(No Model.)

L. P. BOUVIER.

ENVELOPE MACHINE.

No. 481,779. Patented Aug. 30, 1892.

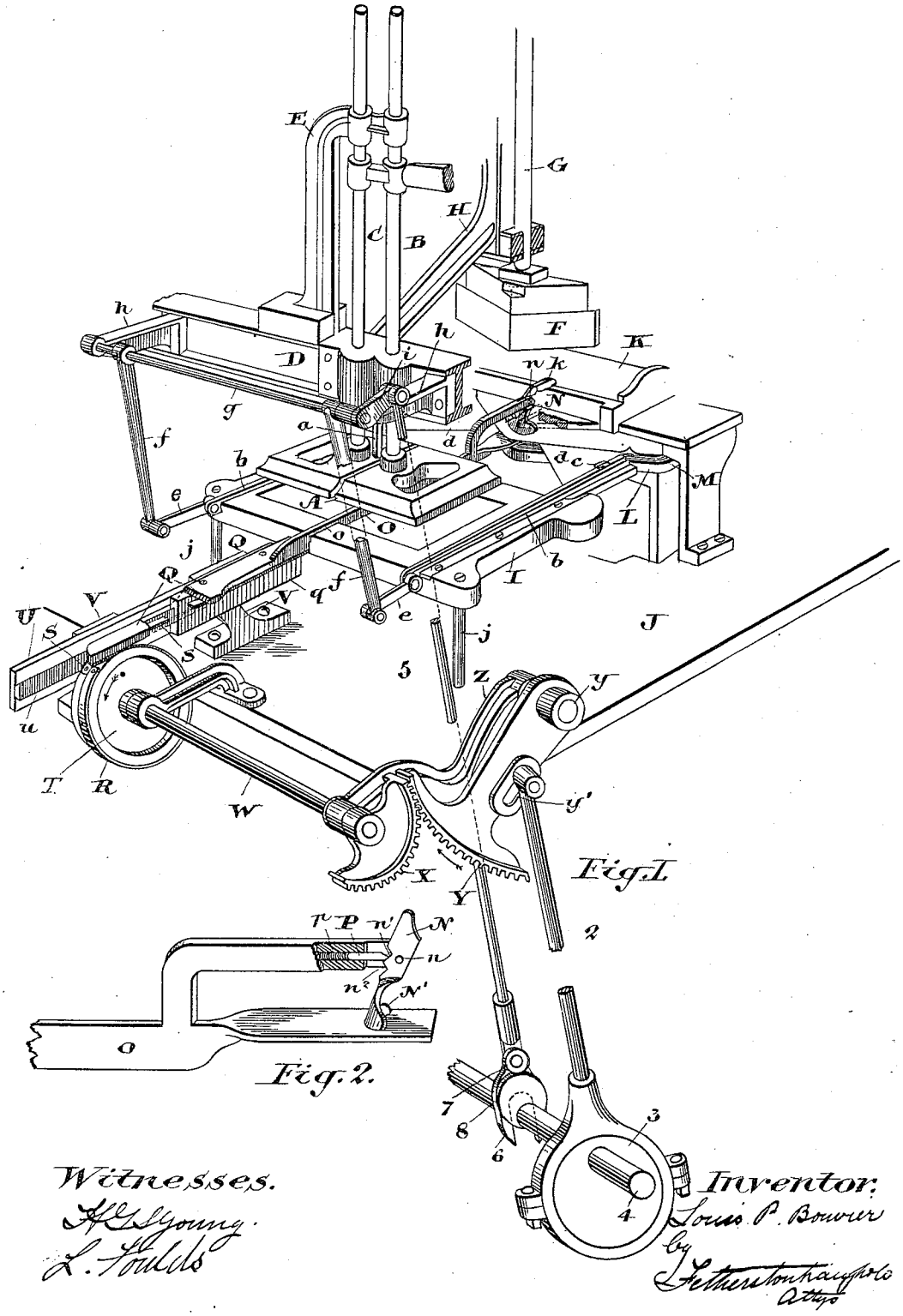

Fig. 1.

Fig. 2.

Witnesses.
H. L. Young.
L. Foulds

Inventor:
Louis P. Bouvier
by Fetherstonhaugh & Co
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LOUIS PETER BOUVIER, OF TORONTO, ASSIGNOR OF ONE-HALF TO WILLIAM HARTY, OF KINGSTON, CANADA.

ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,779, dated August 30, 1892.

Application filed May 2, 1892. Serial No. 431,588. (No model.)

To all whom it may concern:

Be it known that I, LOUIS PETER BOUVIER, machinist, a citizen of the United States of America, and a resident of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Envelope-Machines, of which the following is a specification.

My invention relates to improvements in envelope-machines patented to me on the 2d day of June, 1891, under No. 453,436; and the object of the invention is to provide mechanism whereby the blank may be rapidly fed into position above the opening of the creasing-box and without any appreciable loss of time being effected by the stoppage of the carrying mechanism, as in my former machines; and it consists, essentially, of two sets of mechanism operated from the main shaft, the one set being in the form of a carrier-grip to be operated by suitable mechanism, so as to remove each succeeding blank to a position in proximity to the opening of the creasing-box, while the other is a set of carriers operated in conjunction with the carrier-grip, so as to place the blank in its exact location above the opening in the creasing-box and beneath the plunger, the whole being arranged and constructed in detail as hereinafter more particularly explained.

Figure 1 is a perspective view of portion of an envelope-machine, showing the parts involved in my invention. Fig. 2 is a sectional perspective detail, partially in section, of the carrier-grip.

In the drawings like letters and numerals of reference indicate corresponding parts in each figure.

A is a double-headed folding plunger. The plunger A is made in two parts, as shown, which have a space in the center between them. The two parts of the plunger A are supported at the bottom on the rods B and C, which extend through the center cross-bar D of the frame and the bracket E secured to the top of the cross-bar D, the said plunger deriving a reciprocating vertical motion from the main shaft of the machine in the manner common and described in my former improvements in envelope-machines heretofore patented.

F is a picker, the rod G of which is held in bearings on the supplemental portion H of the frame which is attached to the cross-bar D. The picker F derives a vertical reciprocating motion from mechanism corresponding to that used in my former machines.

I is the creasing-box, which is supported above the table J on the rods *j*.

K is the gum-box, which is supported above the elevator L, upon which is located the pile of blanks M.

N is the carrier-grip, which is pivoted at *n* on the forked end of the rod O. The carrier-grip N has two notches *n'* and *n''*, situated behind its pivot-point.

P is a plunger located in a hole behind the carrier-grip N and held in engagement with either the notches *n'* or *n''* by means of the spiral spring *p*, located behind the plunger. The bottom end N' of the carrier-grip is correspondingly shaped to the apex of the flap of the envelope, and is designed to come within the line of mucilage when it is brought to grip the blank to carry it beneath the plunger.

k is a projection extending from the rear of the gum-box K and designed to come in contact with the upper end of the carrier-grip, so as to force it into the position shown in Figs. 1 and 2 upon the flat surface of the lower prong of the fork, the blank being intermediately situated between the bottom end N' and the flat surface of the lower forked end, as shown.

a is a projection extending from beneath the central cross-bar D and designed to come in contact with the top of the carrier-grip N when it moves rearwardly, so as to bring the plunger P from the notch *n'* to the notch *n''* in the carrier-grip N, and thereby raise its lower end rearwardly from its grip upon the blank. The rod O moves in grooves *o*, made in the front and rear bars of the creasing-box.

The rear end of the rod O is connected to or forms part of the bar Q, which is connected by the belt R, attached to the rear end of the bar Q at one end and to the periphery of the wheel T at the other and passing around the periphery in the manner shown.

S is a belt attached to the front of the bar Q at one end and at the other end secured on and passing around the periphery of the wheel T in the manner shown and designed to re-

volve it in the opposite direction to that in which the belt R will revolve it.

U is a bar supported on the brackets V and having a dovetailed tongue *u*, which fits within a corresponding groove made in the sliding block *q*, which is attached to or forms part of the bar Q. The wheel T is supported on the end of the shaft W, which is supported in brackets secured to the table. Upon the opposite end of the shaft W is secured the quadrant X, which meshes with the quadrant Y, secured on the end of the stud *y*, extending from the bracket Z, secured to the table J. The quadrant Y is slotted at *y'* and is connected by a rod 2 to an eccentric 3, secured to the main shaft 4.

b are carrier-bars running in grooves made in the side bars of the creasing-box and having secured at their front ends the carriers *c* and aprons *d*. The rear ends of the carriers are connected by the links *e* to the arms *f*, which are secured to the rod *g*, supported in bearings in the ends of the brackets *h*, secured to the cross-bar D.

i is an arm attached to one end of the rod *g*. The other end of the arm *i* is connected to the rod 5, which extends down through the table J, and has a forked end 6, which straddles the main shaft 4.

7 is a friction-roller pivoted on the forked end and designed to roll upon the cam 8, secured to the main shaft 4.

Having now described the principal parts involved in my invention, I shall proceed to describe the operation of the parts whereby the carrying of the blank is effected expeditiously and with the slightest possible time elapsing between the folding of one blank and the placing of the next blank on the creasing-box ready to be folded.

The position in which the machine is shown shows the roller 7 on top of the cam 8 so as to bring the carrier *c* on the bars *b* toward the front end of the machine in proximity to the pile of blanks, while the position of the eccentric 3 shows a shorter diameter above the shaft, so that the carrier-grip is also situated in front of the machine and in position to grasp a blank. Before the carrier-grip arrives in the position shown in Fig. 1 the picker F is brought down so as to raise the blank sufficiently high to permit of the apron *d* and lower prong of the fork to come between it and the next succeeding blank immediately on top of the pile. As the picker F brings the blank up, the bottom of the gum-box causes the blank to drop from the picker, and as the apron *d*, during the period that the picker is bringing the blank up, comes beneath it and supports it above the level of the pile of blanks, the picker in the meantime moves upwardly and allows of the carrier-grip N coming into position, the bottom prong of the rod O coming beneath the blank. Immediately the bottom N' of the carrier-grip comes into position inside of the line of the gum laid upon the blank by the picker. The top of the carrier-grip N strikes the projection *k* and forces the plunger P from the notch *n''* to the notch *n'*, thereby tilting the carrier-grip on its pivot, so as to throw the lower end N' upon the top of the blank. The quadrant Y is immediately caused to move upwardly in the direction indicated by arrow by the eccentric 3, so as to mesh with the quadrant X and thereby bring the wheel T around in the direction indicated by arrow.

It will now be seen that the belt S will bring the bar Q, rod O, carrier-grip N, and blank forward, so that the rear end of the blank is in front of the carrier *c* on the carrier-bar *b*, at which interval the top of the carrier-grip N comes in contact with the projection *a* and tilts the carrier-grip N on its pivot, so that the plunger P is forced from the notch *n'* into the notch *n''*, thereby causing the grip to let go of the blank. The rod O will continue backward until it brings the grip and lower prong to the rear of the opening of the creasing-box. The carriers on the bars *b* in the meantime are operated from the cam 8 on the main shaft through the rod 5 and arms F, so as to move rearwardly and bring the blank into the exact position above the opening of the creasing-box. When this is accomplished, the plunger *a* comes down and brings the blank down through the opening. When the plunger *a* has passed beneath the level of the top of the creasing-box, the carrier-grip is caused to move forward by the eccentric 3, and by the time the carrier-grip has reached and grasped the next succeeding envelope removed from the pile of blanks by the picker the plunger has carried the blank down and come back to its normal position ready to receive the next blank which the carrier-grip is bringing forward at the time the plunger is coming to its normal position. This movement of the carrier-grip is effected on account of the plunger *a* being double-headed and having an opening between the heads, so that the rod O may have longitudinal movement through the space when the plunger is returning to its normal position. The carrier-grip is then moved forward by means of the belt R.

Upon the plunger going down with the blank it will of course be understood that the carriers are immediately moved forward into position by the cam 8, so that the aprons *d* are inserted between the next succeeding blank raised by the picker from the pile of blanks.

It will also be understood that when the carrier-grip is tilted on its pivot it will pass rearwardly and forwardly again without its position being affected by the projection *a*.

Heretofore the blanks have been carried forward by carriers which had to stop at the end of their rearward stroke so that the plungers would have time to get up into position, and thereby enable the carriers to move forwardly again so as to bring forward the next succeeding blank; but in my present mechanism it will be seen that by having the short carrier-bars, as shown, and the carrier-

grip N these two mechanisms, and the fact of the carrier-grip being able to move between the two heads of the plunger during the period that the plunger is being brought back to its normal position, a great deal of time is saved, and the blank may be brought immediately into position almost directly after the plunger has folded the preceding blank.

What I claim as my invention is—

1. In an envelope-machine, the combination, with the double-headed plunger and picker, with means for operating them, of a carrier-grip reciprocating between the heads of the plunger, and means for operating said grip, substantially as described.

2. In combination with the picker F and double-headed plunger, with means for operating them, the carrier-grip pivoted in the forked end of the rod O, the bar Q, connected to the said rod and moving on the guide-bar U, the wheel T, and belts R and S, connecting said wheel with the bar Q, substantially as described.

3. In combination with the picker F and double-headed plunger A, with means for operating them, the carrier-grip pivoted in the forked end of the rod O, and means for reciprocating said rod consisting of the bar Q, connected with its rear end and moving on the guide-bar U, the wheel T, secured to shaft W, belts R S, connecting said wheel with the bar Q, the quadrant x, also secured to shaft W, the quadrant Y, meshing therewith, and the rod 2, eccentric 3, and shaft 4, substantially as and for the purpose set forth.

4. In combination with the carrier-grip N, pivoted in the forked end of rod O, the bar Q, formed on the end of said rod and moving on the guide-bar U, the wheel T, belts R and S, connecting the wheel with the bar Q, and the bars b, with means for operating them, said means consisting of arms f, depending from a rod g and having their lower ends pivotally connected to said bars, an arm i, carried by the rod g, a cam on the main shaft, and connections between the said arm and main shaft, substantially as described.

5. The carrier-grip N, pivoted in the forked end of the rod O, means for reciprocating the rod, the notches n' n^2, formed in the grip in rear of the pivot-point, and the plunger P, provided with spring p, substantially as and for the purpose set forth.

LOUIS PETER BOUVIER.

Witnesses:
BLANCHE BOYD,
LEONARD FOULDS.