

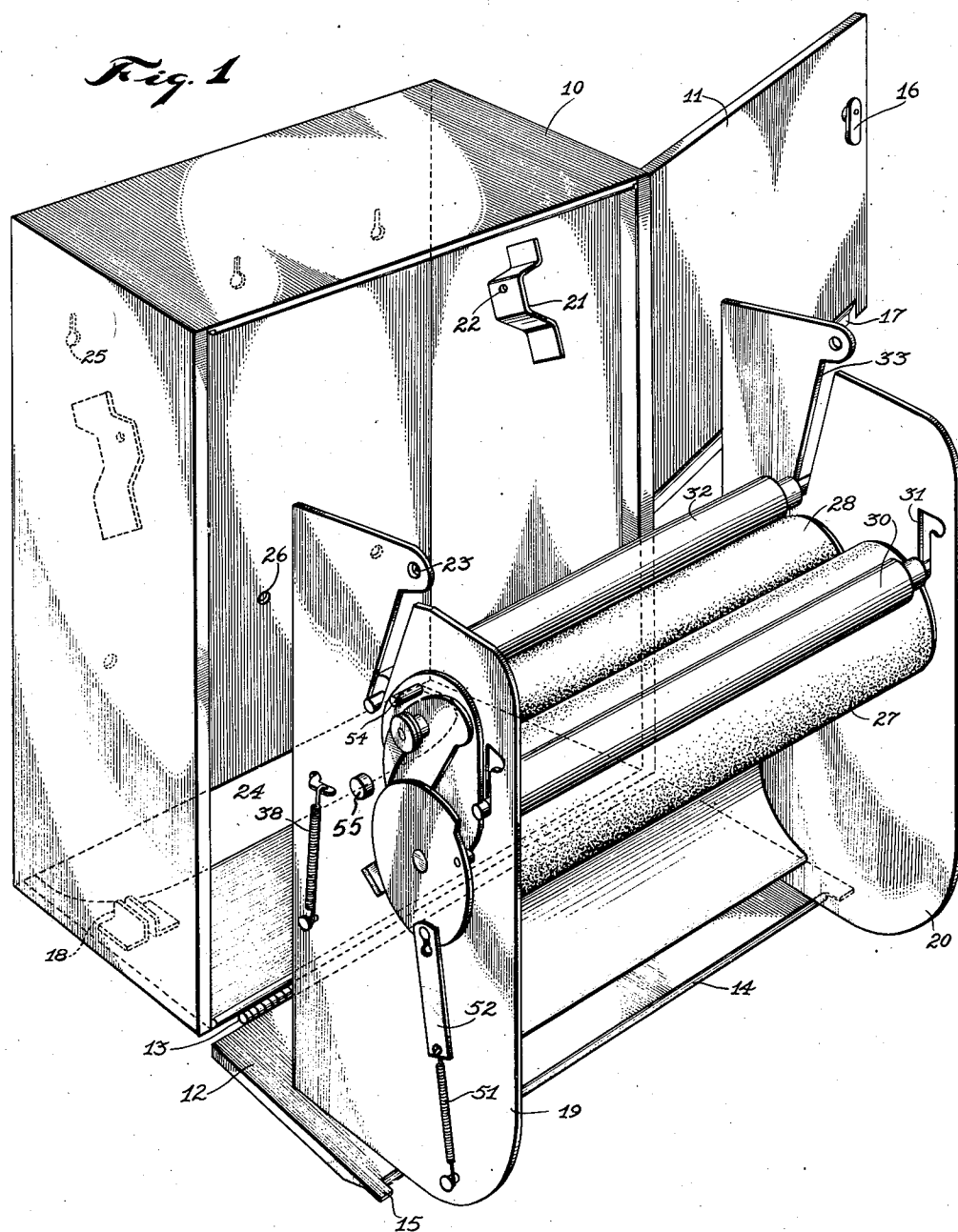
May 17, 1949.

L. L. PRICE
TOWEL DISPENSER

2,470,187

Filed July 3, 1947

3 Sheets-Sheet 1



INVENTOR.
Laurence L. Price
BY
Hazard & Miller
Attorneys

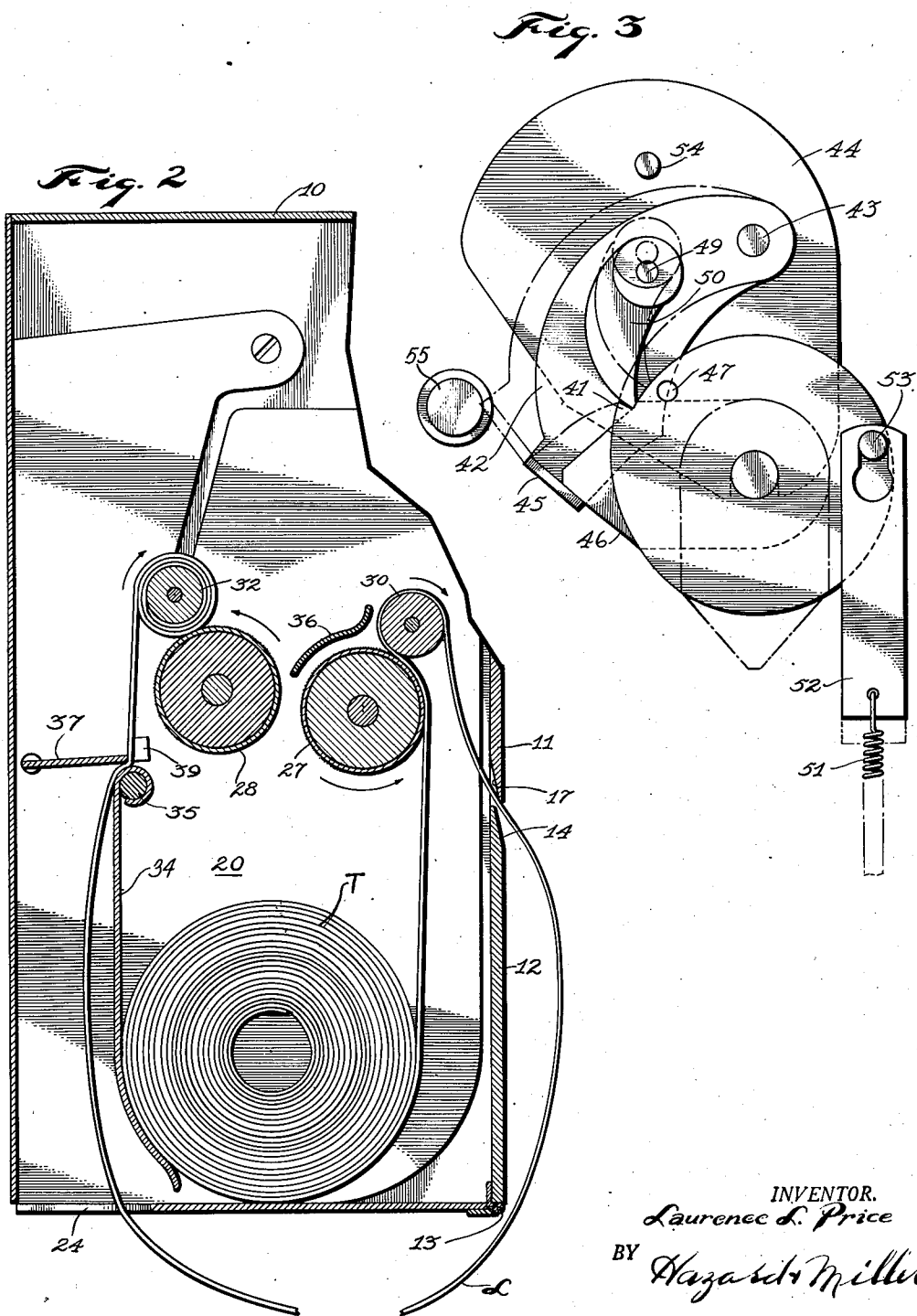
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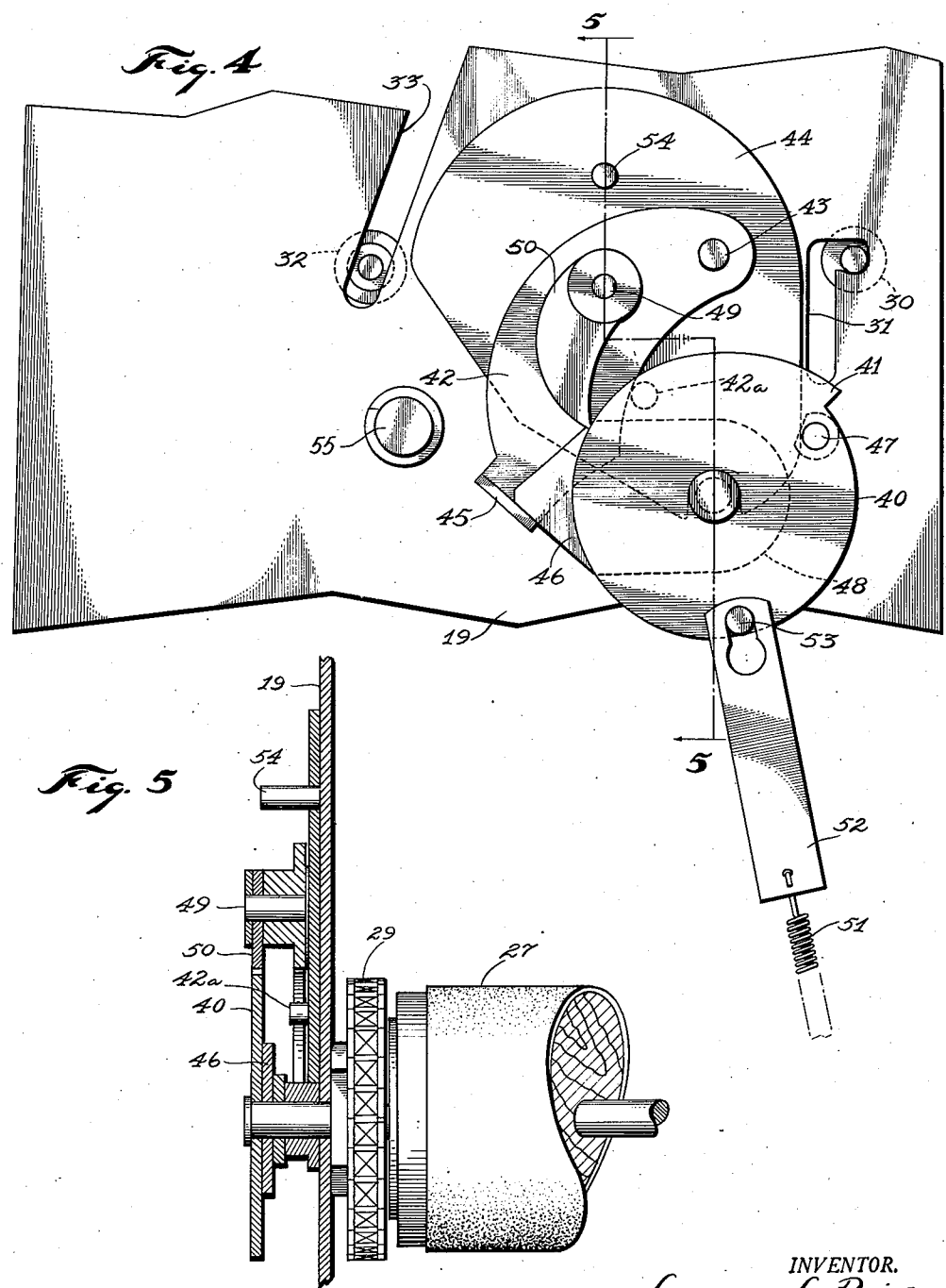
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Laurence L. Price
BY *Hazard & Miller*
Attorneys

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TOWEL DISPENSER

Laurence L. Price, Los Angeles, Calif.

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9 Claims. (Cl. 312—38)

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This invention relates to improvements in towel dispensers.

A primary object of the invention is to provide a novel, simple, and highly durable arresting mechanism which will momentarily arrest withdrawal of the toweling from the dispenser and thereafter immediately clear itself to enable a subsequent length of toweling to be withdrawn. By momentarily arresting the withdrawal of the toweling wastage of toweling is avoided.

Another object of the invention is to provide a towel dispenser which has a novel drag means for imposing a drag on the soiled toweling as it proceeds to the windup roll which is highly advantageous in that it causes the soiled toweling to be tightly wound on the windup roll which is highly desirable and even in the event that the toweling should become twisted as it progresses toward the windup roll, the drag plate will cause the soiled toweling to be wound up smoothly and evenly on the windup roll.

Another object of the invention is to provide a towel dispenser which provides a chamber adapted to receive a roll of clean toweling and behind which there is a partition that keeps the soiled toweling as it progresses toward the windup roll from contacting the clean toweling, the partition being characterized by the fact that it is hingedly mounted or swingably mounted adjacent its upper edge enabling it to be swung forwardly and upwardly beneath the measuring roll thus providing ready access to various parts of the dispenser in threading the toweling and in mounting or detaching the cabinet on a wall.

Another object of the invention is to provide a novel means for installing the working parts of the dispenser within a towel cabinet.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a perspective view of the improved towel dispenser, the working parts or chassis being shown as having been removed from the cabinet;

Fig. 2 is a transverse vertical section through the improved dispenser, parts being broken away;

Fig. 3 is a view in side elevation of the arresting mechanism illustrating in full lines the measuring roll as having been arrested and in dotted lines the position assumed by the parts immediately after the measuring roll has had its forward

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rotation arrested and the tension on the toweling has been released;

Fig. 4 is a view similar to Fig. 3, but illustrating the position of the parts wherein the mechanism has been readied for arresting forward rotation of the measuring roll; and

Fig. 5 is a sectional view taken substantially upon the line 5—5 upon Fig. 4, in the direction indicated.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved towel dispenser comprises a suitable cabinet generally indicated at 10, and which is of box-like structure. The forward wall of this cabinet is provided by two doors 11 and 12. The upper door 11 is swingably mounted on vertical hinges and is adapted to cover the upper portion of the forward side of the cabinet. This door may carry a mirror on its forward side. The lower door 12 is hingedly connected to the bottom of the cabinet by horizontal hinges 13. Its upper edge is beveled and recessed as at 14 below end extensions 15. These end extensions are engageable with the bottom of the upper door 11 when both doors are in closed position so that when the upper door 11 is locked closed, such as by the lock 16, it will lock the lower door 12 in closed position. The bottom edge of the upper door 11 is also beveled off as at 17 and cooperates with the top edge of the lower door 12 to provide a horizontally extending slot through which the clean toweling is withdrawn from the cabinet to form a suspended loop L, see Fig. 2. Near the end walls of the cabinet there are pairs of spaced angle irons 18 which provide guides for the bottom edges of spaced frame plates 19 and 20. Spacing brackets 21 are secured in the cabinet on the end walls thereof and are apertured as at 22 to receive bolts, not shown, that are extended through apertures 23 in the frame plates 19 and 20 to fasten the frame of the dispenser within the cabinet. The bottom wall of the cabinet has an opening 24 therein near its rear wall through which the soiled toweling from the loop L reenters the cabinet.

The cabinet is designed to be mounted on a wall either by means of screws or the equivalent extending through inverted keyhole slots 25 or by means of screws 26 that are extended through apertures somewhat lower down.

The end plates 19 and 20 of the frame are connected by a measuring roll 27 and a rewind roll 28. Both of these rolls have trunnions extending through the end plates and are preferably covered with emery cloth, sandpaper, or the

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equivalent, so as to have a strong frictional engagement with the toweling that passes thereover. These two rolls each have sprockets thereon which are disposed adjacent the inner face of the end plate 19 and an endless chain 29 is trained over these two sprockets. As the sprockets are of the same size and the two rolls 27 and 28 are of the same size, the toweling as it is withdrawn will rotate the measuring roll 27. The roll 28 will be driven thereby and will cause the toweling to wind up to the same extent that it is withdrawn so that the length of the loop L is maintained constant.

In association with the measuring roll 27 there is a pinch roll 30, the trunnions of which are rotatable in angular slots 31 in the end plates 19 and 20. This pinch roll descends by gravity in these slots and will press the toweling against the upper forward side of the measuring roll 27. The windup roll 32 has trunnions disposed in openings 33 in the end plates and descends by gravity therein toward the windup roll 28. A partition 34 is hingedly or swingably mounted on a transversely extending bar 35 that connects the end plates and is suspended therefrom. This partition thus cooperates with the lower door 12 in defining a chamber between the end plates adapted to receive a supply roll of clean toweling T. From this supply roll the toweling is brought upwardly over the forward side of the measuring roll and is then trained about the pinch roll 30. From the pinch roll it passes out of the cabinet through the horizontal slot provided between the doors 11 and 12. In training the toweling around the pinch roll the pinch roll may be lifted in the slots 31 to facilitate drawing the toweling around it. However, when allowed to drop by gravity against the measuring roll, tensions applied to the loop L will be effective to draw the pinch roll downwardly against the measuring roll and thus assure of a good frictional engagement between the toweling and the measuring roll. After passing through the loop L the toweling reenters the cabinet through the opening 24 and is pressed downwardly against the top of the partition 34 by means of a drag plate 37. This drag plate is pivotally mounted at its ends on the end plates 19 and 20 and is urged downwardly by means of a tension spring 38. At the extreme ends of the drag plate there are upstanding sides 39 which tend to confine the toweling at its edges. After passing beneath the drag plate 37 the toweling is wound about the windup roll 32 which, as its trunnions can freely slide downwardly through the openings 33, rests by gravity on the rewind roll 28. As this roll presents a rough surface, it is in strong frictional engagement with the toweling that is wound on the roll 32 thus causing the roll 32 to rotate and draw the toweling from beneath the drag plate 37 with the result that the toweling is very tightly wound on the roll 32 which is highly desirable. Even if the toweling should become twisted I find that the presence of the drag plate causes the toweling to be wrapped tightly and smoothly on the windup roll 32. A separator or partition 36 adjacent the measuring roll keeps the soiled toweling on the windup roll from contacting the clean toweling around the pinch roll.

An important feature of the present invention resides in the mechanism for temporarily arresting withdrawal of the toweling from the measuring roll 27. To this end, the shaft of the measuring roll extends through the end plate 19 and is equipped at its outer end with a disc 40 having

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on its periphery a single rearwardly directed tooth 41. A first stop, generally indicated at 42, is pivoted at 43 on a plate 44 that is mounted on the outer side of the end plate 19. This stop carries an outwardly extending flange 45 that is engageable by a second stop 46. Downward swinging movement of the first stop 42 is limited by a stop pin 42a. The stop 45 is mounted for swinging movement on the extension of the shaft of the measuring roll and is located behind the disc 40. On the rear or inner side of the disc 40 adjacent the tooth 41 there is an inwardly extending boss or lug 47 which is engageable with the edge 48 of the second stop 46 so that although the second stop 46 may swing rather freely with relation to the extension of the shaft of the measuring roll its rotation is limited by this boss. On the first stop 42 there is pivoted at 49 a pawl 50 which rides on the periphery of disc 40 and which is engageable with its single tooth 41. A tension spring 51 is connected to the end plate 19 and by means of a spring hanger 52 is connected to an outwardly extending pin or boss 53 on the disc 40. This tension spring is effective to urge the disc 40 and consequently the measuring roll 27 in a reverse direction during one-half of a revolution of the disc 40, but is effective to urge the disc and the measuring roll in a forward direction during the other half revolution.

The operation of the above-described construction is substantially as follows:

Assuming that the cabinet has been loaded and is ready for operation, tension applied to the loop L of the toweling is effective to cause rotation of the measuring roll 27 in a forward direction as indicated by the arrow on Fig. 2. At the start of the operation the second stop 46 is in the position wherein it is hanging from the extension of the shaft of the measuring roll or in the dotted line position shown in Fig. 3. As the measuring roll 27 commences its rotation the disc 40 is rotated therewith and during its rotation the boss or lug 47 engages the edge 48 on the second stop 46 and causes the second stop to rotate therewith. When the second stop 46 is carried by the boss or lug 47 through 180° or to a position wherein it is standing upwardly from the extension of the shaft of the measuring roll 27 the stop 46 will then fall forwardly until it encounters the flange 45 on the first stop as is illustrated in full lines on Fig. 3. As the measuring roll 27 continues its rotation the boss or lug 47 will eventually engage the edge 48 on the second stop 46 and as the second stop is restrained by the flange 45, continued rotation of the roll 27 and the disc 40 is thus arrested. In this position the tension spring 51 is effective to urge the disc 40 to reversely rotate as is illustrated in Fig. 3. Also, in this position it will be noted that the pawl 50 will have dropped behind the single tooth 41. The reverse rotation of the disc 40 by means of the spring 51 is permitted as soon as the tension on the toweling has been released. This reverse rotation is effective to cause the tooth 41 to push upwardly on the pawl 50 and to thus swing the first stop 42 until its flange 45 has engaged the extension 55 on the rewind roll 28 which serves as a stop limiting upward swinging movement of the first stop 42. In this position the pawl 50 will have shifted from the full line position to the dotted line position shown in Fig. 3, so that reverse rotation of the measuring roll is very small. When the first stop 42 has thus been swung from the full line position shown

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in Fig. 3 to the dotted line position shown therein, the flange 45 has been moved out of the path of the second stop 46 so that the second stop may then swing by gravity from the full line position shown in Fig. 3 to the dotted line position shown therein. This clears the mechanism for a subsequent operation. Consequently, when a subsequent tension is applied to the toweling sufficient to overcome the reverse rotational effort of the spring 51 the measuring roll and the disc 40 can then proceed on their forward movement inasmuch as the edge 48 on the second stop 46 has advanced ahead of the boss or lug 47. At the start of this forward rotation the single tooth 41 recedes from the pawl 50 allowing the first stop to drop by gravity from the dotted line position shown in Fig. 3, to the full line position wherein its flange 45 is returned to the path of the second stop when the second stop 46 is subsequently picked up by the boss or lug 47 and returned to the full line position shown in Fig. 3. It will thus be appreciated that by applying a tension to the toweling hanging in front of the cabinet a suitable length of toweling as measured by the measuring roll can be withdrawn. This continues until the boss 47 engages the edge 48 on the second stop which temporarily arrests further rotation of the measuring roll. When the tension on the toweling is then released, spring 51 reversely rotates the measuring roll and the disc 40 for a very short distance that is sufficient to cause pawl 50 to shift the first stop 42 out of engagement with the second stop 46 thus clearing the mechanism for a subsequent operation.

It is preferable to have the first stop 42 and the pawl 50 urged to return to the full line position shown in Fig. 3 by gravity and it is also desirable to have the second stop 46 returned from the full line position shown in Fig. 3, to the dotted line position shown therein by gravity when the first stop is moved to its dotted line position shown in Fig. 3. However, it is contemplated within the scope of the invention to use springs to urge these parts into their respective positions either in lieu of gravity or cooperative therewith. By having these parts arranged to function by gravity the device is rendered somewhat simpler in construction and there are fewer parts to get out of order.

It will be appreciated by those skilled in the art that the improved construction is highly advantageous in that the arrangement is such as to facilitate threading of the toweling when a new supply roll T is installed. The free end of the toweling is merely drawn upwardly over the measuring roll and brought around the pinch roll 30 which can be elevated in the slots 31 to facilitate this application. After then being drawn through the slot between the doors to form the loop L it is then inserted upwardly through the opening 24. The ability of the partition 34 to be swung forwardly and upwardly from an axis about its upper edge facilitates the insertion of the free end beneath the drag plate 37 after which it is started on its winding on the windup roll 32. It is desirable to have a pin 54 projecting outwardly adjacent the pawl 50 to limit rotation of the pawl with respect to the first stop. This pin may also be employed to limit swinging movement of the first stop in the event that the trunnion or shaft end of the rewind roll is not extended through the plate 19 to serve as a stop-limiting movement of the first stop. In some constructions such as, for example, in paper towel dispensers, there is no occasion to use either

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a rewind roll or a windup roll and in this event the pin 54 is utilized to limit upward swinging movement of the first stop as well as to limit upward swinging movement of the pawl 50 with respect thereto.

The ability of the partition 34 to be swung upwardly and forwardly beneath the measuring roll also facilitates the driving of screws 26 or other fasteners in mounting the cabinet on a wall while the internal mechanism or chassis is mounted in the cabinet by means of the bolts extending through apertures 23 and through the brackets 21. If, in the course of usage, repairs are necessary, these bolts which extend through the apertures 23 and brackets 21 can be easily removed and the entire working mechanism can be slid forwardly between the pairs of angles 18 and a new mechanism inserted by way of replacement without disturbing in any way the mounting of the cabinet on the wall.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In a towel dispenser, a measuring roll rotatable as the toweling is dispensed, a stop mechanism actuated by and controlling the roll including mutually engageable stops, one of said stops being movable into and out of a position wherein it is engageable by the other stop, the other stop being movable by the measuring roll into a position engageable with the first stop, means for automatically reversing the measuring roll after the stops have mutually engaged and tension on the toweling has been released, and means operable by reverse movement of the roll for causing the first stop to clear the second stop during the reverse movement.

2. In a towel dispenser, a measuring roll, a first stop, a second stop movable by the measuring roll into engagement with the first stop, means for arresting rotation of the roll after the stops have mutually engaged, means for urging the measuring roll to reverse when the stops have engaged, means operable by reverse movement of the measuring roll for moving the first stop out of the path of the second stop and limiting reverse movement of the measuring roll, the second stop being urged to advance beyond the point of mutual engagement between the stops immediately when the first stop is moved out of its path, and the first stop being urged to return to its stop-engaging position upon further forward movement of the measuring roll.

3. In a towel dispenser, a measuring roll, a first stop normally urged into stop-engaging position, a second stop movable by the measuring roll into engagement therewith and serving when in engagement with the first stop to limit forward rotation of the measuring roll, means for urging the measuring roll to reversely rotate when the stops have engaged, means limiting reverse rotation of the measuring roll, and means operable by the reverse rotation of the measuring roll for moving the first stop out of stop-engaging position.

4. In a towel dispenser, a measuring roll, a first stop normally urged into stop-engaging position, a second stop movable by the measuring roll into engagement therewith and serving when in engagement with the first stop to limit forward rotation of the measuring roll, means for urging the measuring roll to reversely rotate when the stops have engaged, means limiting reverse ro-

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tation of the measuring roll, and means operable by the reverse rotation of the measuring roll for moving the first stop out of stop-engaging position, the second stop being biased to advance beyond stop-engaging position.

5. In a towel dispenser, a measuring roll, a first stop normally urged into stop-engaging position, a second stop movable by the measuring roll into engagement therewith and serving when in engagement with the first stop to limit forward rotation of the measuring roll, means for urging the measuring roll to reversely rotate when the stops have engaged, means limiting reverse rotation of the measuring roll, and means operable by the reverse rotation of the measuring roll for moving the first stop out of stop-engaging position, the second stop being biased to advance beyond stop-engaging position, and the first stop being biased to return to stop-engaging position when released to do so by further forward movement of the measuring roll.

6. In a towel dispenser, a measuring roll, a disc rotatable therewith, a first stop, a second stop rotatable with the measuring roll and having a limited rotary movement relatively thereto and adapted to engage the first stop, a lug on the disc engageable with the second stop when the stops are in engagement to arrest rotation of the measuring roll, means urging the measuring roll to reversely rotate upon engagement between the stops, and means operable by reverse rotation of the measuring roll for moving the first stop out of engagement with the second stop and limiting reverse rotation of the measuring roll.

7. In a towel dispenser, a measuring roll, a disc rotatable therewith, a first stop, a second stop rotatable with the measuring roll and having a limited rotary movement relatively thereto and adapted to engage the first stop, a lug on the disc engageable with the second stop when the stops are in engagement to arrest rotation of the measuring roll, means urging the measuring roll to reversely rotate upon engagement between the stops, and means operable by reverse rotation of the measuring roll for moving the first stop out of engagement with the second stop and limiting reverse rotation of the measuring roll, the second stop being biased to advance beyond stop-engaging position.

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8. In a towel dispenser, a measuring roll, a disc rotatable therewith, a first stop, a second stop rotatable with the measuring roll and having a limited rotary movement relatively thereto and adapted to engage the first stop, a lug on the disc engageable with the second stop when the stops are in engagement to arrest rotation of the measuring roll, means urging the measuring roll to reversely rotate upon engagement between the stops, and means operable by reverse rotation of the measuring roll for moving the first stop out of engagement with the second stop and limiting reverse rotation of the measuring roll, the second stop being biased to advance beyond stop-engaging position, and the first stop being biased to return to stop-engaging position when released to do so by further forward movement of the measuring roll.

9. In a towel dispenser, a measuring roll rotatable as the toweling is dispensed, a stop mechanism actuated by and controlling the roll including mutually engageable stops, one of said stops being movable into and out of a position wherein it is engageable by the other stop, the other stop being movable by the measuring roll into a position engageable with the first stop, and means for automatically reversing the measuring roll after the stops have mutually engaged and tension on the toweling has been released, the first stop being allowed to advance beyond stop engaging position during the reverse movement of the roll.

LAURENCE L. PRICE.

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