

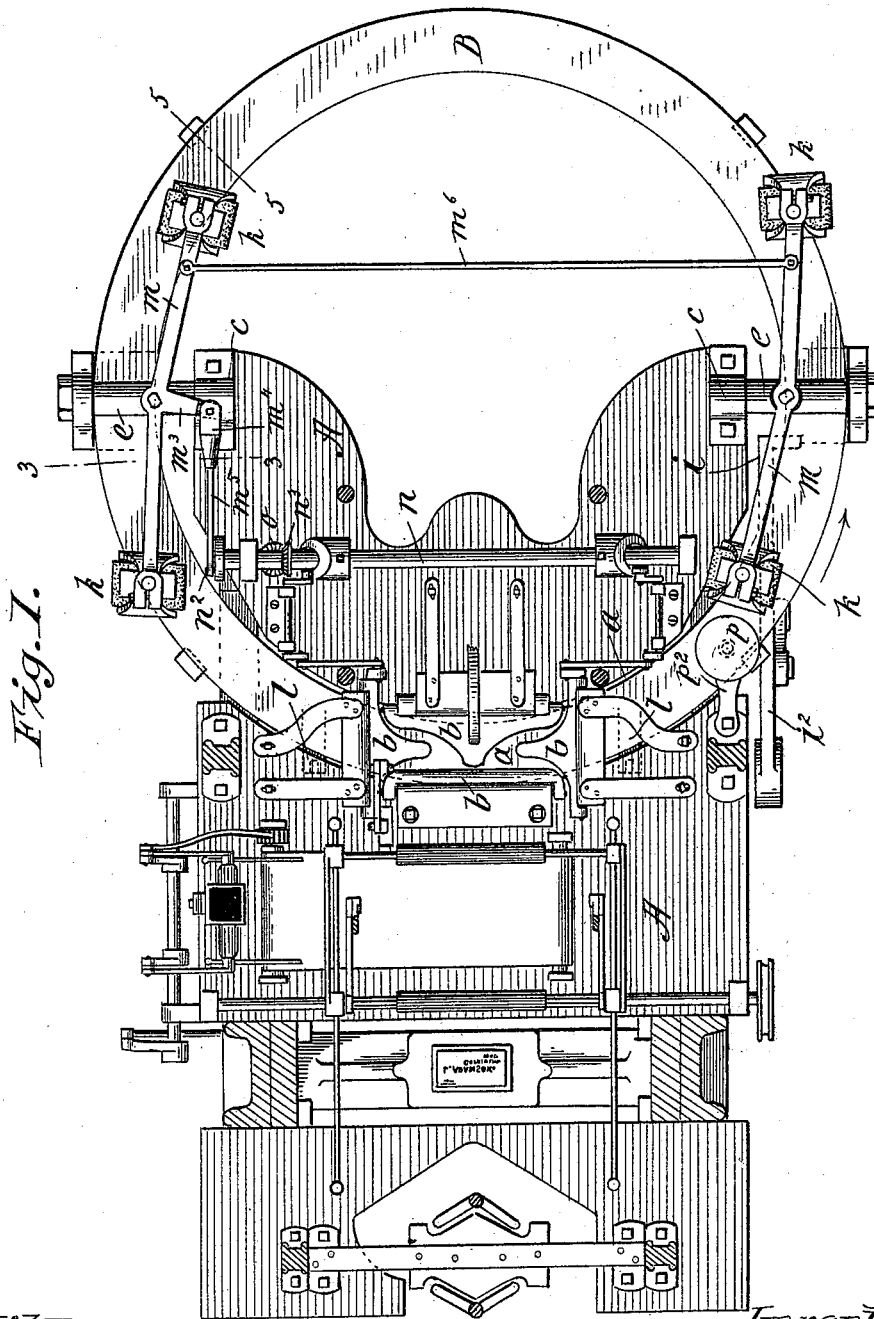
(No Model.)

3 Sheets—Sheet 1.

J. BALL.  
ENVELOPE MACHINE.

No. 491,935.

Patented Feb. 14, 1893.



Witnesses:

*J. H. Garfield*  
*N. J. Clemons.*

Inventor,

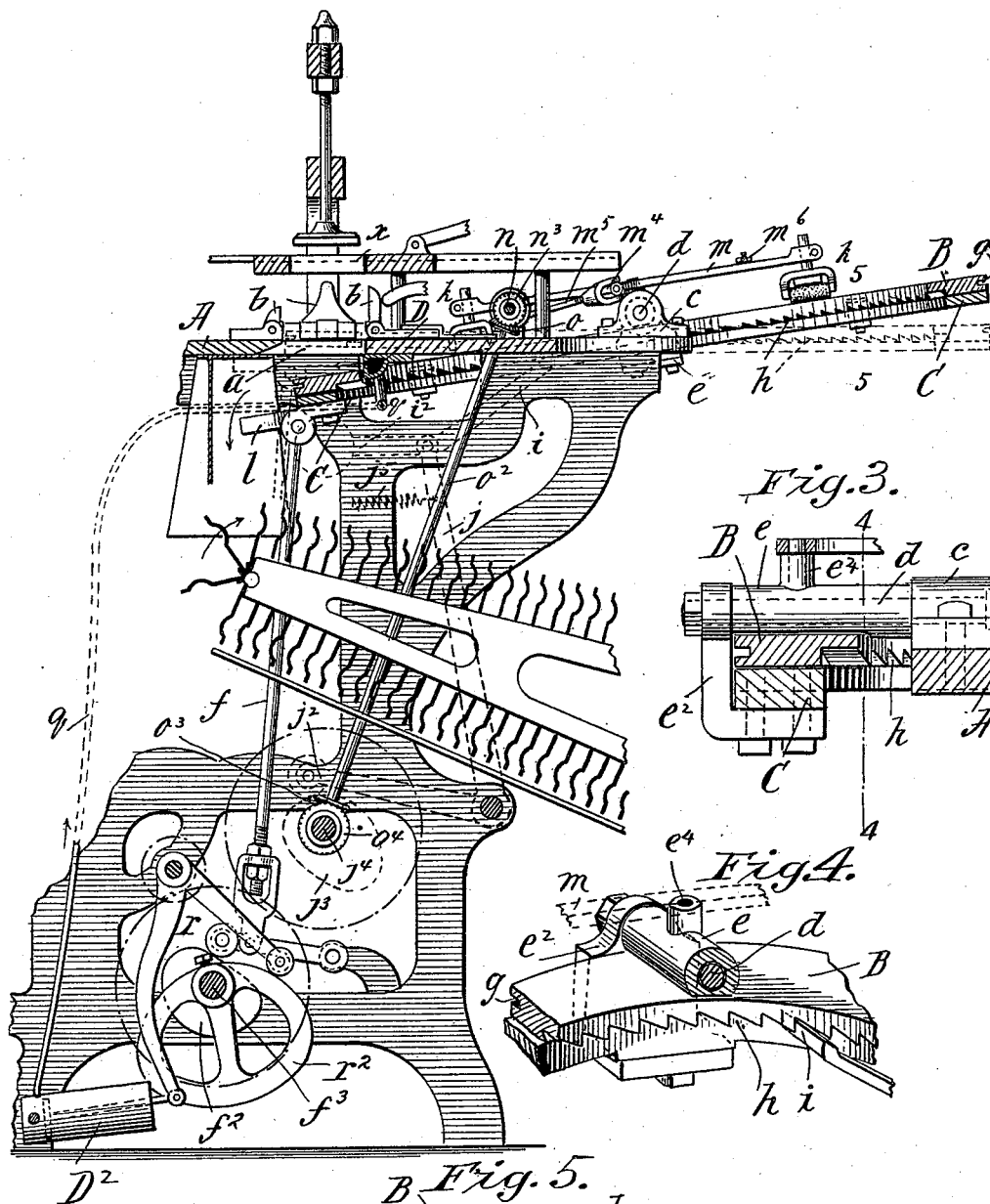
*James Ball*  
*per Chapin & Co*  
*Attys.*

J. BALL.  
ENVELOPE MACHINE.

No. 491,935.

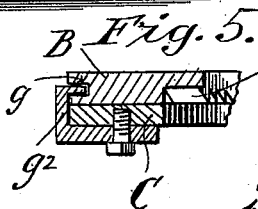
Patented Feb. 14, 1893.

Fig. 2.



Witnesses:

J. H. Goffred  
K. J. Clemons.



Inventor,  
James Ball,  
per Chapman & Co.  
Attys.

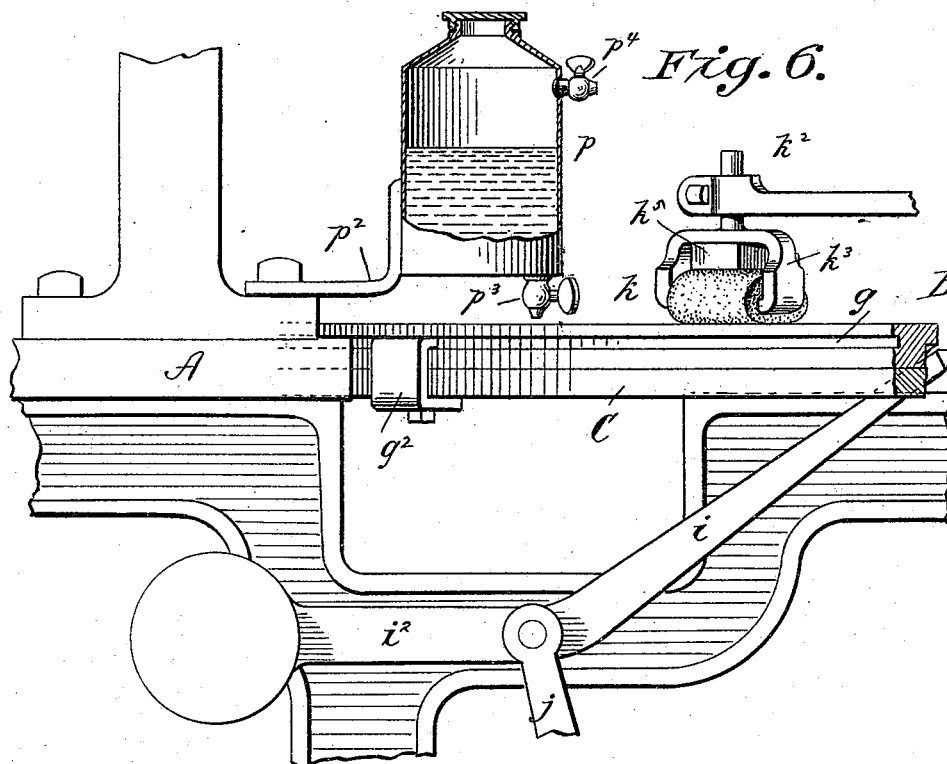
(No Model.)

3 Sheets—Sheet 3.

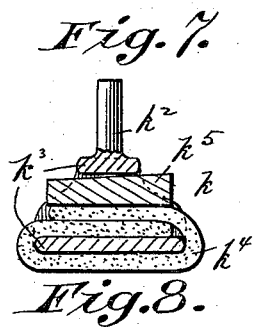
J. BALL.  
ENVELOPE MACHINE.

No. 491,935.

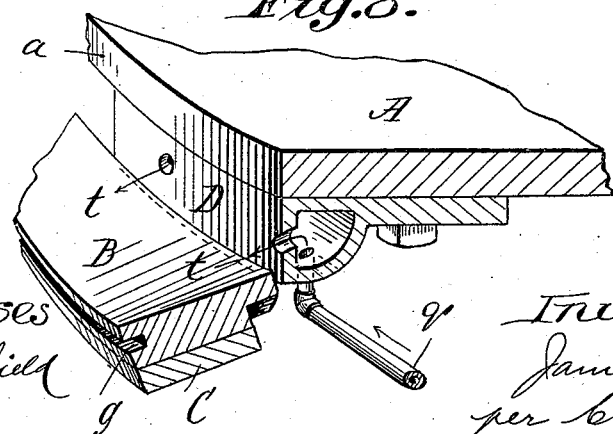
Patented Feb. 14, 1893.



*Fig. 6.*



*Fig. 8.*



Witnesses  
J. R. Garfield  
K. J. Clemons.

Inventor,  
James Ball,  
per Chapin & Co.  
Attys.

# UNITED STATES PATENT OFFICE.

JAMES BALL, OF HOLYOKE, MASSACHUSETTS, ASSIGNOR TO THE HOLYOKE ENVELOPE COMPANY, OF SAME PLACE.

## ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 491,935, dated February 14, 1893.

Application filed May 13, 1892. Serial No. 432,912. (No model.) Patented in England December 9, 1890, No. 20,096.

*To all whom it may concern:*

Be it known that I, JAMES BALL, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Envelope-Machines, (which in part has been patented to me in Great Britain, No. 20,096, dated December 9, 1890,) of which the following is a specification.

10 This invention, for improvements in envelope machines, particularly relates to envelope machines comprising also printing mechanism, and having with relation to the folders a movable folding bed, or bottom, which is adapted to successively present fresh surfaces to receive the folding impact of the folding mechanism whereby any ink-impression imparted by the recently printed envelope face which at the time of folding is in contact with the portion of the folding bottom next to the folders, on the folding of the next envelope is carried away from the folding position in the machine.

25 The object of this invention is to so improve the construction of an envelope machine of the class indicated as to render it simpler, and more practical and efficient.

30 To these ends the invention embodies essentially the combination with a movable ring and means for imparting thereto an intermittent movement, of folders which co-operate with the ring.

35 The invention furthermore consists in conjunctive devices having more or less intimate relations with said ring and folders and all as will be hereinafter fully described and set forth in the claims.

Reference is to be had to the accompanying drawings in which,—

40 Figure 1 is substantially a plan view of an envelope making and printing machine, parts thereof,—as the picker-operating mechanism, the platen for the printing mechanism, and the creasing box or frame,—being understood as removed, such portions of the machine constituting no part of this invention,—and hence their omission renders the illustrations given of increased clearness. Fig. 2 is an elevation and vertical section centrally from front to rear of that part of the machine which com-

prises the invention. In said Fig. 2 the folder-wings are indicated as in their swung up positions, and the ring as in its tipped down position, while in Fig. 1 the reverse relations are indicated. Fig. 3 is a vertical sectional view on an enlarged scale taken on the line 3—3, Fig. 1. Fig. 4 is a perspective and partial sectional view of the parts shown in the preceding figure, the sectional portion of the view being taken on the line 4—4, Fig. 3. Fig. 5 is a detailed cross-sectional view of a part of the ring, the ring-support and an inter-engaging device therefor as taken on the line 5—5, Fig. 1 or 2. Fig. 6 is a partial side elevation and sectional view on an enlarged scale especially showing the relations with the movable ring of the actuating pawl therefor the receptacle for delivering a cleansing liquid onto the ring and one of the wipers. Fig. 7 is a vertical sectional view of one of the wipers. Fig. 8 is a perspective view on an enlarged scale of a portion of the folding-ring (the same being shown as in its tipped down position) and a portion of the table adjacent thereto with the air chamber.

75 In the drawings A represents the table of the envelope machine the same having under the creasing frame, *a*, the curved recess *a*, there being mounted at said recess and in the usual arrangement relative to each other, the folder wings, the same being indicated at, *b*, and they, as well as their operating mechanism being as usual, are not here profusely illustrated and need not be described with further particularity.

85 B represents the ring which is mounted so as to have both an intermittent rotational movement, and a rocking movement, whereby fresh portions of the face of the ring may be successively brought to co-operative relations with the folders, and at intermediate periods have the said so-presented portions tipped down to insure or facilitate the discharge of the then folded envelopes. The ring B is directly supported by and above the ring-formed support C, which is mounted for its rocking movement relative to the table by these means:—The table near opposite edges, at its rear portion has the foot-pieces, *c*, bolted thereto which are provided with the out-

wardly extended, axially aligned studs,  $d$ ; the sleeves,  $e$ , loosely surround said studs and have formed thereon, or rigidly affixed thereto, the depending brackets  $e^2$ , which are of angular form, the inwardly extended horizontal member of each underlying the ring support, C, and is bolted thereto. In Fig. 4 it will be noted that each sleeve,  $e$ , at its under portion is faced off to lie in bearing upon or in proximity to the top face of the folding ring, B. The rocking movement is periodically imparted to the said ring-support so that the ring is first held in the plane coincident with the operating faces of the folders when in their folded down positions or retired downwardly from said position, through means of the connection therewith of the thrust-rod,  $f$ , which receives its reciprocatory movement from the cam  $f^2$  on the shaft,  $f^3$ , which shaft receives its rotary motion in any of the usual manners common in machinery.

$ll$  represent stop lugs, extended angularly from the circular ring-support at a portion thereof which is beneath the table, which serve to limit the rocking of the folding-ring and its support in its operative position.

The folding ring, B, has its outer edge grooved as seen at  $g$ , and the ring-support, C, has angle-lugs,  $g^2$ , bolted thereto which lugs have portions that lie respectively against the outer edge of the folder-ring, and enter the groove,  $g$ , all so that the folder-ring, while having its bodily movement as one with the ring-support, is restrained for its independent rotational movement without liability of displacement from its relations with the ring support.

The bottom of the folder-ring, toward its inner edge, has a continuous series of ratchet teeth,  $h$ , and  $i$  indicates a pawl which has its point or tooth in engagement with the ratcheted ring, and is so mounted that while its operative engagements with the ring will be maintained whether the ring is in its horizontal or tipped down position, it in no way interferes with the movements of the ring from the one to the other of the said positions. It will therefore be noted that said pawl is comprised as a portion of a comparatively long arm which is pivotally supported at the upper end of one arm of the angular lever,  $j$ , the other arm  $j^2$ , of said lever being in operative proximity to the cam,  $j^3$ , on the rotary shaft,  $j^4$ . The spring  $j^5$  maintains the angular lever always in working proximity to the cam. The pawl-ended arm,  $i$ , has the weighted extension,  $i^2$ , beyond its pivotal connection with the lever,  $j$ , whereby the pawl is held to its work, it being, of course, understood that the pawl has yielding movements to accord with the rocking of the ring.

Two pairs of wipers,  $k$ , are shown for the folding-ring, they being mounted to have bodily rocking movements in consonance with the ring and to have also movements independent of the ring always remaining in rubbing or wiping contact therewith. Each

of the said wipers comprises a spindle,  $k^2$ , having at its lower extremity a stirrup-like frame,  $k^3$ , around the lower member of which the strip of pad material,  $k^4$ , may be wound, the terminals of said strip being disposed as seen in Fig. 7, between the upper and lower members of the stirrup-frame and confined by the wedge,  $k^5$ .

Other specific forms of wipers may be substituted. Each pair of the said wipers is carried at the extremities of an intermediately pivoted bar or lever,  $m$ , which is journaled for a swinging movement on the upwardly extended boss,  $e^2$ , of the aforementioned bracket-supporting sleeve,  $e$ , and one of said two-armed levers has the arm,  $m^3$ , radially extended from adjacent its pivot, receiving the connection therewith by means of a suitable joint as seen at  $m^4$ , of a pitman rod,  $m^5$ , which has its other end engaged with the crank or eccentric pin,  $m^2$ , carried by the rotary shaft,  $n$ . A rotation of the shaft is imparted by the mesh with the gear wheel thereon, of the gear,  $o$ , which is carried at the upper end of the shaft,  $o^2$ , and has at its lower end a beveled gear wheel,  $o^3$ , which meshes into the gear wheel,  $o^4$ , on the shaft  $j^4$ . The two double-armed levers,  $m$ , are united by the tie-rod  $m^6$ , so that the motion positively imparted to one of the levers will insure a corresponding movement of the other. The swinging or vibratory movement of the wipers is transversely of the direction of travel of the folding ring and is in addition to the said traveling movements of the ring so that by reason of the movements of the wipers and of the ring any portion of the face of the latter will be subject to the rubbing action of the former.

$p$  indicates a can for containing naphtha, or other suitable cleansing liquid, the said can being mounted on a bracket in proximity to and over the folding ring, and has a discharge cock  $p^3$ , and also a vent at  $p^4$ , all whereby the proper conditions may be established for the continuous issue of the liquid, drop by drop, upon the face of the folding ring. The liquid thus issuing from the can upon the ring is, as plain, carried as the latter moves, subject to the rubbing action of the wipers.

The air chamber is represented at D, located under the table next to the aforesaid curved recess,  $a$ , and has the air conduit,  $g$ , leading thereinto from the air pump, D<sup>2</sup>, shown as mounted for an oscillatory movement near the bottom of the machine, and having its piston operating rod connected to one arm of the angular lever,  $r$ ,—with the other arm of which the cam  $r^2$ , has the working engagement. The air chamber has, through its forward wall, one or more air jets,  $t t$ , so directed as to be thrown into the angle between the envelope back and the sealing flap as the latter comes below and in advance of said jets on the tipping down of the folding ring, and all as is most clearly indicated in the drawings, Figs. 2 and 8. The

envelopes are thus caused to descend from their positions on the folder ring down into the drier chain.

While I prefer to expel the envelopes from the ring by air jets substantially as described the invention is in nowise to be understood as thus limited, so far as the novelties in and otherwise relating to the folder ring are concerned because I may effect the discharge of the envelopes by reason of mechanical devices, entirely.

I claim—

1. In an envelope machine, a movable ring, and means for imparting thereto an intermittent movement in combination with folders which co-operate with the ring, for the purposes set forth.

2. In an envelope machine, the combination with folding mechanism of a ring, a support on which the ring is mounted for a rotatable movement, which support has a tilting movement angularly to the plane of said rotation, means for imparting a periodical tilting movement to the ring support, and a means for imparting the rotational movement to the ring, substantially as and for the purposes set forth.

3. In an envelope machine, the combination with folders and a movable ring and means for imparting thereto an intermittent movement of a receptacle for liquid, having suitable discharge appliances, above the course of movement of the ring, and a wiper and means for automatically moving it, over the folding-impact surface of the ring, substantially as described.

4. In an envelope machine, the combination with a pair of stationary, horizontal, axially aligned bearings, of depending brackets engaging said bearings and having an annular support mounted thereon whereby said brackets and support have rocking movements, and a ring mounted for rotational movements on said annular support, means for imparting intermittently the rocking and rotational movements to the ring, and folders for co-operation with the ring, substantially as described.

5. In an envelope machine the combination with a rotatable ring, of a folder for coaction therewith, a lever arm pivotally mounted adjacent to the ring, a wiper carried by said arm and means for imparting swinging movements to the arm, substantially as described.

6. In an envelope machine the combination with folders and a movable ring of a pair of two-armed levers each intermediately pivotally mounted and each carrying at its end a wiper adapted to bear upon the folding surface of the ring a tie rod uniting arms of each of said levers and means for imparting swinging movements to one of said levers, substantially as described.

7. The combination with folders, and a ring mounted for intermittent rotational movements, and also a rocking movement and means for imparting said movements thereto, of an air-chamber located adjacent the posi-

tion of the tipped-down portion of the ring and having an opening, and an apparatus for forcing air into said chamber, substantially as and for the purposes set forth.

8. In an envelope machine the combination with folders and a movable ring, substantially as described, for presenting different surfaces thereof relative to the folders, an arm pivotally mounted adjacent the ring having a wiper, and provided with an angular extension, a shaft, and means for rotating it and said shaft having a crank member, and a connection between the latter and the said angular extension, substantially as described.

9. In an envelope machine, the combination with folders and a ring having ratchet-teeth and its edge grooved, of a support mounted for a tilting motion, and on which said ring is mounted for rotational movement, and angular members upon the said ring-support which engage the ring groove, and a pawl and means for imparting reciprocatory movements thereto and a means for effecting the rocking of said support, substantially as described.

10. In an envelope machine, the combination with folders, of a ratchet-provided ring and a support on which it is mounted for a rotational movement, a pawl adapted to engage the ratchet-teeth of said ring and a lever on which the pawl is pivotally mounted and a cam for imparting a reciprocatory movement to said lever, substantially as described.

11. In an envelope machine, the combination with folders of a ring and a support on which the ring is mounted for a rotational movement and which support is mounted for a rocking movement, for the purposes set forth, and a cam-operated thrust-rod connected to said support, substantially as described.

12. In an envelope machine, the combination with folders, of a ring, mounted for a rotational movement and a rocking movement, substantially as and for the purposes set forth, and an air-chamber located adjacent the position of the tipped-down portion of the ring under the folders, and having an opening directed toward said position, and a cam operated air pump and a conduit extending therefrom to said air chamber, substantially as described.

13. In an envelope machine, the combination with folders of the ratcheted rotatably mounted ring, a cam and lever operated by the cam, and a pawl pivotally mounted on said lever and having a weighted extension, and a retracting spring for the lever, as shown for the purpose set forth.

14. In an envelope machine, the combination with a table having folders mounted thereon and foot pieces secured to the table at opposite sides thereof and having the axially aligned studs and a sleeve surrounding each stud provided with a depending angular bracket having the ring support secured thereto, the ring mounted and constrained for rotational movement on said ring-support, and

means for imparting rocking movements to the support and rotational movements to the ring, substantially as described.

5 15. In an envelope machine the combination with the table having the arc-formed recess, *a*, and a folding ring and support on which the same is mounted, which support is journaled for a rocking movement upon the table and all so arranged that a portion of the  
10 ring may be received or accommodated by said recess, and folders coacting with the ring, substantially as described.

16. In an envelope machine the combination with folders of the folding ring and a

rocking support on which it is mounted for a 15 rotational movement, a wiper, and arm, on which it is carried that is mounted to have a bodily movement in consonance with the rocking movement of the ring and to have a vibratory movement relative to the ring, and 20 means for respectively imparting the rocking of the ring-support, the rotation of the ring, and the vibratory movement of the wiper carrying arm, substantially as described.

JAMES BALL.

Witnesses:

WM. S. BELLOWES,

K. I. CLEMONS.