

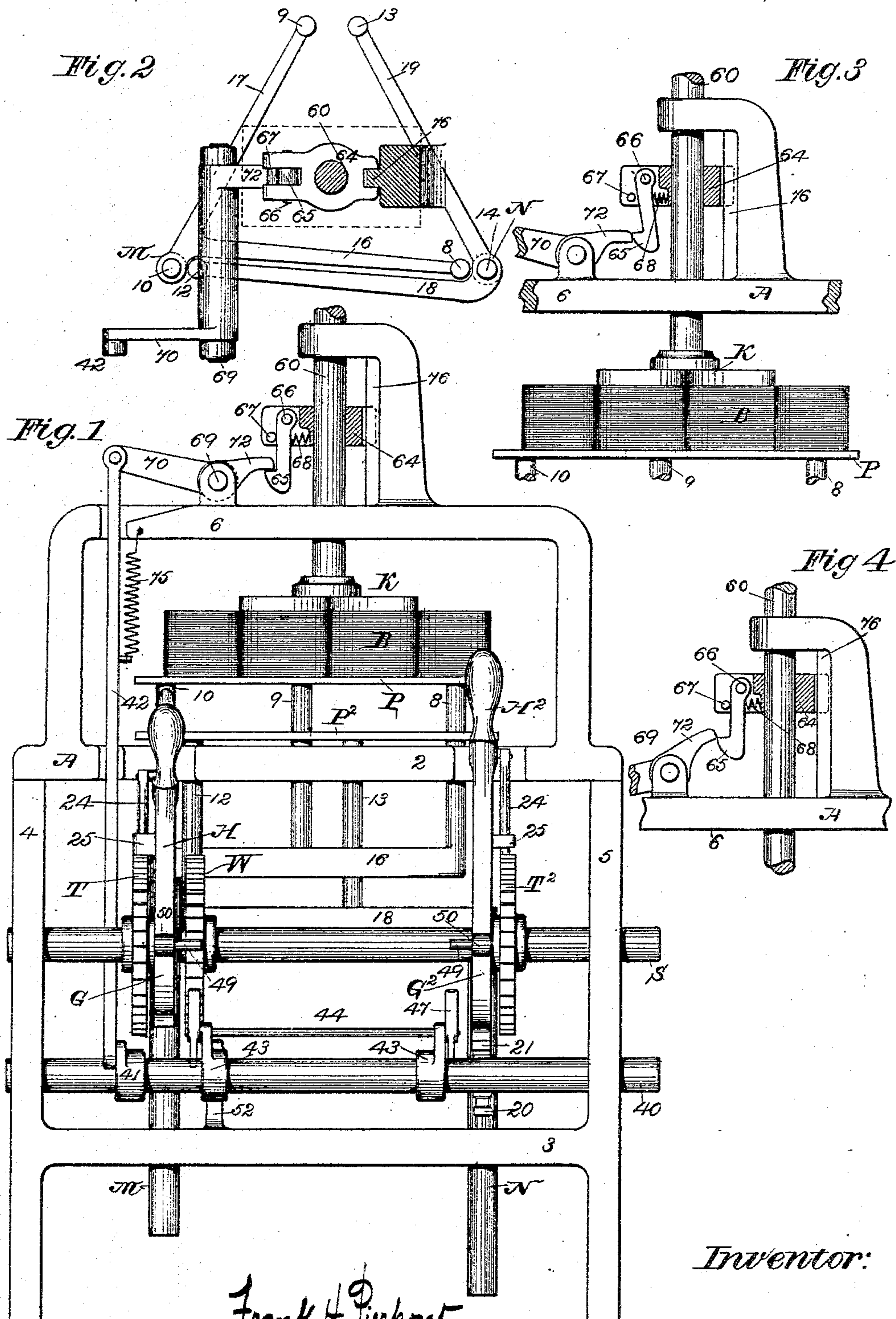
(No Model.)

2 Sheets—Sheet 1.

F. H. RICHARDS.
BLANK FEEDING MECHANISM.

No. 356,893.

Patented Feb. 1, 1887.



Inventor:

Witnesses:

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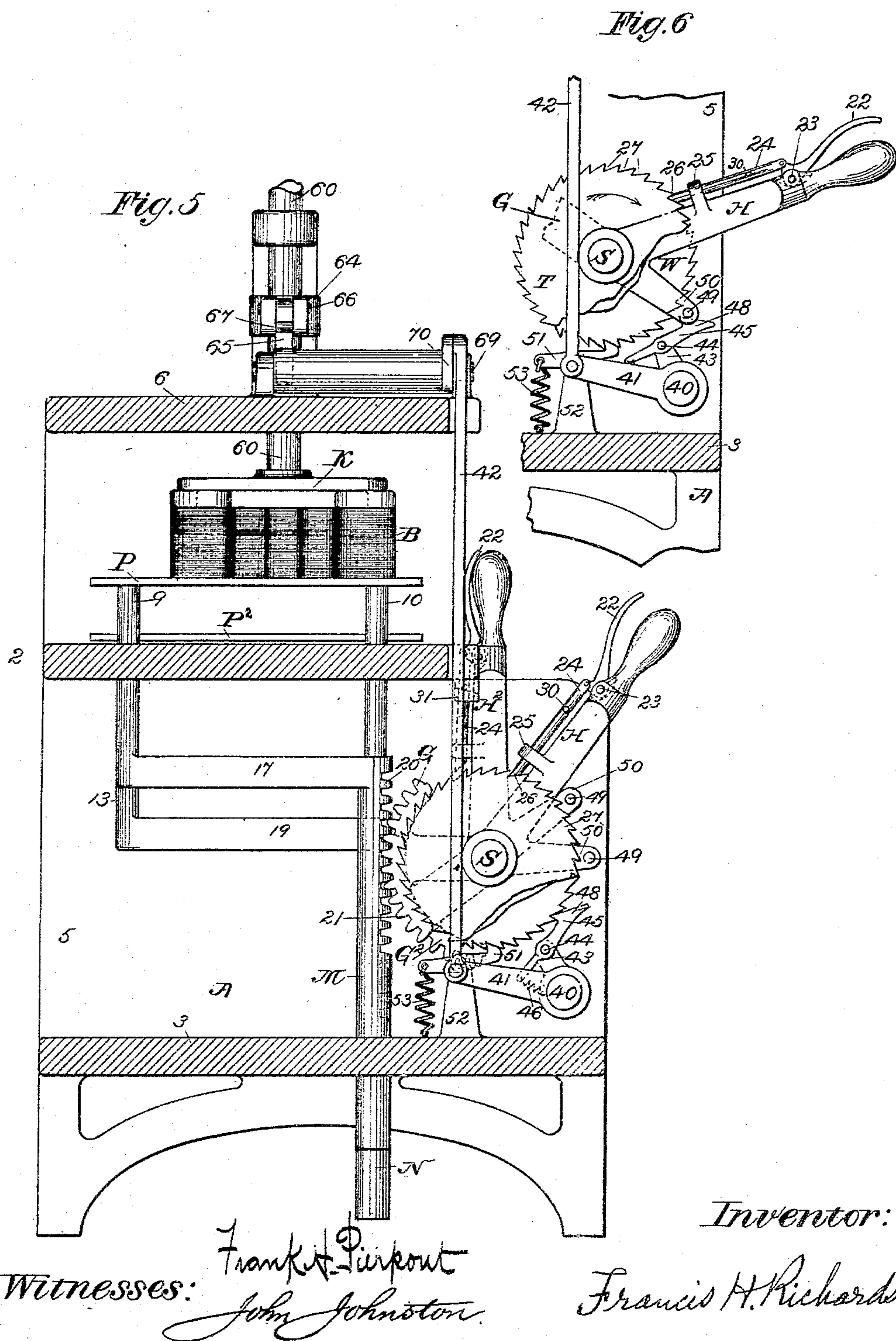
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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF SPRINGFIELD, MASS., ASSIGNOR OF ONE-HALF
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BLANK-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 356,893, dated February 1, 1887.

Application filed February 13, 1886. Serial No. 191,886. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Blank-Feeding Mechanisms, of which the following is a specification.

This invention relates to that class of blank-feeding apparatus in which the pile of blanks is replenished at the bottom while the pickers are taking blanks from the top thereof.

The object of the invention is to provide improved mechanism or apparatus adapted for use in envelope-machines, whereby that operation may be conveniently performed and each blank-supporting plate may be operated independently of the other.

To this end my invention consists in certain improvements and combinations, hereinafter described and claimed.

In the drawings accompanying and forming a part of this specification, Figure 1 is a front elevation of a mechanism embodying my invention. Fig. 2 is a top view of a part of the same. Fig. 3 is a part of Fig. 1, showing certain parts in a different position. Fig. 4 shows a part of Fig. 3, with the latch farther up. Fig. 5 is a side elevation, partially in section, as seen from the left hand in Fig. 1. Fig. 6 shows certain details of Fig. 5 in a different position.

Similar characters designate the same parts in all the figures.

The frame-work of the machine (designated by A) may be the frame of an ordinary envelope-machine, and may be constructed or built up in any way suitable to properly support the operating parts. As shown in the drawings, said frame-work comprises a top plate, 2, a bottom plate, 3, sides 4 and 5, and the upper frame, 6. In these parts are formed the bearings for the several shafts, studs, and slides.

B designates a pile of envelope-blanks placed on the blank-supporting plate P, which rests on and is fed up by a set of plate-lifters, 8, 9, and 10, arranged in a triangular form. P² is another and similar plate, resting on another and similar set of plate-lifters, 12, 13, and 14, similarly arranged. The plates P and P² are

supposed to be the same as those respectively designated B and B² in United States Patent No. 340,245, granted to me April 20, 1886, in which I have broadly claimed a combination of mechanisms substantially as herein shown and described. In that application also I have described a set of blank-guides, between which the pile of blanks is fed up, which guides are adapted to be used in connection with my present improvements. Being fully shown and described in my aforesaid application, said guides are not shown in the present case, as their construction and operation are in no wise to be materially changed.

For communicating to them simultaneous and equal vertical motion all the lifters in a set are rigidly joined together by a horizontal frame, each frame consisting of two arms, 16 17 and 18 19, respectively. By arranging these sets of arms as best shown in Fig. 2 either one may be moved up or down past the other without interference. One set of lifters is connected to a vertically-sliding rod, M, and the other set to a similar rod, N. Both rods are constructed to slide in bearings formed in plate 3, while the lifters pass through holes in plate 2. On one side said rods are provided with a set of rack-teeth, 20, which respectively mesh with similarly-shaped gear-teeth 21, on the segmental gears G G². These segments are loosely fitted on a horizontal shaft, S, and are operated by means of their respective handled levers H and H², which levers are operated either by hand or by power, as follows: Two ratchet-wheels, T and T², are fixed on shaft S adjacent to said levers H and H², respectively, and are carried by said shaft in the direction indicated by the arrow in Fig. 6. The levers are each provided with any suitable thumb-catch locking in one direction into said ratchet-wheels. These catches may be made as follows: A lever, 22, which is pivoted to lever H at 23, operates a sliding pin, 24, that slides in a bearing, 25, formed on said lever H. The point of said pin is formed into a catch, as at 26, working in teeth 27 of ratchet-wheel T. By this or similar means, the ratchet-wheels being turned regularly, either or both of the slides M or N may be moved up by hand or power, and either or both moved down by hand whenever required. When the

slide M or N is moved clear down, as H² in Fig. 5, a pin, 30, on catch 24 runs onto a cam-stop, 31, (shown in dotted lines,) which serves to raise said catch out of notches 27, so that when said slide M or N is clear down it remains down until first raised a little by hand to disengage the catch, as described.

For operating shaft S, I have designed the following apparatus: A rock-shaft, 40, is operated by means of arm 41, fixed thereon, and rod 42, connected, as hereinafter described, to the picker mechanism. Said shaft 40 has arms 43, carrying a small shaft, 44, which has on one end of it a pawl, 45, operating ratchet-wheel W, which wheel is similar to wheels T, and may, indeed, be one of them. In this case, however, the said wheel should have its teeth 27 made radial on both sides, (instead of on one side only, as shown,) so the respective pawls may each take a proper hold thereof. A spring, 46, (shown in dotted lines in Fig. 5,) serves to hold the pawl in contact with wheel W, except when held away, as hereinafter described. Shaft 44, on its opposite end, has a guard, 47, in every way similar to pawl 45, with the exception it has no hook for engaging a ratchet-wheel. This guard and the pawl 45 are shaped as at 48, Figs. 5 and 6, for the purpose of interrupting the movements of shaft S when the slides M and N have, either one or both of them, been fed up a sufficient distance. For this purpose, also, levers H have an arm, 50, provided with a pin, 49, which at the proper time acts to force the pawl 45 away from wheel W, as in Fig. 6, which operation will obviously take place whether said pin acts on the said pawl or on guard 47, these being rigidly connected. For preventing any backward movement of shaft S on the disengagement of pawl 45, a detent-pawl, 51, may be used, it being pivoted on post 52, or otherwise, and operated by a spring, 53, or by a weight.

The picker mechanism consists of the usual vertically-reciprocating stem, 60, working in any suitable bearings formed or affixed to frame 6, an ordinary pair of pickers, K, affixed to the lower end of said stem, and any convenient means for operating them. Said means may, for instance, consist in the devices shown and described for operating the upright Y in United States Patent No. 221,835, dated November 18, 1879. For the purpose of operating the rod 42 intermittently, as required, to feed up the pile of blanks, said stem is provided with a yoke, 64, which carries the spring-actuated lifting-hook 65. This hook is pivoted in said yoke at 66, and is normally held against a stop, 67, by a spring, 68. Pivoted at 69 to a part of frame 6 there is a lever, 70, connected at one end to rod 42 and formed at the opposite or hook-engaging end, 72, to be operated in an upward direction by said hook. A spring, as 75, Fig. 1, is provided to operate said lever and rod 42 in the reverse direction.

The yoke 64, in addition to carrying hook 65, is also constructed in the present instance

to prevent rotation of stem 60, this result being accomplished by means of notches formed in said yoke, which notch fits over and slides on a guide, 76, formed on a part of frame 6. Instead of this construction, I may, however, use for said purpose the well-known devices heretofore employed therefor.

The operation of my improved blank-feeding mechanism is as follows: One of the blank-supporting plates, as P, is placed in position on its lifters, which then stand down. A pile of blanks, as B, is then placed on said plate, which is then lifted up till the top of said pile is slightly above the point shown in Figs. 1, 2, 3, and 5. The envelope-machine being now started up, the blanks are taken one at a time from the top of the pile and carried away by carriers in the usual manner, the plate being fed up in the meantime by means of the mechanism described. While this is going on, the operator places plate P² in position on its lifters and another pile of blanks on said plate. Lever H² is now drawn forward, lifting plate P² until the lower pile reaches plate P, when this plate is pulled out, letting the remainder of pile P rest on the pile on plate P². Lever H is then disengaged and swung back, lowering the lifters of plate P, which is again placed on them, and another pile of envelopes on that, to be fed up as before. In this way the machine may be run continuously, the blanks being fed at convenient intervals. This operation of the lifters and plates is the same as described in my aforesaid Patent No. 340,245.

The operation of the devices for driving shaft 40 from the picker-stem is as follows: In Fig. 3 the pile of blanks B is at such a height that when the pickers K rest thereon the hook 65 does not catch under the end of arm 72, which normally stands down, as there shown. As the pile of blanks is gradually lowered, said hook descends lower until it finally slips under said arm, as in Fig. 1. On now rising, the hook carries said arm upward, and of course sidewise, (it moving in an arc concentric to pivot 69,) until it slips off, as in Fig. 4. The upward movement of arm 72 of course throws down rod 42, turning shaft 40 to move forward the shaft S, which in turn moves up the blank pile, thereby interrupting the operation of the entire feeding apparatus until the pile B is again sufficiently lowered.

It will of course be understood that the mechanism herein described is, both as a whole and in its several parts, capable of modification in various ways and degrees, after the manner of machines in general, without departing from my invention.

Having thus described my invention, I claim—

1. The combination, in a blank-feeding apparatus, of one mechanism consisting of plate-lifters rigidly connected together, and devices, substantially as described, for operating them, with another and similar mechanism consisting of substantially duplicate lifters and de-

vices, said mechanisms being each adapted to be operated independently, substantially as set forth.

2. The combination, in a blank-feeding apparatus, of slide M, carrying a horizontal frame provided with plate-lifters 8, 9, and 10, and slide N, carrying another such frame, provided with lifters 12, 13, and 14, said frames being constructed to pass each other, substantially as set forth.

3. The combination, in a blank-feeding mechanism, of a slide, as M or N, adapted to carry the blank-supporting plate, a vertically-reciprocating picker constructed to operate on the pile of blanks supported on said plate, a shaft having fixed thereon a ratchet-wheel, whereby it is revolved in a forward direction, gearing connecting said slide and said shaft, and the intermittently-acting connecting mechanism, substantially as described, operating

from said picker to feed said shaft when the picker descends below a given point, all substantially as set forth.

4. The combination, in a blank-feeding mechanism, of a slide, as M or N, supporting the blanks, a vertically-reciprocating picker operating on said blanks, shaft S, an intermittently-acting feed mechanism operated from the picker to turn said shaft by means of a pawl-and-ratchet wheel, a lever journaled on said shaft and geared to said slide and detachably connected to said shaft, and a stop carried on said lever and constructed to hold said pawl from said ratchet-wheel when the slide reaches a given height, all substantially as set forth.

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