

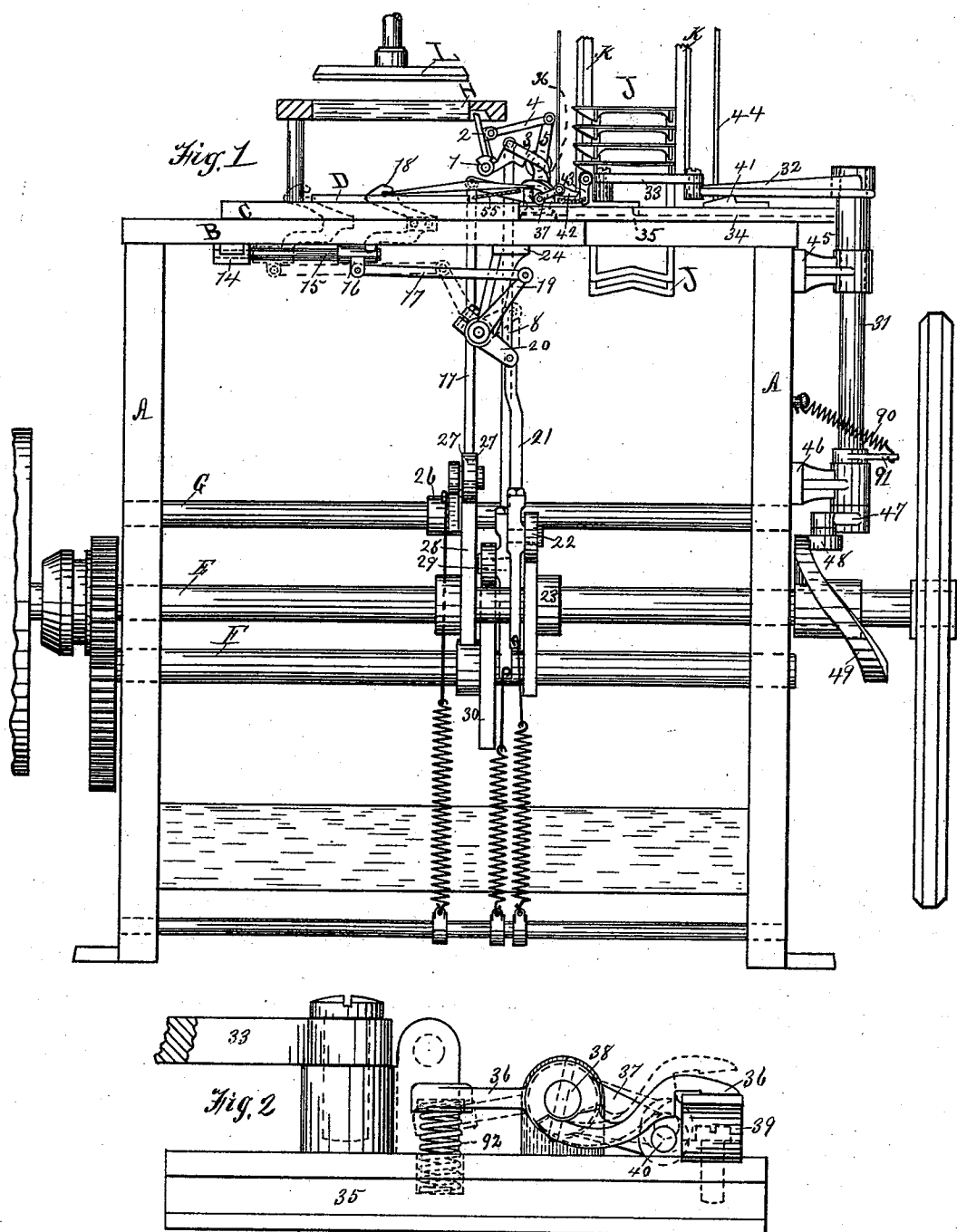
(No Model.)

3 Sheets—Sheet 1.

C. H. HEYWOOD.
ENVELOPE MACHINE.

No. 516,810.

Patented Mar. 20, 1894.



Witnesses
Robt. Ruddell.
Geo. D. Dutton.

Inventor
Charles H. Heywood.

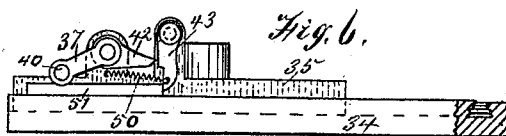
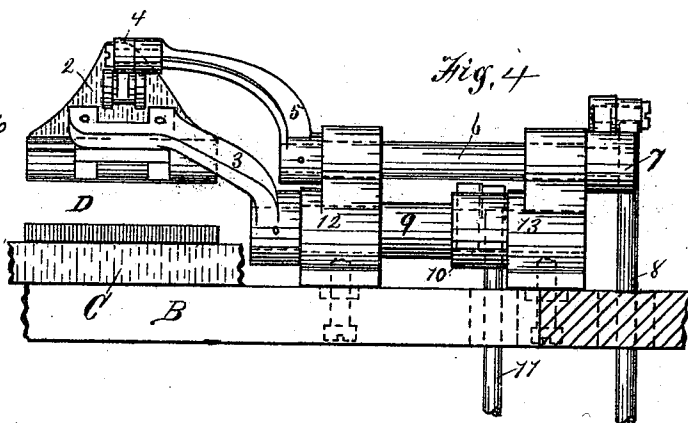
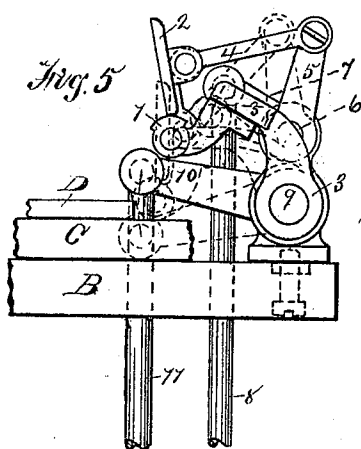
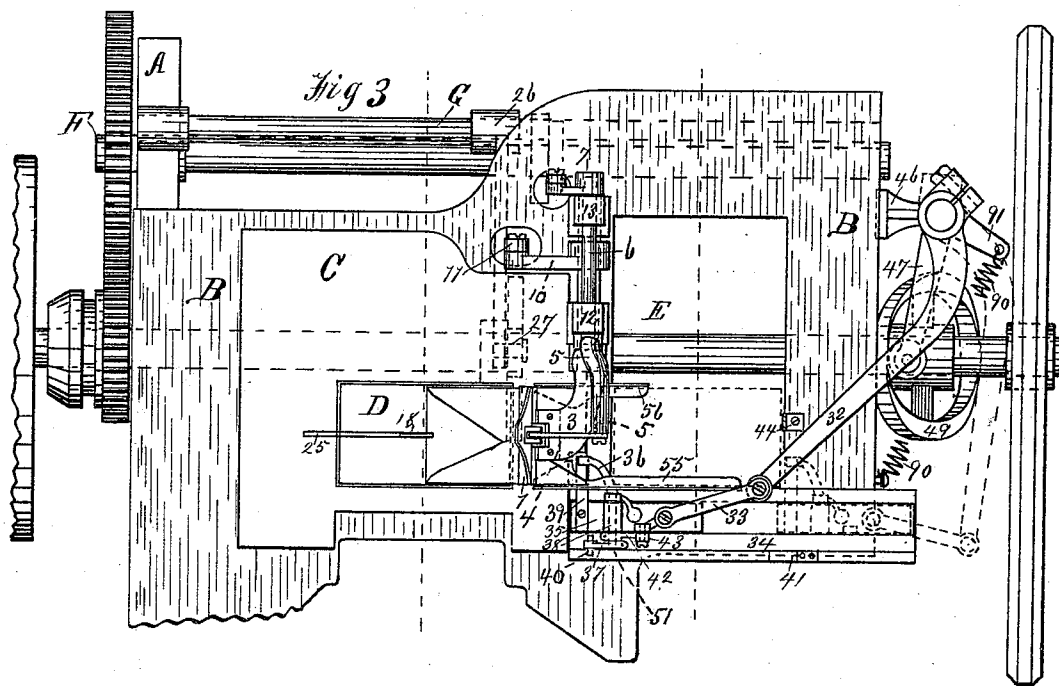
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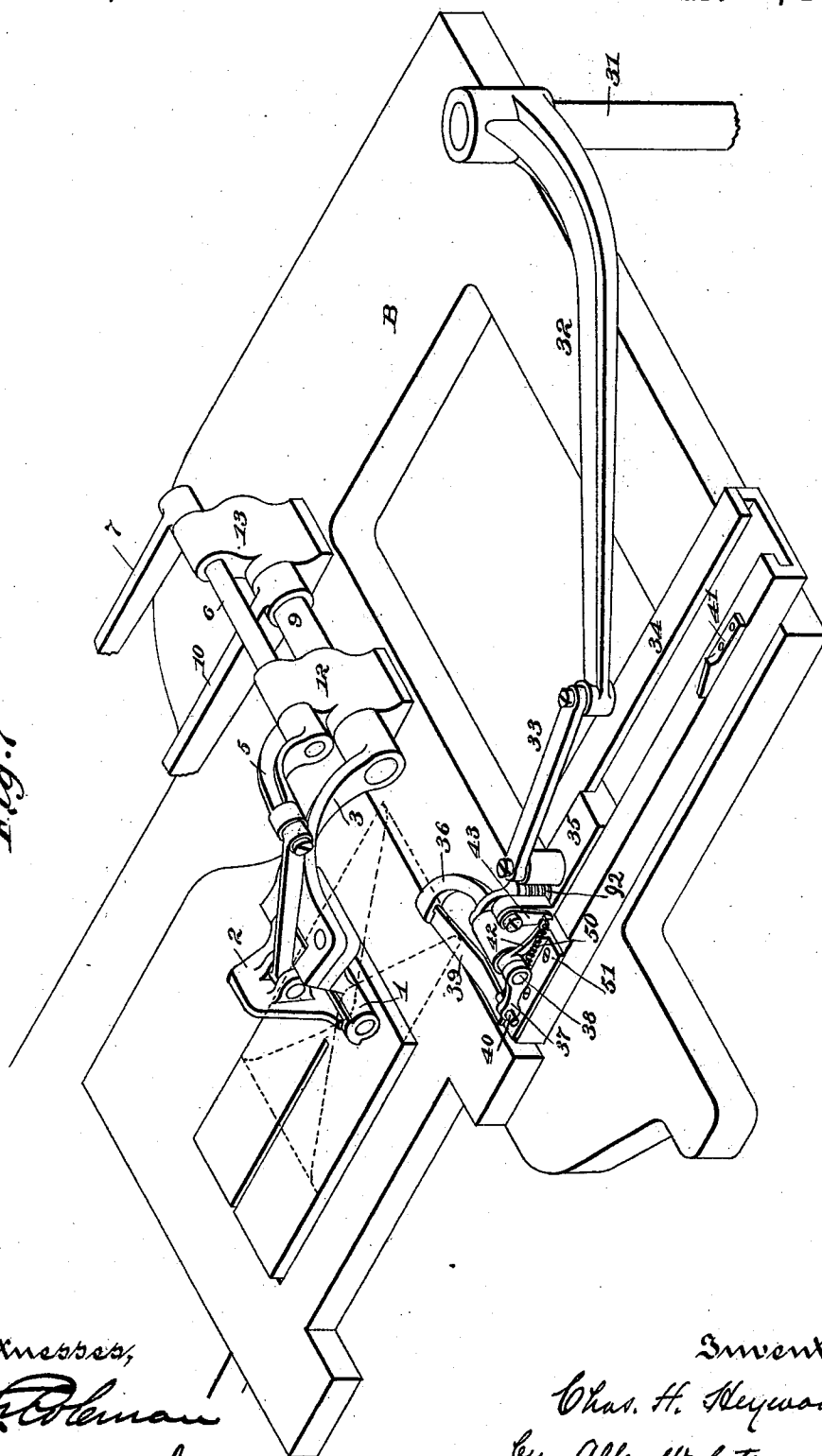
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Fig. 7



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UNITED STATES PATENT OFFICE.

CHARLES H. HEYWOOD, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO
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ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 516,810, dated March 20, 1894.

Application filed February 16, 1892. Serial No. 421,758. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HEYWOOD, a citizen of the United States of America, residing in Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Envelope-Machines, of which the following is a specification, reference being had to the accompanying drawings and letters and figures of reference once marked thereon.

My invention relates more particularly to devices for removing the completed envelopes from the folding bed to the drying chain, and to the construction and operation of one of the folders in connection therewith.

The object of my invention is to provide a device of comparatively simple construction which will effectively perform the various functions required, and with which great rapidity may be had while at the same time the operation is positive in all respects.

I accomplish the objects of my invention by the construction herein shown.

In the accompanying drawings in which like letters and figures of reference indicate like parts,—Figure 1 is a front elevation of an envelope machine provided with my improved construction, various parts which are common to nearly all machines being omitted from the drawings. Fig. 2 is a side view on an enlarged scale of the nipper and operative parts immediately connected therewith. Fig. 3 is a plan view on same scale as Fig. 1. Fig. 4 is a view on an enlarged scale of the folder and operating mechanism immediately connected therewith. Fig. 5 is a view of the same as seen from the left of Fig. 4. Fig. 6 is a view of the tripping mechanism adapted to release the jaws of the gripping device. Fig. 7 is a perspective showing the folder and the conveying jaws, and connections upon the frame of the machine.

In detail, A indicates the main frame of an envelope machine, B the top plate thereof.

C indicates a small plate adapted to support the folding mechanism, D the folding bed upon which the envelope is folded, E the main shaft upon which are mounted the ordinary driving pulley and balance wheel, F

a shaft mounted in bearings on the frame, G a lever shaft mounted in suitable bearings and supporting rocking levers, H a creasing plate located above the folding bed and through which the envelope blanks are folded by the plunger, J links of the chain to hold the envelopes while drying, L the plunger having a reciprocating motion through the creasing plate, and K, uprights which support the drying chain. 1 a movable end folder, 2 a flap pivoted thereon, 3 a frame mounted upon a shaft and to which the folder is fastened, 4 a connection extending from the radial arm 5 to the flap of the folder 2, 5 a radial arm operating to open and close the end folder, 6 a rock-shaft upon which arm 5 is mounted, 7 a radial arm fastened upon the rock-shaft, 8 a rod extending from the cam shaft upward and secured to arm 7, 9 a rock-shaft for operating arm 3, 10 a radial arm fastened upon rock shaft 9, 11 a rod extending from the camming shaft to arm 10, 12 and 13 stands fastened upon the table through which shafts 6 and 9 extend, 14 a small hanger fastened under the plate B, in which is fastened the rod 15, 16 a frame sliding upon rod 15, 17 a connection extending and operating frame 16, 18 the ejector hook, 19 a radial arm fastened upon rock shaft extending from hanger 24, 20 a short arm upon the opposite end of the shaft carrying arm 19, 21 a rod extending from the cam shaft upward to operate 20, 22 a cam roll upon the fork at the end of rod 21, 23 cam for operating the ejector hook through connecting mechanism, 26 lever upon shaft G for raising and lowering the end folder, 27 cam roll, 28 cam, 29 cam roll for opening and closing the end folder, 30 cam for operating roll 29, 31 rock shaft for working slide 35, 32 arm fastened upon rock shaft 31, 33 connection extending from arm 32 to slide 35, 34 frame in which slide 35 travels, 36 nipper for moving the envelope, 37 small arm for opening nipper, 38 rock shaft upon which nipper is fastened, 39 lower jaw of the nipper 36, 40 pin in end of arm 37, 41 a wedge-shaped piece for opening nipper, 42 small pawl on rock shaft 38, 43 catch for holding arm 42, 44 guide or stop for the envelopes, 45

and 46 hangers in which rock shaft 31 has bearing, 47 arm fastened upon the lower end of rock shaft 31, 48 cam roll upon arm 47, 49 cam for moving the nipper slide through connecting parts, 50 spring for holding catch 43, 51 abutment stop for catch 43, 90 spring for holding cam roll 48 against the cam 49.

The construction and operation is as follows: A frame A is provided upon which is mounted a top plate B and which is provided with suitable bearings in which are mounted the shafts which give the requisite intermittent motion to the several parts. A cam 49 is mounted upon the main shaft E, and a vertically arranged rock shaft 31 is mounted in suitable bearings and provided with a lever 47, and mounted upon the free end of this lever is a roll 48 which bears against the face of the cam 49, and a spring 90 is attached to the frame A at one end and at its opposite end to a lever 91 which lever is fixed upon the vertical rock shaft, the tendency of which spring is to force the roll 48 at all times against the face of the cam. A lever 32 is mounted at the top portion of the vertical rock shaft, the free end of which lever is attached to the mechanism which feeds the envelopes from the bed to the drying chain. It will readily be seen that as the shaft E with cam 49 mounted thereon revolves, the lever 47 will be moved and with it the rock-shaft, thus moving the operating mechanism connected with the rock-shaft. The mechanism which turns the end flap of the envelope (which is nearest toward the drying chain) downward is arranged to move away at each operation from the bed of the machine, thus giving an open space for the passage of the envelope beneath it to the drying chain. The construction of this portion of the folding mechanism is illustrated on an enlarged scale in Figs. 4 and 5 of the drawings the first figure being a view of the device as seen from the side toward the drying chain, and the latter being a view of the device as seen from the left of Fig. 4. The folding flap 2 is pivotally mounted upon a supporting piece 1, and the supporting piece 1 is in turn pivotally mounted upon a radial arm 3, which arm is mounted upon a rock shaft 9 having bearings in suitable supports mounted upon the top plate B.

Mounted upon the rock-shaft 9 is an arm 10 to which is pivotally connected a rod, 11, which has intermittent longitudinal motion given it through the movement of a suitable cam mounted upon one of the rotatable shafts. It will be seen therefore that the rotation of the rock-shaft 9 in one direction will carry the supporting part 1 downwardly to the folding bed, and that motion in the opposite direction will raise it from the bed.

Pivotally connected to the folding flap 2 is a connecting rod 4 whose opposite end is pivotally mounted upon the free end of a radial arm 5, this arm being mounted in fixed position upon a rock-shaft 6, which rock-shaft is

also provided with a radial arm 7, fixed thereon and connected with said radial arm is a connecting rod 8, which extends downwardly and receives intermittent longitudinal motion from one of the cams mounted upon one of the main rotating shafts.

The adjustment of the parts is such that as soon as the support or arm 3 is carried downwardly to its position upon the folding bed the arm 5 operates to move the flap 2 downwardly, thus giving the requisite fold, after which these parts return to their normal or first position and the feeding device immediately operates to remove the envelopes from the folding bed to the drying chain. After the folding operation is completed, the envelope is carried to the right (under the folding device described) by the operation of the hook 18, which rests normally within a slot 25 cut in the plates C and D, and which hook is mounted upon a carriage 16, which slides upon a track or rod 15 and which carriage receives its motion from the operation of the bell-crank-lever having arms 19 and 20, which lever receives its motion from the operation of the connecting rod 21, motion being communicated thereto by the operation of a cam mounted upon one of the main shafts. As the envelope is carried forward in the manner just described, the end nearest the drying chain is caught between the jaw 36 and the block 39, the same being mounted upon the slide or carriage 35 and the carriage receives its motion through the operation of the lever arm 32, the same being connected with the carriage through the medium of the connecting piece 33, and immediately upon the envelope being fed below the jaw 36 the jaw is allowed to descend and grasp the same firmly at which time the lever 32 is moved through the operation of the cam 49 and the carriage is caused to travel forward, thus depositing the envelope within the drying chain, and at the time the carriage reaches the desired position to deposit the envelope in the drying chain the depending end of the arm 37 mounted upon the same shaft with the jaw 36, is brought into engagement with an inclined plane 41, thus raising the arm 37 which rocks the shaft 38 and opens the jaw 36, which operation entirely releases the envelope and leaves it free within the chain. As the arm 37 is raised by the inclined plane 41 a pawl 42 is thrown downwardly a sufficient distance to enable the catch 43 to pass over and engage the nose thereof and to retain it in its downward position, thus keeping the jaw 36 open until the catch 43 has been thrown away from the nose of the pawl 42 a sufficient distance to release the same. A spiral spring 50 is employed to constantly draw the catch 43 toward the nose of the pawl 42. The jaw of the nipper 36 is held down on the block 39 by means of a spring 92, arranged under the rear arm of the nipper, the force of the spring being to push the arm upward and hold the jaw

down on the block, so that an envelope between the jaw and the block is held securely for the operation intended.

The tripping operation is produced by the employment of a block 51, against which the end of the catch 43 bears when the carriage is returned to its first position to receive an envelope.

The three folds other than the one at the end or side through which the envelope passes from the folding bed to the drying apparatus may be made in any of the well known ways, and I have not illustrated the application of the same herein, as they form no part of my invention and are not required for the proper understanding of the operation of the machine.

Having, therefore, described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination in an envelope machine, of a rock-shaft 9, mounted on the folding-bed, a radially and laterally directed arm 3, on the end of the shaft 9, a support 1 secured to the end of the arm 3, a rock-shaft 6 mounted above the folding-bed, a radially and laterally directed arm 5, on the end of the shaft 6, a folding flap 2, hinged at its lower edge to the support 1, a connecting-rod 4, pivotally connected to the back of the folding-flap and to the end of the arm 5, and means to rock the shaft

9 and move the flap bodily to and from the bed, and means to rock the shaft 6 and vibrate the flap, all substantially as described.

2. The combination in an envelope machine of a movable carriage or frame 35, a jaw provided lever 36 pivotally mounted thereon, a block 39 for the jaw to bear against, a spring arranged to force the jaw toward the block, a lever 37 fixed to the same pivot with the lever 36, an inclined plane 41 arranged in the track of the lever 37, a pawl 42 fixed on the same pivot, a catch 43 arranged to engage the nose of the pawl, a block 51 fixed in the track of the lever 37 and catch 43, means to give the carriage reciprocating motion in its ways and means to feed the envelopes from the bed to a point between the block 39 and opened jaw 36, substantially as shown.

3. The combination in an envelope machine of an end folding device movable above the folding-bed, a feed arranged to carry the envelope from the bed below the end folding device, a carriage having jaws arranged to take the envelope from below the raised folding device and carry the same to the drying chain and in combination substantially as shown.

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Witnesses:

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