Jan. 10, 1933. A. BOOMERSHINE 1,893,725

DISPENSING APPARATUS

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FIG. 1

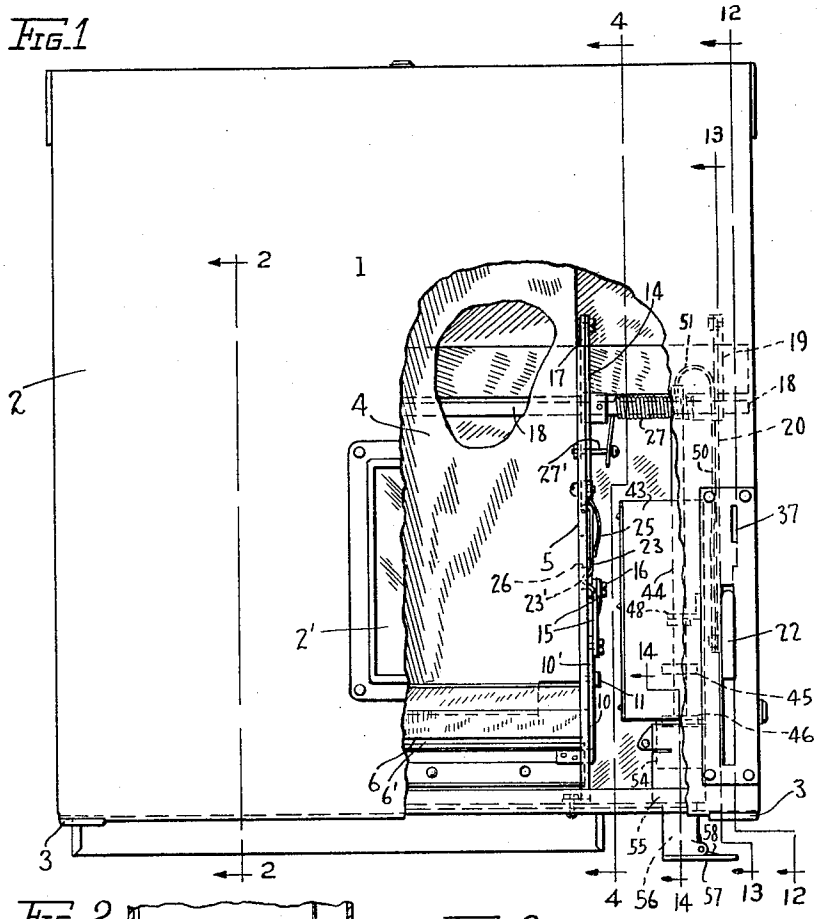


FIG. 2

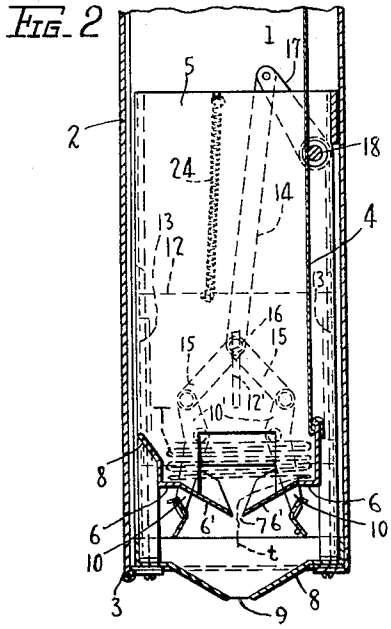
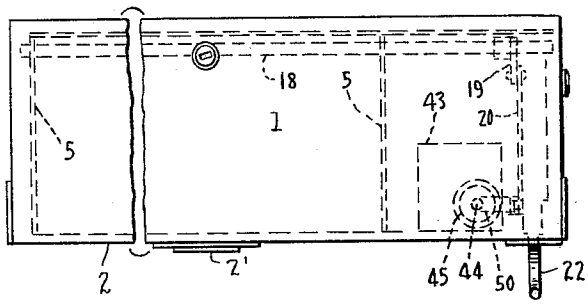


FIG. 3



INVENTOR

Adam Boomershine

BY Staley & Welch

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DISPENSING APPARATUS

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FIG. 7

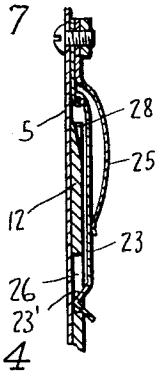


FIG. 8

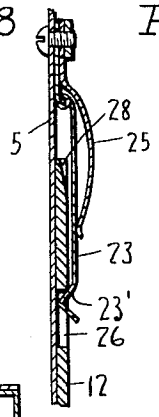


FIG. 6

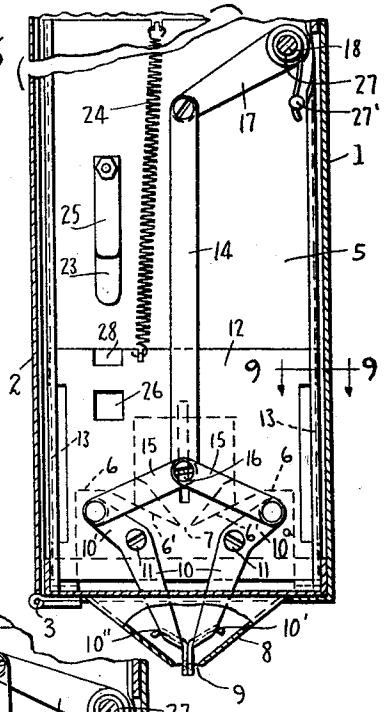


FIG. 4

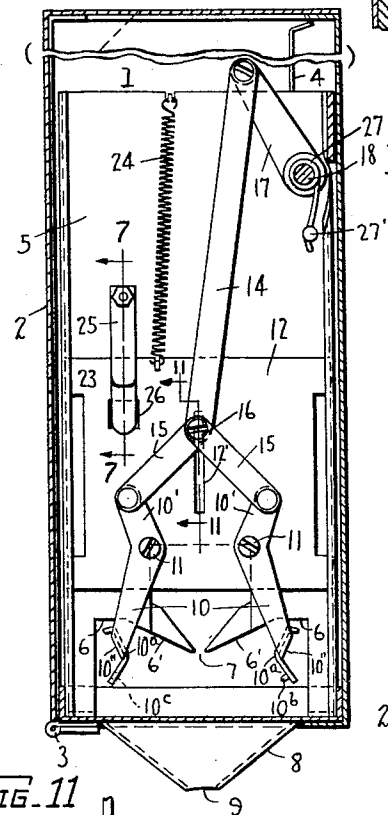


FIG. 5

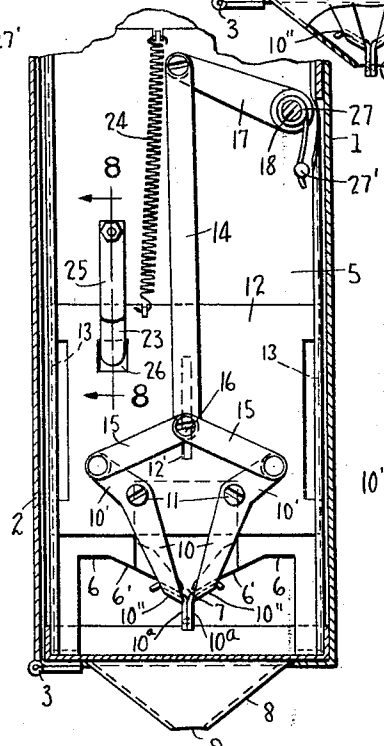


FIG. 9

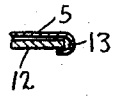


FIG. 10

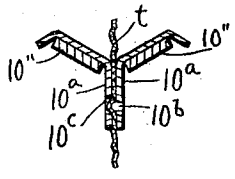
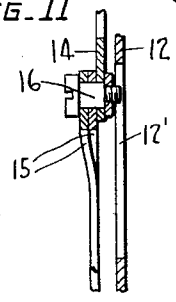


FIG. 11



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DISPENSING APPARATUS

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FIG. 12

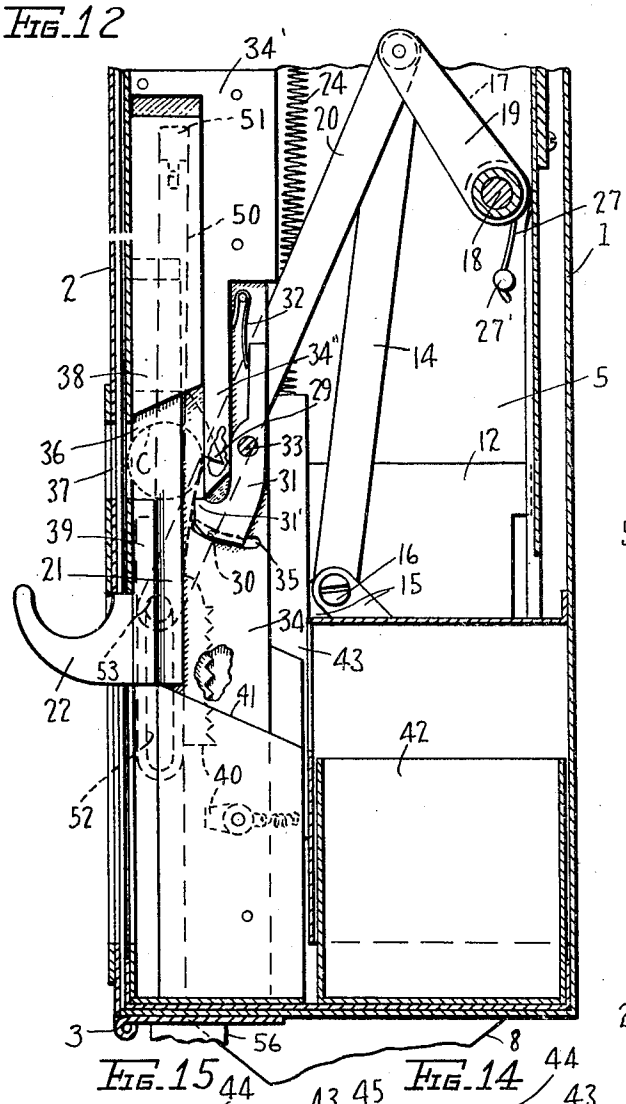


FIG. 13

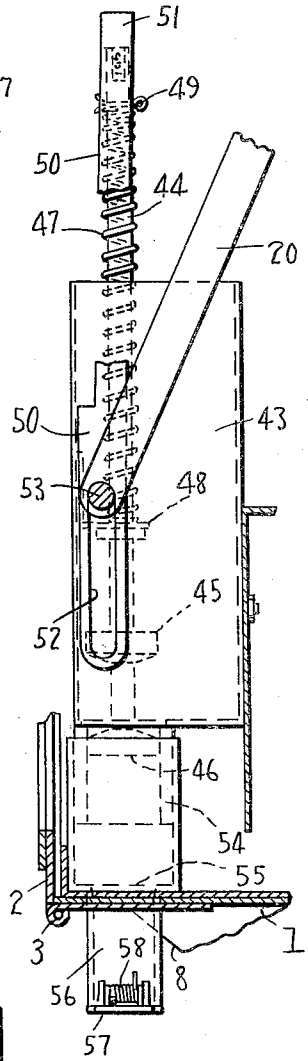


FIG. 15

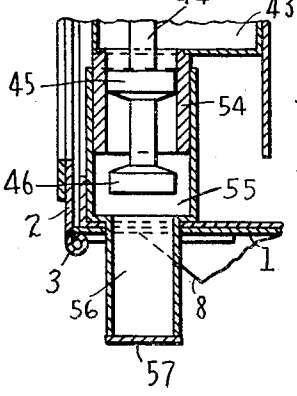
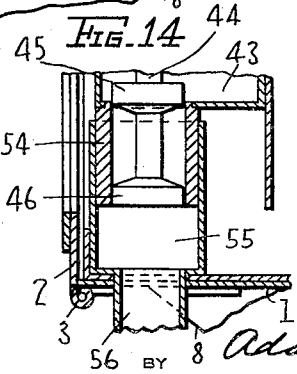


FIG. 14



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Patented Jan. 10, 1933

1,893,725

UNITED STATES PATENT OFFICE

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DISPENSING APPARATUS

Application filed January 23, 1931. Serial No. 510,694.

This invention relates to dispensing apparatus, it more particularly relating to apparatus for dispensing paper articles such as stacked paper towels.

An object of my invention is to improve the mechanism for ejecting the towels.

A more specific object of the invention is to provide an arrangement whereby the towels will be at all times concealed within the cabinet, together with ejecting mechanism of a character which will eject a portion of one of the towels through an opening in the cabinet to a position where it may be readily grasped by the user.

A further object of my invention is to provide improved means for dispensing powdered soap.

A further object of my invention is to improve the coin controlled devices which operate the article-ejecting mechanism.

In the accompanying drawings:

Fig. 1 is a front elevation with the cabinet partly broken away.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a top plan view.

Fig. 4 is a section on the line 4—4 of Fig. 1 showing the ejecting mechanism in inoperative position.

Fig. 5 is a section on the same line as Fig. 4 showing the position of the ejecting mechanism after it has been operated to grasp an article, but before ejection thereof.

Fig. 6 is also a section on the same line as Fig. 4 showing the ejecting mechanism moved to the position for ejecting the article.

Fig. 7 is an enlarged section on the line 7—7 of Fig. 4.

Fig. 8 is an enlarged section on the line 8—8 of Fig. 5.

Fig. 9 is a section on the line 9—9 of Fig. 6.

Fig. 10 is a detail section of a portion of the clamping members of the ejecting mechanism when in their operative position.

Fig. 11 is an enlarged section on the line 11—11 of Fig. 4.

Fig. 12 is a section on the line 12—12 of Fig. 1.

Fig. 13 is a section on the line 13—13 of Fig. 1.

Fig. 14 is a section on the line 14—14 of Fig. 1.

Fig. 15 is a section similar to Fig. 14, but showing the parts in a different position.

Referring to the drawings, 1 represents an outer cabinet or casing constructed preferably of sheet metal, the forward side 2 of which is hinged at its lower edge as at 3 so that access may be had to the interior of the casing when desired. Within the casing is a holder or magazine for the articles to be dispensed, which in the present case, are folded paper towels. This magazine is preferably constructed of sheet metal and has a back 4, sides 5, bottom members each having a horizontal portion 6 at its outer edge and downwardly inclined portions 6′ separated for the full width of the magazine to form an elongated discharge opening 7, and a short forward wall 8 in its lower portion, the front and top being otherwise open. The folded towels T to be dispensed are placed in the magazine, being supported by the horizontal portion 6 of the bottom. These towels are so stacked that the lower fold of each towel will be interengaged with the folds of the next lower towel so that when a towel is ejected the lower flap or fold of the next succeeding towel will be drawn through the elongated opening 7 in the manner shown at *t* in Fig. 2, this being a well known arrangement in dispensing apparatus of this character. The discharge opening 7 of the magazine is a suitable distance above the bottom 8 of the outer casing or cabinet and this bottom 8 also has an elongated discharge opening 9 in vertical alignment with the discharge opening 7 of the magazine. By this arrangement the hanging flap of the towel, being considerably above the discharge opening 9 will not be accessible to the user until it has been ejected by the mechanism to be described.

A set of ejecting devices is located at each end of the towel magazine. Each one of these ejecting devices employs a pair of pivoted jaws 10 which are pivoted as at 11 to a vertically movable slide 12 which is slidably mounted in ways 13 formed by bending the metal of the front and rear edges of the end walls 5 of the magazine. The arm 10′ of each

of the jaw members 10 is pivotally connected to the lower end of a long link 14 by a link 15. The links 14 and 15 are pivoted together by a screw 16 (Fig. 11) which has its end projecting into an elongated vertical slot 12′ in the slide 12. The upper end of the link 14 is connected to a crank arm 17 fast to a rock shaft 18 which is common to both sets of the ejecting devices. This shaft 18 has at one end thereof a crank arm 19 (Fig. 12) which is pivotally connected by a link 20 with a vertically movable operating member 21 having an operating finger piece 22, this member in the present case being the slide member of the coin controlled device.

When the member 21 is moved downwardly by pressure upon the finger piece 22 it rocks the shaft 18, the initial rocking movement of which causes the links 14 and 15 to rock the clamping members 10 upon their pivots 11 to the position shown in Fig. 5 so as to clamp between the strips 10^a of which one each is attached to the lower ends 10″ of a pair of jaws 10, the fold or flap of the towel which projects through the opening 7. A positive gripping effect on the flap of the towel is afforded by the pressure of a plurality of small pins 10^b in one of the strips 10″ in alignment with a plurality of openings 10^c in the mating strip, the pins pressing the paper partially into the openings. In the meantime the slide 12 has been held in its uppermost position by a hinged detent 23 and by a coil spring 24. The detent 23 is pivotally connected at its upper end with the end 5 of the magazine as shown best in Fig. 7 and Fig. 8, a flat spring 25 having one end thereof secured to the magazine, serves to press the free V-shaped portion 23′ of the detent into a recess 26 formed in the slide 12. This recess 26 is somewhat elongated and normally the V-shaped portion of the detent is in the extreme lower portion thereof as shown in Fig. 7, but upon the initial movement of the ejecting mechanism just described the slide 12 will be permitted a slight downward movement against the tension of the spring 24 in order to obviate friction caused by the binding of the parts. At the end of this slight downward movement of the slide the upper wall of the recess 26 will be engaged by the detent 23 which is of sufficient strength to hold the slide in its upper portion until the clamping members have been initially moved to clamping position to firmly clamp the flap of the towel.

Upon further movement of the main operating device, the ejecting jaws together with the slide 12 upon which they are mounted will be moved downwardly to eject the flap of the towel through the opening 9 in the bottom of the cabinet, the tension of the spring 25 which holds the detent 23 in the recess 26 being overcome upon this movement so that the V-shaped portion of the detent will ride upon the slide, and beyond the upper edge thereof as shown in Fig. 6. As soon as the main operating device has been drawn down to its limit and released, a spring 27 coiled about the shaft 18, with one end thereof secured to the shaft and the other end placed about a pin 27′ projecting from the end of the magazine serves to return the parts to their normal position. Upon this return movement, it is essential that the clamping jaws should release the projecting flap or fold of the towel upon the initial upward movement of the slide and to that end means are provided for yieldably temporarily retarding the movement of the slide until the jaws have opened. The upper edge of the slide, in line with the recess 26 is provided with an inclined recess 28 (Figs. 6, 7 and 8) over which the free end of the detent 23 must ride. This inclination is such as to temporarily retard the movement of the slide as soon as the V-shaped portion of the detent makes contact with the lower portion of the inclination, so that the further upward movement of the link 14 under the action of the spring 27 will through the links 15 open the jaws, after which the tension of the detent spring 25 is overcome to allow the slide 12 to move to its normal upward position.

The door or forward side 2 of the cabinet is provided with a window 2′ opposite the lower part of the magazine in order that the contents of the magazine may be observed without opening the cabinet so that the customer may determine whether the machine is in condition to dispense the towels or other articles; that is, whether the machine is empty or whether it still has articles in the magazine.

The mechanism so far described may be employed in a free dispensing apparatus or in a coin controlled dispensing apparatus. In the present case I have shown coin means for controlling the operation of the slide 21. This slide has on its inner edge a projection shown partly in dotted lines at 29 (Fig. 12). Normally standing in the path of movement of this projection is a laterally extending detent 30 on the lower end of a lever 31 pivotally mounted on a pin 33 which projects from the frame 34 within which the slide 21 is mounted and which is normally held in engaging position by a spring 32. The detent 30 extends through an elongated arcuate slot 35 in the frame 34. The slide 21 has a coin pocket 36 normally in registry with the slotted opening 37 in the door of the casing. The upper wall of this coin pocket is formed by a member 38 which is secured to the slide proper 21 and has an inclined lower edge and the lower wall is formed by another member 39 likewise secured to the slide proper. The inner wall of the pocket is formed by an extension 34″ on the lower side of the frame member 34′ which is secured in spaced rela-

tion with the frame member 34 so as to form a way for the member 21 to slide in. When a coin is inserted as indicated in dotted lines at C (Fig. 12) and the slide pulled downwardly the coin will contact with the nose 31′ of the detent lever and rock the detent 30 out of the path of the projection 29 to permit the complete operation of the slide, the full movement of which is insured by a well known form of full stroke device indicated in dotted lines at 40. The coin drops to the inclined ledge 41 and from thence is deposited in a coin box 42.

Means are also provided in this machine for dispensing a quantity of powdered soap on each operation. The powdered soap is contained in a casing 43 within which is reciprocally mounted a plunger 44 on the lower end of which are a pair of spaced collars 45 and 46 forming therebetween a measuring pocket. The plunger is held in its normal upward position by a spring 47 coiled thereabout and interposed between a perforated plunger guide 48 projecting from the interior of the casing 43 and the cotter pin 49 carried by the plunger. An arm 50 has a bent-over portion 51 which is pivotally connected with the upper end of the plunger, this arm extending down along the outside of the casing and having at its lower end an elongated slot 52 within which works the pin 53 which serves to pivotally connect the link 20 with the cam slide 21. The length of this slide is such that the pin 53 will contact the lower wall of the slot 52 sometime prior to the completion of the down stroke of the slide 21, carrying the pocketed portion of the plunger down through a conduit 54 depending from the bottom of the casing and at its final movement carrying the lower collar or wall 46 of the pocket into a chamber 55 from which leads a discharge chute 56 normally closed by a valve 57 which is hinged to the lower end of the chute 56 as shown in Fig. 1 and held in closed position by a spring 58. In Fig. 13 the plunger 44 is at the upper end of its stroke in which position the lower collar 46 closes the upper end of the conduit and so retains the powdered soap in the soap casing 43. As the plunger moves downwardly, the pocketed portion moves into the conduit, carrying with it a measured quantity of powdered soap as seen in Fig. 14, and so soon as the parts reach the position shown in Fig. 15 this powdered soap is discharged into the chamber 55 and there drops into the chute 56 ready to be dispensed when the valve is opened by the customer, while the upper collar 45 now closes the upper end of the conduit on the upward or return stroke, the lower collar 46 enters the conduit before the upper collar 45 leaves, preventing any discharge of soap, during this movement.

Having thus described my invention, I claim:

1. In a dispensing apparatus for stacked paper articles such as towels, folded and stacked such that a fold of the lowermost article will depend from the stack, of devices for ejecting said depending flap through a discharge opening consisting of means upon the initial movement of said devices for positively grasping said depending flap and means for thereafter bodily moving said grasping means with the flap in a direction only toward the discharge opening so as to project the flap therethrough.

2. In a dispensing apparatus for stacked paper articles such as towels, folded and stacked such that a fold of the lowermost article will depend from the stack, of devices for ejecting said depending flap through a discharge opening consisting of means upon the initial movement of said devices for positively grasping said depending flap, means for thereafter bodily moving said grasping means with the flap in a direction only toward the discharge opening so as to project the flap therethrough, means for returning the parts to their normal position, and means whereby the grasping means are caused to release said flap prior to the completion of the return movement thereof.

3. In a dispensing apparatus for stacked paper articles such as towels, folded and stacked such that a fold of the lowermost article will depend from the stack, a pair of pivoted jaws normally disposed at the sides of said fold, operating devices for said jaws, means whereby the initial movement of said devices closes said jaws upon the depending fold, and means whereby the further discharging movement of said devices moves said jaws bodily in but one direction to eject the fold through a discharge opening.

4. In a dispensing apparatus for stacked paper articles such as towels, folded and stacked such that a fold of the lowermost article will depend from the stack, a pair of pivoted jaws, operating devices for said jaws, means whereby the initial movement of said devices closes said jaws upon the depending fold, means whereby the further discharging movement of said devices moves said jaws bodily in but one direction to eject the fold through a discharge opening, means for returning the parts to normal position, and means for causing said jaws to open upon such return movement and prior to the completion thereof.

5. In a dispensing apparatus for stacked paper articles such as paper towels folded and stacked such that a fold of the lowermost article will depend from the stack, ejecting mechanism comprising a pair of pivoted jaws, a movable member upon which said jaws are mounted, a manually operated device, and connections from said device whereby the initial movement thereof closes the jaws and the additional movement thereof moves said

movable member and the jaws in but one direction to ejecting position.

6. In a dispensing apparatus for stacked paper articles such as paper towels folded and stacked such that a fold of the lowermost article will depend from the stack, ejecting mechanism comprising a movable slide, yieldable means for holding said slide in normal position, a pair of jaws pivotally connected with said slide, a manually operated device, and connections between said device and said jaws whereby the initial discharging movement thereof closes said jaws and the further movement thereof moves said slide and jaws in but one direction to ejecting position.

7. In a dispensing apparatus for stacked paper articles such as paper towels folded and stacked such that a fold of the lowermost article will depend from the stack, ejecting mechanism comprising a movable slide, yieldable means for holding said slide in normal position, a pair of jaws pivotally connected with said slide, a manually operated device, connections between said device and said jaws whereby the initial movement thereof closes said jaws and the further discharging movement thereof moves said slide and jaws in but one direction to ejecting position, means for returning the parts to normal position, and means for temporarily resisting the return movement of said slide to cause said connections to open the jaws prior to the return thereof to normal position.

8. In a dispensing apparatus for stacked paper articles such as paper towels folded and stacked such that a fold of the lowermost article will depend from the stack, ejecting mechanism comprising a movable slide, a pair of jaws pivotally mounted on said slide, a rock shaft, a manually operated device for rocking said shaft, an arm on said rock shaft, toggle mechanism between said arm and jaws, and means for temporarily resisting the movement of said slide whereby the operation of said manually operated device causes an initial closing of said jaws and thereafter a movement of said slide and jaws to ejecting position.

9. In a dispensing apparatus for stacked paper articles such as paper towels folded and stacked such that a fold of the lowermost article will depend from the stack, a pair of jaws one of which has a series of openings and the other a series of pins to register with said openings, means for pivotally mounting said jaws, and a manually operated device for causing an initial closing of said jaws and thereafter a movement thereof to ejecting position.

In testimony whereof I have hereunto set my hand this 21st day of January, 1931.

ADAM BOOMERSHINE.