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P. A. WOOSTER

2,260,925

DISPENSING DEVICE

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Fig. 2.

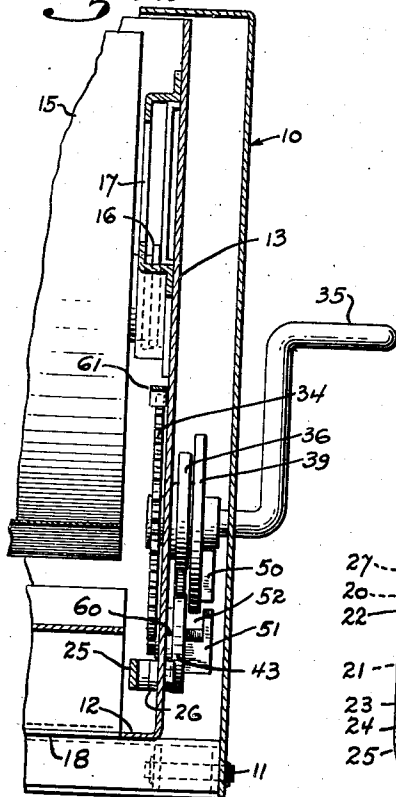


Fig. 1.

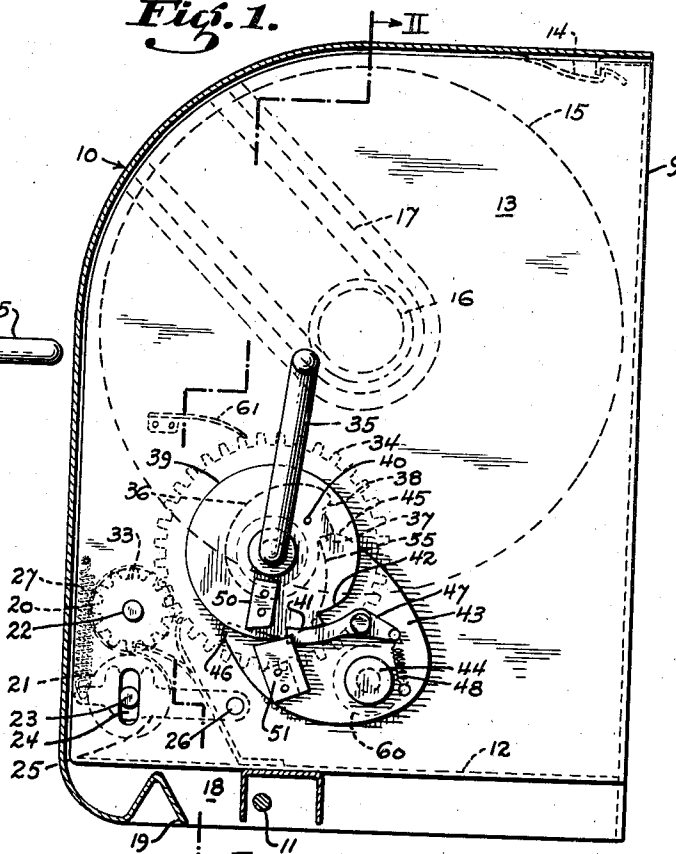


Fig. 3.

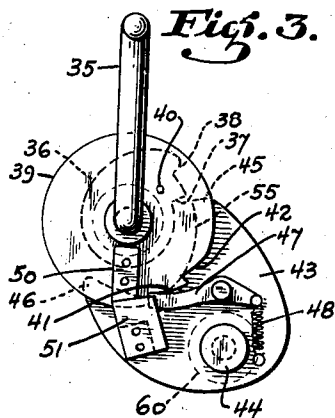


Fig. 4.

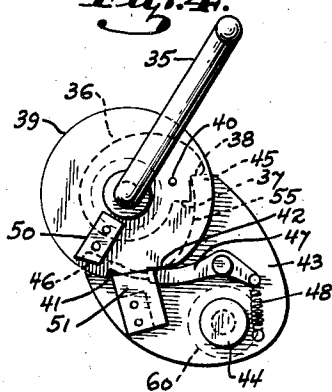
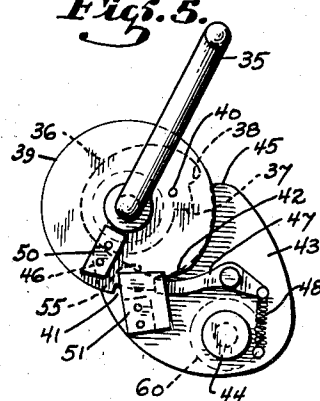


Fig. 5.



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DISPENSING DEVICE

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9 Claims. (Cl. 271-2.3)

The present invention relates to dispensing devices and particularly to operating mechanism for the same, which operating mechanism includes means to discourage wasteful use of the articles that are dispensed.

The invention, as will be apparent from the description which follows, is applicable to dispensers of various types and the following description, which will be directed particularly to a device for dispensing paper towels, should be understood as illustrative of the invention but not as limiting it to the particular form shown and described.

It is common practice to provide paper towels in public and semi-public lavatories in the form of a continuous roll of toweling contained in a suitable cabinet and adapted to be delivered from the cabinet in measured lengths by manipulation of a rotatable crank. It is also common to limit such a crank to one rotation at a time, each complete rotation of the crank being sufficient to deliver a single towel. It has become the practice in many cases, in order to discourage wasteful use of toweling, to employ a time delay mechanism associated with this operating crank so that towels may be withdrawn from the cabinet only at predetermined time intervals. In other instances latching mechanisms have been employed to latch the crank against operation after the delivery of each towel, and a latch release lever is employed so that it must be operated between successive towel dispensing operations of the crank. Both of these types of operation have disadvantages. The time delay mechanism is costly and has the further disadvantage that in many cases the time of delay is too great to be consistent with satisfactory service to the patrons. In dispensers where a latch release mechanism is employed, the towels may be dispensed so quickly that often the object of the device, which is to prevent wasteful use of toweling, is not accomplished. The present invention contemplates the provision of means to discourage wasteful use of towels in a manner that will be considerably less costly than the time delay system and that will at the same time involve a greater delay between successive towel dispensing operations than is involved in the type of dispenser employing the latch and latch release mechanism.

It is the object of the present invention to provide an operating means for a dispensing device which includes a rotatable operating member and means to latch said member against operation

and releasable upon oscillatory movement of said member.

It is a further object of the invention to provide operating mechanism for a dispensing device that is simple in construction, positive in action, and inexpensive to manufacture. Further objects and advantages of the invention will be made apparent in the following specification, wherein reference is made to the accompanying drawing illustrating one form of the invention.

In the drawing—

Fig. 1 is a sectional view of a towel dispensing cabinet disclosing in side elevation the operating mechanism embodying the present invention.

Fig. 2 is a sectional view taken on the line II—II of Fig. 1 and showing the said operating mechanism in front elevation, and

Figs. 3, 4 and 5 are side elevational views of the operating mechanism only, which is illustrated in Fig. 1, showing the parts of said mechanism in different positions that they will occupy during successive steps of operation.

Referring first to Figs. 1 and 2 of the drawing, the present invention is illustrated as it will be employed in connection with a dispenser for paper toweling in roll form. In these figures of the drawing a towel cabinet is illustrated as comprising an outer casing 10. This casing is pivoted on pins 11 in a manner to permit it to swing outwardly and downwardly to make the interior of the cabinet accessible. Within the casing 10 there is a supporting structure which comprises a back plate 9 adapted to be secured to a wall, a bottom plate 12, and a pair of side plates, one of which is illustrated at 13. The pins 11 which pivotally support the outer casing 10 permit it to be swung to its closed position, illustrated in Fig. 1, and a latch generally indicated at 14 may be employed to retain the casing in this position.

The roll of paper toweling shown at 15 is rotatably supported by a projecting trunnion 16 which is received in a suitable guide 17 at one end. The roll may be supported for rotation at its other end by any conventional means, not shown. In order to withdraw toweling from the roll 15 and cause it to be projected through an opening 18 at the bottom of the cabinet so that the projected portion may be torn against a suitable tearing edge 19, a pair of feed rolls are provided as indicated at 20 and 21 in Fig. 1. The feed rolls 20 and 21 have trunnions 22 and 23 projecting axially from their ends to support them for rotation. The trunnion 22, of the roll 20, projects through a perforation in the side

plate 13 of the cabinet which serves as a bearing therefor, and the lower trunnion 23 projects through a slot 24 in the plate 13. These feed rolls are urged toward each other resiliently and the present invention includes an improvement in means for effecting this resilient pressure between the rolls. As shown in Fig. 1, the trunnion 23 of the lower roll 21 is embraced by a notch in lever 25 which is pivoted to the side plate 13 at 26 and which is urged upwardly around this pivotal support by means of a spring 27. The lever 25 is arranged interiorly of the side plate 13 and close to the end of the feed roll 21 so that there is little tendency for the trunnion 23 to be loosened in the roll because of the pressure exerted by the lever. As these rolls are ordinarily constructed of wood with steel trunnions imbedded in their ends, it has been found that pressure applied to the trunnions adjacent their outer ends has a tendency to enlarge the holes in the wood and cause the trunnions to work loose. Through the medium of the lever 25 it is possible to obtain great pressure though a comparatively light spring, 27, is used, and this serves as an advantage because with a high degree of pressure between the rolls it is possible to eliminate rubber facing on the rolls, which is sometimes necessary to cause the toweling to be properly fed between the rolls.

The toweling from the roll 15 is passed over the upper feed roll 20 and then between the feed rolls and out through the opening 18 so that it will be advanced through the opening upon rotation of the feed roll 20. A gear 33 is fixed to one end of the feed roll 20 and meshes with a gear 34 which is carried by and adapted to be rotated by a hand crank 35 for the purpose of imparting rotation to the feed rolls. The gears 33 and 34 are disposed interiorly of the side plate 13, through which the crank 35 extends.

The mechanism illustrated in Figs. 1, 3, 4 and 5 is employed to limit the crank 35 to a single cycle operation, that is, to cause it to stop after each complete rotation, which rotation effects the delivery of one towel, and also to permit a subsequent towel delivering rotation of the crank 35 only after an oscillating motion has been imparted to the crank. There are other towel dispensing mechanisms in which the operating crank is limited to single cycle operation and is releasable by a slight reverse movement of the crank. In such cases, however, the delay or inconvenience necessitated between successive towel dispensing operations is not sufficient to effect any substantial saving in toweling. The mechanism of the present invention which necessitates an oscillating movement of the operating crank between successive towel deliveries has the advantage that the oscillating movement requires more time than a single movement of the crank; and it has the further advantage of being simple to operate and of not requiring any special instructions for the patron, the tendency of persons operating such a device being to attempt operation in both directions. Consequently, a patron attempting to obtain a towel and finding that the crank is latched against forward movement, will move it backward and forward alternately until it is released. The mechanism for accomplishing this purpose comprises a two-step helical cam 36 secured to the crank 35 for rotation therewith, and having an inner step 37 thereon and an outer step 38 thereon. This cam 36 is preferably disposed against or adjacent to the exterior face of the

side plate 13, as shown in Fig. 2. Against the outer face of this cam a ratchet disk 39 is disposed. The disk 39 is connected, as by a pin 40, to the cam 36 for rotation therewith and comprises notches 41 and 42 in its outer periphery. Disposed in the same plane as the cam 36 is a stop-plate 43 which is pivotally supported by a pin 44 to the side plate 13. The stop-plate 43 has a finger 45 for engagement with the steps 37 and 38 of the cam 36, and has a finger 46 for engagement with the outer periphery of the cam 36. The stop-plate 43 also carries a pivotal pawl 47 which is urged by a spring 48 into engagement with the outer periphery of the ratchet disk 39 to cooperate with the notches 41 and 42 thereof. A lug 50 is secured to the exterior surface of the ratchet plate 39 in a position for engagement under certain circumstances with a similar lug 51, secured to the outer surface of the stop-plate 43. As the plate 43 is arranged in a plane behind the ratchet disk 39, the lug 51 is substantially twice as thick as the lug 50, so that it extends outwardly to a position for engagement by the lug 50 and it is recessed, as indicated at 52 in Fig. 2, to provide space through which the outer edge of the disk 39 may pass.

As viewed in Fig. 1, the parts of the mechanism just described are in the position that they will assume after a towel dispensing operation, the crank 35 being latched against further dispensing rotation by engagement of the step 37 on cam 36 with the finger 45 of the stop-plate. In order to release the operating lever for further dispensing operation, it must first be moved in a reverse direction a short distance, then forward again, and then in a reverse direction, the final reverse movement permitting the next forward movement to be a complete rotation and to effect dispensing of a towel.

The result of the first reverse motion of the crank 35 is illustrated in Fig. 3, wherein the lug 50 is shown as having come in contact with the lug 51, thereby limiting the reverse movement. During this same movement, the notch 41 in the periphery of the ratchet plate 39 has, through its engagement with the end of the pawl 47, caused the stop-plate 43 to be swung in a clockwise direction for a distance sufficient to move the finger 45 thereof out of its intercepting position with relation to the step 37 on the cam 36. This places the parts in position for the forward part of the oscillating movement, which brings the parts to the positions illustrated in Fig. 4.

In Fig. 4 the crank 35 has been rotated forward or in a clockwise direction until the step 38 of the cam 36 has come into stopping engagement with the finger 45 of the stop-plate 43. This motion has also effected rotation of the ratchet plate 39 until the pawl 47 engages with the notch 42 thereof. The lug 50 has also been carried beyond a position where it will make contact with the lug 51 upon swinging movement of the stop-plate 43.

Fig. 5 shows the position of the parts after the crank 35 has again been moved in a reverse or counter-clockwise direction, the result of which movement has been to rock the stop-plate 43 further in a clockwise direction by reason of engagement of the pawl 47 with the notch 42. This further clockwise movement of the stop-plate 43 serves to move the finger 45 thereof clear of the step 38 in the cam 36, so that the crank 35 may now be given a complete rotation to dispense a towel. The extent of movement

is limited by contact of the finger 46 with the edge of cam 36 as shown in Fig. 5.

As the crank 35 is rotated to dispense a towel, the parts of the operating mechanism are automatically returned to the positions in which they are illustrated in Fig. 1. This is effected by the cam 36, which engages at its point of greatest radius with a cam edge 55 formed on the stop-plate 43 intermediate the fingers 45 and 46 thereof. The cam edge 55 is so shaped that the cam 36 will engage therewith during its clockwise rotation to swing the stop-plate 43 to the position illustrated in Fig. 1 and thus cause the parts to come to rest after a towel dispensing operation by engagement of the step 37 with the finger 45, as hereinbefore described.

A spring washer 60 as shown in Fig. 2 is preferably placed behind the stop-plate 43 to impart a slight frictional resistance to its pivotal movement so that it will tend to remain in each of the positions in which it is illustrated. Preferably a spring pawl, as indicated by dotted lines at 61 in Fig. 1, engages with the teeth of the gear 34 to prevent reverse rotation of this gear to an extent that would cause the toweling to be withdrawn from its feeding position between the rolls 20 and 21. The arrangement of the pawl 61 is, however, necessarily such as to permit the slight reverse movement necessary for oscillation of the crank 35 described above.

As described above, the oscillating movement of the crank which effects release of the latch mechanism comprises a reverse movement, a forward movement, and a second reverse movement, after which the crank is free for a subsequent dispensing operation. The number of oscillatory movements, however, may be enlarged by increasing the number of steps 37 and 38 on the cam 36 and correspondingly increasing the number and spacing of the notches 41 and 42 in the ratchet disk 39.

Many features of the invention have been described specifically hereinabove for purposes of illustration, but it is to be understood that the invention is not limited to this specific disclosure, the scope of the invention being defined by the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In operating mechanism for a dispensing device, a rotatable operating crank, a stepped cam rotatable therewith, a pivoted stop-plate engageable with the steps of said cam to latch the operating member, a ratchet disk rotatable with the crank, and a pawl carried by said stop-plate and cooperating with said ratchet disk to move the plate toward a releasing position upon reverse movements of the crank.

2. In operating mechanism for a dispensing device, a rotatable operating crank, a stepped cam rotatable therewith, a pivoted stop-plate engageable with the steps of said cam to latch the operating member, a ratchet disk rotatable with the crank, and a pawl carried by said stop-plate and cooperating with said ratchet disk to move the plate step by step toward a releasing position upon oscillating movement of the crank.

3. In a dispensing device, the combination of a rotatable operating member, means effective upon rotation of the operating member to dispense an article upon a full forward rotation thereof, means for latching the operating mem-

ber against forward motion at the end of its operating cycle, and means effective upon oscillating movement of the operating member to move the latching means to a position freeing the operating member for a further full forward rotation.

4. In a dispensing device, the combination of a rotatable operating member, means effective upon rotation of the operating member to dispense an article upon a full forward rotation thereof, means for latching the operating member against forward motion at the end of its operating cycle, and means effective upon oscillating movement of the operating member to move the latching means in successive steps toward a position releasing the operating member for a further full forward rotation.

5. In a dispensing device, the combination of a rotatable operating member, means effective upon rotation of the operating member to dispense an article upon a full forward rotation thereof, means for latching the operating member against forward motion at the end of its operating cycle, and means including a ratchet disc carried by the operating member and pawl carried by the latch and engaging the ratchet disc and effective upon oscillating movement of the operating member to release the latching means.

6. In a dispensing device, the combination of a rotatable operating member, means effective upon rotation of the operating member to dispense an article upon a full forward rotation thereof, means for latching the operating member against forward motion at the end of its operating cycle, and means including a ratchet disc on the operating member and pawl engageable therewith on the latch effective upon oscillating movement of the operating member to move the latching means in successive steps toward a releasing position.

7. In operating mechanism for a dispensing device, a rotatable operating crank, means for latching the crank against a full dispensing operation, and means effective upon oscillating movement of the crank to release the latching means and thereby permit dispensing operation of the crank.

8. In operating mechanism for a dispensing device, a crank, means for latching the crank against a full dispensing operation, means effective upon oscillating movement of the crank to release the latching means and thereby permit dispensing operation of the crank, and means effective upon dispensing operation of the crank to return the latching means to latching position.

9. In a dispensing apparatus of the character described, the combination of means for supporting a roll of toweling, a pair of feed rolls between which the toweling is passed to dispense it, means urging said feed rolls toward each other, and comprising a pivoted spring urged lever engaging the journal of one roll, means for rotating the rolls to dispense a measured length of toweling, means to latch the rotating means against a complete dispensing rotation in its operating direction at the end of each dispensing operation thereof, and means effective upon oscillation of the rotating means to release the same for a further dispensing action.

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