A. G. MOODY.

ENVELOP FEED DEVICE.

APPLICATION FILED APR. 8, 1914.

1,127,796.

Patented Feb. 9, 1915.

3 SHEETS—SHEET 1.

Fig. 1

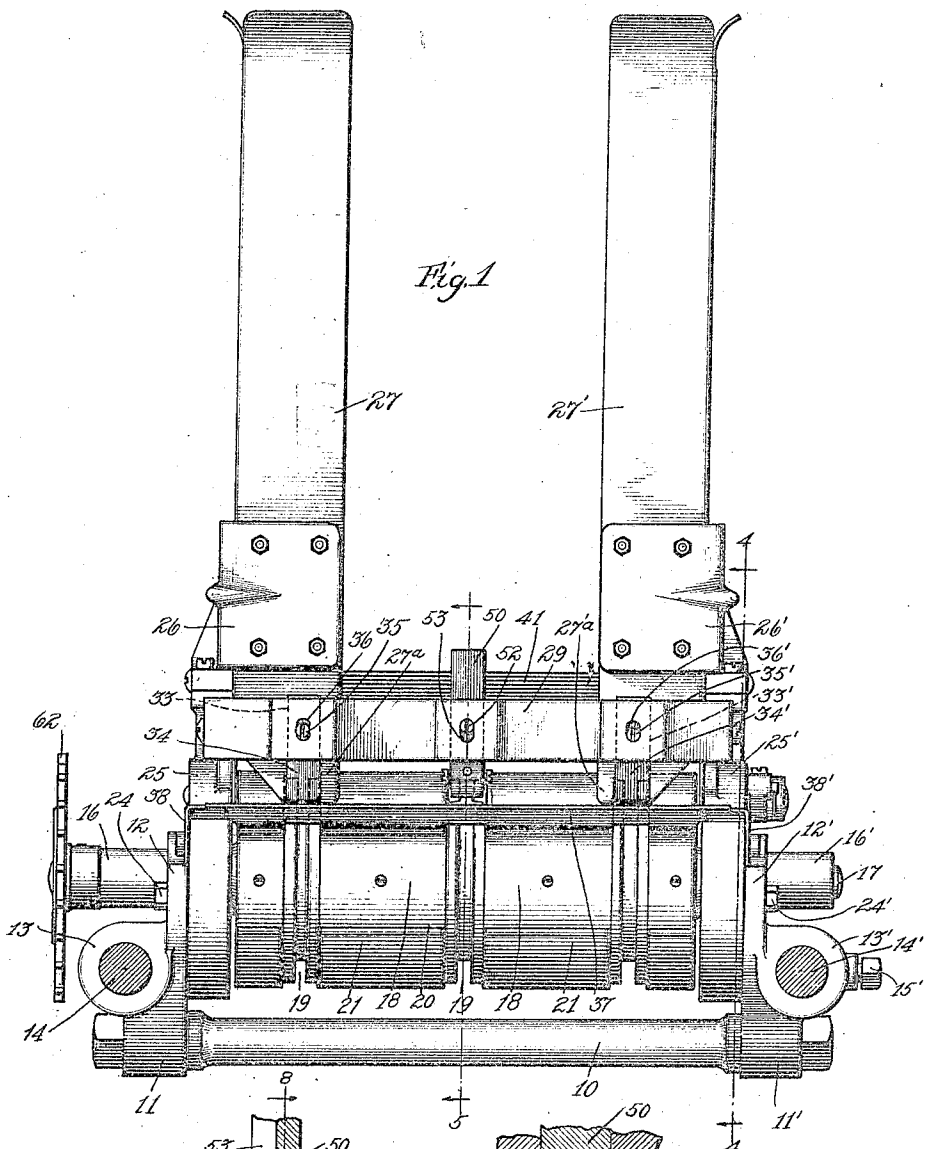


Fig. 7.

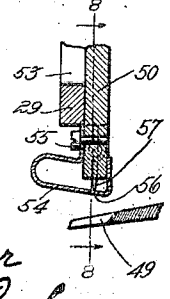
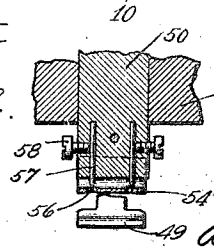


Fig. 8.



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3 SHEETS—SHEET 2.

Fig. 2.

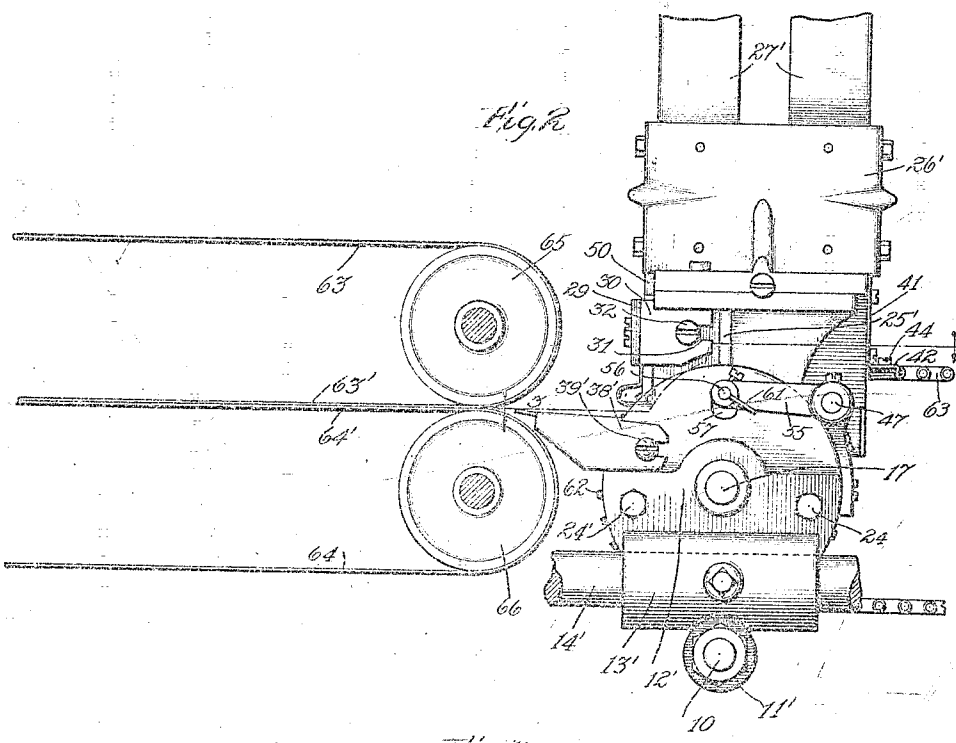
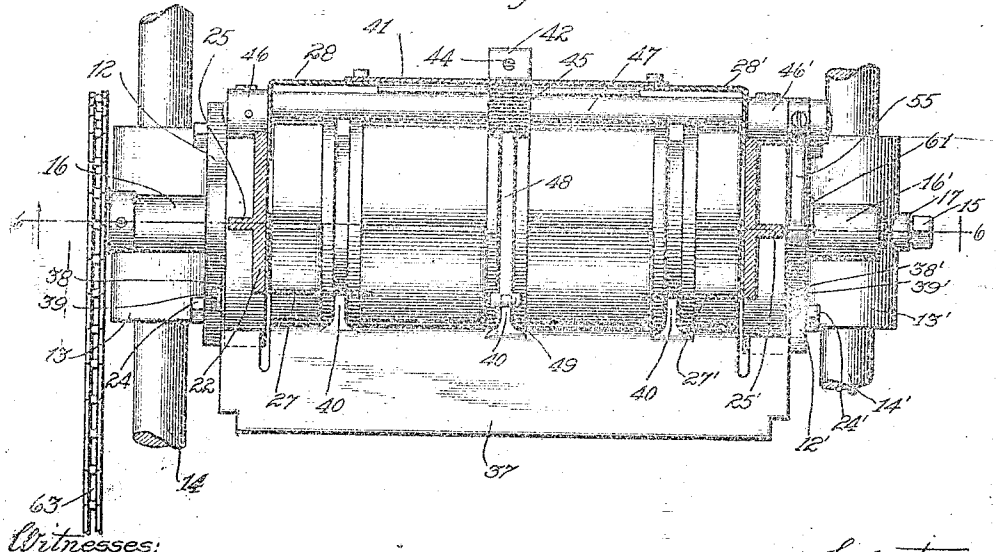


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

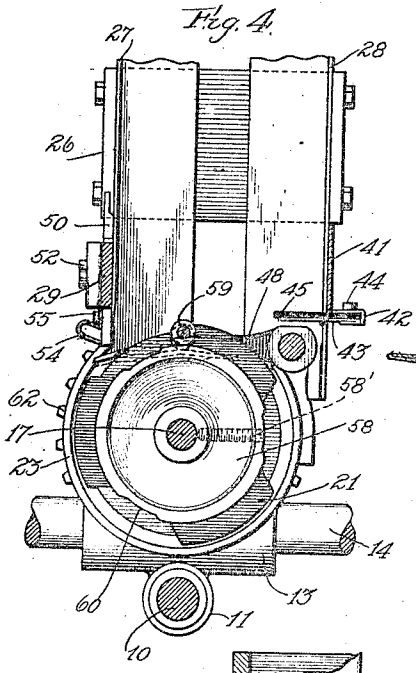


Fig. 5.

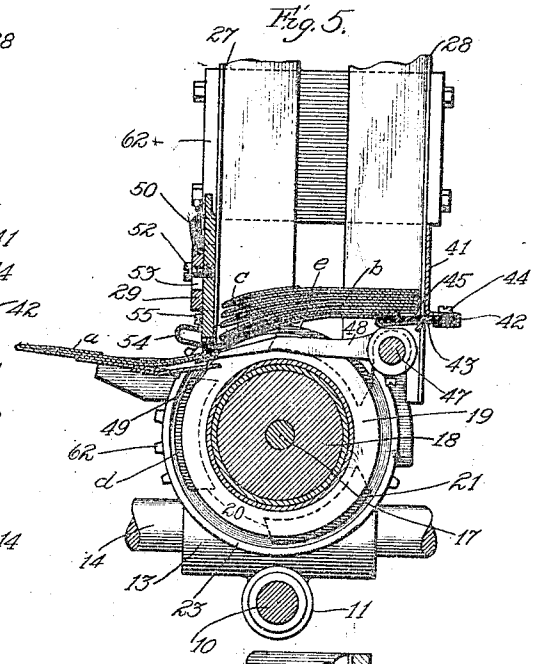
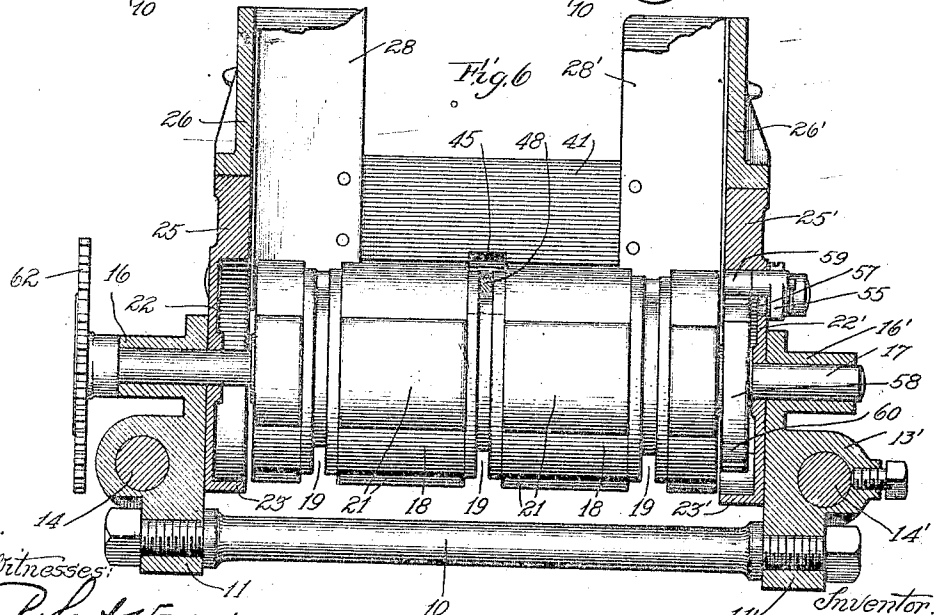


Fig. 6



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UNITED STATES PATENT OFFICE.

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ENVELOP-FEED DEVICE.

1,127,796. Specification of Letters Patent. Patented Feb. 9, 1915.

Application filed April 8, 1914. Serial No. 830,367.

To all whom it may concern:

Be it known that I, ANDREW G. MOODY, a citizen of the United States, and a resident of Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Envelop-Feed Devices, of which the following is a specification.

My invention relates to an envelop feed attachment particularly adaptable and useful in connection with addressograph machines.

The main object is to provide a simple attachment of this class which can be readily applied to existing addressograph machines and which will with certainty and rapidity feed envelops to an addressograph machine in synchronism with the addressing machine.

As envelops are of varying thickness due to the overlapping side and closure flaps, and as they may have a tendency to stick together, another object of the invention is to provide improved escapement means for preventing the ejection of more than one envelop at the same time.

Another object is to provide improved means for automatically adjusting the escapement gap at proper times, and to provide manually controllable means for enabling adjustment of the escapement mechanism.

Referring to the accompanying drawings Figure 1 is a front elevational view of the attachment, Fig. 2 is a side elevational view, Fig. 3 is a sectional view on plane 3—3, Fig. 2, Fig. 4 is a sectional view on plane 4—4, Fig. 1, Fig. 5 is a sectional view on plane 5—5, Fig. 1, Fig. 6 is a sectional view on plane 6—6, Fig. 3, Fig. 7 is an enlarged sectional view on plane 5—5, Fig. 1, of the escapement mechanism, and Fig. 8 is an enlarged sectional view of the escapement mechanism on plane 8—8, Fig. 7.

The supporting structure for the attachment comprises a bar or rod 10 to whose ends are secured the hubs 11 and 11′ supporting the side plates 12 and 12′ and the sleeves 13 and 13′ respectively. These sleeves receive the rods 14 and 14′ which are extended from the machine to which the attachment is applied, the attachment being adjustable on these rods to be locked in adjusted position by set screws 15. The plates 12 and 12′ support journal boxes 16 and 16′ respectively in which the shaft 17 is journaled, this shaft mounting the ejector drum 18. This ejector drum is divided into sections by annular grooves 19 and each section has peripheral pockets 20 each receiving a pad 21 of frictional material, preferably rubber. There may be any number of such pads per section and as shown each section has three such pads spaced 120 degrees apart, the drum therefore having three sets of longitudinally extending pad sections, three envelops being therefore ejected for each revolution of the drum.

The end plates 12 and 12′ support on their inner sides circular plates 22 and 22′ having the annular inwardly extending flanges 23 and 23′ respectively, these plates being secured by screws 24. Standards 25 and 25′ extending upwardly from the flanges 23 and 23′ carry on their tops the rectangular fittings 26 and 26′ respectively in the front corners of which are mounted the vertical guides 27 and 27′ respectively of angular cross section, and in whose rear corners are mounted similar vertical guides 28 and 28′, these guides forming a vertical container and guide structure for the envelops to be ejected, the rear guides extending downwardly below the top of the drum and the lower ends 27^a and $27'^a$ of the front walls of the guides extending downwardly to within a short distance of the drum periphery to leave a gap for the ejection of envelops. A strap 29 bridges across in front of the lower ends 27^a and $27'^a$ and has rearwardly extending lugs 30 engaging against the outer sides of standards 25 and 25′ each lug being provided with a slot 31 for receiving a screw 32 for fastening the strap in place and for allowing ready removal thereof. The strap has channels 33 and 33′ in front of the ends 27^a and $27'^a$ for receiving plates 34 and 34′ respectively, screws 35 and 35′ adjustable in the plates extending through vertical slots 36 and 36′ respectively in the strap whereby the plates may be vertically adjusted and locked to project their lower ends any desired distance below the ends 27^a and $27'^a$ whereby to adjust the escapement gap for the envelops. In front of the drum and in a plane below the ends of the plates 34 and 34′ a table 37 is provided, this table having side flanges 38 and 38′ slotted to receive screws

39 and 39′ threading into the supporting plates 22 and 22′ respectively. Guide tongues 40 extend rearwardly from the table and into the peripheral grooves 19 in the drum to be below the stack of envelops in the guide structure and to guide the envelops to the apron.

Connecting between the rear walls of the guides 28 and 28′ is a plate 41 which has the supporting tongue 42 deflected rearwardly from its lower edge substantially at the middle of the plate. This tongue supports a forwardly extending plate 43 secured in place by a screw 44, and between the tongue and plate a pad 45 preferably of soft rubber is clamped to overlie the plate. The rear edge of the stack of material, such as envelops, rests on this rubber pad, and the friction of the rubber against the stack will have a tendency to retard or brake movement of the envelops. This rubber support is somewhat higher than the drum in order that the envelops may assume an inclined position with their front edges dipping downwardly as shown in Fig. 5.

The machine thus far described will efficiently feed objects such as paper, cards, and will also efficiently feed envelops. However, envelops are of varying thickness due to the front and overlapping flaps, and as they are gummed it may happen that one or more envelops will stick together. Therefore, particularly when the machine is run at high speed, it may happen that more than one envelop will be ejected at one time, but to guard against this and to make the machine fully reliable at all times and under all conditions of operation, I provide improved escapement mechanism. At the rear ends of the plates 22 and 22′ are journal box extensions 46 and 46′ journaling the shaft 47, and extending forwardly from this shaft and through the central groove 19 of the drum is an arm 48 terminating at its front end in the guide plate 49, this guide plate being normally substantially in horizontal alinement with the ends of 27ª and 27′ª or the lower ends of the plates 34 and 34′, the arm being below the top peripheral line of the rubber pads, so that the envelops during ejection movement will pass over the guide plate. Above the guide plate is the bar 50 adjustable vertically in the pocket 51 provided in a strap 29, the adjustment being effected by means of screw 52 secured to the bar and extending through slot 53 in the strap. A presser foot 54 of spring material is adjustably secured to the lower end of the bar by a screw 55′ and in its base has holes 56′ into which project the points of escapement pins 57′ locked to the bar by set screws 58′, as clearly shown in Fig. 8.

The normal width of the gap between the presser foot 54 and the guide plate 49 is such that it will permit no more than four ply to pass therethrough, and the purpose is to always have four thicknesses or plies in this gap in order to prevent more than one envelop from being ejected at one time. By referring to Fig. 5, the length and spacing of the rubber pads is such that one rubber pad will leave an ejected envelop with its rear edge in the gap until the following row of pads has engaged the next envelop and advanced its front edge into the gap, thus assuring four plies in the gap and preventing the next lowermost envelop from entering the gap and being ejected. Referring to the drawing, the envelop *a* has been ejected as far as it can by the drum and its rear edge is still within the escapement gap. The then lowermost envelop *b* of the stack will be engaged by the next pads and will be shifted forwardly into the gap with its front edge overlying the rear edge of the envelop *a*, and as the envelop *b* is still further shifted outwardly the friction between the envelops will cause the envelop *a* to be fully ejected across the table 37 and out of the gap. However, by this time the envelop *b* will have been shifted outwardly far enough to bring into the gap its four ply section, that is, the section where the point of the closure flap overlies the overlapping ends of the side flaps, or the overlapping ends of the one side flap and base flap, it being understood that the envelops are piled in the stack with their flaps up and in advance. Therefore, should the next lowermost envelop *c* have moved with the envelop *b*, it will find the gap filled by the four ply thickness of envelop *b* and will be stopped from further movement by the escapement points. Of course, beyond the four ply section the envelop again becomes two ply and the envelop *b* will after a while present only two ply thickness in the gap. However, when this occurs the envelop will be more than one half way out of the gap and the friction between the rear end of the envelop and the next envelop will be so small that such next envelop will not follow. Even if it does follow, it can do so for a short distance only, that is only so long as it presents two ply thickness, and as soon as its four ply thickness at the overlapping flaps reaches the escapement points the envelop will be stopped against further movement, and then when the lowermost envelop is ejected as far as it can be by the drum we will have the relative position shown in Fig. 5, the partly inserted envelop overlying with its front edge the rear edge of the ejected envelop.

It has already been pointed out that by means of the rubber shelf 45 the envelops will assume an inclined position for the purpose of allowing the envelops, particularly the lowermost envelop, to sag down

sufficiently at its front end to readily enter the escapement gap when the drum engages with the envelop. When the machine is running at full speed the lowermost envelop may not have time enough to sag sufficiently to be in register along its front edge with the gap and it might, when engaged by the drum, strike the gap and buckle. To insure dropping of the front edge of the envelops I provide for dropping the guide plate 49 at the proper time. This is accomplished by cam mechanism, the shaft 47 having at its right end a forwardly extending arm 55 which supports at its front end the shaft 56 which extends through the opening 57 in plate 22 over a cylindrical cam disk 58 mounted within the flange 23′ on the drum shaft 17, the arm 55 carrying at its outer end the cam bearer 59 for coöperating with the cam disk. The cam disk has three depressions 60 spaced 120 degrees apart into which the cam bearer 59 may drop to allow downward swing of arm 55 and rocking of shaft 47 and corresponding downward swing of the arm 48 and the guide plate 49 thereon to increase the width of the escapement gap. The cam disk 58 is adjustable on the drum shaft by means of set screw 58′. The adjustment is preferably such that the guide plate will be allowed to drop just after one set of pads on the drum leaves the ejected envelop and before the next set of pads engage with the next lowermost envelop. Referring to Fig. 5, the guide plate will drop just after the pads *d* leave envelop *a* and before pads *e* engage with the envelop *b*. The gap will then be increased and the inner edge of envelop *a* will still be within the gap. The front edge of envelop *b* will then drop into the plane of the gap and then the pads *e* will engage with this envelop, and as soon as the envelop has its front edge inserted in the gap the guide plate will be raised and then envelop *b* by engaging at its front edge with the rear edge of envelop *a* will complete the ejection of the latter envelop. It may be that the next lowermost envelop *c* will move with the envelop *b* while the guide plate is lowered. The plate is, however, raised before the envelop *c* gets very far and the escapement points 57′ will then prevent further movement of this envelop. Then as the envelop *b* completes the ejection of envelop *a*, the envelop *c* will drop and will follow envelop *b* but only until its four-ply section enters the gap, when it will again be stopped. It very seldom happens, however, that the next lowermost envelop will follow the envelop being ejected. If the adjustment of the notch length is made such that the guide plate will remain lowered until the envelop *b* has fully ejected envelop *a* and has brought its four ply section into the gap, there will then be four ply in the gap when the plate is again raised and the next lowermost envelop could not follow. Adjustment can thus be made as desired to prevent more than one envelop from being ejected at one time depending upon the style of envelop, the thickness and quality of the paper, etc. To further increase the range of adjustment I provide manually controllable means for adjusting the gap. As shown, the cam bearer 59 is eccentrically mounted on the shaft 56 and at its outer end the shaft has an arm 61 by which it may be readily turned against its frictional engagement in its bearing. When the shaft is turned and the cam bearer 59 rotated, the arm 55 will be raised or lowered and thus the normal width of the gap correspondingly adjusted.

Any suitable means can be provided for driving the ejector device but when the device is associated with a machine such as an addressograph it should be driven in synchronism with the addressing mechanism in order that the envelops can be fed at the proper rate. As shown, the drum shaft has at one end a sprocket wheel 62 connected by chain 63 with a driving member which may form part of the driving train for the addressograph. Means, also driven in synchronism with the addressograph, are preferably provided for conveying the ejected envelops to their proper printing position in the addressograph. As shown in Fig. 2, conveyer belts 63 and 64 pass around pulleys 65 and 66 in such manner that the inner flights 63′ and 64′ engage with each other in a plane to receive the envelops ejected over the table 37 of the ejecting device. The belts are intermittently driven and may be adjusted to receive the envelops just after release thereof from the ejector drum, or after the envelops have been fully ejected from the ejecting device by succeeding envelops, the envelops being then carried to the addressograph machine.

I do not of course desire to be limited to the precise structure, arrangement and operation shown and described, as changes and modifications are no doubt possible which would still come within the scope of the invention.

I claim the following:

1. In an ejector device for articles such as papers, cards, envelops or the like, the combination of a container into which the articles are arranged in a stack, an ejector drum below said stack forming a support for the front of the stack, a ledge on the container above the drum forming a support for the rear of the stack, ejector pads on the drum for engaging with the lowermost article to effect forward shift thereof, upper guiding edges on the container in front of the drum, a guide plate below said edge, the articles being shifted by the drum through

the gap between said edge and plate, and means for adjusting said guide plate to vary the gap.

2. In an ejector device for articles such as papers, cards, envelops or the like, the combination of a container into which the articles are arranged in a stack, an ejector drum below said stack forming a support for the front of the stack, a ledge on the container above the drum forming a support for the rear of the stack, ejector pads on the drum for engaging with the lowermost article to effect forward shift thereof, upper guiding edges on the container in front of the drum, a guide plate below said edge, the articles being shifted by the drum through the gap between said edge and plate, and means for automatically effecting raising of said plate at predetermined intervals to thereby adjust said gap.

3. In an ejector device for articles such as papers, cards, envelops or the like, the combination of a container into which the articles are arranged in a stack, an ejector drum below said stack forming a support for the front of the stack, a ledge on the container above the drum forming a support for the rear of the stack, ejector pads on the drum for engaging with the lowermost article to effect forward shift thereof, upper guiding edges on the container, a guide plate below said edge, the articles being shifted by the drum through the gap between said edge and plate, and means carried by the drum for automatically effecting raising of said plate and thereby adjustment of said gap at predetermined intervals.

4. In an ejector device for articles such as papers, cards, envelops or the like, the combination of a container into which the articles are arranged in a stack, an ejector drum below said stack forming a support for the front of the stack, a ledge on the container above the drum forming a support for the rear of the stack, ejector pads on the drum for engaging with the lowermost article to effect forward shift thereof, upper guiding edges on the container, a guide plate below said edge, the articles being shifted by the drum through the gap between said edge and plate, a cam lever having connection with said guide plate, and a cam traveling with said drum and coöperating with said lever to automatically effect raising of the plate to vary said gap at predetermined intervals.

5. In an ejector for articles such as paper, cards, envelops or the like, the combination of a container in which the articles are arranged in a stack, an ejector drum below the stack, longitudinal rows of raised ejector pads on said drum spaced equidistantly, said container having an escapement gap for the articles, said ejector pad rows being so spaced that after one row leaves an ejected article the rear edge of said article will still be within said gap and the front edge of the next article will overlap said rear edge when said next article is engaged by the next row of pads.

6. In a feeding device for articles such as papers, cards, envelops or the like, the combination of a container in which the articles are arranged in a stack, a rotatable drum below said container for coöperating with the bottom of the stack to successively shift the articles outwardly, a guide plate over which the articles are shifted by the drum, a vertically adjustable escapement foot supported above the guide plate, and means for periodically lowering said guide plate to increase the escapement gap between the plate and the point.

7. In a feeding device for articles such as papers, cards, envelops or the like, the combination of a container in which the articles are arranged in a stack, said container having an ejector slot, an ejector drum below the front of the stack of articles, a support for the rear of the stack, and circumferentially spaced apart ejector pads on the drum extending radially beyond the periphery thereof, the front of the stack before engagement of a pad with the lowermost article resting on the drum periphery in advance of said pad to bring the front edge of the lowermost article into registration with the ejector slot whereby said pad will first shift said lowermost article a distance into the slot and will then raise the front of the stack to carry the next lowermost article above the slot to prevent ejection thereof.

8. In a feeding device for articles such as papers, cards, envelops or the like, the combination of a container in which the articles are arranged in a stack, said container having an ejector slot, an ejector drum below the front of the stack of articles, a support for the rear of the stack, and circumferentially spaced apart ejector pads on the drum extending radially beyond the periphery thereof, the front of the stack before engagement of a pad with the lowermost article resting on the drum periphery in advance of said pad to bring the front edge of the lowermost article into registration with the ejector slot whereby said pad will first shift said lowermost article a distance into the slot and will then raise the front of the stack to carry the next lowermost article above the slot to prevent ejection thereof, and means for increasing the depth of the slot just prior to the engagement of a pad with an article whereby entrance of the lowermost article into the slot is assured when said article is first engaged by the pad.

9. In a feeding device for articles such as papers, card, envelops or the like, the combination of a container in which the articles are arranged in a stack, an ejector drum having raised circumferentially spaced

apart ejector pads, a guiding edge and a guide plate below said edge forming a gap through which articles are to be ejected, the front of the stack resting on said guide plate before an ejection operation, and means for dropping said plate just before ejection begins and for again raising said plate after the lowermost article has entered the gap whereby the front of the stack may drop to bring the lowermost article into registration with the gap and whereby the stack is again raised to bring the next lowermost article above the gap to prevent ejection thereof with the lowermost article.

In witness whereof, I hereunto subscribe my name this 25th day of March, A. D., 1914.

ANDREW G. MOODY.

Witnesses:
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EMILIE ROSE.