DELIVERY MECHANISM FOR ENVELOP AND SIMILAR MACHINES.

Fig. 1.

Fig. 2.
To all whom it may concern:

Be it known that we, Charles H. Heywood and Denison E. Travis, citizens of the United States, residing at Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Delivery Mechanism for Envelop and Similar Machines, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

This invention pertains and is applicable to machines of the class of those shown and described in United States Letters Patent No. 420,792, dated February 4, 1890, and No. 518,730, dated March 20, 1894.

The main object of the present invention is to remove envelopes or bags from the folding beds of envelop or paper bag machines with certainty and rapidity.

It consists in certain novel features of construction and in the peculiar arrangement and combinations of parts as hereinafter particularly described and pointed out in the claims.

In the accompanying drawing like characters designate the same parts in both figures.

Figure 1 is a vertical cross section on the line 1, 1, Fig. 2, of delivery mechanism embodying the present invention as applied to an envelop or similar machine; and Fig. 2 is a vertical section in a plane at right angles to that of Fig. 1 and indicated by the line 22, 22, thereon.

For the purpose of illustration only such parts of the envelop machine as are necessary for explaining the construction and operation of the delivery mechanism are shown.

a designates the folding bed; b the front folder and c the back folder of an envelop machine mounted on the top plate d of the machine frame.

e is a horizontal shaft extending across the machine below and parallel with the folding bed a. It is provided with cams f and g and at one end with a crank h.

i is a tubular rocker shaft located below and parallel with the front side of the bed a and provided with a crank arm j and with tubular arms k extending upwardly therefrom through openings in the top plate d at each end of the bed a and bent inwardly and formed at their free ends with suction mouths which open towards the shaft i and are adapted to be swung therewith to and fro over the bed a. A suction pump l whose piston is connected with and actuated by the crank h, is connected by a hose or flexible pipe m with the rocker shaft i.

A connecting rod n which is forked or slotted to embrace the shaft e, is pivoted to the crank arm j and provided on one side with a roller o, which is held by a spring p in contact with the face of the cam f. This spring e tends to swing the suction picker arms k away from the folding bed a into the position indicated by dotted lines in Fig. 2.

Vertically movable lifter arms q are pivoted at their upwardly bent rear ends to standards or supports on the top plate d, adjacent to the back side of the folding bed a. At their free front ends they are bent upwardly and adapted to pass through vertical openings in said bed adjacent to its front side. Connecting rods r which are forked or slotted to fit over the shaft e and are guided thereon, are pivoted at their upper ends to the arms q and are provided with rollers s which are held by springs t in contact with the faces of the cams g. These springs tend to carry the arms q downward to positions in which their free front ends are flush with or below the top of the bed a.

The lifter arms may be fastened on a common pivot rod or rocker shaft v and both operated by a single cam g, forked connecting rod r and spring t, thus simplifying the construction of the machine without affecting its operation.

The delivery mechanism hereinafore described operates as follows: An envelop u having been folded on the bed a, the picker arms k are swung backward by the cam f over the envelop on the bed, as shown by full lines in Fig. 2, and dwell for an instant in this position. The front folder b opens and the arms q lifted by the cams g, following the opening of the back folder, thereupon, raise or tip the front side of the envelop from the bed a against the opposing mouths of the picker arms into position to be caught and carried thereby over the front folder b, which projects above the top of the bed. At the same time the plunger of the pump l being drawn upward by the crank h, exhausts air from the shaft i and picker arms, producing therein a partial vacuum.


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which sucks and holds the envelop against the free ends of the picker arms. The roller 5
0 then passes off from the high part of the
cam f and the spring g quickly turns said
arms forward carrying the envelop with
them. An instant before the picker arms
start forward the rollers s leave the high
parts of the cams g, and the springs t draw
the lifter arms q down into their normal po-
sitions below the top of the bed e. The re-
versal of the pump plunger when or just
before the picker arms reach their forward
position indicated by dotted lines in Fig. 2,
destroys the vacuum therein and releases
the envelop, which is positively disengaged
therefrom and discharged by the continued
downward movement of the plunger.

The operations above stated being per-
formed in quick succession, envelops or the
like are removed from the bed e promptly
and with certainty immediately upon the
opening of the folders.

Various changes in the details of con-
struction and arrangement of parts may be
made without departing from the principle
and intended scope of the invention.

We claim:

1. In combination with the folding bed of
an envelop or similar machine, a suction
30 picker movable to and fro over the folding
bed, means for producing a vacuum in said
picker while it is over and moves away from
said bed, and a lifter adapted to raise an
envelop or the like upwardly from the bed
against the picker, substantially as de-
scribed.

2. In an envelop or similar machine, the
combination with the folding mechanism
comprising a bed and front folder, of a suc-
tion picker movable to and fro over said
bed, means for exhausting air from the
picker while it is over and moves away from
the bed, and a vertically movable lifter
adapted to raise an envelop or the like from
the bed into position to be caught by the
picker and to be carried thereby over the
front folder, substantially as described.

3. In an envelop or similar machine the
combination with the folding bed, of a suc-
tion picker consisting of a tubular rocker
shaft provided with tubular arms having
mouths at their free ends which are bent to
pass over said bed, means for exhausting air
from said picker, and a lifter consisting of
arms movable vertically through openings in
the bed and adapted to raise an envelop or
the like therefrom towards the opposing
mouths of the picker, substantially as de-
scribed.

4. In an envelop or similar machine the
combination with folding mechanism com-
prising a bed and folder, of a suction picker
comprising a tubular rocker shaft provided
with inwardly bent tubular arms terminat-
ing in mouths opening towards said shaft
and a suction pump connected with said
shaft; a lifter comprising pivoted arms
movable at their free ends upwardly through
openings in said bed, and means for actu-
atizing the picker, pump and lifter, substan-
tially as described.

5. In an envelop or similar machine, the
combination with a folding bed, of a with-
drawing mechanism for removing a folded
envelop or the like from the folding bed and
comprising a pair of suction pickers, means
for swinging said pickers in planes at the
opposite ends of said folding bed, said pick-
ers being bent at their ends to extend over
said folding bed, and means for lifting an
envelop or the like from said bed into con-
tact with said pickers, substantially as de-
scribed.

6. In an envelop or similar machine, the
combination with a folding bed and mech-
anism for folding an envelop or the like
thereon, of a withdrawing mechanism com-
prising the following instrumentalities op-
ereating in the order named, a suction picker,
means for moving said picker over the fold-
ing bed, means for raising the envelop into
contact with said picker, means for produc-
ing a vacuum in said picker, and means for
reversing the movement of said picker, sub-
stantially as described.

In witness whereof we hereto affix our
signatures in presence of two witnesses.

CHARLES H. HEYWOOD.
DENISON E. TRAVIS.

Witnesses:
A. M. BRAMAN,
RUSSELL W. LEWIS.