(No Model.) 4 Sheets—Sheet 1.

F. H. RICHARDS.

ENVELOPE MACHINE.

No. 364,132. Patented May 31, 1887.

Fig. 3

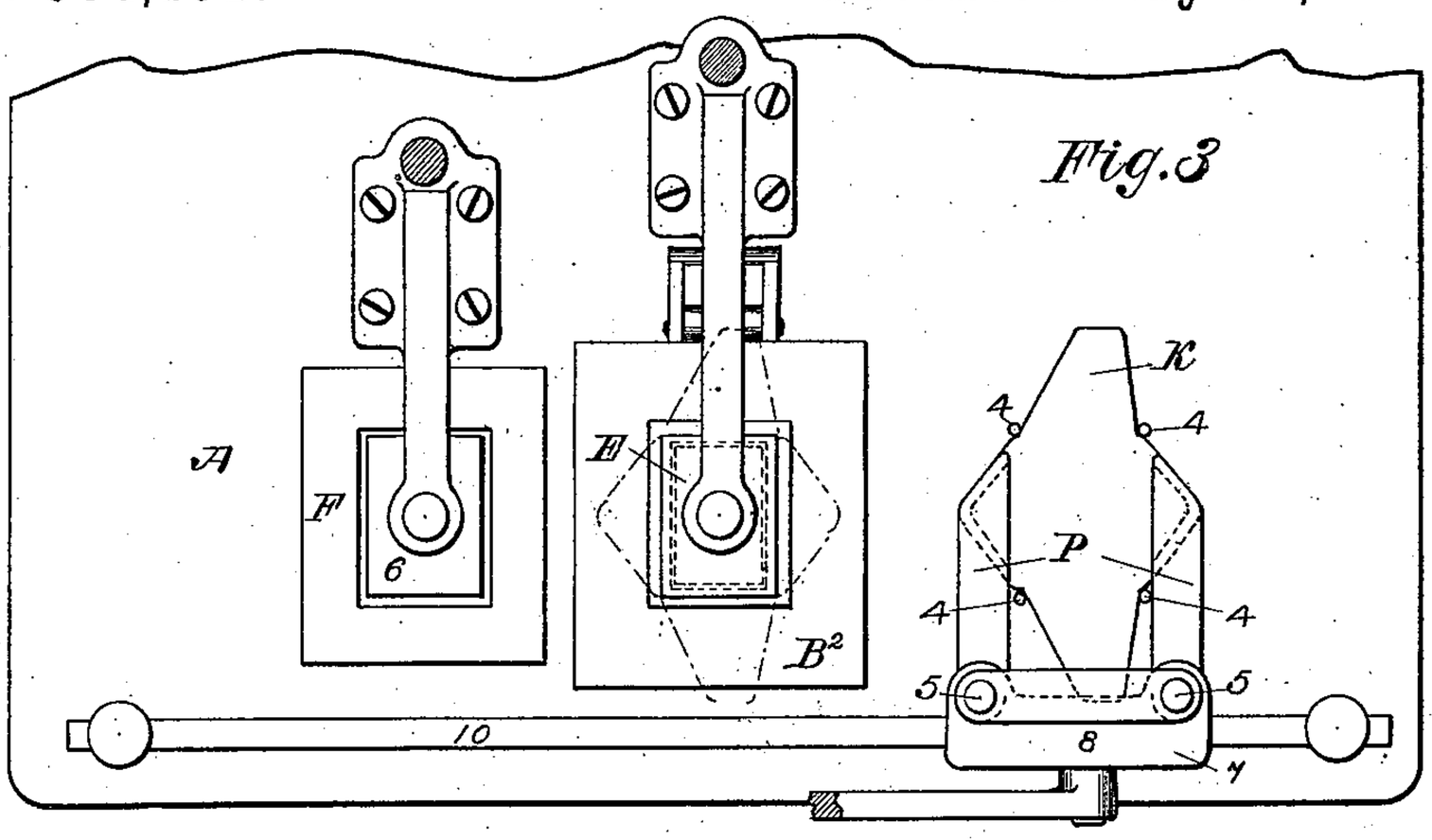
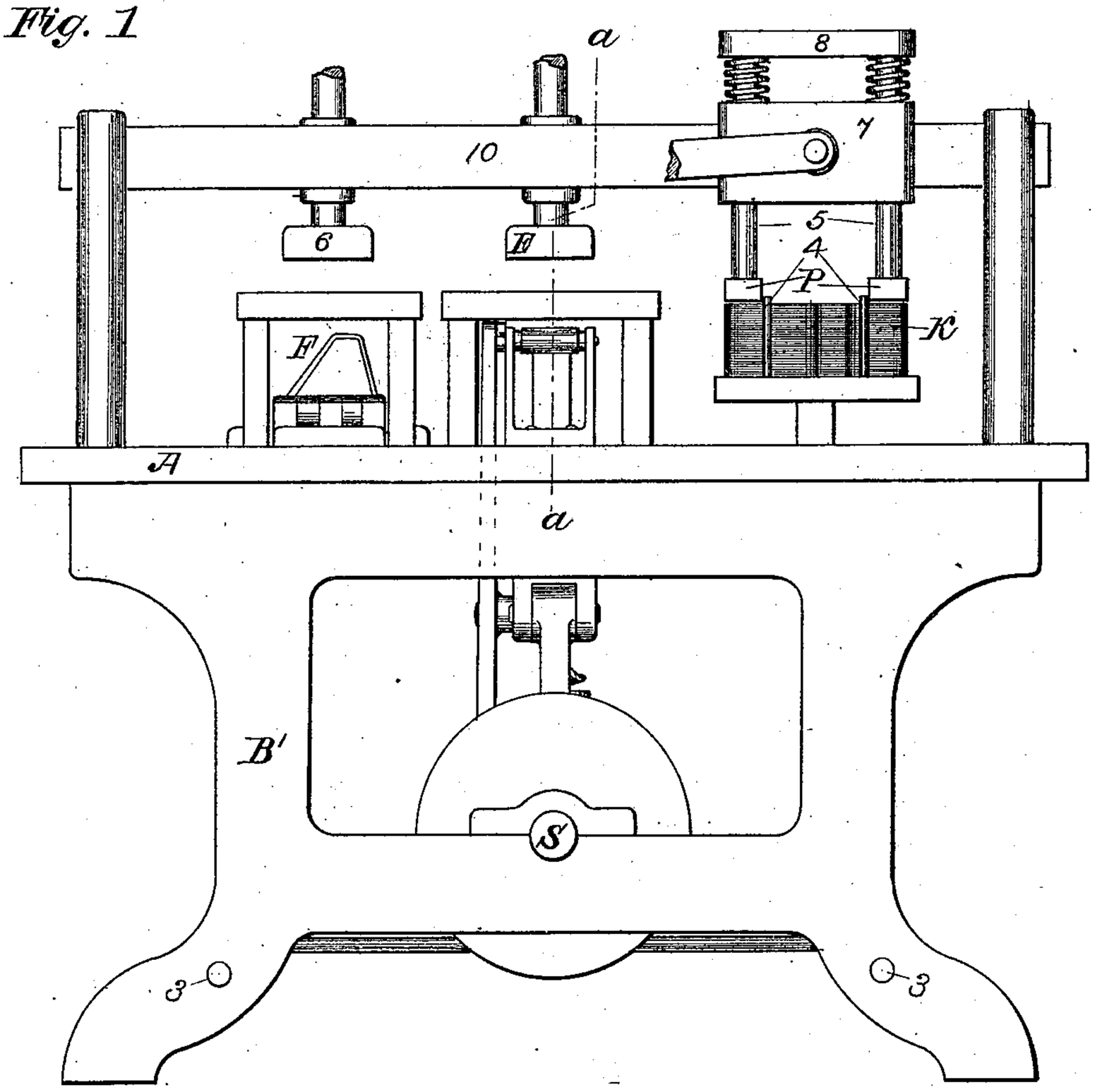


Fig. 1



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Inventor:
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(No Model.)

4 Sheets—Sheet 2.

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Fig. 4

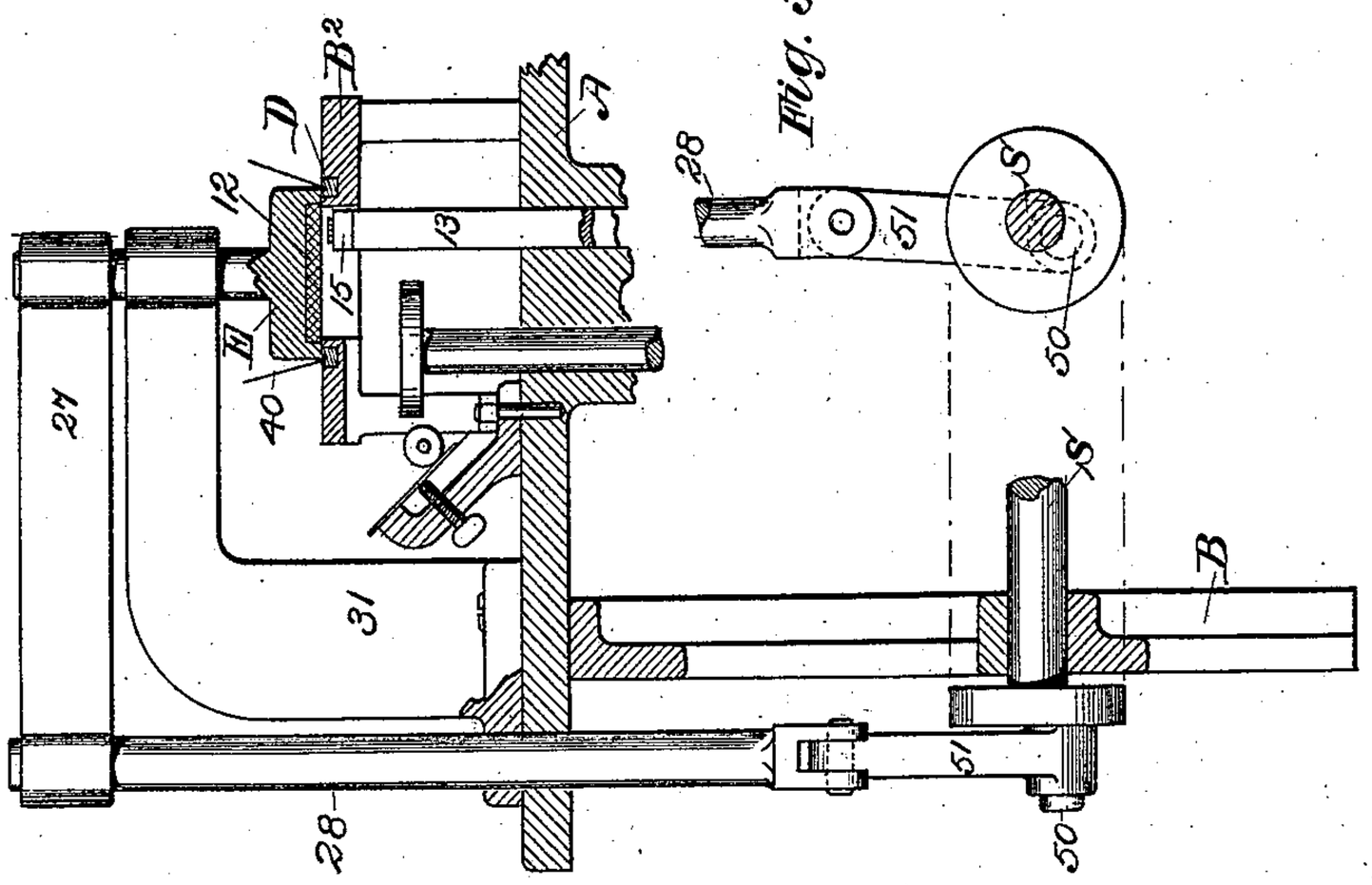
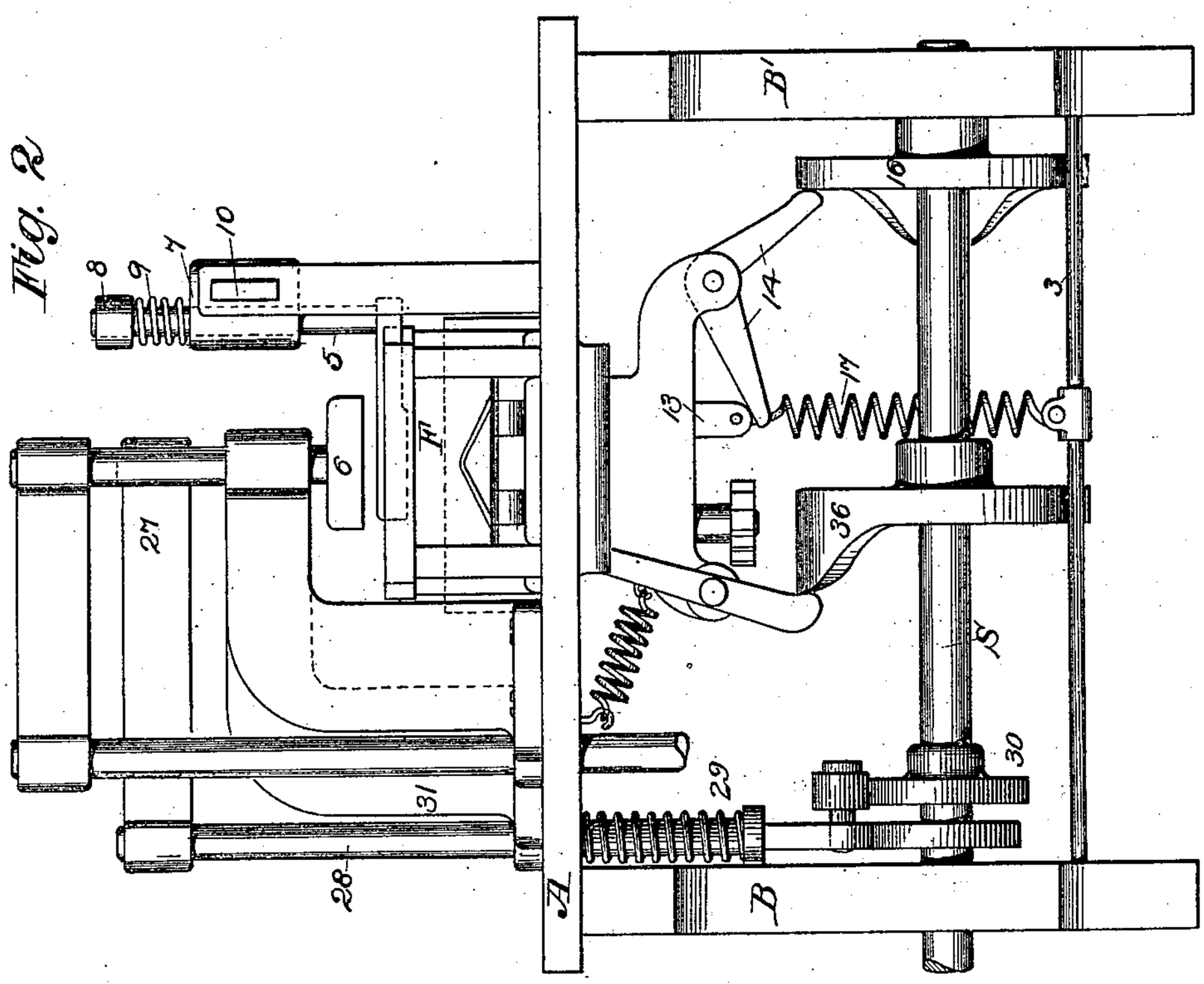


Fig. 5

Fig. 2



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(No Model.) 4 Sheets—Sheet 3.

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ENVELOPE MACHINE.

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Fig. 6

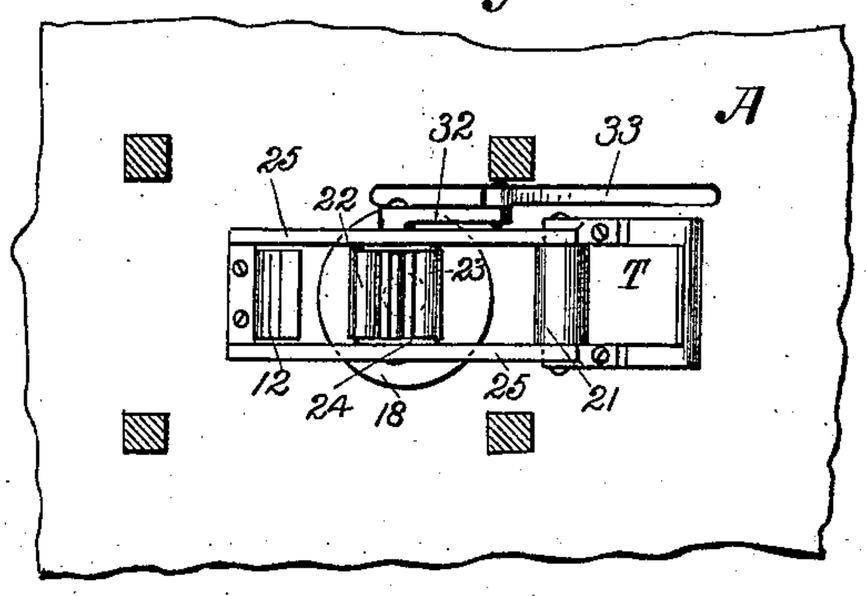


Fig. 7

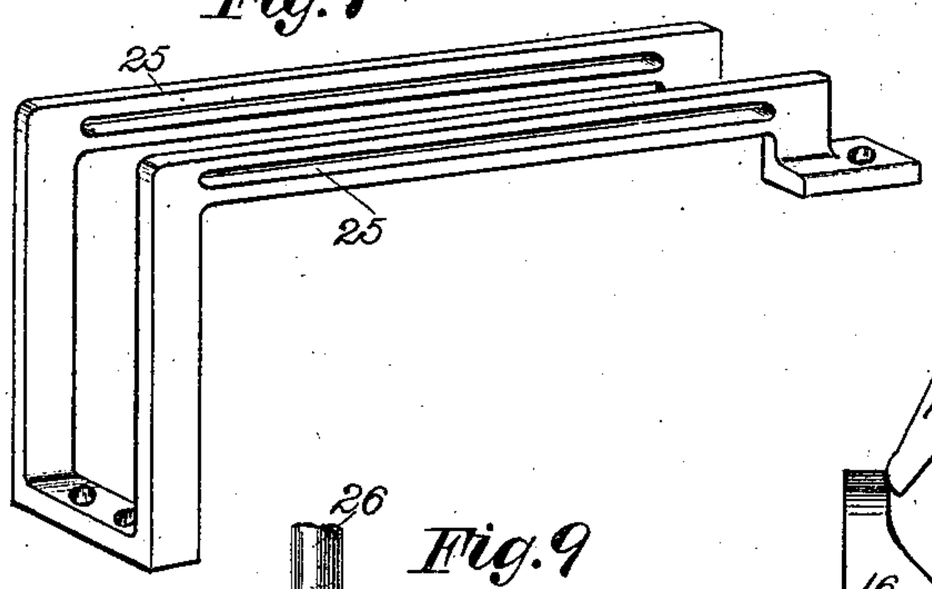


Fig. 8

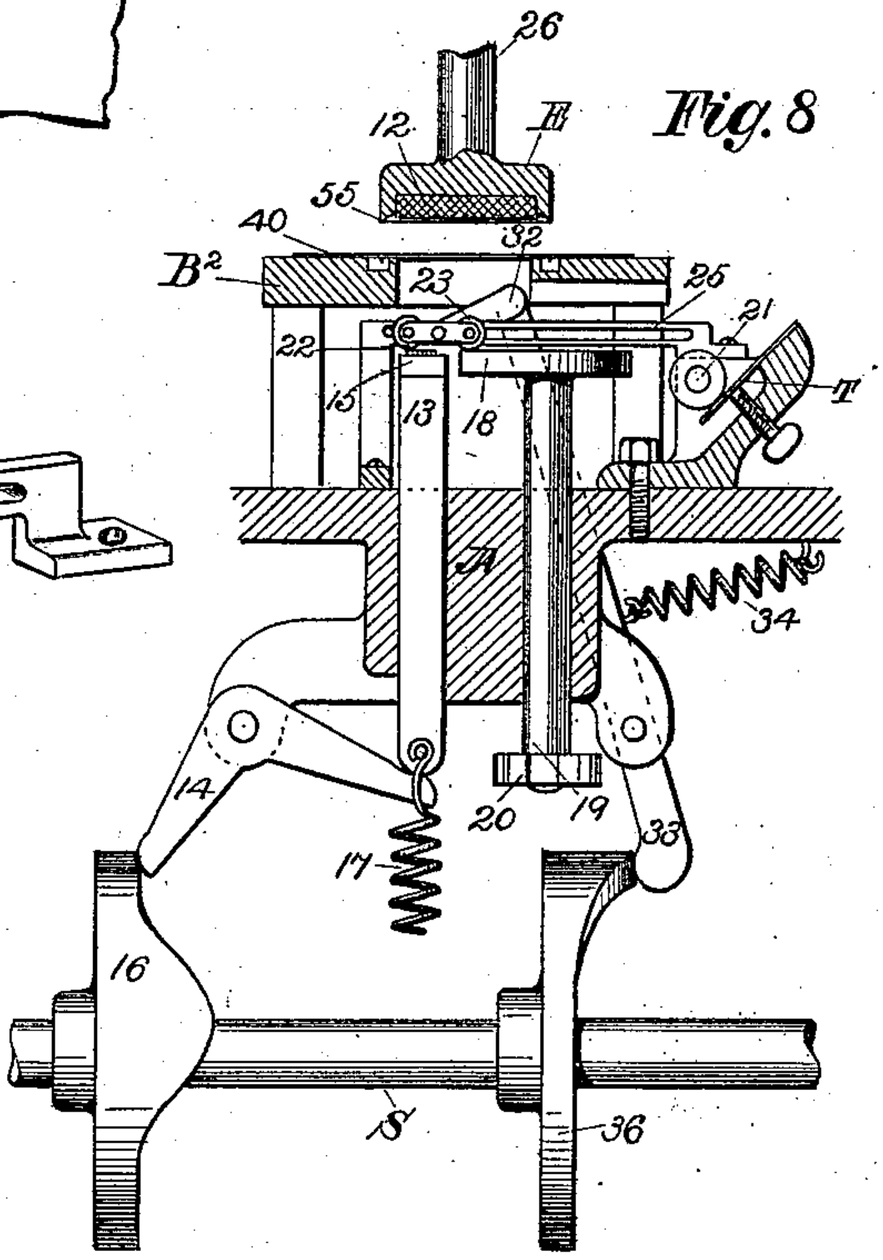
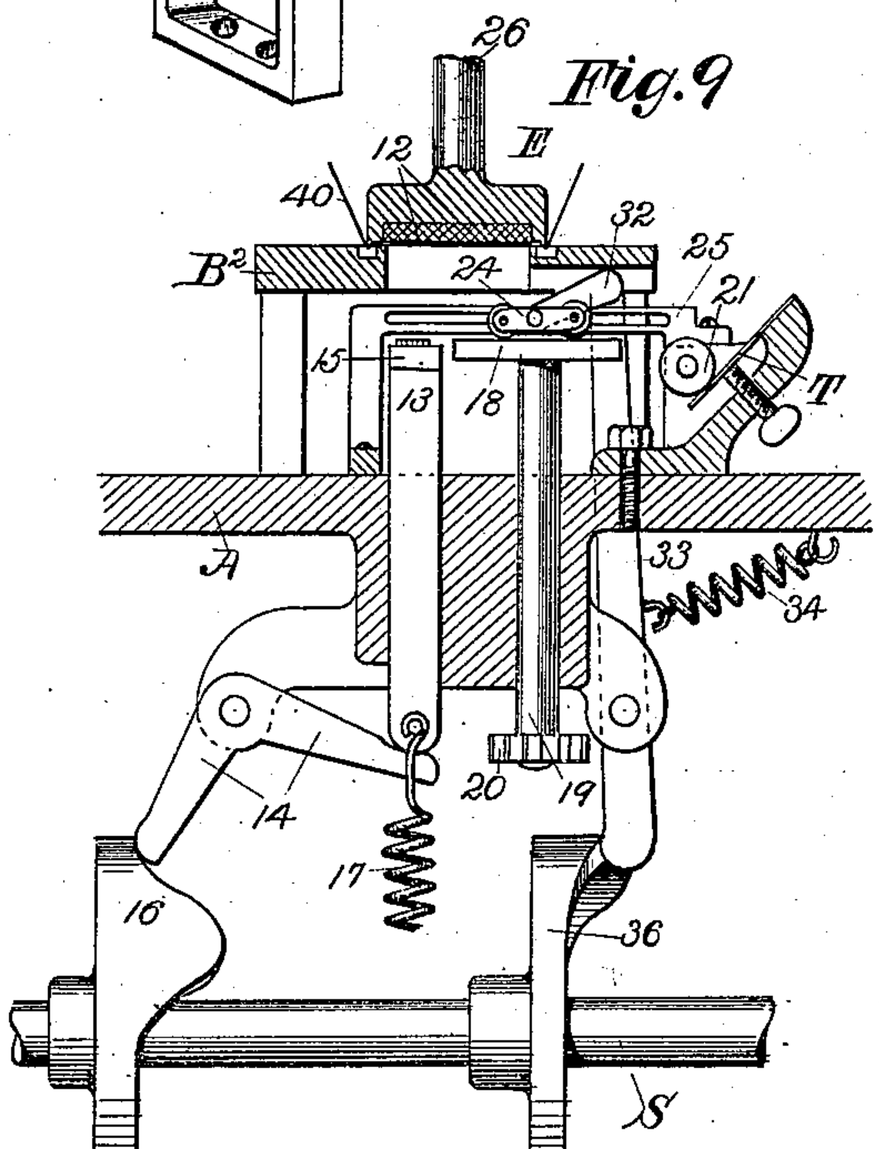


Fig. 9



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(No Model.) 4 Sheets—Sheet 4.

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ENVELOPE MACHINE.

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Fig. 10

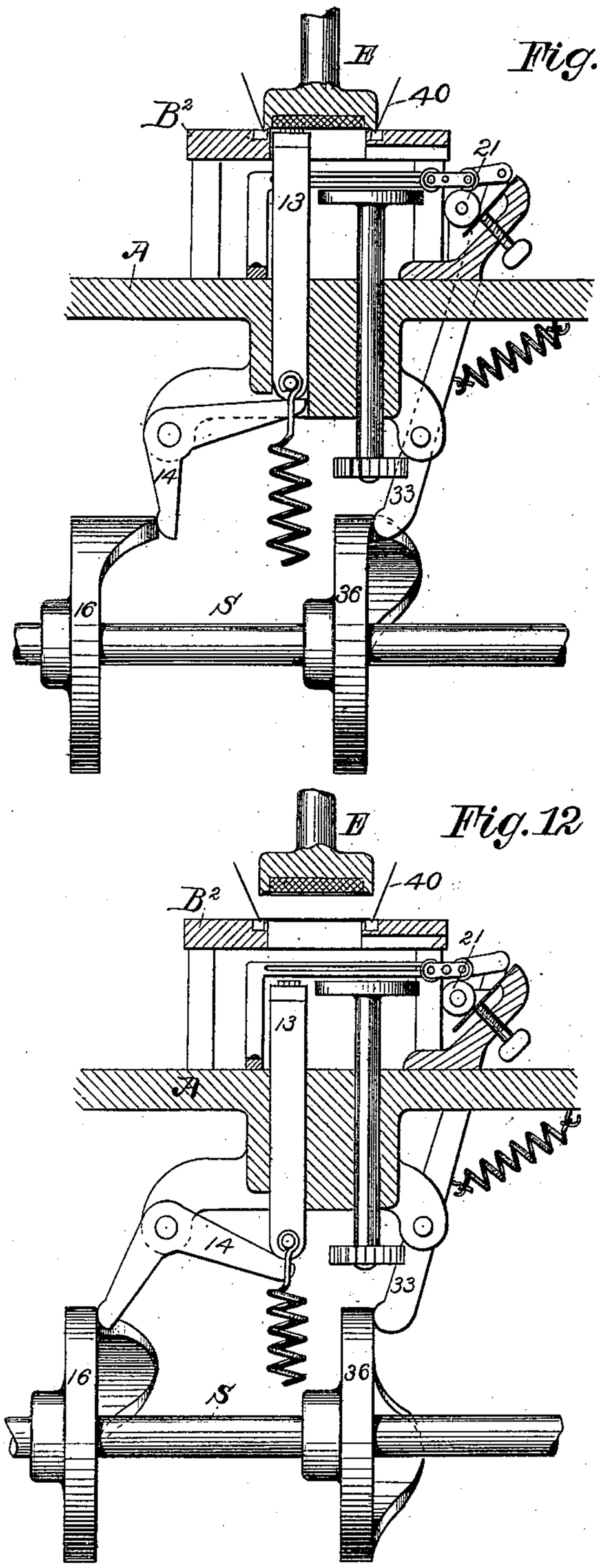

Fig. 11

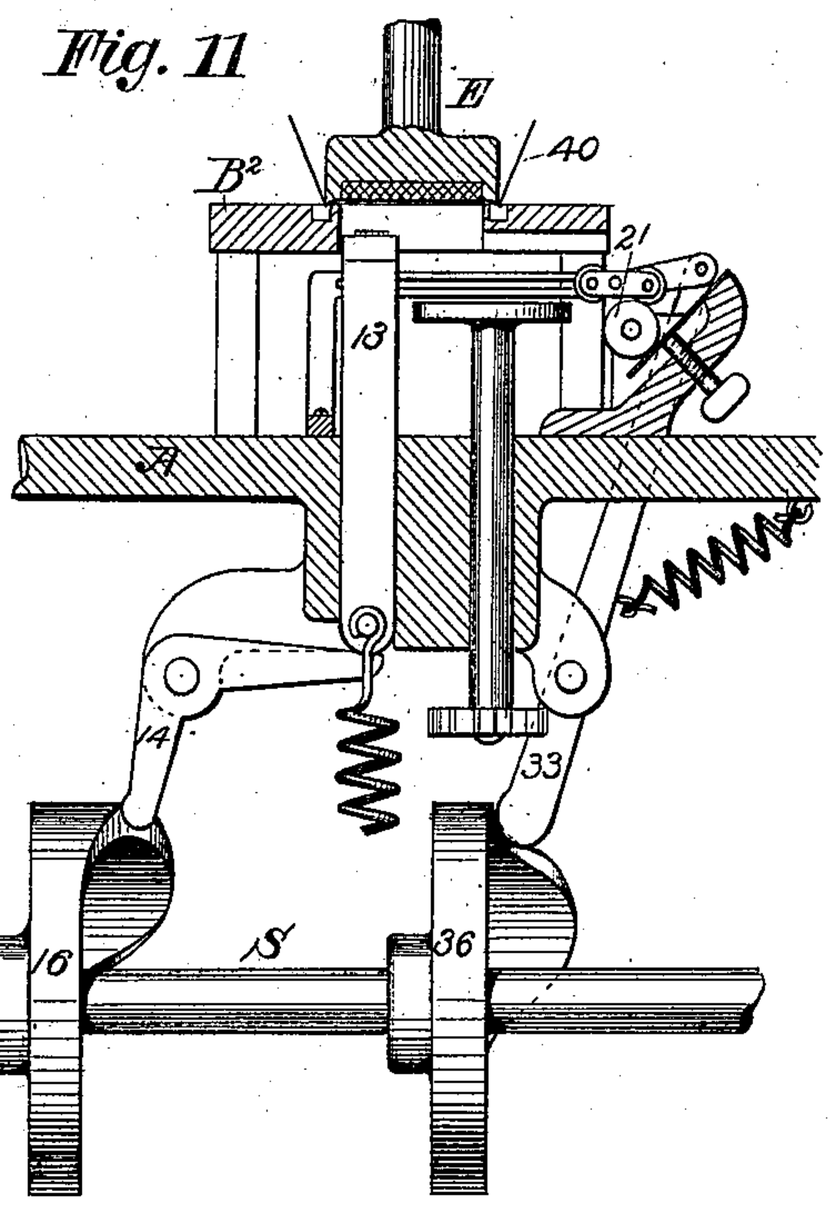

Fig. 12

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UNITED STATES PATENT OFFICE.

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ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 364,132, dated May 31, 1887.

Application filed October 19, 1885. Renewed November 15, 1886. Serial No. 218,920. (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 blanks are creased in their folding-lines prior to the folding operation, the object being to provide mechanism adapted to simultaneously crease and print the blanks at the same place in the machine.

My invention is applicable to the improved envelope-machine described and claimed in my application No. 118,905, filed January 28, 1884, of which some of the parts are shown in this case.

The invention consists in the devices and combinations hereinafter described and claimed.

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, some of the upper parts being broken away. Fig. 2 is an elevation of the rear of the same, which is at the left hand in Fig. 1. Fig. 3 is a top view of the principal parts on the top plate, showing the blank-carrying pickers in their front position. Fig. 4 is a vertical section about in line *a a*, Fig. 1, showing a modification in one of the details. Fig. 5 is another view of one of the modified details, drawn in projection with the same parts in Fig. 4. Fig. 6 is a top view of the inking apparatus. Fig. 7 is a perspective view of the guides supporting the inking-rollers and their carriage. Fig. 8 is a view similar to Fig. 4, but more complete, showing a blank in place preparatory to creasing. Fig. 9 shows the creasing-die brought down onto the blank. Fig. 10 shows the die still down, holding the blank in place, and the type plate or block forced up to print the under side of the creased blank. Fig. 11 shows the die still holding the creased and printed blank, while the type-plate has begun to move down. Fig. 12 shows the type moved clear down, ready for inking, and the creasing-die raised, thus freeing the blank, which is next conveyed away by the pickers to the folding mechanism.

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.

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

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 3.

P P are a pair of pickers, each connected to a vertically-reciprocating stem, 5, whereby they are operated. In Fig. 1 they are shown resting on the blank pile, from which they are supposed to take a blank, and, first lifting it up, carry it away to and beneath the creasing-die. The stems 5 are fitted to holes in a slide, 7, and are connected at the top by the bar 8. Springs 9 serve to lift the pickers after they have been pushed down. This operation may be performed, and also the slide be moved on its supporting-guide 10, by the means shown for so operating the similar pickers and slide in my aforesaid prior application, Serial No. 118,905.

F designates the folding-box, which is furnished with an ordinary set of folding-wings, a trap-door, and the plunger 6.

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

Between the folding-box F and the pile of blanks I place a mechanism for creasing the blanks in their folding-lines, which is constructed as follows: Any suitable casting, as

B², supports a creasing-bed, D, with its top in about the plane of the lifted pickers. Said bed may be made of elastic material, as rubber, contained in a groove in B², or it may be a grooved plate, corresponding to the folding-lines of the blank. A vertically-reciprocating die, E, preferably having a creasing-edge, as at 55, 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, Fig. 2, said stem and slide having their bearings in bracket 31. The under side of die E has a platen, 12, against which the type may act in the ordinary manner. The type-block 15 is fixed on a vertically-movable part, for which part I employ slide 13, working in a bearing in plate A, and having access to the platen through an opening in part B², as fully shown in the drawings. Said slide is operated at proper times and through the required distances by cam 16, constructed suitably therefor, which cam acts through the angle-lever 14, or other connections, to move the slide up, a spring, 17, being employed to draw it down. When the type-block is down, as in Figs. 8 and 9, its upper surface is in the plane of the revolving ink-table 18. This table is or may be the usual simple device commonly employed for the same purpose in small printing-presses. It is carried on a shaft, 19, having a ratchet-wheel, 20, which is to be turned intermittently in the usual manner by devices not shown in the drawings. It is not material what devices are used for that purpose. Other forms of ink-table may also be substituted for table 18, as may be preferred. Ink is supplied to the table and type from an ordinary ink-fountain, T, having the usual rolls, 21, for delivering the ink.

The distribution is effected by an ordinary traveling roller, or, as shown in the drawings, a pair of them. These are designated by 22 23, and are supported in a carriage, 24, which runs in guides 25. Said carriage is operated by a link, 32, from a lever, 33, which is moved in one direction by spring 34 and in the other by cam 36. On account of their small size, these parts do not all have reference-characters in all the views. The apparatus is, however, so common that its construction and operation will be obvious.

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, is raised thereby, and conveyed to position 40, Fig. 8, immediately and centrally under the creasing-die, as shown by dotted lines in Fig. 3. Die E is now brought down forcibly onto the blank, as in Fig. 9, impressing the folding-lines into the groove or into the rubber when this is used. While said die remains on the paper, thereby holding it firmly in place, the type, previously inked, is brought up against and prints the blank, as shown in Fig. 10. Next, the type is withdrawn from the blank while this is still held by the creasing-die, as in Fig. 11, and then the type and die move away simultaneously to their positions in Fig. 12. After this the creased and printed blank may be carried on by the pickers to be folded and disposed of in the ordinary manner, the machine then standing ready for operating on the next blank.

It should be understood that I am not limited to the use of blank-carrying pickers for taking the blank to and from my improved combined creasing and printing mechanism, for I may use therefor the carriers, or others similar thereto, shown and described in my application, Serial No. 178,690, filed October 1, 1885.

It will also be understood that my invention is applicable to envelope-machines of the class shown in United States Patent No. 177,048, dated May 2, 1876, in which the envelope-blank is presented to the printing mechanism by an intermittently-acting feed, and not by blank-carrying pickers, as herein described. It is in practice quite immaterial which of these devices is employed to feed the blanks, the only essential thing, the motion imparted to the blank, being the same in each case.

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.

For operating the creasing-die, a modified mechanism may be used, as shown in Fig. 4. Here slide 28 is operated from crank 50 by a link, 51. The required dwell of the die on the bed D is obtained in this case by making the slide and arm slightly elastic.

Having thus described my invention, I claim—

1. The combination, in an envelope-machine, of a creasing-bed, a creasing-die operated by mechanism, substantially as described, to have a dwell on said bed, and printing mechanism operating to print the blank held by said die and during said dwell, substantially as set forth.

2. The combination, in an envelope-machine, of a creasing-bed, a creasing-die operating on said bed, means, substantially as described, for feeding blanks to said bed, a type-block adapted to print the blanks against said die, and means, substantially as described, operating the die and type to first crease and hold the blank and then print said blank while held by the creaser, substantially as set forth.

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