

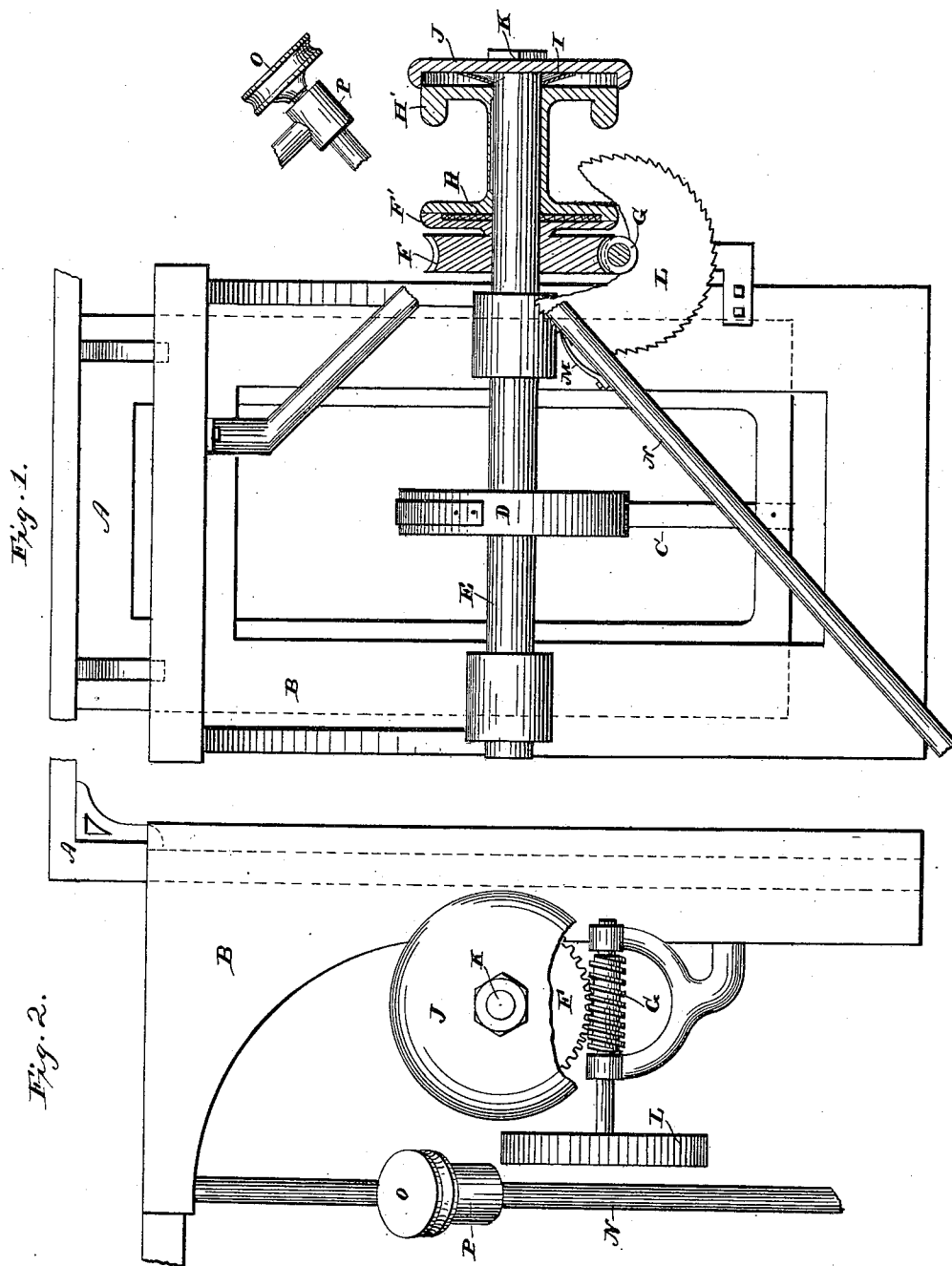
(No Model.)

2 Sheets—Sheet 1.

W. D. SLATER.
ENVELOPE MACHINE.

No. 463,458.

Patented Nov. 17, 1891.



Witnesses.
Chas. R. Burr.
A. S. Stewart.

Inventor.
W. D. Slater.
by Chas. R. Burr.
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

W. D. SLATER.
ENVELOPE MACHINE.

No. 463,458.

Patented Nov. 17, 1891.

Fig. 3.

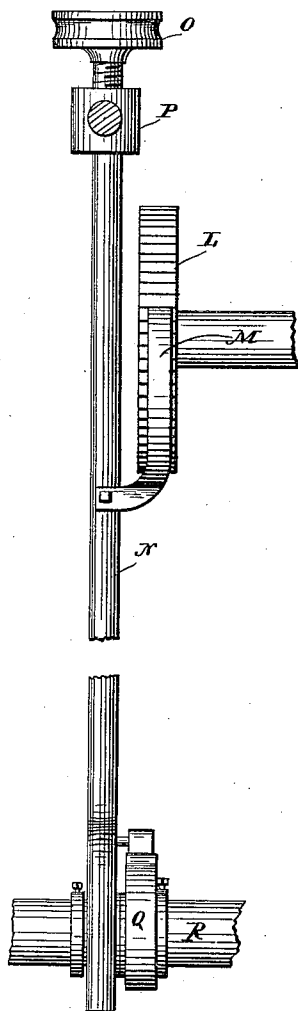
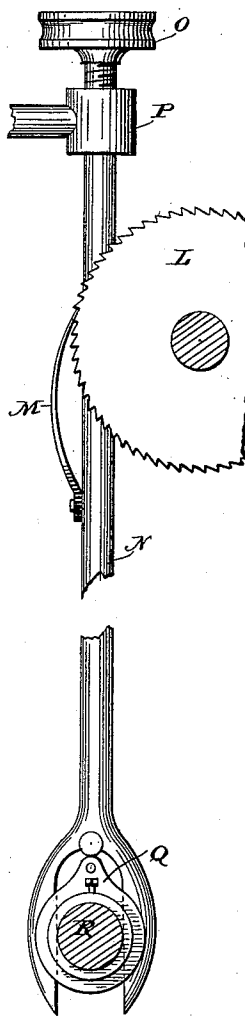


Fig. 4.



Witnesses.
Chas. R. Burr.
A. J. Stewart.

Inventor.
Wm. D. Slater
by Chas. R. Burr & A. J. Stewart
his Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM D. SLATER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE
MORGAN ENVELOPE COMPANY, OF SAME PLACE.

ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,458, dated November 17, 1891.

Application filed April 2, 1888. Serial No. 269,367. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. SLATER, of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Envelope-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

My invention relates to improvements in the mechanism for operating the elevator or blank-table in envelope-machines; and it consists in the novel construction and combination of parts hereinafter described and claimed, whereby the elevator is enabled to be fed or raised automatically and positively, and each time to an extent proportioned to the thickness of the paper of which the blanks are composed, and whereby, also, the feed of said elevator may be changed or regulated at pleasure without stopping the machine. The construction is also such as that the attendant may easily raise and lower the elevator by throwing the automatic devices out of operation.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of a portion of an envelope-machine, showing the application of my improvements thereto. Fig. 2 is a front elevation of the same. Figs. 3 and 4 are detail views showing the manner in which the feeding mechanism is driven from the main shaft.

Similar letters of reference in the several figures indicate the same parts.

A represents the elevator, upon the upper portion of which the envelope-blanks to be fed to the gumming and folding mechanism are placed. This elevator is adapted to move freely in vertical ways or guides in the frame B.

E is a shaft supported in suitable bearings on the frame B, and having firmly secured to it by a key or otherwise a pulley D, to which is attached one end of a flexible metal strap or band C, the other end of which is secured

to the lower portion of the elevator, as shown in Fig. 1.

Mounted loosely upon shaft E is a worm-gear F, having attached to it or formed integral with it a half-coupling or clutch-section F', which is adapted to engage with a corresponding half-coupling or clutch-section H, connected by a spline-and-groove connection to the shaft E, so as to turn with said shaft, but be capable of a free longitudinal movement thereon. Upon the end of the shaft E is a hand-wheel J, secured by a nut K and having a recess in its inner side for receiving a portion H' of the half-coupling H when said half-coupling is moved on the shaft in the direction of the hand-wheel, and I is a spring which operates to keep said half-coupling H normally in engagement with the half-coupling F' on the worm-gear F.

By grasping the hand-wheel J and pressing the portion H' of the movable half-coupling into the recess in said hand-wheel the half-couplings are thrown out of engagement, and the operator is then enabled by means of the hand-wheel to freely rotate the shaft E, and through the pulley D and strap C raise or lower the elevator at will.

The worm-gear F meshes with a worm G, and upon the worm-shaft is mounted a ratchet-wheel L, with which co-operates a pawl M, carried by a rod N, that is given a longitudinal reciprocating motion by means of a cam Q on the driving-shaft R of the machine. The upper end of the rod N passes through an arm or bracket P and bears an adjustable nut O. Each time the rod N is raised by the action of the cam Q the pawl M carried by it rotates the ratchet-wheel L, and through the worm G, worm-gear F, and half-couplings F' H causes the shaft E to be rotated and the elevator to be lifted, as before described. The distance which the elevator is raised, or, in other words, the extent of the feed, depends upon the extent of the throw given the rod carrying the pawl, and this in turn is regulated by the adjustment of the feed-nut O. When said feed-nut is unscrewed, the rod carrying the pawl is allowed to drop to its

lowest extent upon the cam Q before said nut strikes the bracket or stop P and is arrested thereby, and as the result of this the rod carrying the pawl is given its greatest movement and the ratchet-wheel is turned through the distance represented by quite a number of its teeth; but as the said feed-nut is screwed up more and more the throw of the rod is shortened and the pawl turns the ratchet-wheel less and less until each successive tooth is engaged, which will give, of course, the minimum feed.

The practical operation of the invention is as follows: Let it be supposed that the elevator is down to its lowest position and ready to receive the envelope-blanks that are to be fed to the gummer and picker. The operator places the blanks on the table of the elevator, grasps the hand-wheel J, and with his fingers uncouples the clutch by moving the half-coupling H out of engagement with the half-coupling F', and then turns said hand-wheel to the left, thereby winding the strap on the pulley D and raising the elevator upward toward the gummer and picker. When the blanks have been carried to the desired height, the movable half-coupling is released and it is carried into engagement with the half-coupling on the worm-gear F by the operation of the spring I, thus throwing the automatic feed into operation and causing the elevator to be raised step by step and to an extent each time determined by the adjustment of the feed-nut O, as before described. If the feed has been previously set for very thin paper and it becomes necessary to change it to adapt it to a thicker paper, it is only necessary that the feed-nut be unscrewed so as to increase the feed.

Since all the elements of the automatic feeding arrangement are geared together positively, the greatest certainty of operation is secured and there is no danger of slipping and failure to feed, as there is in machines where frictional connections are relied upon. I by preference employ a plain pulley and a flexible metal band as the means for connecting the shaft E with the elevator; but it is obvious that other equivalent modes of connection may be resorted to—as, for instance, a sprocket wheel and chain connection.

As I before suggested, the automatic feed of the platform is susceptible of being increased or diminished without stopping the operation of the machine, and whenever it is desired to lower the elevator or raise it to a given point by a single movement it can be done by simply disengaging the clutch-sections and turning the hand-wheel in the manner pointed out.

Having thus described my invention, what I claim as new is—

1. In an envelope-machine, the combination, with the elevator and its guides, of the shaft having the pulley and hand-wheel mount-

ed thereon, the strap connecting said pulley and elevator, the driving mechanism, and a clutch interposed between the driving mechanism and shaft, substantially as described.

2. In an envelope-machine, the combination, with the elevator and its guides, of the shaft carrying the worm-gear, connections between said shaft and the elevator, a clutch for connecting the worm-gear to its shaft, the worm, the ratchet-wheel, and reciprocating feed-bar carrying the pawl, substantially as described.

3. In an envelope-machine, the combination, with the elevator and its guides, of the shaft bearing the pulley and the worm-wheel, the strap connecting the pulley with the elevator, a clutch for connecting the worm-wheel to its shaft, the worm-shaft, the ratchet-wheel, the adjustable feed-bar and its pawl, and the actuating-cam, substantially as described.

4. In an envelope-machine, the combination, with the worm-gear, the shaft on which it is mounted, the pulley, the strap, and the elevator, of the worm-shaft, the ratchet-wheel, the feed-bar and its pawl, the actuating-cam, the feed-nut and its co-operating-stop, and the clutch devices for connecting the worm-gear to its shaft, substantially as described.

5. In an envelope-machine, the combination, with the elevator and its guides, of the shaft bearing the worm-gear and hand-wheel, the connections between said shaft and the elevator, and the half-couplings on the worm-wheel and shaft, respectively, substantially as described.

6. In an envelope-machine, the combination, with the pulley-shaft, the pulley, the strap, and the elevator, of the worm-gear mounted on said shaft and provided with a half-coupling, the hand-wheel, the co-operating half-coupling connected by a spline-and-groove connection to the pulley-shaft, and the spring for keeping the half-couplings normally engaged, substantially as described.

7. In an envelope-machine, the combination, with the elevator and its guides, the lifting-strap, the pulley, the pulley-shaft, the worm-gear and its half-coupling, the hand-wheel, the movable half-coupling, and the spring for holding the half-couplings normally engaged, of the worm-shaft, ratchet-wheel, feed-bar, and its pawl and actuating-cam, substantially as described.

8. In an envelope-machine, the combination, with the elevator and its guides, the lifting-strap, the pulley, the pulley-shaft, the worm-gear and its half-coupling, the hand-wheel, the movable half-coupling, and the spring for holding the half-couplings normally engaged, of the worm-shaft, ratchet-wheel, feed-bar, its pawl and actuating-cam, and the adjustable feed-nut, substantially as described.

9. In an envelope-machine, the combination, with the elevator and its guides and the

shaft connected therewith, of the wheel mounted loosely on said shaft and connected with the driving mechanism, the half-coupling on said wheel, and a co-operating half-coupling connected to the shaft by a spline-and-groove connection, substantially as described.

10. In an envelope-machine, the combination, with the vertically-moving elevator and shaft co-operating therewith for elevating it, of the drive-shaft, connections between the

drive-shaft and elevator-shaft, a clutch interposed in said connections, and a hand-wheel on the elevator-shaft for moving the same when the clutch is disconnected, substantially as described.

WILLIAM D. SLATER.

Witnesses:

ROGER MORGAN,
J. WARRNIER.