

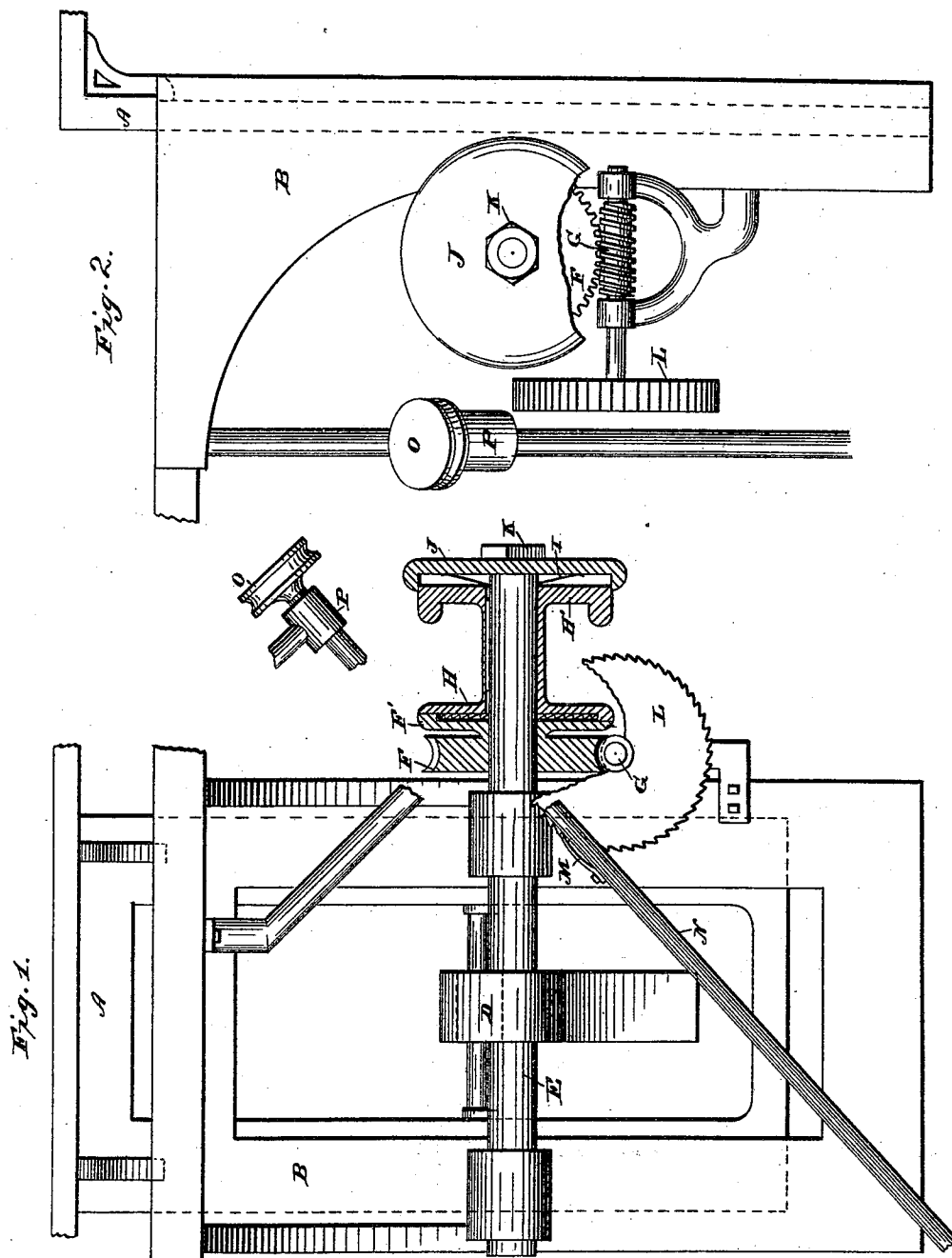
(No Model.)

2 Sheets—Sheet 1.

W. D. SLATER.
ENVELOPE MACHINE.

No. 463,459.

Patented Nov. 17, 1891.



Witnesses.
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Fig. 5

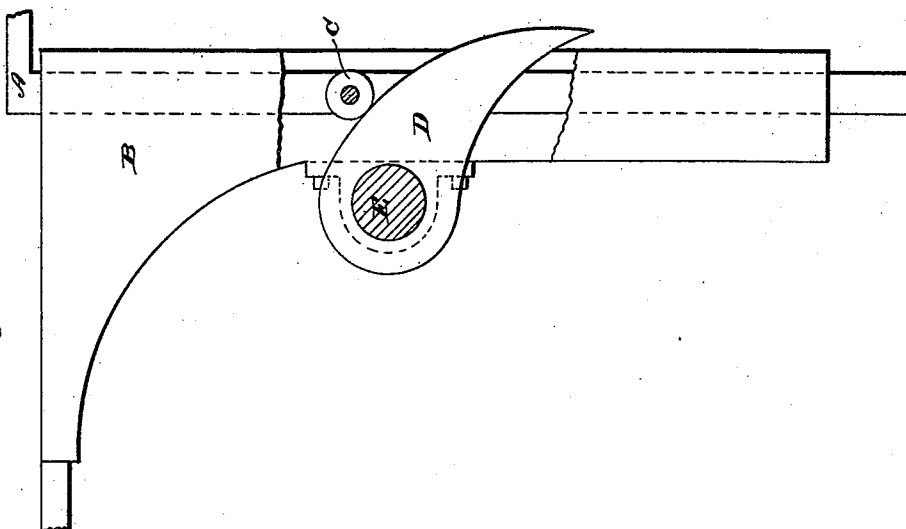


Fig. 4.

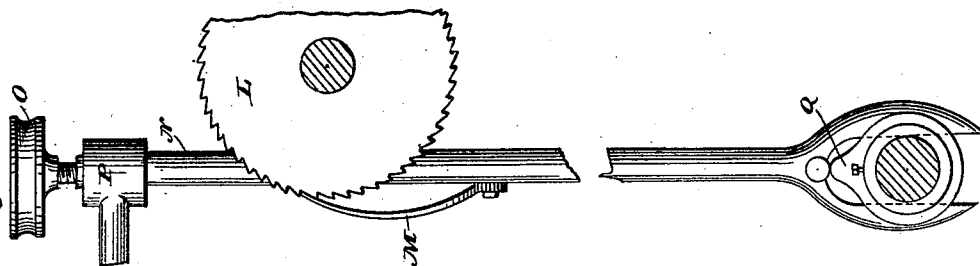
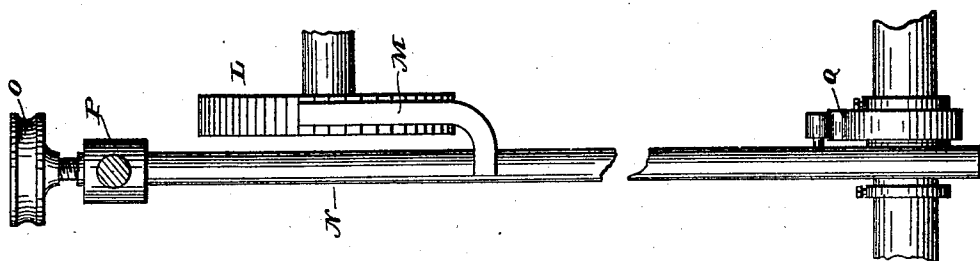


Fig. 3.



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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. 463,459, dated November 17, 1891.

Application filed April 7, 1888. Serial No. 269,943. (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
5 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
10 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
15 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 that the attendant
20 may easily raise and lower the elevator by throwing the automatic devices out of operation.

In the accompanying drawings, Figure 1 is 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
25 the main shaft. Fig. 5 is a view illustrating the manner in which the lifting-cam operates to raise the elevator.

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
30 frame B.

E is a shaft having firmly secured to it by a key or otherwise a cam D, with which a projection or roller C on the elevator is adapted to co-operate, as shown in Fig. 5.

35 Mounted loosely upon shaft E is a worm-gear F, having attached to it or formed inte-

gral with it a half-coupling F', which is adapted to engage with a corresponding half-coupling H, connected by a spline-and-groove connection to the shaft E, so as to turn with said
40 shaft, but be capable of a free longitudinal movement thereon. Upon the end of the shaft E is a hand-wheel J, secured to a nut K, and having a recess in its inner side for receiving a portion H' of the half-coupling H
45 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
50 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
55 the cam D and roller 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,
60 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
65 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
70 F' H cause the shaft B 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
75 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
80 the bracket 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 if
85 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 moves the half-coupling H out of engagement with the half-coupling F', and then turns said hand-wheel to the left, thereby causing the cam D to operate on the roller C and raise the elevator upward to 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 further 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 operate 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. 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 half-couplings and turning the hand-wheel in the manner pointed out. The cam D is so formed as to give a uniform and regular movement to the elevator when the shaft is turned, as any skillful mechanic will understand.

In a contemporaneous application, Serial No. 269,367, I have shown a strap connection between the elevator and its shaft instead of the cam herein shown, and have included claims in said application of sufficient breadth to cover both or equivalent mechanism when combined with a clutch and hand-wheel interposed between the driver and elevator shafts; therefore I do not wish to be understood as claiming such broad matter herein.

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 carrying the worm-gear and the lifting-cam, 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.

2. In an envelope-machine, the combina-

tion, with the elevator and its guides, of the shaft bearing the lifting-cam and the worm-wheel, a clutch for connecting the worm-wheel to its shaft, the worm-shaft, the ratchet-wheel, the feed-bar and its pawl, the actuating-cam, and the feed-nut, substantially as described.

3. In an envelope-machine, the combination, with the worm-gear, the shaft on which it is mounted, the lifting-cam 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.

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

5. In an envelope-machine, the combination of the elevator and its guides, the lifting-cam and its shaft, the worm-gear on the pulley-shaft provided with the half-coupling, and a co-operating half-coupling connected to the pulley-shaft by a spline-and-groove connection, substantially as described.

6. In an envelope-machine, the combination, with the shaft E, lifting-cam, and 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 shaft, and the spring for keeping the half-coupling normally engaged, substantially as described.

7. In an envelope-machine, the combination of the elevator and its guide, the lifting-cam and its 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, the worm-shaft, ratchet-wheel, feed-bar, and its pawl and actuating-cams, substantially as described.

8. In an envelope-machine, the combination of the elevator and its guides, the lifting-cam and its 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, 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 of the elevator and its guides, the shaft provided with the half-coupling, a co-operating half-coupling connected to said shaft by a spline-and-groove connection, and the lifting-cam, and the co-operating roller on the elevator, substantially such as described, between the shaft and elevator.

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