(No Model.) 2 Sheets—Sheet 1.

H. D. & D. W. SWIFT.

ENVELOPE MACHINE.

No. 470,218. Patented Mar. 8, 1892.

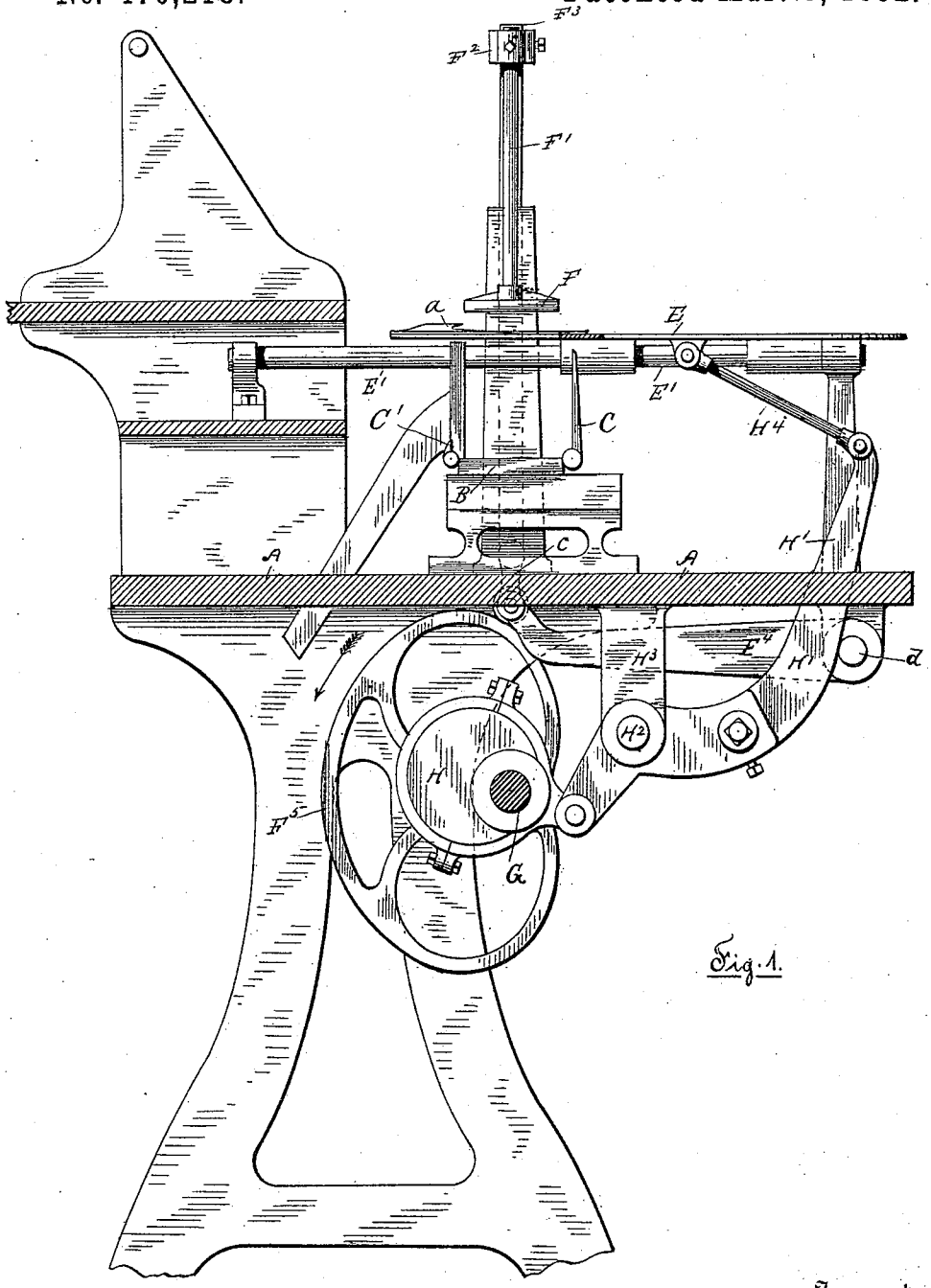

Fig. 1.

Witnesses
Chas. F. Schmelz.
H. M. Fowler.

Inventors
Henry D. Swift
D. Wheeler Swift
By their Attorney
Rufus B. Fowler

(No Model.) 2 Sheets—Sheet 2.

H. D. & D. W. SWIFT.

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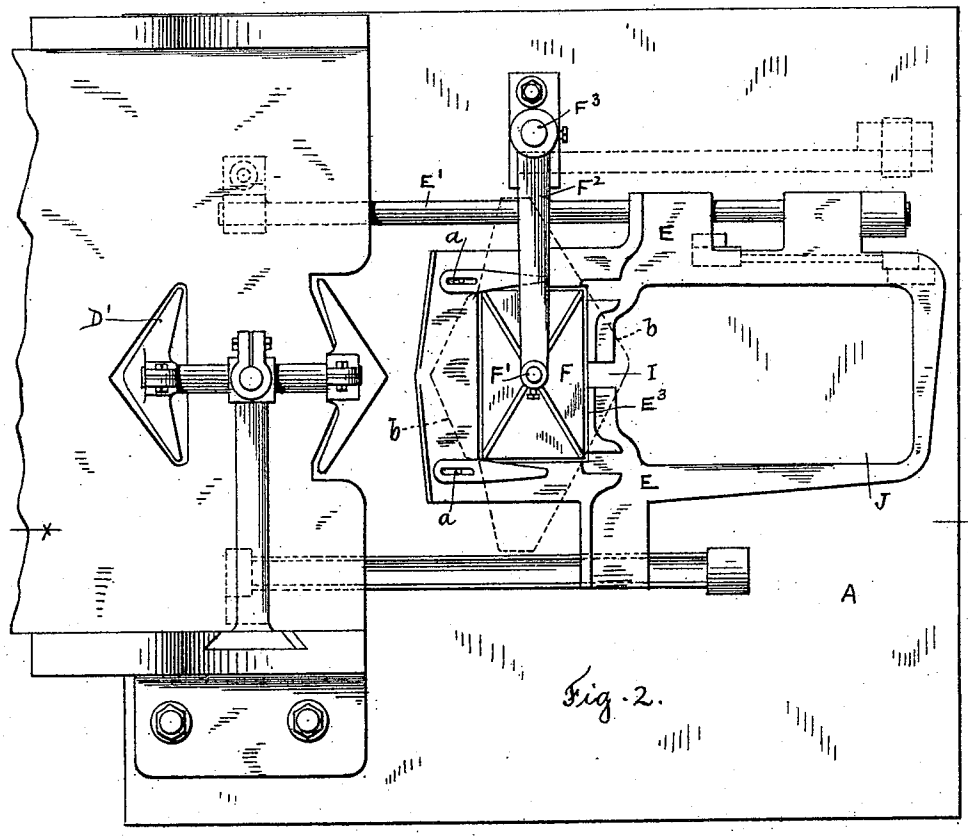

Fig. 2.

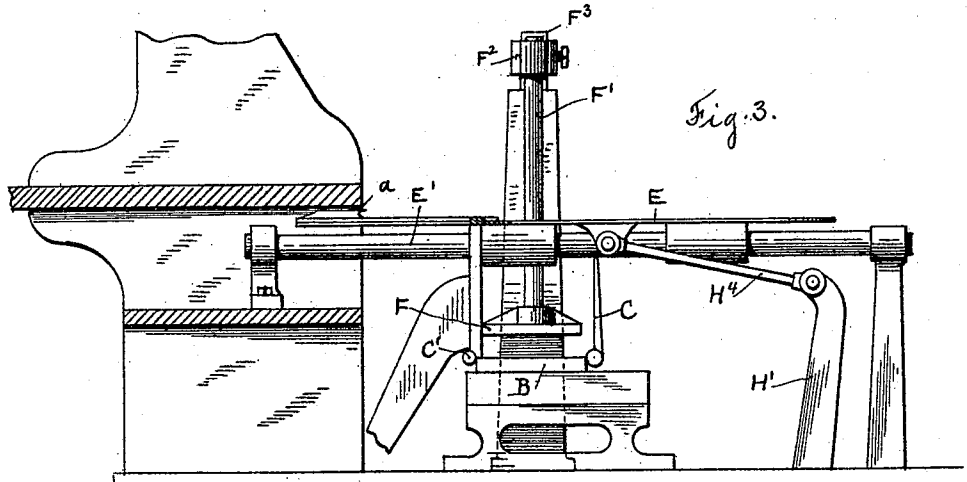

Fig. 3.

Witnesses
Chas. F. Schmelz.
H. W. Fowler.

Inventors
Henry D. Swift
Daniel Wheeler Swift
By their Attorney
Rufus B. Fowler.

UNITED STATES PATENT OFFICE.

HENRY D. SWIFT AND DANIEL WHEELER SWIFT, OF WORCESTER, MASSACHUSETTS, ASSIGNORS OF ONE-HALF TO JAMES LOGAN AND JOHN S. BRIGHAM, OF SAME PLACE.

ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,218, dated March 8, 1892.

Application filed March 2, 1888. Serial No. 266,004. (No model.)

To all whom it may concern:

Be it known that we, HENRY D. SWIFT and DANIEL WHEELER SWIFT, citizens of the United States, and residents of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Envelope-Machines, of which the following is a specification, accompanied by drawings, forming a part of the same, and together giving a full, clear, and exact description of our invention, which relates to that part of an envelope-machine employed in carrying the envelope-blanks from the pick-ups to the folding mechanism, usually termed the "carriage," and to the means by which the carriage is actuated.

In the accompanying drawings only such parts of an envelope-machine are shown as are directly concerned in our present invention and as may be necessary to fully illustrate the same.

Figure 1 is a vertical sectional view on line X X, Fig. 2, of a part of an envelope-machine, showing only the operative parts by which the carriage and plunger are moved. Fig. 2 is a top view of a portion of the machine, showing the carriage in plan view; and Fig. 3 is a vertical sectional view of a part of an envelope-machine on line X X, Fig. 2, and showing the carriage and plunger in different positions relatively from those shown in Fig. 1.

Similar letters refer to similar views in the different figures.

A denotes the supporting-table, upon which is placed the folding-bed B, on which the envelope-blank is folded by means of folding blades or leaves, two of which are shown—viz., that employed to fold the back flap (shown at C) and the seal-flap folder, (shown at C′.) The envelope-blank is raised from the pile of blanks by the action of the gummed pick-ups D D′ in the usual and well-known manner in envelope-machines, and not requiring a detailed description.

E denotes what is known in envelope-machines as the "carriage," having a reciprocating motion on the ways E′ E^2, the forward end of the carriage passing beneath the envelope-blank as it is raised by the upward motion of the gummed pick-ups and engaging the envelope-blank by means of the hooks *a a* on the upper surface of the carriage, causing the blank to be carried as the motion of the carriage is reversed beneath the plate F, termed the "plunger," and which is given a vertically-reciprocating motion, carrying the envelope-blank lying on the carriage E, and indicated by the broken lines *b*, down through a rectangular opening E^3 in said carriage onto the folding-bed in position to have its flaps folded over upon the folding-bed by the action of the folding-blades in the manner common to envelope-machines. The plunger F is attached to a rod F′, carried in an arm F^2, which is attached to a rod or bar F^3, having a vertically-reciprocating motion in ways on the machine. The lower end of the rod F^3 is connected by a link *c* with the free end of a vibrating lever F^4, pivoted at *d* and actuated by a cam F^5 on the main shaft G. The carriage E is actuated by means of an eccentric H in the main shaft G through the vibrating lever H′, pivoted at H^2 to the lug H^3, and a link H^4, connecting the end of the lever with the carriage, and the motion of the plunger is so timed with reference to the motion of the carriage that as the carriage has reached its farthest point in its rearward motion and during its period of "dwell" the plunger is made to move downward and carry the envelope-blank down through the rectangular opening E^3 upon the folding-bed B. The carriage then begins at once its forward motion, the rod F′ passing through the narrow opening I, the action of the plunger-cam causing the plunger F to be raised through the opening J in the carriage E. Thus, it will be seen, the motions of the carriage E and the plunger F are made to overlap each other, the upward motion of the plunger being in part simultaneous with the forward motion of the carriage E.

The carriage E in the machine (shown in part in the accompanying drawings) performs the double purpose of, first, carrying the envelope-blank from the pick-ups to the position indicated by the broken lines in Fig. 2

beneath the plunger, and, second, to sustain the blank above the rectangular opening E^3 to receive the action of the plunger F in its downward movement, carrying the blank through the opening E^3, which is slightly larger than the plunger. The movement of the blank through the rectangular opening E^3 begins the operation of folding by bringing the several flaps of the envelope at right angles with the body of the envelope as it lies upon the folding-bed B, and it has been considered necessary to cause the carriage to dwell long enough to allow the plunger to pass downward and to return through the rectangular opening E^3 before the carriage began its forward motion. We avoid this necessity by forming another opening J in the carriage and connecting the two openings E^3 and J by a narrow opening or slot I, thus allowing the plunger to pass down through one opening, beginning the operation of folding, and to return through another opening, and at the same time sustain the envelope-blank beneath the plunger, and also providing a suitable rectangular opening, through which the envelope-blank is pushed by the action of the plunger. We thus secure an easy motion of the carriage and also save a portion of the time in which the plunger would otherwise be required to move.

We are aware that the carriage by which the envelope-blank has been carried to the folding mechanism has been moved by means of an eccentric; but in such cases the carriage was not required to perform the second function of the carriage shown and described herein—viz., to support the blank above a rectangular opening in said carriage, through which it was pushed by the downward movement of the plunger.

What we claim as of our invention, and desire to secure by Letters Patent, is—

1. In an envelope-machine, the combination, with a plunger having a reciprocating motion, whereby the envelope-blanks are carried upon the folding-bed, of a carriage having a reciprocating motion, whereby the envelope-blanks are carried beneath the plunger, said carriage being provided with a rectangular opening, through which the envelope-blanks are pushed by the downward motion of the plunger, an opening for the withdrawal of the plunger in its upward motion, and a narrow slot communicating with said opening to allow the passage of the plunger-rod, substantially as described.

2. In an envelope-machine, the combination, with a carriage having a reciprocating motion in a horizontal plane, whereby the envelope-blanks are carried beneath the plunger and sustained above a rectangular opening in said carriage, of a plunger having a reciprocating motion in a vertical plane, whereby the envelope-blank is carried through said rectangular opening, said carriage being provided with a second opening communicating with said rectangular opening for the withdrawal of said plunger, and connected operating mechanism, substantially as described, connected with said plunger and with said carriage, whereby the reciprocating motion of said carriage is made to overlap the reciprocating motion of said plunger, substantially as described.

HENRY D. SWIFT.
D. WHEELER SWIFT.

Witnesses:
RUFUS B. FOWLER,
JOHN S. BRIGHAM.