Dec. 23, 1941. C. L. POST 2,267,574

ENVELOPE FEEDING MECHANISM

Filed July 13, 1939 2 Sheets-Sheet 1

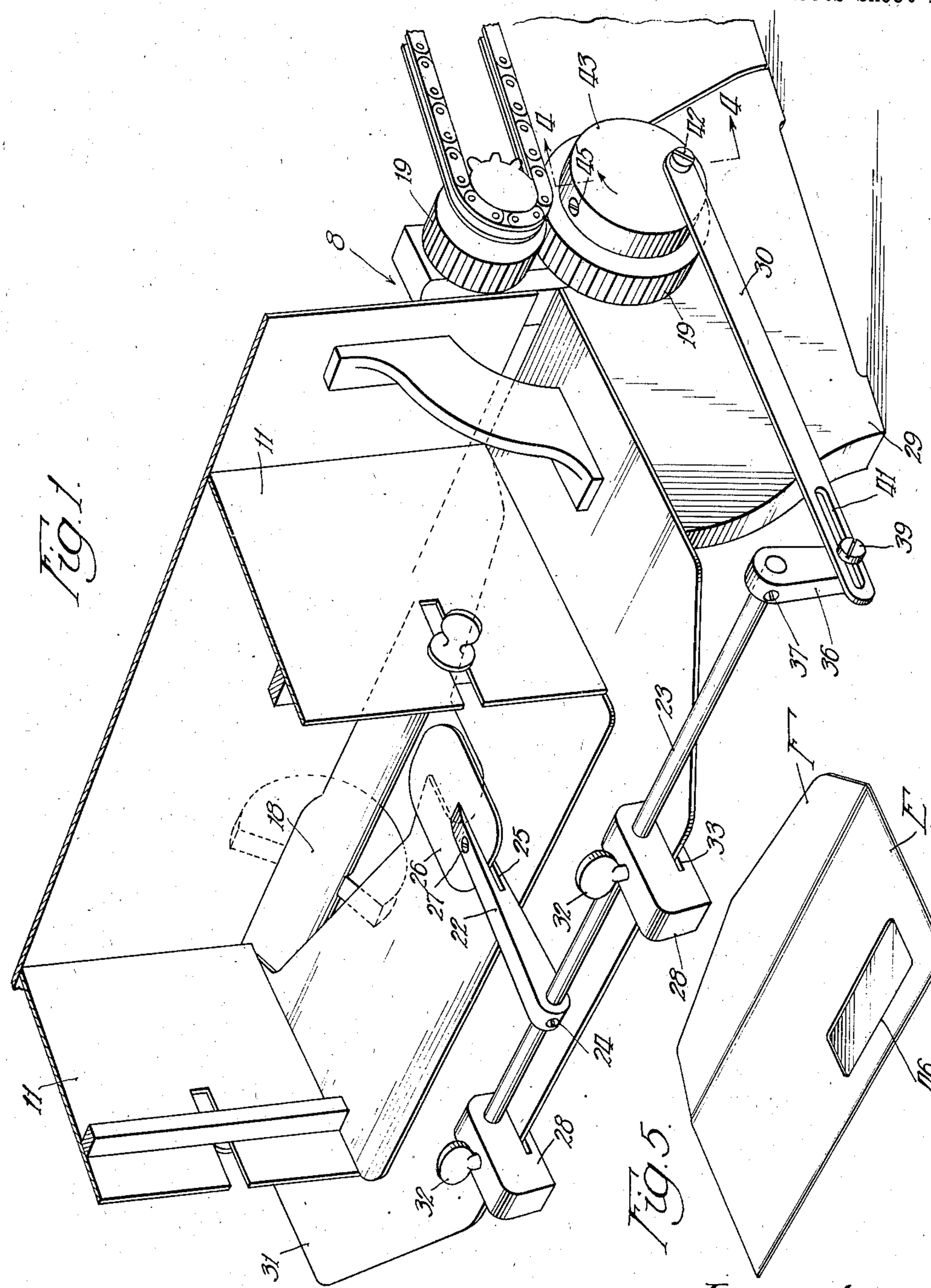

Fig. 1.

Witness
V. Siljander

Inventor
Claude L. Post
By: J. Lee & J. Lee Attys.

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Fig. 2.

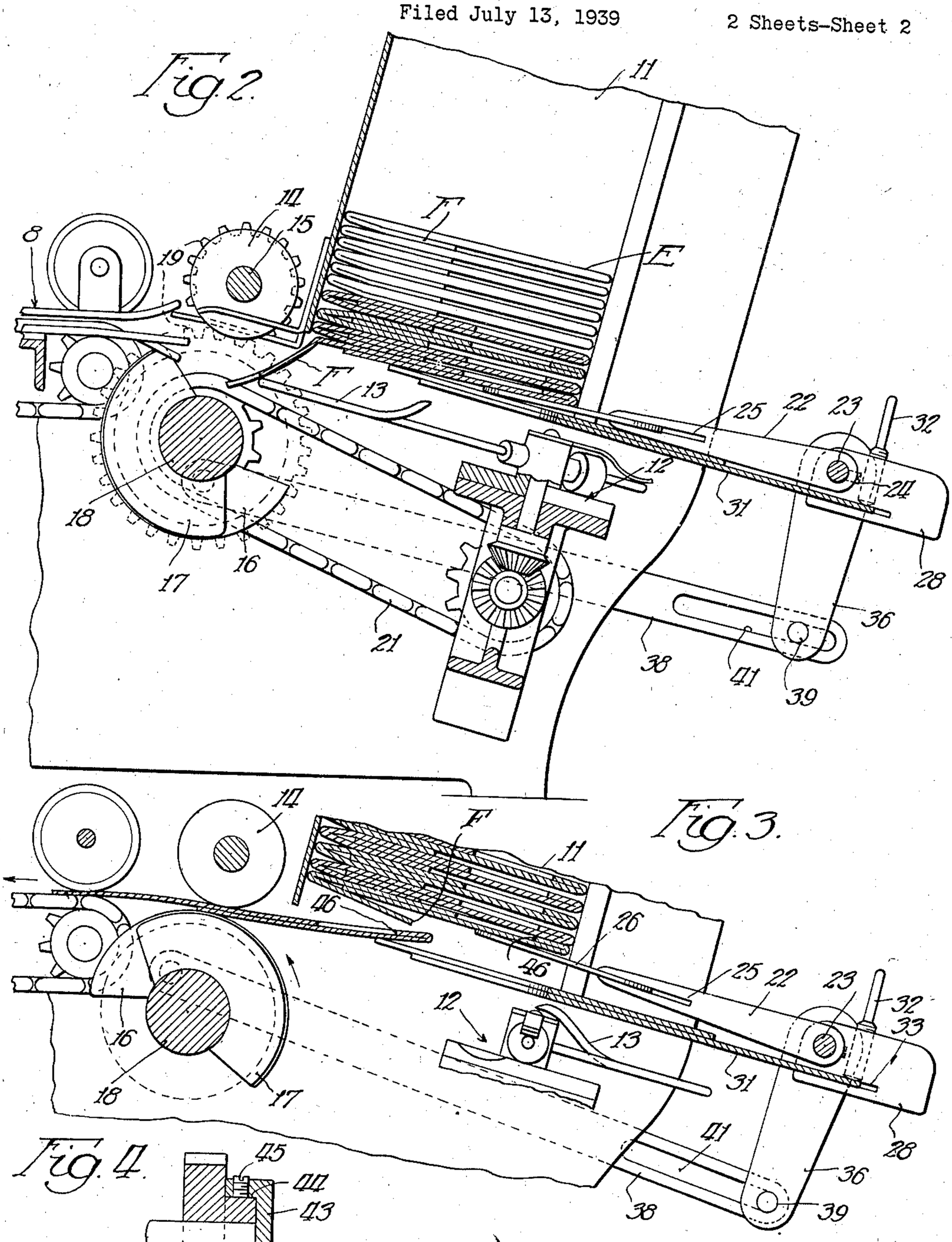
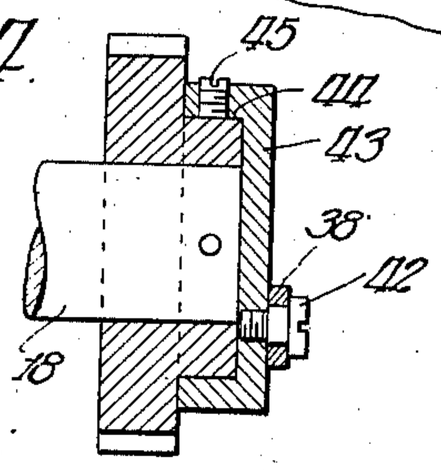


Fig. 3.

Fig. 4.



Witness:
V. Siljander

Inventor
Claude L. Post
By: Lee & Lee Attys.

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ENVELOPE FEEDING MECHANISM

Claude L. Post, Chicago, Ill.

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7 Claims. (Cl. 271—2)

The invention relates to feeding mechanism, and particularly to a device for use in feeding envelopes having a window or the like therein.

Heretofore considerable difficulty has been experienced in feeding envelopes to printing machines, for example, where the envelopes have been provided with an opening or window in the same, which rendered it difficult to feed envelopes from a stack as the flap of the envelope on the bottom of the stack would catch in the window of the envelope directly ahead of it as the latter envelope was drawn from the bottom of the stack into the machine. This causes either one or both of the envelopes to be torn and jams the feeding mechanism.

The present invention, therefore, has as one of its objects the production of a feeding mechanism having suitable means associated therewith for preventing the envelopes from engaging and tearing one another during feeding, and jamming up the feeding mechanism.

Another object of the invention is the construction of such a feeding mechanism which lifts the stack of envelopes above the preceding envelope as the latter passes into the machine.

Another object of the invention is the construction of such a mechanism which may be attached to the machine for use with envelopes having a window therein and may be removed if desired when not in use.

Another object of the invention is the production of such a device which may be attached to substantially any type of such a machine with a minimum of time and labor.

Another object of the invention is the construction of such a device which may be readily adjusted for envelopes of various sizes and shapes.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

One embodiment of the present invention is shown for illustrative purposes in the accompanying drawings in which:

Fig. 1 is a perspective view of a portion of a machine of the type described with my improved feeding device applied thereto;

Fig. 2 is a sectional view through the portion of the machine shown in Fig. 1 with the bottom envelope about to enter the feeding mechanism;

Fig. 3 is a similar view with the envelope entering the feeding mechanism, showing the envelope directly above the same raised out of contact therewith;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; and

Fig. 5 is a perspective view of an envelope of the type adapted to be used with the present invention.

In Figs. 1, 2, and 3 of the drawings, the present invention is shown in relation to a fragment of a printing press of the character shown and fully described in Patent No. 1,758,536, issued to me May 13, 1930, and having a feed table indicated as a whole by the numeral 8 associated therewith and a magazine 11 adapted to contain a plurality of superimposed envelopes E to be fed to the table 8 and thence to a printing machine or the like.

Positioned below the magazine 11 is a feeding mechanism indicated as a whole by the numeral 12, the specific details and operations of which are fully described in Patent No. 1,730,477, issued to me October 8, 1929.

Briefly, the mechanism 12 includes a rotatable finger 13 adapted to engage the flap F of the lowermost envelope E positioned in the magazine 11 in a manner to unfold the flap thereof and move it outwardly into substantial alignment with the body of the envelope between upper feed rollers 14 mounted on the shaft 15 and lower feed segments 16 and 17 mounted on the shaft 18 by which the flap F is engaged in a manner to feed the envelope from the magazine 11 onto the feed table 8, said rollers 14, segments 16 and 17 and the finger 13 being operated in a proper synchronism by means of gearing 19 shown in Figs. 1 and 2 and a drive chain 21 as clearly described in said Patent No. 1,730,477.

As shown in Figs. 2 and 3, the envelopes E are stacked in the magaznie 11 with the faces of the envelopes upward. The finger 13 engages the flap F of the bottom envelope and rotates it downward into the position shown in Fig. 2, where the segments 16 and 17 draw it up into engagement with the rollers 14, after which it enters the machine, as shown in Fig. 3. The usual envelopes readily enter the machine with no difficulty whatsoever. However, when the envelope is provided with a window or opening therein through which an address or the like on the contents of the envelope are visible for mailing purposes, a new difficulty arises. As shown, the envelopes are stacked face up so that the flap of the top envelope is resting on the face of the one be-

low. When the latter envelope is drawn from the bottom of the stack, the opening or window 46 passes adjacent the flap F of the envelope immediately above. As the flaps have a tendency to open slightly the flap of the envelope on the bottom of the stack sometimes catches in the window of the envelope being drawn from the stack. This results in one or both of the envelopes being torn and the machine jammed, necessitating the stopping thereof to remove the obstruction created thereby. This difficulty arises with both envelopes merely having openings and those having transparent windows of "Cellophane" or the like. In the latter case, the thickness of the paper in the envelope at the window is sufficient to engage the flap of the envelope above. With the present invention, the envelopes in the stack are preferably raised out of contact with the envelope entering the mechanism, thus entirely eliminating any possibility of the flap of one envelope catching in the window of another. It will be noted that the envelopes are moved out of position during feeding as contrasted with prior devices wherein means are inserted between envelopes to prevent engagement of the flap and window.

In the construction illustrated in the drawings, an arm 22 is carried on a shaft 23 and is locked thereon by a set screw 24 or other suitable means. The free end of the arm is provided with a slot 25 in which is carried a paddle 26. A set screw 27 securely holds the paddle in place and may be readily loosened for adjustment of the paddle to accommodate envelopes of various sizes. The shaft 23 is journaled in a pair of blocks 28 which are mounted on the table 31, the latter forming the bottom of the magazine 11. The blocks 28 may be permanently mounted on the table 31 or if desired, may be removably secured thereto, as shown in the drawings, by means of wing screws 32 which clamp the blocks to the table, the blocks in this case being slotted, as shown at 33, to receive said table. The arm 22 and paddle 26 are of a size to position the paddle under the stack of envelopes so that the partial rotation of the shaft will raise the arm 22 and stack of envelopes from the bottom of the magazine 11.

The shaft 23 is operatively connected with the feeding mechanism so that the arm 22 and paddle 26 will be raised in synchronism with the feeding mechanism as will hereinafter be described. In the present form of the invention, shown in the drawings, particularly Fig. 1, the end of the shaft 23 is provided with an arm 36 rigidly secured thereto by a set screw 37 or other suitable means. Slidably connected to the opposite end of the arm 36 is a slotted connecting member 38, the screw 39 passing through the slot 41 of the member and into the arm 36 with the member being free to slide on the screw 39. The opposite end of the member 38 is pivotally secured by means of a screw 42 to a cylindrical cap 43. As shown in Fig. 4, the cap 43 is secured to the hub 44 of the gear on the shaft 18 by means of a set screw 45. Obviously, the cap 43 could be formed as an integral part of the gear if desired, the construction shown, however, readily adapting itself for use on old machines which would not be provided with the cap. It might be mentioned that while the shaft 23 is driven through the arm 36, the member 38 and cap 43 from the shaft 18, obviously it might be driven from any suitable power shaft of the machine.

The operation of the device is as follows:

As previously mentioned, the finger 13 engages the flap F of the enevlope at the bottom of the stack, moving it into the position shown in Fig. 2 where it is picked up by the segments 16 and 17, which rotate it up to the rollers 14, there being a plurality of them on the shaft 16, after which the envelopes will be drawn into the machine, as shown in Fig. 3. As soon as the bottom envelope begins to move from under the stack, the arm 22 and paddle 26 will begin to rise, carrying with it the remaining envelopes in the magazine. This continues until the stack has preferably been raised clear of the lower envelope which, having cleared the paddle rests on the bottom of the magazine, as shown in Fig. 3, thereby eliminating any possibility of the edge 46 of the envelope from engaging the flap F of the envelope thereabove. As soon as the lower envelope has left the bottom of the magazine, the arm 22 and paddle 26 will drop to the bottom of the magazine, whereupon the cycle will be repeated. The arm and paddle drop to the bottom of the magazine solely by their own weight and that of the stack of envelopes, there being no positive returning action due to the sliding action of the screw 39 in the slot 41. The arm 22 and paddle 26 may be readily adjusted to raise the stack of envelopes to any desired height. This is accomplished merely by unscrewing the set screw 24 which locks the arm 22 to the shaft 23 and rotating the arm relative the shaft to give the desired travel. The synchronism of the arm with the rest of the feeding mechanism may be readily adjusted by rotating the cap 43 on the hub 44 of its respective gear. This likewise is accomplished merely by unscrewing the set screw 45 in the cap, rotating the cap to the desired position and then locking the set screw. Obviously, rotation of the cap will change the point in the feeding cycle at which the member 38 will rotate the shaft 23 and the arm 22.

It will be seen from the above description that I have provided a construction wherein jamming of the mechanism is eliminated, as well as injury to the article being fed. It will also be noted that I have provided a feeding device which may be readily installed or removed and which may be accurately aligned and synchronized with the remainder of the machine to obtain the best results.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence, I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a feeding device, the combination of a magazine for holding a stack of window envelopes, mechanism for laterally feeding the bottom envelope of the stack from said magazine, and means for raising the next envelope out of engagement with the window portion of the bottom envelope as the latter is laterally drawn from the magazine by said feeding mechanism.

2. In a feeding device, the combination of a magazine for holding a stack of envelopes, mechanism for feeding the bottom envelope of the stack from said magazine, an arm pivotally carried by said device with the free end of the arm positioned in said magazine adjacent the bottom thereof, said envelopes resting on said arm, and

means for moving the free end of said arm upwardly to raise the next envelope out of feeding position as the bottom envelope is drawn from the magazine by said feeding mechanism.

3. In a device for feeding envelopes, the combination of a magazine for holding a stack of window envelopes, mechanism for feeding the bottom envelope of the stack from said magazine, an envelope engaging member movably carried by the device, and means operatively connecting said member with the mechanism whereby said member will move the next envelope substantially out of contact with the window portion of said bottom envelope as the latter is drawn from said magazine.

4. In a feeding device, the combination of a magazine for holding a stack of envelopes, mechanism for feeding the bottom envelope of the stack from said magazine, a shaft positioned outside said magazine, an arm rigidly carried at one end thereof by said shaft, the free end of said arm being positioned within said magazine, a second arm eccentrically connected at one end to said shaft, the opposite end of said second arm being operatively connected to said feeding mechanism to partially rotate said shaft and raise the free end of said first arm in synchronism with said feeding mechanism.

5. In a feeding device the combination of a magazine for holding a stack of envelopes, mechanism for feeding the bottom envelope of the stack from said magazine, a shaft positioned outside said magazine, an arm rigidly carried at one end thereof by said shaft, the free end of said arm being positioned within said magazine, a second arm rigidly connected at one end to said shaft, and an actuating member slidably connected at one end to the free end of said second arm and the opposite end eccentrically connected to said feeding mechanism whereby said last-mentioned arm is oscillated to periodically raise the free end of said first-mentioned arm in said magazine.

6. In a feeding device the combination of a magazine for holding a stack of envelopes, mechanism for feeding the bottom envelope of the stack from said magazine, a shaft positioned outside said magazine, journaling means for said shaft removably carried by the device, an arm rigidly carried at one end thereof by said shaft, the free end of said arm being positioned within said magazine, a second arm rigidly connected at one end to said shaft, and an actuating member slidably connected at one end to the free end of said second arm, a cap member removably secured to a rotatable member of said feeding mechanism, the opposite end of said actuating member being pivotally secured to said cap at a point spaced from the axis of rotation of the cap whereby said last-mentioned arm is oscillated to periodically raise the free end of said first-mentioned arm in said magazine.

7. In a device for feeding envelopes, the combination of a magazine for holding a stack of substantially horizontally positioned window envelopes, mechanism for substantially horizontally feeding the bottom envelope of the stack from said magazine, a member movably carried by the device, said member being engageable with said envelopes, and means operatively connecting said member with the mechanism to raise the next envelope out of the path of the window portion of the bottom envelope as the latter is substantially horizontally drawn from said magazine.

CLAUDE L. POST.