Sept. 15, 1931. H. B. FOULDER 1,823,442

BAG FEEDING MEANS

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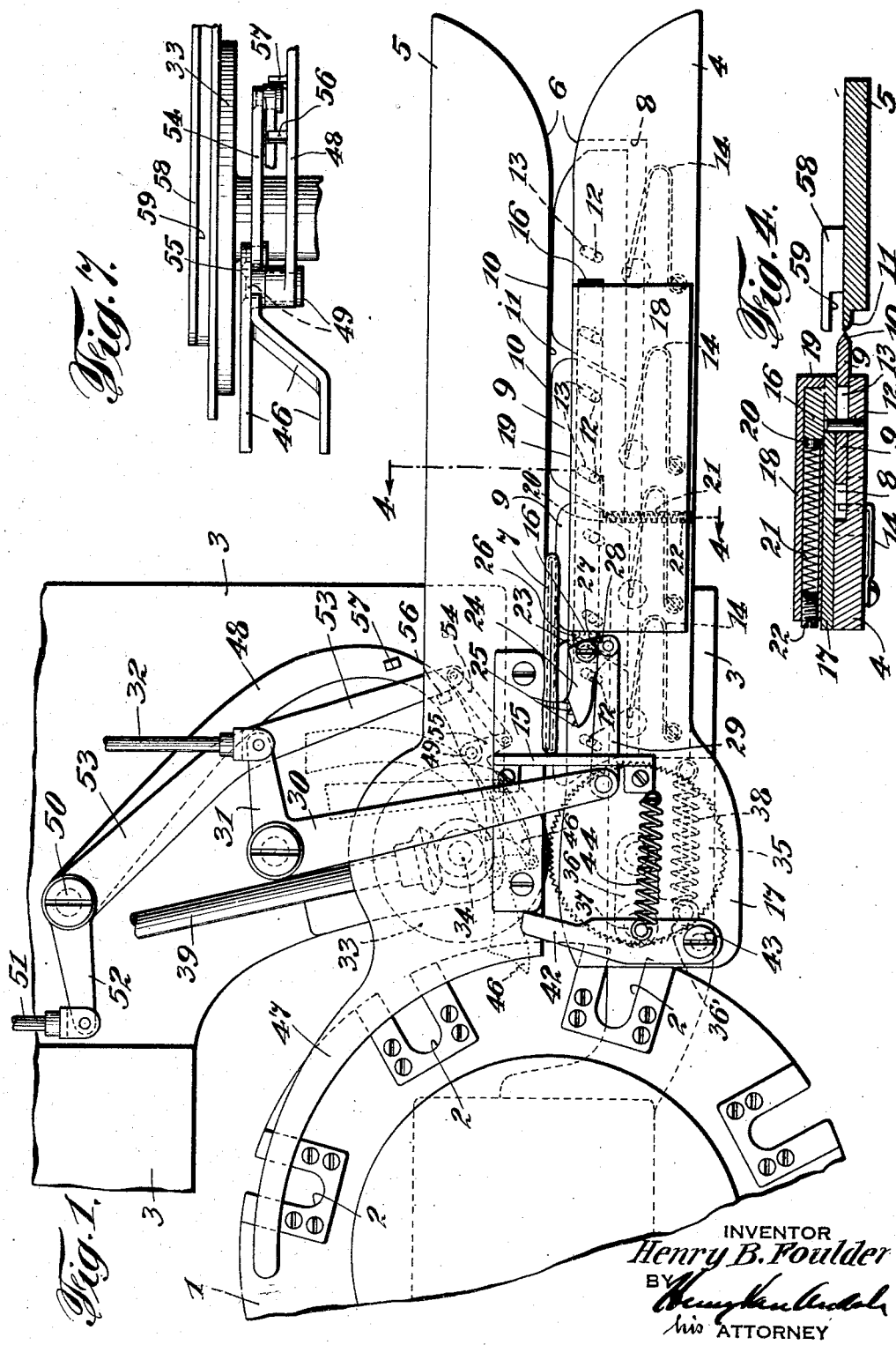


Fig. 1.

Fig. 4.

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Fig. 2.

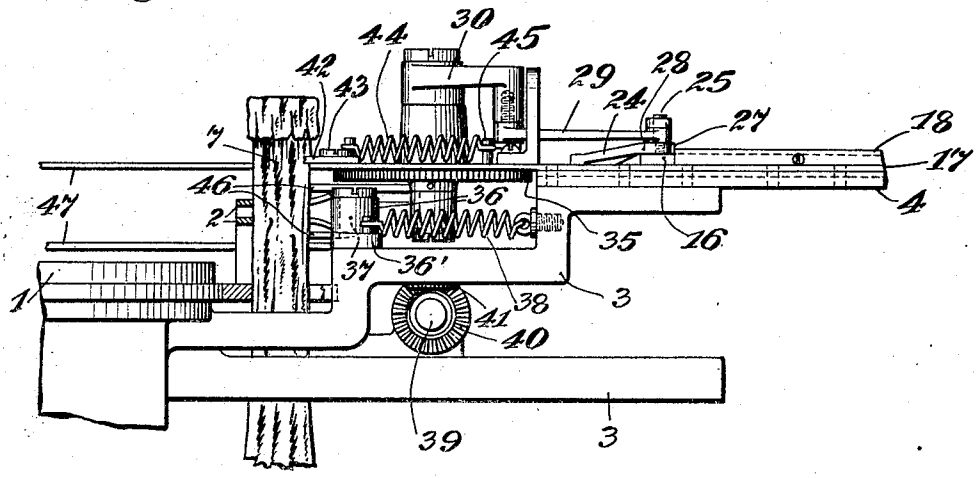
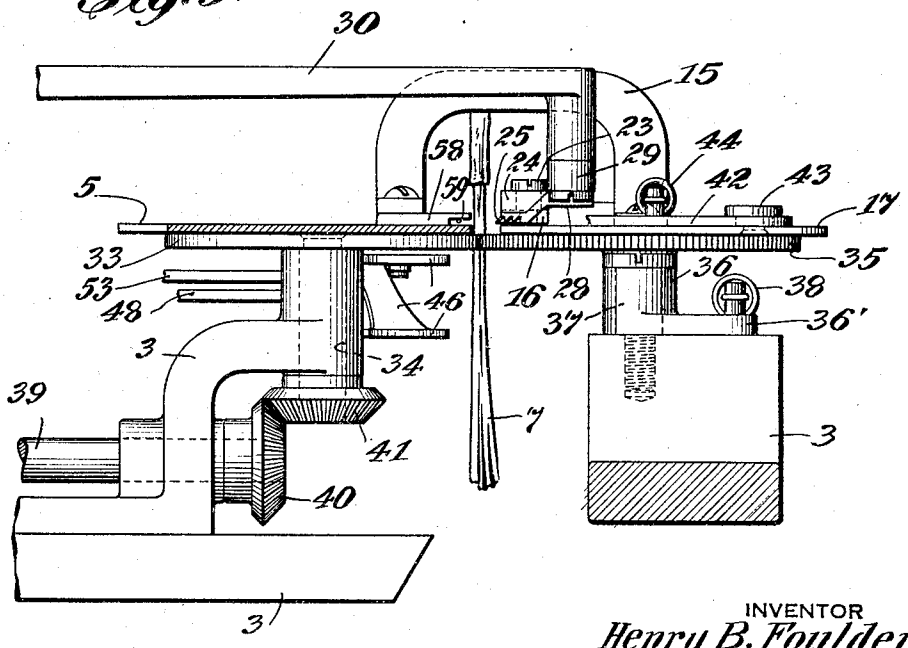


Fig. 3.



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Fig. 5.

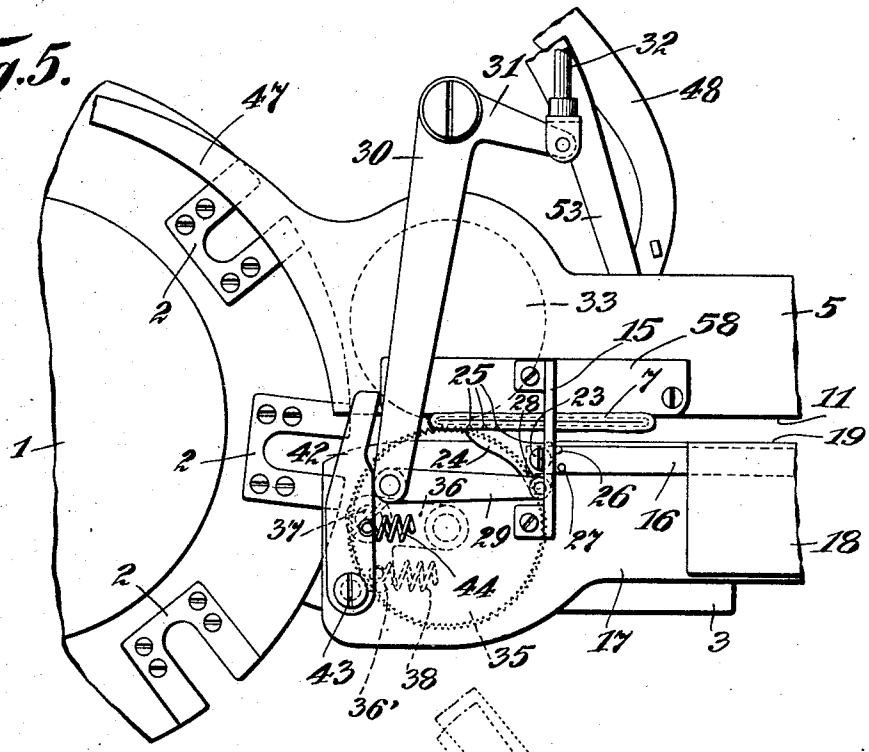
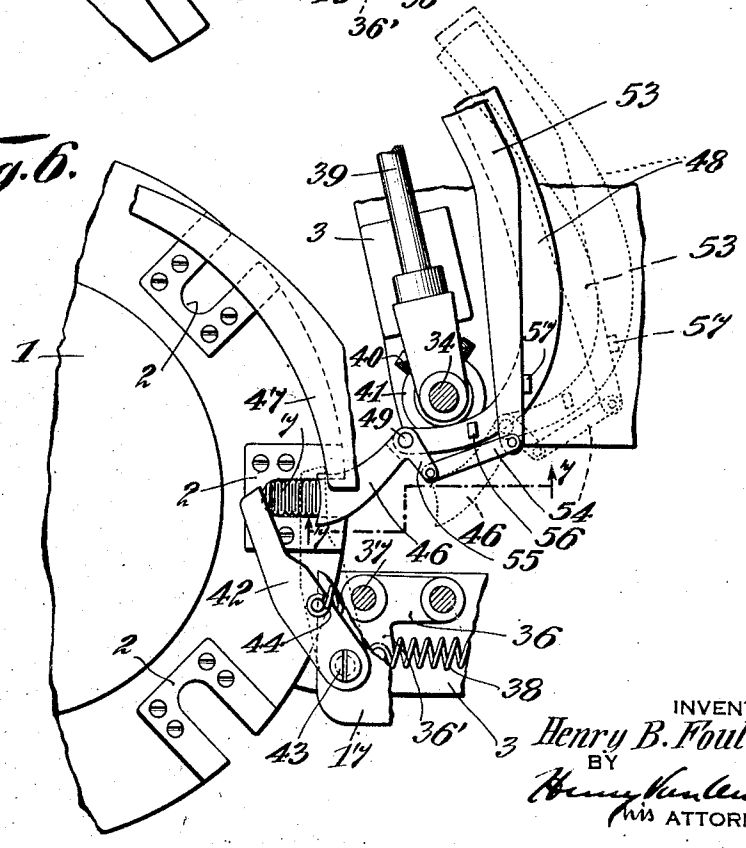


Fig. 6.



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UNITED STATES PATENT OFFICE

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BAG FEEDING MEANS

Application filed March 21, 1930. Serial No. 437,690.

This invention relates to bag feeding means and more particularly relates to an apparatus which delivers bags fed thereto to any suitable device, which may be a bag-holding turn-table, which holds the bags for tying, the apparatus also preferably puckering and compressing the necks of the bags in the bag-holding means. The present invention may be said to be an improvement on the apparatus which forms the subject matter of my co-pending application, Serial No. 398,587, filed October 10, 1929, for bag feeding means.

Many bag tying machines have associated therewith a turn-table having a series of equidistant notches about the periphery in which the puckered necks of the bags to be tied may be placed and held, the turn-table being rotated step by step to place the notches successively in a predetermined position relative to a bag tying machine which fastens the necks of the bags held in these notches successively by means of wire, cord or other binding material. A machine suited to this purpose and including a turn-table of the character referred to is disclosed in my prior application for improvements in bag tying machines, filed December 14, 1928, Serial No. 326,125.

In my prior application, Serial No. 398,587, I have disclosed an apparatus having a constantly rotating bag feeding wheel or disk and two oscillating feeding wheels or disks adapted to co-act periodically with the rotating disk to engage a bag disposed by the operator in a suitable feed channel and to advance the bag opposite a notch of the bag holding turn-table, the bag being seated home in this notch by a follower or pusher which, at the proper time, comes into engagement with the bag neck from behind.

A principal object of this invention is to improve upon the apparatus and bag feeding means disclosed in my said co-pending application, Serial No. 398,587; to simplify the mechanism and to render it more efficient and sure in operation; and to provide bag feeding means of the character described which requires less attention, care and precision of movement on the part of the operator, and presents less danger of the operator being injured by careless manipulation in feeding bags to the apparatus.

The objects of this invention further include the provision of an improved bag receiving guide; means for preventing injury to the operator when inserting bags into the guide; means for advancing bags from the guide to rotating bag feeding means; simplified and improved bag advancing means; and improved pusher means for seating advanced bags in their respective notches in the turn-table, the construction and movement of the pusher being such as to eliminate any danger of the pusher striking any advancing or advanced bag on the backward movement of the pusher. Other objects of this invention will be in part obvious and in part pointed out hereinafter.

This invention, accordingly, consists in the features of construction, combination of elements and arrangement of parts which now will be more particularly set forth and exemplified in the accompanying drawings, and the scope of the application of which will be set forth in the claims which follow.

In order to illustrate certain possible embodiments of this invention, attention is hereby directed to the accompanying drawings forming a part of this application and in which;

Fig. 1 is a top view of an apparatus embodying my invention showing, in association therewith, a turn-table partly broken away;

Fig. 2 is a front view of a portion of the mechanism, being the same portion as is shown in Fig. 6;

Fig. 3 is an end view of the apparatus, certain parts being shown in section and others being broken away for the sake of clearness;

Fig. 4 is a sectional view through the bag receiving guide, and is taken on the line 4—4 of Fig. 1;

Fig. 5 is a top view of a portion of the apparatus showing the bag advancing means in advanced position;

Fig. 6 is a top view of a portion of the apparatus showing the bag pusher means in advanced position; and

Fig. 7 is a sectional view of a portion of

the mechanism and is taken on the line 7—7 of Fig. 6.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring to the drawings, to illustrate one form of bag holding means with which my invention may be associated, there is shown a turn-table 1 having notched bag receiving and holding means 2 disposed about its periphery. The turn-table is driven intermittently step by step by any suitable means, not shown. A suitable turn-table and driving means therefor is disclosed in my co-pending application, Serial No. 326,125.

On a suitable table or framework, such as 3, is mounted a pair of guide plates 4 and 5, presenting an elongated guide slot 6 into which the operator may slide the extended neck of a bag 7. The upper surface of plate 4 is cut away as at 8, and in this recess are disposed a plurality of plates 9, preferably having pointed edges 10 presented against a pointed edge 11 formed on plate 5. Plates 9 are guided on plate 4 by means of pins 12 secured to plate 4 and extending through notches 13 formed in plates 9. Plates 9 are resiliently pressed toward plate 5 by means of springs 14, which are secured to the bottom of plate 4, extend through slots in plate 4 and press resiliently against the rear of plates 9. Preferably, plates 9 are movable obliquely. The function of these plates 9 is to hold a bag in the guide securely against dropping out, and at the same time, rendering it easy for the operator to insert a bag neck into the guide.

Adjacent the end of this row of plates 9, a bridge member 15 is positioned over the guide slot. The hand of the operator is adapted to strike and be stopped by this bridge when a bag is inserted into the guide slot. Accordingly, this bridge not only prevents the operator's hand from accidently touching any part of the mechanism in advance of the bridge and thus prevents possible injury to the operator, but also determines the position of the bag in the guide when it is released by the operator.

A bar 16 is slidably retained over the plate 4 in a channel provided by two plates 17 and 18, which are secured to the plate 4. Bar 16 is frictionally engaged in the slot between a flange 19 and a friction member 20, which is pressed against the bar 16 by means of a spring 21 disposed between plates 17 and 18 and held in place under pressure by means of set screw 22.

The forward end of bar 16 has a pivot pin 23, on which is mounted a lever having an arm 24 provided at its end with bag engaging teeth 25. Bar 16 has stop pins 26 and 27, which are adapted to be engaged by the heel 28 of the lever to restrict the amount of movement of the lever in either direction of rotation.

Mechanism is provided for periodically rocking this lever to cause its teeth to engage a bag positioned in the guide and to move this bag forwardly into engagement with bag feeding means, which will be described hereinafter, then to rock the lever so as to disengage the teeth from the bag and to then take the lever and slide bar 16 back into initial position. Such mechanism may include a link 29 which connects the heel 28 of the lever 24 to one arm 30 of a bell crank lever, the other arm 31 of the bell crank lever being connected to a rod or shaft 32, which is periodically reciprocated by any suitable means, for instance, by mechanism such as is disclosed in my co-pending application 398,587.

Positioned to engage a bag advanced by the lever 24 is a constantly rotating disk 33, mounted on a shaft 34, and a co-acting disk 35 mounted on a swinging bracket 36, this bracket being pivotally mounted on a pin 37. Disk 35 is continuously pressed against the periphery of rotating disk 33 by means of a spring 38 which, at one end is secured to the framework 3 and at its other end to a boss 36′ formed on bracket 36.

Disk 33 may be constantly rotated by means of a constantly rotating shaft 39, which has a bevel gear 40 meshing with a bevel gear 41 secured to shaft 34.

Co-acting disks 33 and 35 are adapted to grip a bag advanced thereto by the lever 24, and to feed this bag through the disks and adjacent the notch 2 of the turn-table 1, which has been placed in position to receive this bag.

As the bag is fed through the disks 33 and 35, it presses against and moves forwardly a lever 42, which is pivoted on a pin 43 carried on the forward end of plate 17 and is subject to the resilient action of a spring 44, which is secured at one end to the lever 42, and at its other end to a pin 45 mounted on plate 17. The function of lever 42 is to prevent the bag from falling downwardly out of the apparatus after it has been fed beyond the feeding disks 33 and 35.

When the bag has been advanced to this point, it is engaged from the rear by the forward end 46 of a pusher which moves the bag neck into notch 2, puckers and compresses it therein and maintains its engagement against the bag until the turn-table has taken the bag neck behind the retaining members 47 associated with the turn-table.

The pusher includes a main arm 48, to which the forward portion 46 is pivoted as at 49. Arm 48 is secured to a shaft 50, which may be rocked periodically by means of a reciprocating shaft 51, which is connected to the shaft by means of a lever 52. The shaft 51 may be reciprocated by any suitable mechanism, not shown, such, for instance, as that

shown in my co-pending application, Serial No. 398,587.

When the pusher arm 48 is moved forwardly, its forward end is first pivoted into extending position, and when the pusher arm 48 is retracted, the forward end 46 is first pivoted away from the path traversed by the bags. To this end a lever 53 is loosely mounted on shaft 50. Preferably, suitable friction means are provided to restrain movement of arm 53 when shaft 50 rotates, although possibly the weight of arm 53 is sufficient for the purpose. The opposite end of lever 53 is connected by means of a link 54 to a heel 55 provided on forward pusher portion 46. Forward and rear stop lugs 56 and 57 are provided on pusher arm 48 for arm 53.

The action of the pusher mechanism is as follows: When the pusher is in fully retracted position and its forward end 46 is adjusted on arm 48 away from the bag channel, arm 53 will be disposed against stop pin 56. On initial movement, the pusher arm 48 will move forwardly, while arm 53 remains stationary until engaged by stop lug 57, thus moving forward portion 46 on arm 48 toward the bag channel, into the position shown in dotted lines in Fig. 6. The pusher then continues to move forwardly to the end of its movement into position shown in full lines in Fig. 6, taking arm 53 along due to the engagement of lug 57 therewith. When shaft 50 rotates in the reverse direction, arm 53 will remain stationary until engaged by lug 56. Due to this relative movement between members 48 and 53, the forward end 46 of the pusher will be pivoted on arm 48 away from the bag channel as the pusher and arm 53 are taken back to initial position.

As the pusher advances it engages a bag fed through disks 33 and 35 and pushes the bag into the notch in the turn-table, positioned to receive the bag. The pusher puckers and compresses the bag neck into the notch and maintains engagement with the bag neck during the movement of the turn-table which takes the bag neck behind the fixed plates 47 which then hold the bag in the notch. Because of the lost motion connection between arms 48 and 53, end 46 of the pusher may follow the movement of the turn-table even before arm 48 draws back. It will be noted that when the pusher is retracted its forward end 46 cannot engage or touch any bag that is passing through the apparatus for delivery into a subsequent notch in the turn-table.

In order to insure positive engagement of the advancing member 24 with bags placed in the guideway, and to protect the operator, from injury in feeding bags to the apparatus, I preferably attach a plate 58 upon the plate 5 opposite the plates where the bag engagement takes place. This plate 58 is rabbeted to provide a groove as at 59 opposite the teeth 25 of the member 24.

From the above, the operation will be readily apparent. The operator merely inserts bags with necks extended into the guide, preferably advancing them until his hand strikes the bridge 15. Thereupon, the advancing member 24, carried on slide 16 engages the bag and advances it into engagement with the bag feeding disks 33 and 35. Preferably, the teeth 25 of the bag advancing member are inclined forwardly, so that in the event the disks 33 and 35 grip a bag before member 24 has been disengaged therefrom, the disks will merely pull the bag out of engagement with the teeth and the feeding will not be interrupted, nor will the bag be torn by the teeth. When the bag has been fed by the disks 33 and 35, the pusher member engages the bag from behind and seats it in the awaiting notch of the turn-table, maintaining its engagement with the bag neck until the turn-table has disposed the bag behind the retaining members 47. Meanwhile, the bag is prevented from falling out of place by reason of its engagement with lever 42. As aforestated, neither the pusher nor the advancing element 24 can interfere in their backward movements with any bag advancing in the apparatus, since each is withdraw out of the path of advancing bags during their backward movement. It will be apparent that the operator may feed bags just as fast as they are taken away by the advancing means 24. It is also apparent that all that is required of the operator is to position the bags in the guide, and that the apparatus will do the rest without any further aid from the operator.

It will also be apparent from the above that the apparatus described herein embodies the advantages and secures the objects aforementioned. The apparatus has also other advantages which will be apparent to those skilled in the art.

As many changes could be made in the above construction and as many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is to be understood that the subject matter contained in the above description and illustrated in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. In an apparatus of the character described, in combination, two guide members providing a guide passage between them, and bag engaging plates slidably carried on one of said members and resiliently pressed edgewise toward the other guide member.

2. In an apparatus of the character described, in combination, means for holding a bag in a predetermined location in the apparatus, and means for engaging and advanc-

ing a bag from such location, the advancing means including a slide bar, a bag gripper movable on the slide bar into and out of bag gripping position and movable with the slide bar to advance a gripped bag and to return to initial position, and means for reciprocating the slide bar and moving the gripper thereon.

3. In an apparatus of the character described, in combination, means for holding a bag in a predetermined location in the apparatus, and means for engaging and advancing a bag from such location, the advancing means including a slide bar, a bag gripper movable on the slide bar into and out of bag gripping position and movable with the slide bar to advance a gripped bag and to return to initial position, means for reciprocating the slide bar and moving the gripper thereon, and means frictionally resisting reciprocation of the slide bar.

4. In an apparatus of the character described, bag advancing means, including, in combination, a slide bar, a gripper pivotally mounted on the slide bar, and means whereby the gripper is first pivoted on the slide bar into bag gripping position and then is advanced with the slide bar to advance a gripped bag, and at the end of the advance movement is pivoted on the slide bar to release the gripped bag and then returned with the slide bar to initial position.

5. In an apparatus of the character described, in combination, two plates providing a bag passage between them, a gripper provided with bag engaging teeth mounted on one of said plates for movement across said passage, and a member on the other plate presenting a groove opposite and in alignment with the teeth of the gripper.

6. In an apparatus of the character described, bag advancing means, including, in combination, a slide bar, a gripper pivotally mounted on the slide bar, and means, including an oscillating lever connected to the gripper, for periodically pivoting the gripper on the slide bar and reciprocating the slide bar.

7. In an apparatus of the character described, in combination, means providing a bag passage through the apparatus, and means, including a resiliently yielding finger disposed across said passage and adapted to be engaged by a bag fed along said passage, to restrain said bag from falling downward out of said passage.

8. In an apparatus of the character described, in combination, a pusher including a main arm having an end portion pivoted thereto, means for oscillating the pusher, and means for pivoting the end portion with respect to the main arm upon initial movement of the main arm in either direction.

9. In an apparatus of the character described, in combination, a pusher including a main arm having an end portion pivotally mounted thereon, means for oscillating the main arm, a movable member connected to said end portion, and means on the main arm adapted to move into engagement with said movable member at the start of the movement of the main arm in either direction, to vary the position of said end portion relatively to the main arm of the pusher.

This specification signed this 18th day of March, 1930.

HENRY B. FOULDER.