W. R. ALLEN.

FEEDING DEVICE.

APPLICATION FILED OCT. 14, 1911.

1,085,781.

Patented Feb. 3, 1914.

2 SHEETS—SHEET 1.

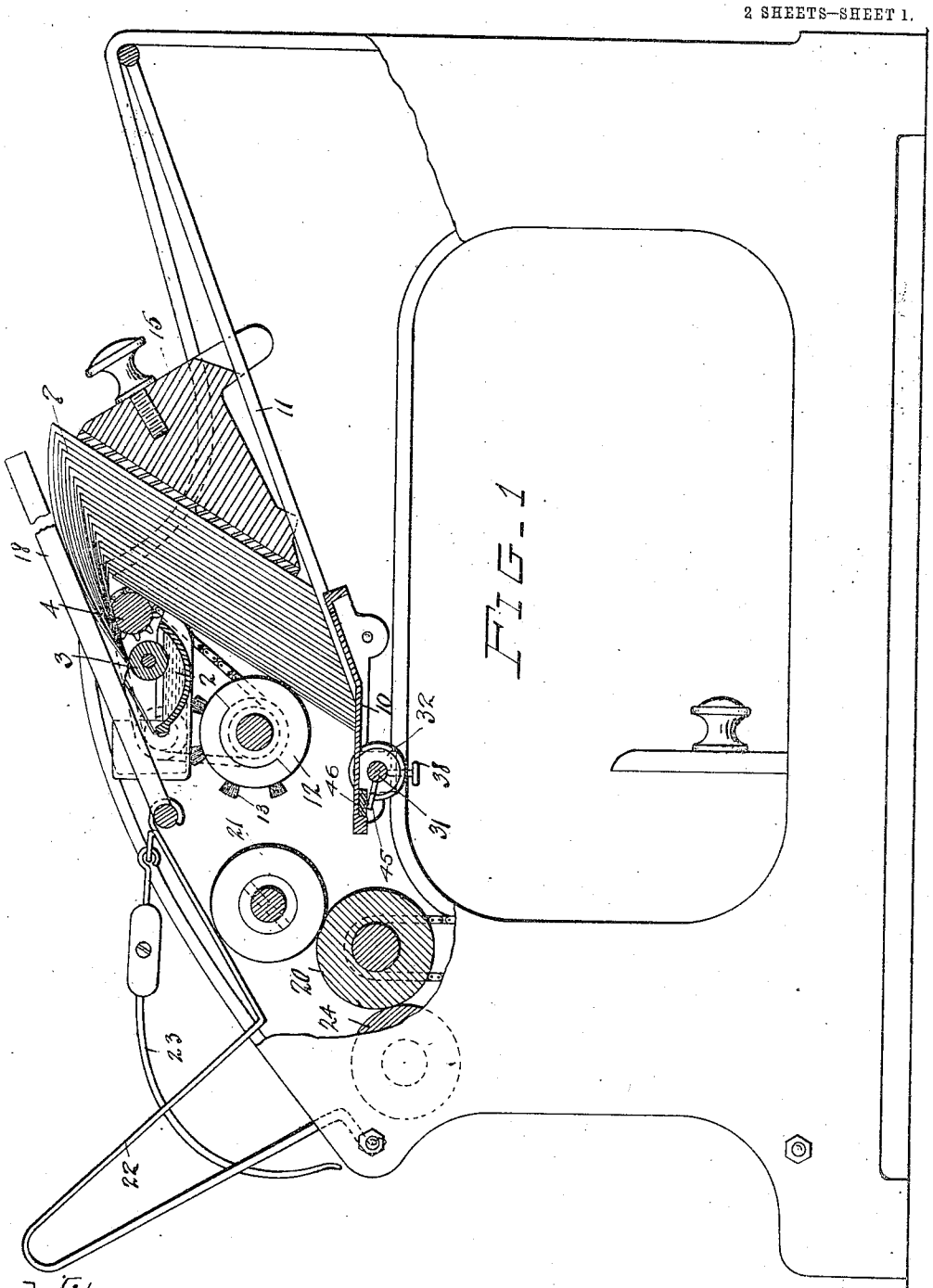



FIG. 1

Witnesses:
Chas. C. Watt
Hugh B. McGill.

Inventor
William R. Allen.
By Albert W. Baker
Atty.

W. R. ALLEN.

FEEDING DEVICE.

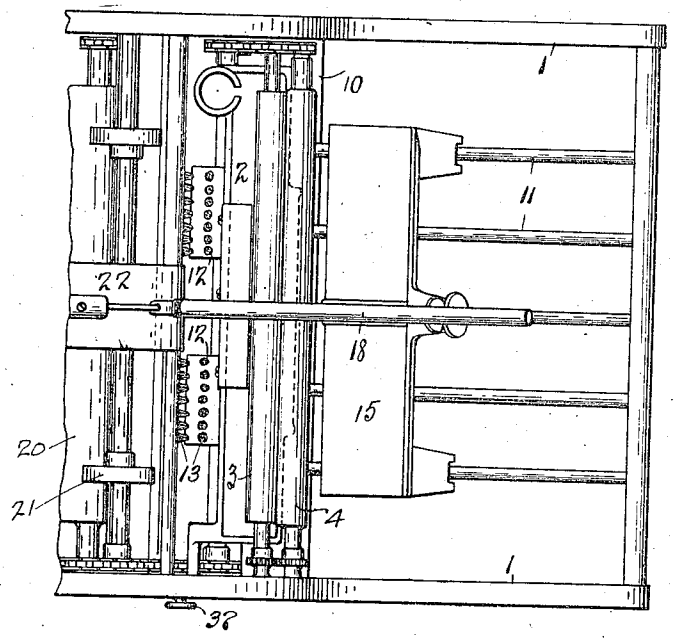
APPLICATION FILED OCT. 14, 1911.

1,085,781.

Patented Feb. 3, 1914.

2 SHEETS—SHEET 2.

FIG. 2



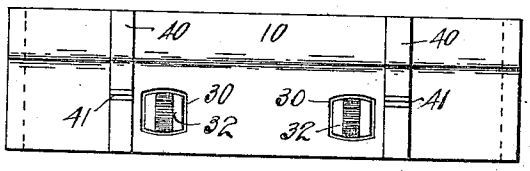




FIG. 3

FIG. 4

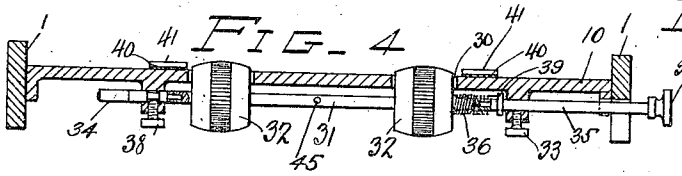



FIG. 5

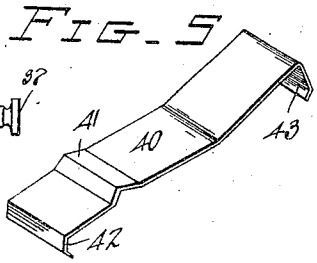
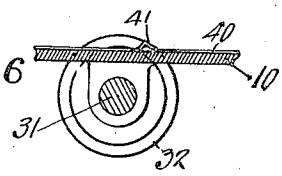



FIG. 6




Witnesses:

Chas. A. Watt

Hugh B. McGill.

Inventor

William R. Allen,

By Albert H. Bates,

Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM R. ALLEN, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## FEEDING DEVICE.

1,085,781. Specification of Letters Patent. Patented Feb. 3, 1914.

Application filed October 14, 1911. Serial No. 654,708.

*To all whom it may concern:*

Be it known that I, WILLIAM R. ALLEN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Feeding Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to devices for feeding paper sheets, whether single or folded sheets, cards or envelops, and its object is to provide effective means for limiting the feed to one sheet or article at a time.

To this end the invention consists of a retarding member adapted to act on the edge of fed sheets, and, by a reverse movement, retard the same and thus coöperate with the propelling members of the feeding device to hold back all but the foremost sheet while allowing the foremost sheet to be fed forward. In embodying such means I have found that I can obtain the result most effectively my making a retarding device in the form of a roller arranged to engage the forward edge of the sheet and provided with a spring tending to turn the engaging portion of the roller backwardly after the fed sheet has turned it forwardly.

The invention includes the broader idea of the reversely acting retarding roller combined with the paper feed, and also, more particularly, the spring actuated retarding roller.

It includes also the combination with the retarding roller of a stationary retarder, which, under certain circumstances, is advantageous.

It includes further the particular embodiment of the invention illustrated in the drawings hereof and hereinafter more fully described.

In the drawings, Figure 1 is a sectional side elevation of an envelop sealing machine embodying my invention; Fig. 2 is a partial plan of the same; Fig. 3 is a plan of the plate constituting a portion of the feed deck of such machine and having my retarding rollers; Fig. 4 is a vertical section through the axis of the rollers; Fig. 5 is a perspective view of the separable retarding clip, which is employed under certain circumstances; Fig. 6 is a fragmentary vertical cross section of the deck plate, showing the retarding roller and the retarding clip.

In the particular embodiment shown in the drawings, 1 represents the side members of the frame of the machine, 2 the trough for liquid extending between the side members and secured to them, 3 a moistening roller dipping into the trough, and 4 a transfer roller coöperating with the dipping roller for transferring the liquid to the flaps of envelops. The envelops are shown at 7 in Fig. 1. They stand one behind the other on their bottom edge on an inclined feeding deck composed of the plate 10 and the longitudinal inclined bars 11. The envelops are pressed forwardly against feeding rollers 12 by a follower block 15 resting on the inclined bars and sliding forward by gravity. In this position the flaps of the envelops lie one over another, the undermost flap resting on the transfer roller under the pressure of a gravity rod 18 pivotally carried by the frame and bearing on the flaps.

In the construction described, the rotation of the feed roller in the direction to bring its rear face downwardly is designed to draw downwardly and forwardly the foremost envelop, thereby dragging its flap across the transfer roller. Such movement is intended to feed the envelop with its moistened flap forwardly so that it passes between the roller 20 and the surmounting rolls 21. In such passage the envelop may travel into a chute 22 with the bottom edge uppermost and the flap edge may ride across the top portion of the roller 20 and then pass downwardly between that roller and a coöperating roller 24, such downward movement being expedited by a weighted arm 23 acting on the edge of the envelop. Thus the envelop is automatically sealed.

The construction so far described is substantially that of Patent No. 891,277, granted June 23, 1908 to J. A. Markoe. The particular features of the present invention are shown herein as adapted to this class of machine, though it is to be understood the invention is not limited to such class but may be employed with machines for feeding other paper sheets, post cards, etc. I will now describe such features as they are embodied in the present illustration.

The plate 10 of the feed deck has openings through it, of which two are shown at 30, Fig. 3. Journaled transversely of the machine beneath these openings is a shaft 31 on which are rollers 32 projecting upwardly

through the openings. These rollers are of the barrel-like form shown, the surface of each roller being roughened by longitudinal depressions. I provide a spring acting on the shaft 31 and tending to turn it so as to cause the upper portions of the barrel-like rollers to tend to travel rearwardly, that is in a right hand direction in Fig. 1.

In the embodiment shown I provide the desired spring action by mounting in alinement with the shaft 31 a short shaft 35, which is surrounded by a coiled spring 36, one end of which is anchored to the shaft 35 and the other end to the shaft 31. The shaft 35 is provided with a knurled head 37, beyond the side of the frame, by which the shaft may be turned and a suitable set screw 33 screwing into an ear on the under side of the deck plate bears against this shaft and is adapted to hold it in any given position.

I find it convenient to journal the shaft 31 by means of sockets at its ends into which extend reduced pins on the shaft 35, and on a stud 34, which is clamped by a set screw 38 screwing into an ear formed on the under side of the deck plate. The spring 36 may very conveniently be secured to the two shafts by anchoring one end in an opening in the end of the adjacent roller 32 and the other end in an opening in the washer 39, which is mounted on a flattened portion of the shaft 35. The mounting of the shaft 31 on the alined shafts held by the set screws enables the parts to be very conveniently removed, if desired.

It will be seen that the mounting of the spring 36 enables me to put it under any desired tension simply by turning the knurled head 37 and the set screw 33, and I can accordingly give the roller a tendency to rotate rearwardly with the desired force when it is shoved forwardly by fed envelops. I provide a suitable stop limiting the rearward movement, consisting of a pin 45 secured to the shaft 31 and adapted to abut a leather or other bumper 46 secured to the under side of the deck plate.

As the envelops are fed forwardly by the feed rollers 12, which are shown as having friction fingers 13 made by strands of rubber, there is a tendency of one or more envelops behind the foremost line to cling to the foremost envelop. The frictional hold, however, of the rubber feeding fingers on the foremost envelop is greater than the frictional hold of the foremost envelop on the one behind it. This frictional hold of the feed roller fingers is sufficient to shove forwardly the foremost envelop, notwithstanding the retarding action of the barrel rollers which, due to the spring, engage and tend to shove rearwardly the fed edge of the envelop. As soon, however, as the foremost envelop, which has turned the retarding rollers forward, has cleared them, the force of the spring is greater than the frictional feeding force on the next to the foremost envelop, and, accordingly, this spring rotates the retarding rollers rearwardly and carries back to position one or more envelops behind the foremost one, which may have started to follow it. The result is that the feed is confined to one envelop at a time.

I find that it is desirable to have an adjustment of the retarding device for envelops of different stiffness, as, obviously, the stiffer the envelop the more effective it is in turning the retarding rollers forward. The adjustment of the spring provides for a considerable leeway in the stiffness of envelops, as a further adjustment, I provide removable humps, which may be used for the lighter envelops and are designed to lift them slightly before they engage the upper portions of the barrel rollers, whereby the retarding action of these rollers is lessened, corresponding to the more flexible character of envelop.

The adjustable humps mentioned, I prefer to make of sheet metal clips, which lie on the upper face of the deck plate 10 and have spring ends engaging the edges of the plate. Such a clip is shown at 40 in Figs. 3, 4, 5 and 6. It has an intermediate upwardly projecting V-shaped hump 41 and has two down-turned ends 42 and 43 which are flanged inwardly at their extreme ends. Such a sheet metal device may be easily sprung onto the deck plate with the flanges extending beneath the plate. The strip lies alongside the retarding roller and the hump is preferably between the rear edge of the roller and the high point of the roller, as shown in Fig. 6. In this position the hump acts to lift the lower edge of the envelop so that a smaller segment of the roller is in the path of the envelop, and hence less retarding is given to the envelops. For the heavier or stiffer envelops, these clips are removed altogether.

Having thus described my invention, what I claim is:

1. In a machine of the character described, the combination of a removable shaft, a roller on the shaft, an alined shaft, means for turning the alined shaft and holding it in desired position, a coiled spring surrounding the alined shaft and connected at one end to it and at the other end to the roller shaft, and means for feeding sheets against the roller.

2. In a machine of the character described, the combination of a feed deck having openings, a shaft below said openings, barrel shaped rollers on the shaft projecting through the openings and having their top surfaces at the ends substantially in the same plane with the top of the deck, a spring acting on the roller shaft, and means for feeding the sheets against the rollers.

3. In a device of the character described, the combination, with means for feeding sheets, of a feed deck, a retarding roller and a hump, both projecting above the plane of the feed deck and the hump being adapted to engage the sheet while it engages the roller to relieve the sheet of some of the retarding action of the roller.

4. In a device of the character described, the combination, with a feed deck, of means for feeding sheets, a retarding roller, and a stationary hump adapted to raise the sheet above the plane of the deck as it is about to be acted on by the roller.

5. In a device of the character described, the combination, with means for feeding sheets, of a spring-constrained reversely-acting roller tending to retard the fed sheets, and a removable hump tending when in place to lift the sheets as they are about to act on the roller.

6. The combination, with a feed deck, of a retarding roller projecting through an opening in the deck, a hump adapted to lift the sheet as it is about to engage the roller, and means for feeding the sheets against the hump and the roller.

7. The combination, with means for feeding sheets, of a feed deck, a roller projecting through an opening therein, a sheet metal strap adapted to be removably held on the face of the deck alongside of the end of the feed roller, and a transverse upwardly extending hump on the sheet metal strap adjacent to the line of engagement of the sheet with the roller.

8. In a device of the character described, the combination of a feed deck, a feed roller and a follower adapted to coöperate to feed sheets standing on edge on the deck, a roller projecting through an opening in the feed deck, means for giving the roller a tendency to rotate rearwardly to retard the sheets being fed, and a sheet metal strip coöperating with the roller and tending to lift the sheet to act thereon, said strip lying alongside of the end of the roller and having a hump adjacent to the line of engagement of the roller, said strip having turned over ends by which it may hold itself in place on the deck.

9. The combination, with an inclined feed deck and a follower movable thereon for feeding envelops standing on edge on the deck, of a feed roller overlying said deck and adapted to grasp one after another the envelops delivered thereto by said follower, and a hump extending above the plane of said deck in front of the foremost envelop and adapted to engage the envelops after their engagement by the feed roller for impeding their advance and preventing the delivery of more than one thereof at a time.

10. The combination, with a feed deck adapted to receive envelops standing on edge and means for feeding the envelops therealong, of a feed roller overlying said deck and adapted to grasp, one after another, the envelops delivered thereto by said follower, and a hump removably mounted on the feed deck for engaging the bottom edge of the envelops for impeding their advance and preventing the delivery of more than one thereof at a time.

11. The combination, with a feed deck adapted to receive envelops standing on edge and means for feeding the envelops therealong, of a feed roller overlying said deck and adapted to grasp, one after another, the envelops delivered thereto, and a retarding barrel-shaped roller associated with said deck and projecting slightly thereabove and adapted to be rotated in the direction to oppose the transit of the envelops there-across.

12. The combination of a feed deck on which articles to be fed may stand, an opening through the deck, a barrel-shaped roller journaled on an axis below the deck and having its convexity projecting through such opening, the circular ends of the roller being approximately tangent to the upper face of the deck, and a spring tending to turn the roller rearwardly with reference to the direction of feed.

13. In a machine of the character described, the combination of a feed deck having an opening, a barrel shaped roller mounted on an axis below the top plane of the feed deck and having its central portion projecting through the opening and having its ends not materially higher than the top of the feed deck, and a spring acting on said roller and tending to return it when rotated from its normal position.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

WILLIAM R. ALLEN.

Witnesses:
ALBERT H. BATES,
GEO. T. TRUNDLE, Jr.