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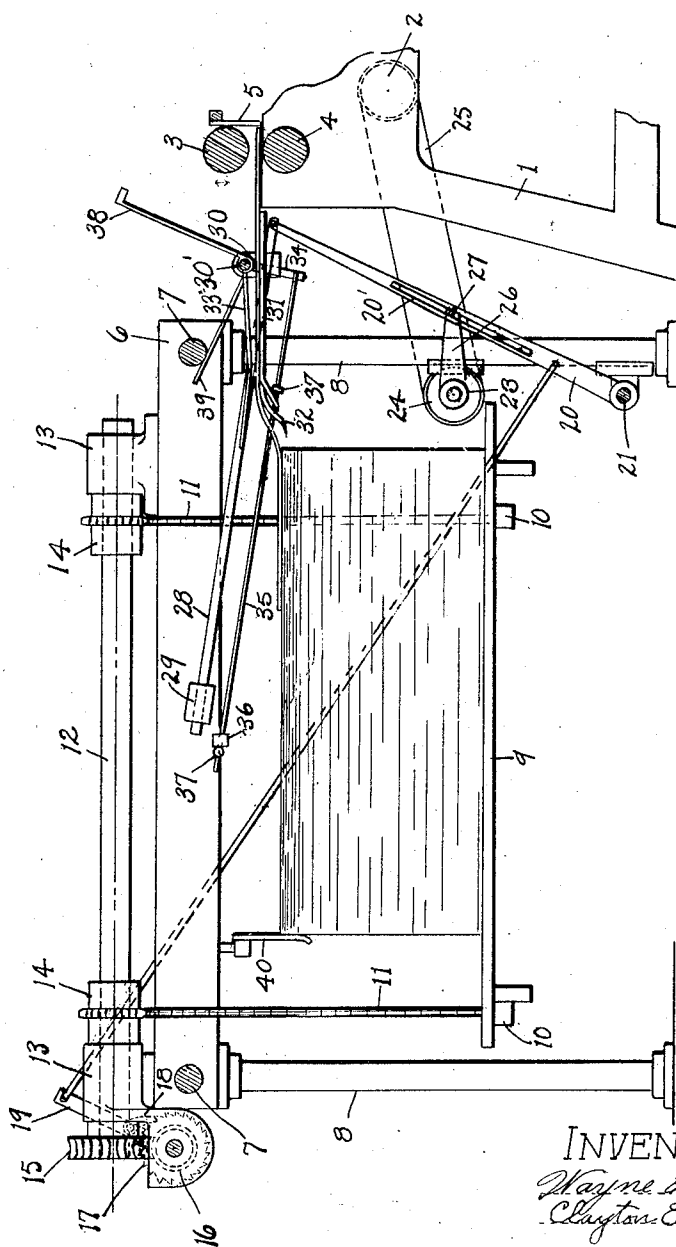
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1,653,305

AUTOMATIC PAPER FEED

Filed July 24, 1926

2 Sheets-Sheet 1



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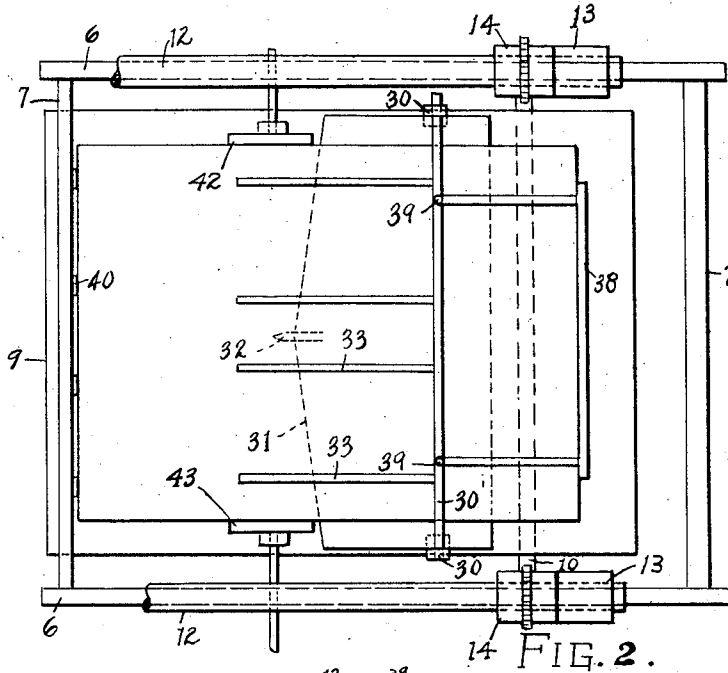


FIG. 2.

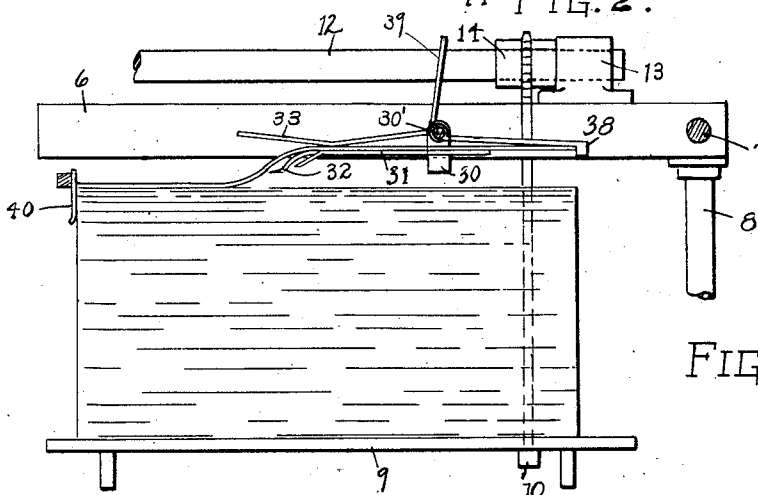


FIG. 3.

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AUTOMATIC PAPER FEED.

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Our invention relates to devices for automatically feeding sheets of paper to a machine designed to perform some operation upon said sheets. More particularly it relates to automatic feeding devices adapted to serve machines that may be fed more than one sheet at a time, as for instance a perforating machine or a binding machine.

The object of our invention is to provide an automatic feed that will divide and separate off a quantity of sheets equal to the capacity of the machine that it is adapted to feed and deliver said sheets accurately to said machine.

Further objects of our invention lie in its simplicity of operation and economy of construction.

We attain these objects by mechanism shown in the accompanying drawings, in which—

Fig. 1, is a side elevation of our automatic paper feed and a portion of a perforating machine, showing the feeder, driven from the perforating machine, nearing the position of delivery of a quantity of sheets to said perforating machine.

Fig. 2, is a plan view of our feeder showing the divider and carriage as the paper is being divided and separated.

Fig. 3, is a side elevation of the structure and mechanism appearing in Fig. 2.

The parts will be identified by numerals of reference which refer to the same parts in all of the views.

1 is the frame of the perforating machine. 2 is a sprocket carried on a shaft, not indicated, which is a part of said perforating machine. 3 is the drop feed roll. 4 is the stationary feed roll. 5 is the gate of a perforating machine as usually constructed.

6, 6 are the members forming the side frames of our feeder. 7, 7 are the spacers holding the side frames in proper spaced relation, the whole constituting a rigid frame. 8, 8, 8, 8 are legs of any suitable construction, connected to said frame.

9 is the paper elevator platform. 10, 10 are the supporting bars underneath the said platform. 11, 11, 11, 11 are the elevator chains. 12, 12 are the elevator shafts which are journaled in suitable bearings 13, 13 at each side of the machine. 14, 14, 14, 14 are the sprockets on said shafts over which the elevator chains are wrapped.

15, 15 are worm gears, one on each of the shafts 12. These gears are actuated by

worms 16, 16 which are secured to a cross shaft, not indicated. Attached to said cross shaft is a ratchet wheel 17. Co-acting with said ratchet wheel is a pawl 18, pivotally connected to a lever 19, which is journaled on the cross shaft and held in proper spaced relation to the ratchet wheel by a collar, not indicated. Lever 19 is connected to lever 20 by a rod 22.

Levers 20, 20, one on each side of the machine, oscillate on pivots 21, 21 which are mounted in suitable brackets attached to the supporting legs 8. A cross shaft 23, to which is secured a sprocket 24, is journaled in bearings also attached to the supporting legs.

A chain 25 passing over sprockets 2 and 24 furnishes the means whereby the feeder is driven by the perforating machine.

Secured to each end of shaft 23 are crank arms 26, 26. These arms carry pins 27, 27 which act in slots 20', 20' on the levers 20, 20, imparting an oscillating motion to said levers. Bearings might be provided for the pins 27, 27 and otherwise arranged to slide in the slots 20', 20'.

The reciprocating rods 28, 28 are pivotally connected to the upper ends of levers 20, 20 and supported in suitable bearings 29, 29. These bearings are pivotally connected to the side frames 6, 6 to permit oscillation.

Bearings 30, 30 are secured to rods 28, 28 and support the shaft 30'. Bearings 30, 30 also support the feed carriage 31 which is in the form of a plate, tapered and bent downward at the front edge to form a plow.

The dividing point 32 has a knife edge and is attached to the carriage plate 31 in such a manner that the point is slightly in advance of the point of the plow.

33, 33, 33, 33 are clamping fingers secured to the shaft 30'. A spring and toggle mechanism, not shown, causes the fingers 33 to be held under spring tension against the face of the plate 31 or away from it depending upon the position of the trip arm 34. The trip rod 35 is pivotally connected to trip arm 34 and supported in bearing 36. Bearing 36 is pivotally mounted to permit oscillation. 37, 37 are collars adjustably mounted on the rod 35.

38 is the forward jogger which is carried on shaft 30' but not secured thereto. The arms 39, 39 are a part of the forward jogger support or otherwise attached thereto. 40 is the rear jogger and is secured to the frame

of the machine at 41. 42 is the side guide. 43 is the side jogger and is operated by mechanism not shown.

The operation of our mechanism is as follows: Operation of the perforating machine causes rotation of the cross shaft to which is secured the sprocket 2. The chain 25 transfers the motion to sprocket 24 causing rotation of shaft 23 and crank arms 26. This causes oscillation of arms 20 as previously described. Oscillation of arms 20 moves rods 28, the carriage 31, the shaft 30' and the co-operating mechanism attached thereto with a forward and backward motion.

Motion is transferred to the lever 19 by rod 22, causing the pawl to feed the ratchet wheel. Thru the worm gearing, the sprocket 14 and the chain 11, the elevator platform is caused to rise a predetermined amount with each stroke of the feeder.

As the carriage advances toward the stack of paper, the dividing point 32 strikes the paper at the desired distance below the top of the stack, divides and separates a quantity of sheets which are lifted by the plow to the top of the plate 31. As the carriage advances the forward jogger 38 drops into place and when the carriage reaches the end of its forward stroke the jogger straightens the forward edges of the sheets that have been separated from the stack. At this point the back collar 37, having previously collided with the bearing 36, causes the trip arm 34 to operate the spring toggle mechanism which results in bringing the clamping fingers 33 into forcible contact with the separated sheets.

As the carriage moves back, the separated sheets are dragged from the stack and the forward edges brought to the gate 5 and between the feed rolls 3 and 4 of the perforating machine. During this backward movement of the carriage, the elevator again raises the stack of paper and the forward jogger is raised by the arms 39 colliding with the spacer 7.

At the end of the back stroke, the forward collar 37, having previously collided with the bearing 36, causes the trip arm 34 to again operate the spring toggle mechanism, resulting in the release of the pressure of the clamping fingers 33.

The drop feed roll 3 of the perforating machine now moves down into contact with the paper and the gate 5 rises, whereupon the separated sheets are fed into the machine.

While we have described a particular form of our invention, we anticipate modifications of the mechanical construction. We consider such modifications to be within the scope of our invention, which we conceive to be a mechanism to divide and separate a quantity of sheets from the top of a stack, raising said quantity of sheets to a carriage

and subsequently moving them to a point of delivery.

What we claim and desire to secure by Letters Patent, is:

1. A paper feeding mechanism comprising the combination with means for supporting a stack of sheets, a reciprocating carriage supported in alignment with said stack, a suitable instrument supported on said carriage for dividing and separating a quantity of sheets from the top of said stack on the forward movement of said carriage, means for adjusting the quantity of sheets separated on said movement, means for maintaining said adjustment as succeeding quantities of sheets are removed, means for raising said separated sheets onto said carriage and means for delivering said sheets from said carriage.

2. A paper feeding mechanism comprising the combination with means for supporting a stack of sheets, a reciprocating carriage supported in alignment with said stack, a suitable instrument supported on said carriage for dividing and separating a quantity of sheets from the top of said stack on the forward movement of said carriage, means for adjusting the relation of said dividing instrument to the top of said stack, means for maintaining said relation as succeeding quantities of sheets are removed, means for raising said separated sheets onto said carriage and means for delivering said sheets from said carriage.

3. A paper feeding mechanism comprising the combination with means for supporting a stack of sheets, a reciprocating carriage supported in alignment with said stack, a suitable instrument supported on said carriage for dividing and separating a quantity of sheets from the top of said stack on the forward movement of said carriage, means for adjusting the distance below the top of said stack that said dividing instrument will contact, means for maintaining said distance as succeeding quantities of sheets are removed, means for raising said separated sheets onto said carriage, means for retaining said sheets on said carriage during its backward movement, and means for delivering said separated sheets from said carriage.

4. A paper feeding mechanism comprising the combination with means for supporting a stack of sheets, a reciprocating carriage supported in alignment with said stack, a suitable instrument supported on said carriage for dividing and separating a quantity of sheets from the top of said stack on the forward movement of said carriage, means for adjusting the distance below the top of said stack that said dividing instrument will contact, means for maintaining said distance as succeeding quantities of sheets are removed, means for raising said separated sheets onto said carriage, clamping fingers actuated by

the movement of said carriage for retaining said sheets on said carriage during its backward movement, and means for delivering said separated sheets from said carriage.

5 5. A paper feeding mechanism comprising the combination with means for supporting a stack of sheets, a reciprocating carriage supported in alignment with said stack, a suitable instrument supported on said carriage
10 for dividing and separating a quantity of sheets from the top of said stack on the forward movement of said carriage, means for adjusting the distance between the top of said stack and the point that said dividing
15 instrument will contact, means for maintaining said distance as succeeding quantities of sheets are removed, means for raising said separated sheets onto said carriage, a jogger
20 for straightening and aligning the forward edges of said sheets, means for retaining said sheets on said carriage during its backward

movement, and means for delivering said separated sheets from said carriage.

6. A paper feeding mechanism comprising 25 the combination with means for supporting a stack of sheets, a reciprocating carriage supported in alignment with said stack, means for elevating said stack a predetermined amount with the return stroke of said carriage, a suitable instrument supported on
30 said carriage for dividing and separating a quantity of sheets from said stack on the forward movement of said carriage, means for raising said separated sheets onto said
35 carriage, means for retaining said sheets on said carriage during its backward movement, and means for delivering said separated sheets from said carriage.

In witness whereof we have hereunto set
40 our hands.

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