movable support for a pile of sheets adapted to be individually withdrawn therefrom; a pivoted lever, means to raise the support by the turning of the lever in one direction, means for thus turning the lever only when the latter assumes a predetermined position, means tending to turn the lever to such position, a lip projecting laterally from the lever, a member normally engaging the lip from that side which will prevent the lever from thus turning, a turnable shaft from which the member projects, a second shaft parallel to the first shaft, a horizontal rod projecting from said second shaft over the support and the pile thereon, a finger mounted on said rod to engage the topmost sheet of the pile, connections between said shafts whereby a downward swinging of the rod a certain distance as governed by the lowering of the pile will rotate said first shaft sufficiently to cause the lip engaging member to clear the same, while permitting of an upward movement of said rod without affecting the lip-engaging member, a trip rod projecting from the second shaft in the direction opposite to the horizontal rod, an oscillating shaft arranged in vertically spaced and parallel relation to the trip rod, and a strap eccentrically pivoted at one end on the last named shaft and having a vertical slot through which said trip rod passes, the slot being arranged so that the strap at one end of the slot engages and depresses the trip rod only with the arrival of the shaft at one end of its oscillatory stroke.

3. In combination with a vertically movable support for a pile of sheets and means to withdraw the sheets individually; means to raise the support including a lever tending to turn in one direction to effect a raising movement, means to prevent such turning of the lever including a lip projecting from the lever and a member normally but releasably holding the same; a movable finger normally engaging the topmost sheet of the pile, means between the finger and member to move the latter clear of the lip when the finger has been lowered by the depletion of the pile a certain extent, and means actuated in conjunction with the sheet withdrawing means to raise the finger once with every sheet withdrawing movement without affecting and irrespective of the position of the member relative to the lip.

In testimony whereof I affix my signature.

CHARLES L. LOW.