July 26, 1960 J. B. RYNO 2,946,587

TOWEL DISPENSER

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FIG. 1

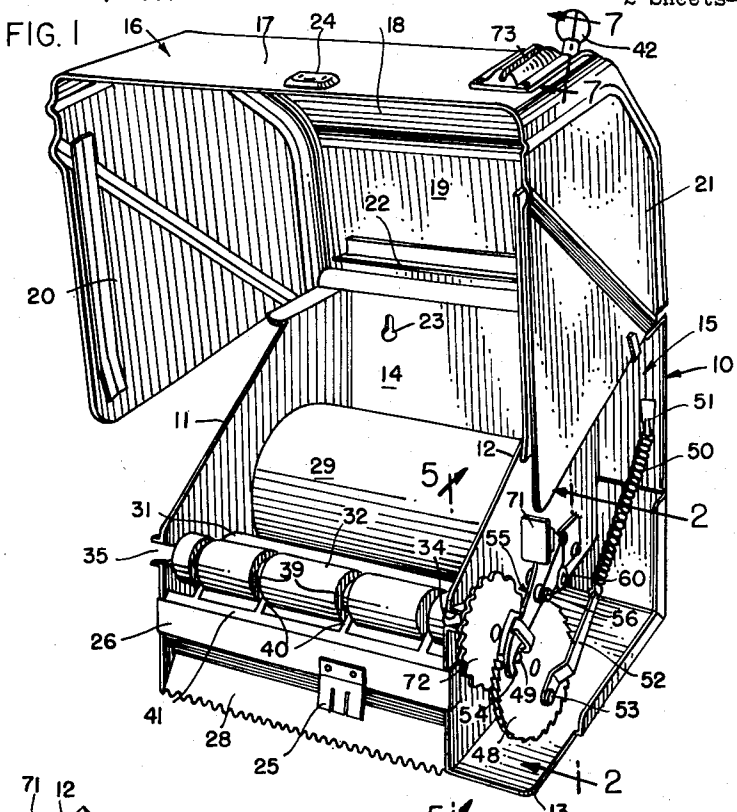


FIG. 2

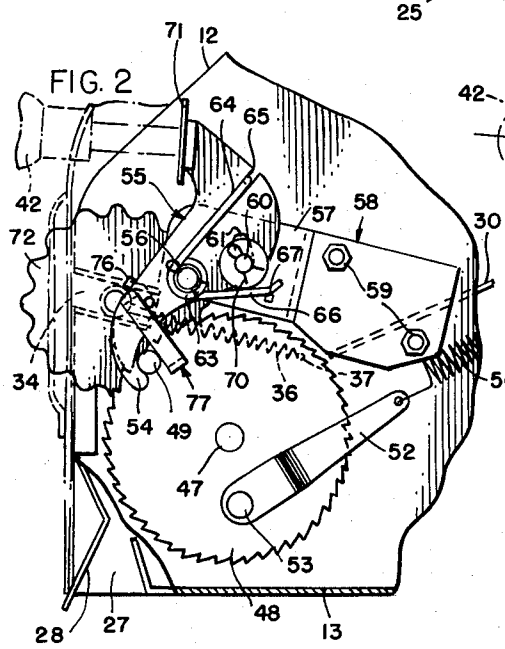
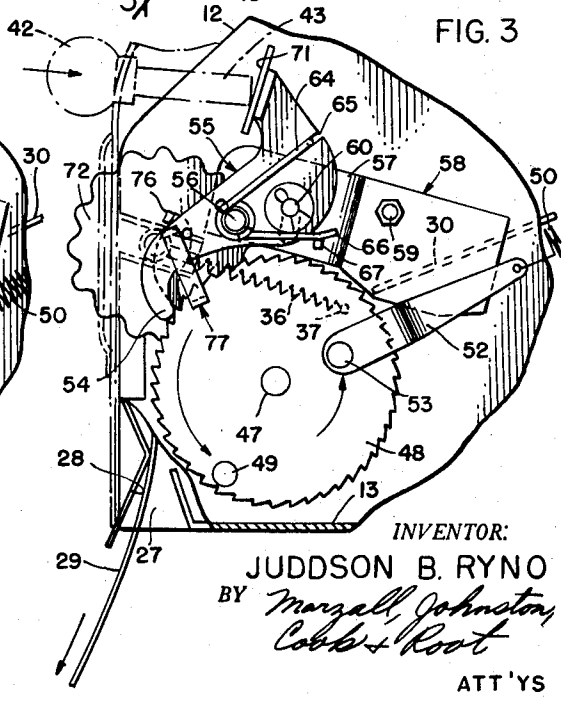


FIG. 3



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FIG. 4

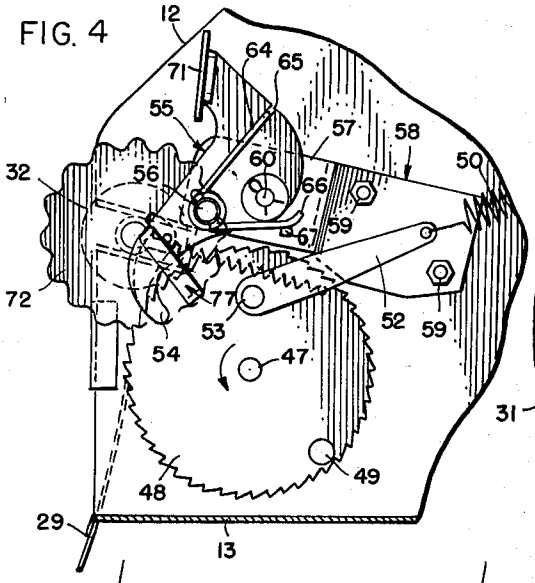


FIG. 5

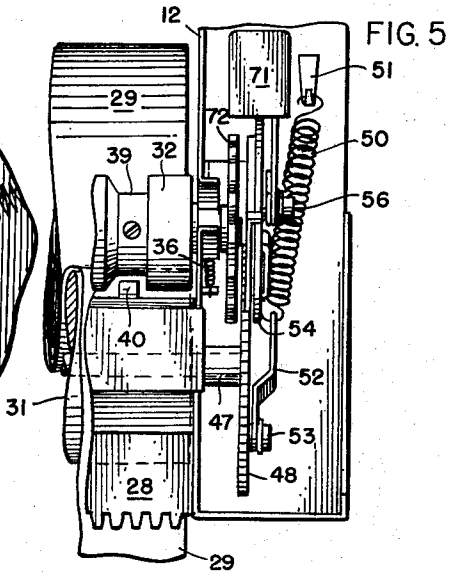


FIG. 6

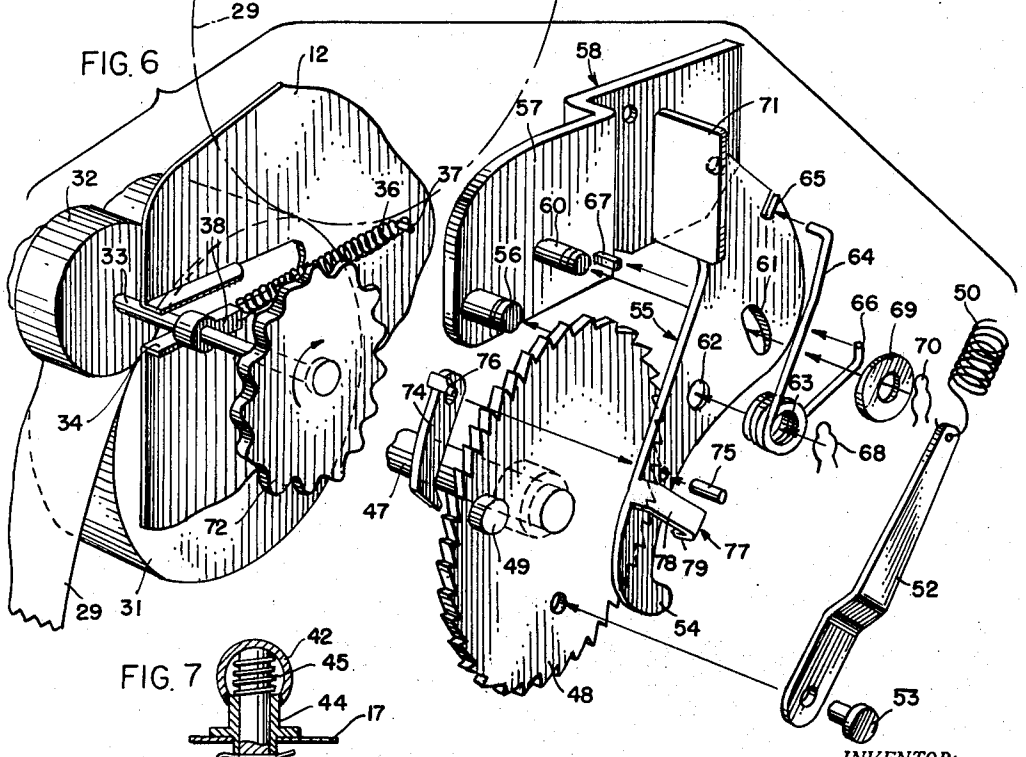
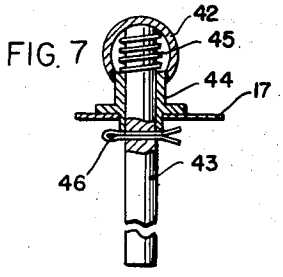


FIG. 7



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TOWEL DISPENSER

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3 Claims. (Cl. 271—2.4)

This invention relates to improvements in sheet or web dispensing apparatus, and more particularly to an improved apparatus for dispensing paper toweling in predetermined amounts.

Dispensers for paper toweling are well known and largely used in washrooms frequented by the public, and in washrooms frequented by employees of industrial plants, offices, and the like. It has been proven to be economical to limit the amount of paper toweling withdrawn from a dispenser with each hand operation. However, in constructing a dispenser which will serve such a purpose, it has been necessary to utilize numerous moving and complexly associated mechanical parts in order to give a dispenser which will properly limit the amount of toweling dispensed with these hand operations.

Accordingly, it is an object of this invention to provide a paper toweling dispenser capable of delivering a predetermined amount of toweling with each hand operation, wherein the mechanism for accomplishing this purpose is simply and economically constructed and consists of a relatively few number of moving parts thereby further decreasing maintenance problems.

Another object of this invention resides in the provision of an improved toweling dispenser, wherein only a predetermined amount of toweling may be withdrawn from the dispenser after a single hand operation.

Still another object of this invention is in the provision of an improved toweling dispenser having mechanism for permitting only a predetermined amount of toweling to be withdrawn from the dispenser subsequent to a single hand operation, wherein the relatively small number of parts involved permit the construction of a complete and extremely compact toweling dispenser.

Other objects, features and advantages of the inveniton will be apparent from the following detailed disclosure taken in conjunction with the accompanying sheets of drawing, wherein like reference numerals refer to like parts, in which:

Fig. 1 is a perspective view of a toweling dispenser embodying the invention with the cover in raised position, disclosing the inner working elements of the dispenser;

Fig. 2 is a side elevational vew, taken substantially along line 2—2 of Fig. 1, illustrating the feed mechanism with the component parts in position and ready to be operated for a dispensing operation;

Fig. 3 is a view similar to Fig. 2, but illustrating the parts in position after the manual control lever has been depressed;

Fig. 4 is a view similar to Fig. 3, but illustrating the parts of the feed mechanism in still another position;

Fig. 5 is a fragmentary front elevational view of the feed mechanism;

Fig. 6 is an exploded perspective view of the feed mechanism; and

Fig. 7 is a fragmentary sectional view, taken substantially along line 7—7 of Fig. 1 and illustrating the hand operated control for initiating the towel dispensing operation.

In accordance with the invention, toweling is delivered from a storage chamber to a feed or measuring roller, and through a delivery opening to the user upon actuation of the feed mechanism. Depressing of the control button initiates the operation of the feed mechanism to eject a certain amount if toweling at which time the ejected toweling may be grasped in order to pull more toweling out of the cabinet until a predetermined amount is withdrawn. A stop mechanism limits the maximum amount of toweling that may be withdrawn from the cabinet with each hand operation regardless of whether the push button is held in a depressed position or not. The relatively few number of moving parts which make up the feed or measuring mechanism not only permits cheaper construction but provides easier operated dispensing apparatus and eliminates a complex mechanism which might require considerable maintenance.

The toweling dispenser illustrated in the drawings for purposes of exemplifying the present invention includes generally a toweling dispensing mechanism which feeds or measures a predetermined amount of toweling during each operation thereof, and a cabinet or housing for enclosing the mechanism and storing a supply of toweling.

The cabinet includes a cabinet having a rear wall **10**, parallel opposed side walls **11** and **12** and a bottom **13**. A toweling storage chamber or cavity **14** is defined by the side and rear walls, and the side wall **12** is spaced inwardly from the ends of the rear wall and bottom to further define an end chamber **15** which houses most of the dispensing mechanism.

The cavities **14** and **15** are enclosed by the cover **16** which includes a front wall **17** connected at its upper end to a rearwardly slanting panel **18** which in turn connects to a top wall or panel **19**. Side walls **20** and **21** complete the cover, and the cover is hinged to the upper end of the rear wall **10** by a transversely extending hinge **22**, Fig. 1. Holes 23 (only one shown) are provided in the rear wall **10** in order to hang the toweling dispenser on suitable hanging members of a building wall. A locking mechanism **24** coacts with a locking tab **25**, Fig. 1, which is mounted on a cross bar **26** extending between the side walls **11** and **12** in order to selectively lock the cover into closed position over the cavities **14** and **15**. A delivery opening **27** is provided in the bottom wall **13** of the cabinet for delivering toweling from the cabinet, and the forward part of the opening is defined by a tear plate **28** having a lower serrated edge against which paper toweling may be pulled for severing purposes.

Within the toweling storage cavity **14**, a roll of paper toweling **29** is supported at its opposite ends on inclined guideways **30**, Fig. 2, and the web of the toweling is drawn from the bottom of a roll and trained between a lower feed or measuring roll **31**, Figs. 5 and 6, and an upper presser roll **32**. From the coacting rolls, the paper is trained downwardly over the surface of the feed roll **31** and through the delivery opening **27**.

The presser roll **32** is mounted on a shaft **33** guidedly supported at opposite ends in downwardly inclined slots **34** and **35**, and it is constantly biased against the paper toweling and feed roll **31** by a spring **36** at each end thereof (only one shown). The spring **36**, Fig. 6, is secured at one end to a pin **37** on the side wall **12** and at the other end to a bracket **38** journalled on the presser roller shaft **33**. The presser roller **32** is provided with a plurality of spaced reduced diametrical portions **39** which freely receive fingers **40** of toweling guide members **41**, Fig. 1, which prevent the toweling from adhering to the presser roller wherein it might be carried around the roller and beyond the limits of the guide member so that a user could not pull the toweling through the delivery opening **27**.

The dispensing mechanism is constructed so that upon

depressing of the button or knob 42, Figs. 1, 2, 3, and 7, the feed or measuring roll 31 may be rotated through one revolution thereby dispensing a length of paper equal to the circumference of the feed roll. Accordingly, a variation in the diameter of the feed roll 31 would give variation in the amount of paper delivered from the cabinet by the dispensing mechanism. The knob 42 is secured on the end of a push-pull rod 43 which is slidably received within a tubular guide 44 secured to the front wall 17 of the cover 16. The knob 42 is spherical in shape and arranged to telescope over the tubular guide 44, and is normally positioned as shown in Figs. 2 and 7 by the biasing of a spring 45 arranged about the rod 43 and abutting at one end against the inside of the knob 42 and at the other end against the tubular member 44. In order to limit the outward movement of the knob 42 and the rod 43, a cotter pin 46 or like element is mounted in the rod 43 and adapted to define a stop for bearing against the inner end of the member 44 when the rod 43 is in its out position.

The feed or measuring roll 31 is mounted on a shaft 47 which is rotatably supported by the side walls 11 and 12 with the end of the shaft at the side wall 12 extending into the end chamber 15 and having mounted thereon for corotation therewith a flywheel or disc wheel 48. This flywheel has a detent or pin 49 carried at a point outward at the center thereof and extending from the side remote from the feed roll 31. The flywheel 48 is continually urged to the position shown in Fig. 3 by a spring 50 connected at one end to a lug 51, Figs. 1 and 5, mounted on the back wall 10 and at the other end to a link 52 which, in turn, is pivotally connected to the flywheel 48 by a pin 53 at a point outward of the center of the wheel and angularly displaced by a predetermined amount from the detent 49. The pin 53 is secured at a point radially inward from the detent 49, and the link 52 is offset away from the flywheel 48 so that during a rotational cycle of the flywheel 48 when the pin 49 will pass the link 52, there will be no interference of the movement of the detent 49 by the link 52.

Prior to depressing of the button 42, when the flywheel is in its properly set position and ready for the next cycle of operation, the detent 49 will be engaged by an arresting means in the form of a lug or stop 54 of the manually actuatable lever 55. The lever 55 is pivotally mounted on a stud shaft 56 carried on the end of an offset portion 57 of a mounting plate 58 which is secured to the side wall 12 by fasteners 59. The offset portion 57 is such as to position the lug 54 of the lever 55 on the outer side of the flywheel 48 or on the side remote from the feed roller 31. A stop or limit pin 60 is spaced from the stub shaft 56 and also mounted on the offset portion 57 to be received within the confines of an arcuate slot 61 formed in the body of the lever 55 and in spaced relationship from the shaft 56. The lever 55 of course is appropriately apertured at 62 to pivotally receive the stub shaft 56. Thus, the pivotal movement of the lever 55 is restricted by the arcuate slot 61. The lever 55 is normally biased so that the stop 60 bears against the bottom half of the arcuate slot 61 by a spring 63 which is provided with coils arranged on the stub shaft 56 and with one end 64 anchored in a slot 65 of the lever 55 and the other end 66 bearing against a pin 67 mounted on the offset portion 57. In order to hold the spring 63 and the lever 55 on the stub shaft, a spring retainer clip 68 engages a groove adjacent the outer end of the stub shaft and provides a retaining means to bear against the outer side of the spring 63 which is placed on the stub shaft after the lever has been first placed thereon. To additionally hold the lever in mounted relationship with the mounting plate 58, and particularly with the offset portion 57, a washer 69 is arranged over the outer end of the stop 60 which bears against the outside of the lever 55 and is held thereon by a spring retaining clip 70 in a similar fashion as the spring retainer clip holds the spring 63 and lever on the stub shaft 56.

At the upper end of the lever 55 a plate 71 provides a bearing surface to be engaged by the inner end of the push-pull rod 43, whereupon depressing of the button 42 and the push-pull rod 43 shifts the lever 55 to the position as shown in Fig. 3, wherein the top of the arcuate slot 61 then engages the limit pin 60 and the lug 54 on the lever 55 is removed from the path of the detent 49 on the flywheel 48 so that the force of the spring 50 pulls the flywheel 48 to the position shown in Fig. 3, which thereby issues a certain amount of toweling from the cabinet. Further issuance of toweling from the cabinet may be accomplished by merely grasping that portion of the toweling which has been issued by the rotation of the flywheel 48 by the spring 50 and pulling the toweling from the machine until the detent 49 again engages the lug 54 which will have assumed its original position as seen in Fig. 2 by the force of the spring 63, or by manual rotation of the presser roller 32 by spinning a control or ejecting wheel 72 which is mounted on the shaft 33 of the presser roller 32 and arranged to have a portion of it projecting through an opening or slot 73 formed in the front wall 17 of the cover 16. This wheel 72 is peripherally roughened or formed with circumferentially spaced smoothly rounded lugs so that it may be easily operated by the hand of the user. Inasmuch as the presser roller is in tight friction engagement with the web of the toweling and the web of the toweling being between the presser roll and the feed roll 31, the toweling will be issued from the cabinet as well as the movement of the presser roll being transferred to the feed roll which will rotate in a clockwise direction as seen in Figs. 2 and 3.

Inasmuch as the flywheel 48 will be rotating against the force of the spring 50 during further issuance of the toweling from the cabinet, means is provided to prevent reverse rotation of the flywheel which includes a pawl 74 pivotally mounted on a pin 75 of the lever 55 and engageable with the outer ratcheted surface or edge of the flywheel 48. The pawl 74 is gradually actuated to fall into engagement with the teeth on the flywheel 48 and prevent reverse rotation thereof at any time. In order to prevent rotation of the pawl 74 in a clockwise direction about its pivot end 75, a stop 76, Fig. 6, is secured to the pawl and engages the top edge of the lever 55, as seen in Fig. 2, and thereby prevents accidental rotation of the pawl to a non-operative position. If desired, a spring may be utilized in order to continually bias the pawl into engagement with the teeth on the ratchet wheel 48.

In order to further prevent dispensing more than the predetermined amount of toweling from the cabinet should the button 42 be held in a depressed position and the lug 54 be out of the path of the detent 49, an auxilary lug or stop is mounted on the lever 55, and generally indicated by the numeral 77 and which includes a main bar portion 78 spaced outwardly from the lever 55, Fig. 6, and a flange 79 extending inwardly from the free end of the bar portion 78 toward the lever 55. Thus, the stop 77 provides an open space through which the detent 49 may normally pass inasmuch as the bar portion 78 is spaced outwardly from the outer end of the detent 49 when the lever 55 is in its normal position as seen in Fig. 2. However, when the lever 55 is in its trip position as seen in Fig. 3, the flange 79 is moved to a position which will block movement of the detent 49 as an attempt is made to rotate the flywheel 48 thereby. So only upon release of the lever 55 may the flywheel be moved past the auxiliary stop 77, and as the lever 55 is released to its normal position as shown in Fig. 3, the lug 54 is brought into operative position which will allow the detent 49 to bypass the auxiliary stop 77 and then engage the lug 54 on the lever 55. The machine will then be ready for a successive towel dispensing operation and as the fly-

wheel 48 moves through a cycle of rotation, the link 52 and the spring 50 will move again to a position as seen in Fig. 2 whereby the detent 49 is biased against the lug 54 of the lever 55.

In loading the cabinet, the cover 16 is swung to its upper position as seen in Fig. 1 and a roll of toweling is placed on the inclined supports 30 so that the toweling may be drawn from the bottom of the roll and the toweling is brought between the feed and presser rolls 31 and 32 and slightly into the opening or delivery orifice 27.

For dispensing or issuing toweling from the cabinet, the knob 42 will be depressed to initiate one cycle of operation of the feeding mechanism whereby the detent 49 is disengaged from the lug 54 of the lever 55 and the flywheel 48 is allowed to rotate to the position as seen in Fig. 3 by means of the spring 50 and thereby issue a certain amount of toweling from the cabinet. By either grasping the end of the toweling and further pulling it from the cabinet or by rotating the ejecting wheel 72 to thereby feed the toweling from the cabinet, a predetermined amount of toweling may be supplied in accordance with the size of the feed roll 31; and during this feed operation, the feed roll 31 and the flywheel 48 will make one complete cycle or revolution until the detent 49 is again brought into engagement with the lug 54 on the lever 55.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

The invention is hereby claimed as follows:

1. Apparatus for dispensing paper toweling in predetermined amounts comprising a cabinet having a delivery opening, a feed roll adjacent said opening over which the toweling is trained, a presser roll for maintaining the toweling in frictional contact with said feed roll, a disc wheel mounted to corotate with said feed roll, a pin extending laterally from said disc wheel and eccentric to the center thereof, a pivotally mounted lever having a lug thereon normally in the path of said pin to limit the movement of the feed roll in one direction, means for preventing rotation of said feed roll in the other direction, manual means for shifting said lever to move the lug from the path of said pin, means for holding said pin against said lug when the lever is in its normal position and to rotate said disc wheel through an arc when the lug leaves the path of said pin, and auxiliary means on said lever to prevent rotation of said feed roll beyond a certain defined arc when said lug is removed from the path of said pin.

2. In a towel dispenser including a cabinet adapted to contain toweling, means operating automatically to arrest the issuance of toweling from the cabinet when a predetermined length of toweling has been issued, said means comprising a roller against which the toweling is frictionally biased, a rotatable member connected to said roller, detent means mounted on said member, means for continually urging said member into a first position in the direction of rotation of said roller causing discharge of toweling from the cabinet, movable latch means arranged to engage said detent means at a second position beyond said first position, and manual means controllable from the outside of said cabinet for actuating said latch means, whereby operation of said latch means releases said member whereupon it is urged to said first position thereby issuing toweling from the cabinet and whereby a predetermined amount of toweling may be issued before the detent means again engages the latch means.

3. A towel dispenser including, a cabinet for supporting a roll of toweling, and a rotatable dispensing means supported in said cabinet, said dispensing means comprising, a feed roll, a presser roll resiliently urged against said feed roll, the toweling being trained between said rolls, a disc wheel operatively connected to said feed roll and rotatable therewith, means for continually biasing said wheel and feed roll to one position, means preventing said wheel from rotating in one direction, stop means extending laterally from said wheel and being spaced outwardly from the center thereof, arresting means engaging said stop means, manually actuatable means exteriorly of said cabinet connected to said arresting means, and auxiliary arresting means engageable with said stop means to prevent issuance of more than a predetermined amount of toweling should said manually actuatable means be continually actuated.

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