(No Model.) 2 Sheets—Sheet 1.

F. H. RICHARDS.

ENVELOPE MACHINE.

No. 343,856. Patented June 15, 1886.

Fig. 1

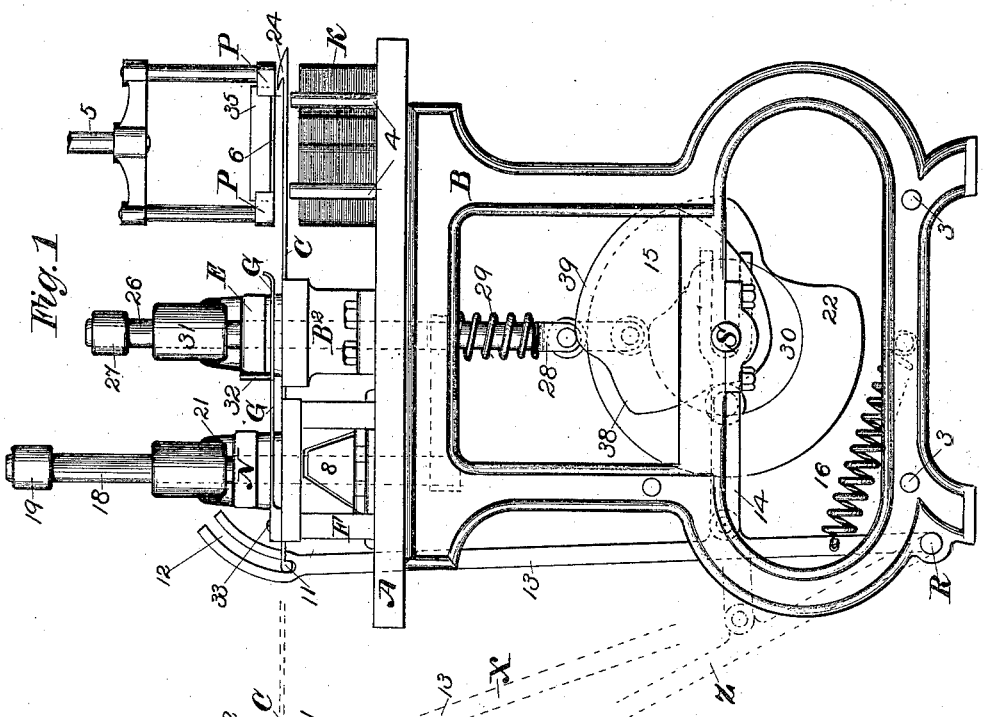
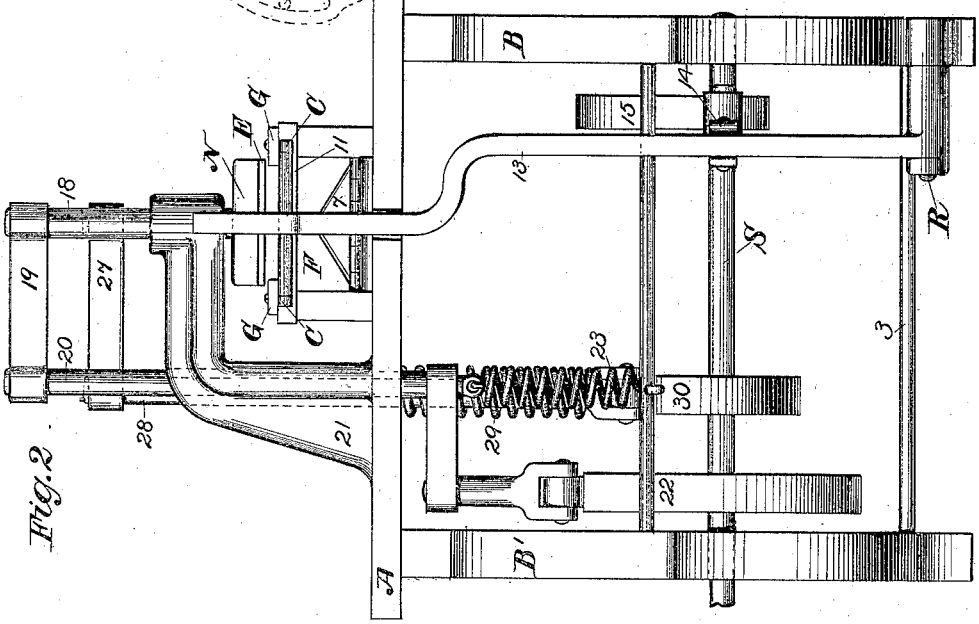


Fig. 2.



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Inventor:
Francis H. Richards

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

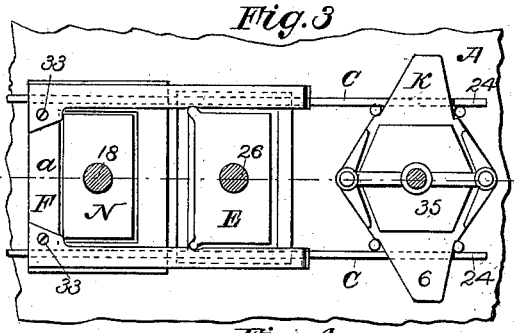


Fig. 5

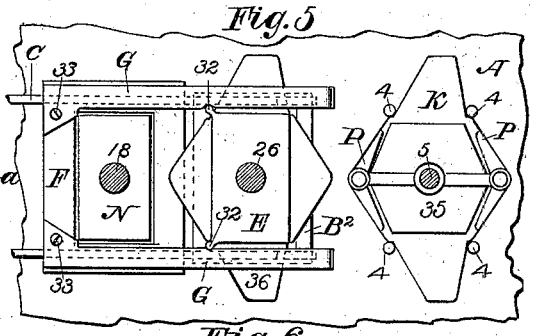


Fig. 4

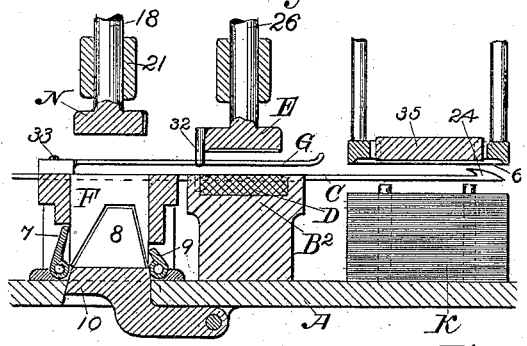


Fig. 6

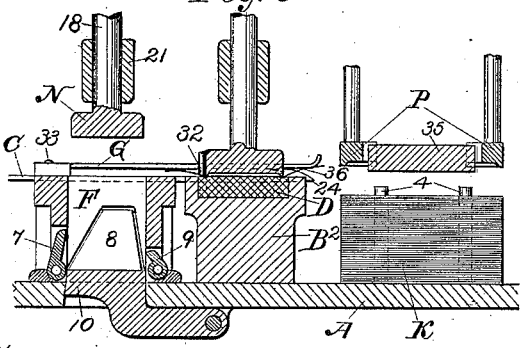


Fig. 7

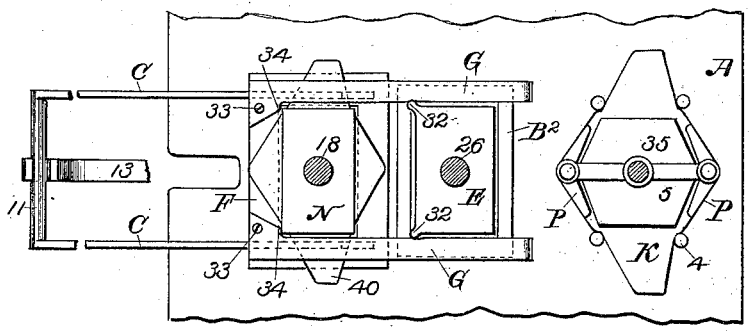
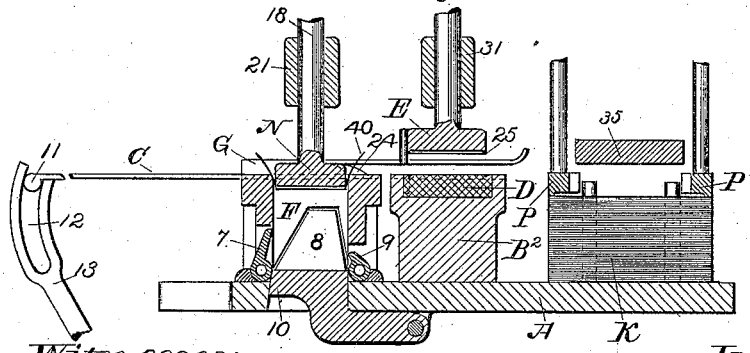


Fig. 8



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF SPRINGFIELD, MASS., ASSIGNOR OF ONE-HALF TO THE PRATT & WHITNEY COMPANY, OF HARTFORD, CONN.

ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,856, dated June 15, 1886.

Application filed October 1, 1885. Serial No. 178,690. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Springfield, in the county of Hampden, State of Massachusetts, have invented certain new and useful Improvements in Envelope-Machines, of which the following is a specification.

This invention relates to that class of envelope-machines in which the blank is creased in the folding-lines prior to the folding operation, the object being to provide mechanism specially adapted for creasing the blanks, as aforesaid, which shall be applicable to the ordinary envelope-machines.

To this end the invention consists in the combinations hereinafter set forth.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of so much of an envelope-machine as embodies my improvements. Fig. 2 is a rear elevation of the same as seen from the left hand in Fig. 1. Fig. 3 is a top view of the principal parts on the top plate, showing the carrier in its front position. Fig. 4 is a vertical section in line *a a*, Fig. 3. Fig. 5 is a top view similar to Fig. 3, showing the carrier moved back to its middle position. Fig. 6 is a section similar to Fig. 4, showing the carrier as in Fig. 5. Fig. 7 is a top view similar to Figs. 3 and 5, showing the carrier in its back position. Fig. 8 is another section similar to Fig. 4, showing the parts as in Fig. 7.

Similar characters designate like parts in all the figures.

The frame-work for carrying the several details of my improved envelope-machine may consist, as in ordinary practice, of the top plate, A, supported at either end on legs B and B′, which are tied together near the bottom by rods 3 3.

S indicates the usual driving-shaft carrying the operating-cams.

R is an ordinary shaft or stud carrying the lever connected to the blank-carrier.

K is the pile of blanks, placed, as usual, near the front of the machine, between guides that are designated by 4 in Figs. 1 and 5.

P P are an ordinary pair of pickers connected to a vertically-reciprocating spindle, 5, whereby they are operated. In Fig. 8 they are shown resting on the blank pile, from which they are supposed to take a blank and lift it up to position 6, Figs. 1 and 4.

F designates the folding-box, which is furnished with an ordinary set of folding-wings, 7, 8, and 9, and trap-door 10.

Inasmuch as my improvements do not at all relate to or modify the usual cams and connecting devices for operating the aforesaid trap-door, folding-wings, and pickers, said cams and devices and other parts are not shown in the drawings, being left out to give clearer illustration of my improvements than could otherwise well be done. Said wings, door, and pickers may, however, be operated by the mechanism shown for similar purposes in United States Patent No. 177,048, dated May 2, 1876.

The upper side of box F has formed therein ways for the ordinary reciprocating blank-carriers C C. These are united at the rear ends by rod 11, which works in a slot, 12, in the upper end of a long arm, 13, pivoted on shaft R. Said arm is operated through rod 14 in one direction by the double-stepped cam 15, and in the other by spring 16. The carriers have the usual hooks, 24, at the front end for drawing along the blanks. For driving the blanks down into said box, the machine has a plunger, N, which is affixed to a spindle, 18, connected by arm 19 to a slide, 20, that (together with said spindle) has its bearing in a bracket, 21, fixed to or formed on plate A, said slide being operated in one direction by cam 22 and in the other by spring 23.

Between the folding-box F and the pile of blanks there is placed a mechanism for creasing the blanks in their folding-lines, which mechanism may be constructed as follows: Any suitable casting, as B^2, supports a creasing-bed, D, with its top in about the plane of the carriers. Said bed may be made of elastic material, as rubber, or it may be a grooved plate corresponding to the folding-lines of the blank. A vertically-reciprocating creasing-die, E, preferably having a creasing-edge, as at 25, Fig. 8, is carried immediately over said bed by a stem, 26, which is operated by arm 27 and slide 28 in one direction by spring 29 and in the other by cam 30, said stem and slide having their bearings in a bracket, 31,

similar to bracket 21. On the rear corners of the die E there are projecting stops 32, against which the blank is drawn by hooks 24 at a certain stage in the operation of the machine. These stops being fixed on the die, they are readily actuated by the motion of said die without requiring special driving mechanism. Close to either side of the creasing-die two similar guides, G, stand just above the blank and extend back over the folding-box, to the top of which they are fastened by screws 33. The rear ends of these guides are shaped to form stops 34, against which the blank rests when in position over the folding-box. The stops 32 may descend into recesses (not shown) to be formed in bed D, or they may be yieldingly attached to die E by any well-known means, so as to have a vertical movement thereon, thereby avoiding the necessity for such recesses. For delivering the lifted blank from the pickers to the carriers, the ordinary clearer, 35, is held (by means not shown) in a fixed position between said pickers, substantially as shown.

The operation of my improvements is as follows: A pile of blanks previously cut to the required shape having been placed between guides 4, the uppermost one is gummed, as usual, by pickers P, and raised thereby to position 6. (See Figs. 1 and 4.) Here the blank is forced off from the pickers by the clearer 35 and falls onto carriers C, behind hooks 24, and is carried back to position 36 against stops 32, immediately and centrally under the creasing-die, as shown in Figs. 5 and 6. That die is now brought down forcibly onto the blank, impressing the folding-lines into the groove, or into the rubber when this is used. The die is next raised by cam 30, when the blank is carried back against stops 34, as at 40, Fig. 7. After this the plunger N descends and forces the creased blank down into the box F, where it is folded and disposed of in the ordinary manner. The carriers being in the meantime returned to their front position, the machine then stands ready for operating on the next blank.

It should be understood that my invention is not limited to the use of a blank-creasing mechanism constructed and operated in the particular manner above described. Its construction may be modified in various ways without departing from the spirit of my invention.

In another application, Serial No. 176,433, filed September 7, 1885, I have described and claimed an improved blank-creasing mechanism adapted to be used in connection with my present improvements.

The proper operation of the carriers is produced by the cam 15, which has an intermediate step, 38, Fig. 1, shaped to throw arm 13 back to middle position, X, wherein the carrier stands, as in Figs. 4 and 5, the upper step, 39, serving to throw said arm to its back position, Z. This and the other cams of the machine are supposed to be so constructed as to properly co-operate in carrying out the above-described operations.

After one blank has been carried back under stops 32 die E is lowered a little to bring said stops in position to intercept the next blank, thus by a proper construction of cam 30 avoiding the necessity of having separate means for operating them.

In another application, Serial No. 118,905, I have described and claimed a combination comprising a blank-creasing mechanism, a folding mechanism, and means operating to present a blank to said mechanisms successively in the order named. I do not, therefore, broadly claim such subject-matter in this application.

Having thus described my invention, I claim—

1. The combination, in an envelope-machine, of a folding-box and its plunger, blank-holding devices and pickers, a blank-creasing mechanism, substantially as described, between said box and devices, blank-carriers, substantially as described, to take the blank from the pickers and convey it to the creasing and then to the folding mechanism, and mechanism, substantially as described, operating said mechanisms to first crease a blank in its folding-lines and then push down the creased blank into said box, substantially as set forth.

2. The combination, in an envelope-machine, of a folding-box, creasing-bed D, and die E, plunger N, carriers C, means, substantially as described, for supplying blanks to said carrier, and means, substantially as described, operating said die, plunger, and carriers, to present a blank to and crease it on said bed, and then to carry it to and push it down in the box, substantially as set forth.

3. The combination of carriers C, having hooks 24, die E, having stops 32, and means, substantially as described, operating said die and stops to temporarily intercept a blank on the carriers, substantially as set forth.

4. The combination of the blank-guides, the pickers, carriers C, the creasing mechanism, the folding mechanism, the double-stepped cam 15, and connections, substantially as described, from said cam to said carriers, substantially as set forth, and for the purpose specified.

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Witnesses:
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WILBUR M. STONE.