Aug. 13, 1929. F. G. STEINER 1,724,228

FEED CONTROL DEVICE FOR TOWEL CABINETS

Filed Feb. 10, 1927 2 Sheets-Sheet 1

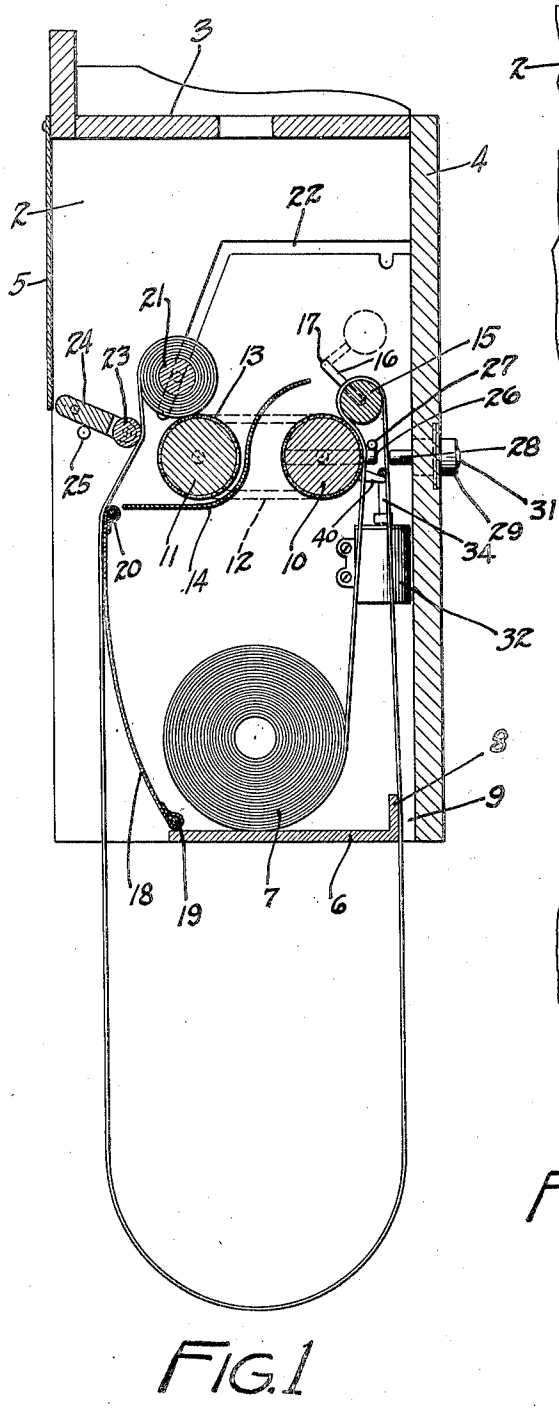


FIG. 1

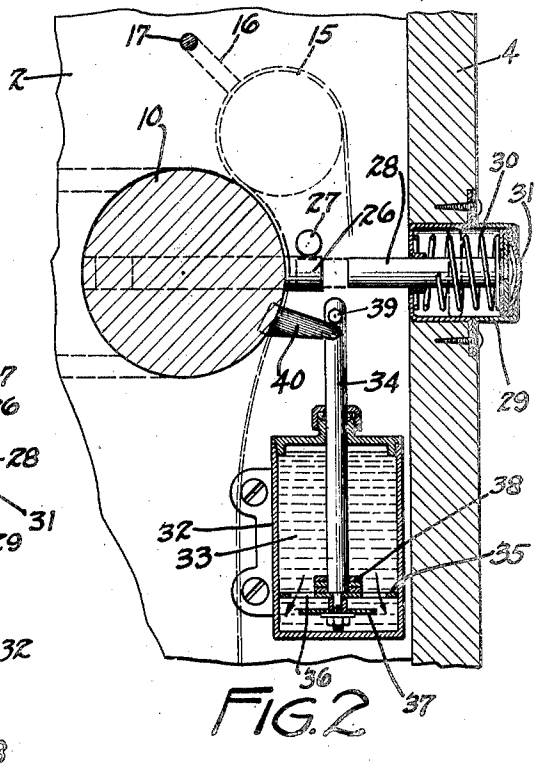


FIG. 2

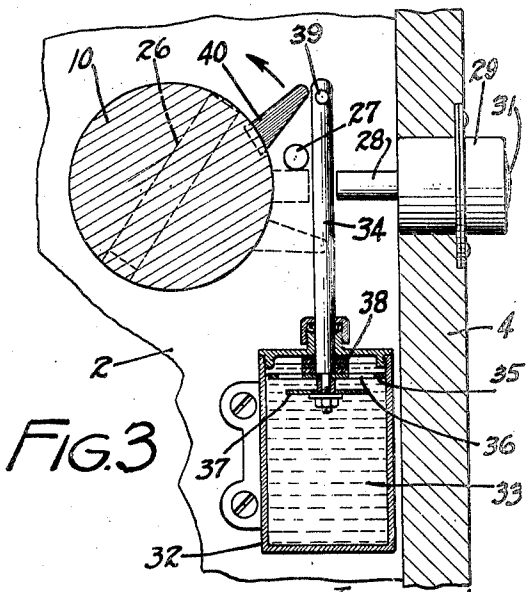


FIG. 3

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FEED CONTROL DEVICE FOR TOWEL CABINETS

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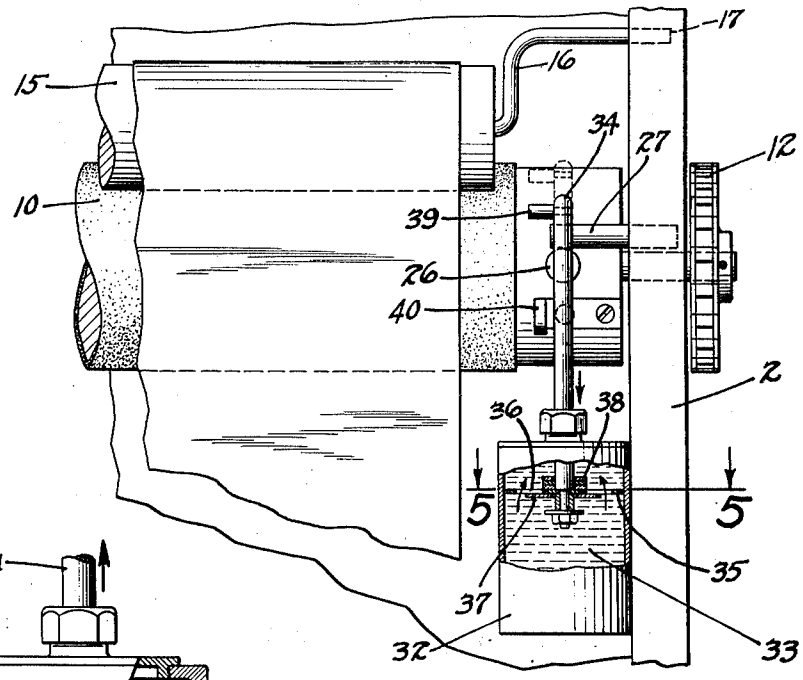


FIG. 4

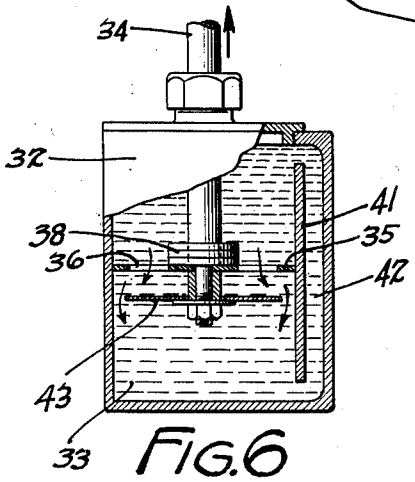


FIG. 6

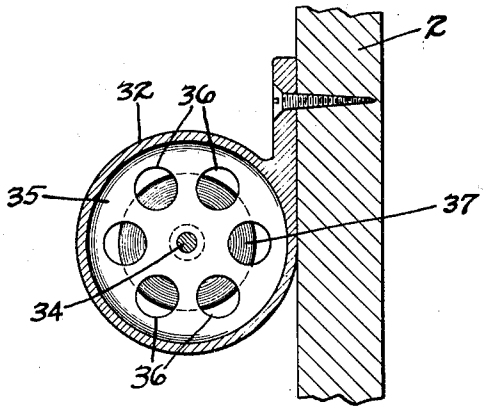


FIG. 5

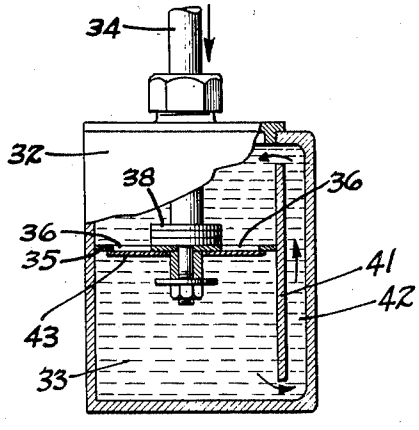


FIG. 7

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UNITED STATES PATENT OFFICE.

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FEED-CONTROL DEVICE FOR TOWEL CABINETS.

Application filed February 10, 1927. Serial No. 167,256.

My invention relates to devices for vending or delivering a web of clean towel to the user thereof and may be incorporated in either the wall type of cabinet or one of the floor or stand type as occasion may require.

In cabinets for delivering or vending towels provision is usually made for locking the feed delivery roll to prevent feeding of the towel web until the roll is released. The locking device is connected with the roll in position to be manipulated by the finger of the towel user and if the roll is adapted to make a complete or partial revolution after each release before being checked then the towel user by repeated manipulations of the locking device can continue to draw out clean lengths of towel as fast as he can revolve the feed roll and operate the locking device. This is objectionable as a maliciously and mischievously inclined person might pull out a very much longer length of clean towel than he needed for any purpose and thereby the cabinet would soon become empty of the clean towel and other prospective users would be denied its use and the purpose of the cabinet would be defeated.

The object, therefore, of my invention is to provide a controlling means for the delivery feed roll which will positively prevent repeated operations of the locking device and release of the delivery feed roll and necessitate the elapse of a predetermined period of time between one manipulation of the roll release mechanism and the next operation thereof.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming a part of this specification,

Figure 1 is a vertical sectional view through a towel cabinet embodying my invention;

Figure 2 is an enlarged detailed sectional view of the releasing mechanism and the timing device by means of which the operation of the release mechanism is controlled, showing the normal position of the parts;

Figure 3 is a similar view illustrating the control device in position to prevent operation of the release mechanism;

Figure 4 is a view taken at right angles substantially to the section lines of Figures 2 and 3;

Figure 5 is a detailed sectional view on the line 5—5 of Figure 4;

Figure 6 illustrates a modified construction of the cylinder of the control mechanism; and

Figure 7 shows another view of this modification.

In the drawings, 2 represents the side walls of the cabinet; 3, the top thereof; 4, the door adapted to swing open to expose the interior of the cabinet and 5, a back plate which preferably is provided to close the upper rear portion of the cabinet. A plate or shelf 6 is provided in the bottom of the cabinet whereon the supply of towel 7 may be placed. The front of this shelf has a ledge 8 between which and the door 4 is a gap or passage 9 wherein the web of clean towel hangs in a loop below the cabinet. 10 and 11 represent delivery and take up feed rolls having bearings in the side walls of the cabinet and provided with a driving connection such as a sprocket chain 12 between them. These rolls are of substantially the same diameter and have the same peripheral speed and the rear roll is driven from the forward one and I may arrange these rolls horizontally; that is, on substantially the same level to economize the vertical space in the cabinet, but do not wish to confine myself to this arrangement as the rolls may have a different relative position, if preferred. The surfaces of these rolls are adapted to cling or adhere to a towel web and generally may be sanded as indicated at 13 but instead of this construction they may be covered with a suitable rubber material, or by any other suitable means roughened surfaces may be provided which will cling to the fibers of the towel web. A guard plate 14 is preferably provided between these rolls and serves to prevent the soiled web from contacting with the clean one. A pinch roll 15 is preferably provided with arms 16 pivoted at 17 in the side walls of the cabinet and whereon the pinch roll is adapted to swing vertically. Normally, this roll will move toward the delivery feed roll and when the web of clean towel is stretched upwardly between these two rolls, it will be pinched between them and the operator drawing down on the depending web from the pinch roll will re-

volve it and also the delivery feed roll and from this roll the take up roll will be operated also. A guard 18 preferably of suitable flexible material such as canvas is provided in the rear of the supply of clean towel and is preferably supported by a rod 19 near the rear of the shelf 6 and a corresponding rod 20 near the plate 14. The web of soiled towel is stretched upwardly in the rear of this guard, the hand of the operator pressing the guard forwardly during the operation so that sufficient room is provided for conveniently inserting the hand and the end of the loose web is passed around a take up roll 21 that is mounted in guides 22 in the side walls of the cabinet. This roll is adapted to slide down in its guides toward the take up feed roll and the contact of the soiled towel convolutions with the take up feed roll will cause the revolutions of the take up roll to wind the towel web therein synchronously with its delivery from the towel supply. A tension roll 23 is preferably mounted in a pivoted support 24 which is adapted to bear on the soiled towel web and operate as a means for stretching it and putting it slightly under tension before it reaches the take up roll. A stop 25 limits the downward movement of this tension device.

The delivery feed roll has a bolt 26 mounted to slide transversely of the axis of the roll and normally this bolt has one end projecting outwardly in position to contact with a stop 27 in the wall of the cabinet and positively lock the feed roll against movement and delivery of the clean towel web; the bolt 22 should, of course, be provided with means to prevent it from falling out of the transverse hole in the feed roll 10 when said roll is revolved. A release plunger 28 is mounted in a suitable casing 29 in the door of the cabinet and is normally held in a retracted position by the tension of a spring 30. When the operator applies his finger to a cap 31 at the outer end of the plunger, he may force it inwardly to disengage the bolt 26 from the stop 27 and thereupon the delivery feed roll will be released and may be revolved and when the sliding bolt has reached a predetermined point in a revolution of the roll, it will slide by gravity outwardly to a point where it will contact with the stop 27 and positively check a second consecutive revolution of the feed roll. It would be possible for a person standing in front of the cabinet to force in the plunger 28 and release the bolt 26, draw out a length of towel and then when the revolution of the roll was completed release it again and continue the operation until the entire length of towel was exhausted. To prevent such manipulation by any mischievously or maliciously inclined person, I provide a means whereby when the delivery feed roll is once released a predetermined time must elapse before the release mechanism can be operated again and this predetermined time may be increased or decreased as may best suit the desires of the attendant in charge of the cabinet. Various devices may be provided for this purpose but I prefer the simple mechanism shown herein which consists of a cylinder 32 secured by suitable means to the wall of the cabinet and adapted to contain a suitable inelastic fluid 33. A plunger rod 34 is mounted to slide in the head of the cylinder and has a disk 35 thereon provided with holes 36 through which the inelastic fluid may flow. A second disk 37 is mounted below the disk 35 and spaced therefrom and is adapted to slide on the rod 34 to and from the holes 36 and serves to obstruct to some extent the free flow of the liquid through these holes by partially covering them upon the down stroke of the plunger rod. I also prefer to provide washers 38 on the stud 34 made of suitable metal and operating as a means for aiding or accelerating the downward movement of the plunger rod in the cylinder. The upper end of the rod 34 extends to a point near the bolt 26 and the release plunger 28 and is provided with a stud 39 in the path of a finger 40 on the delivery feed roll. Normally the finger will contact with the stud when the locking bolt 26 is in its locking position as indicated in Figures 1 and 2. When the operator begins to pull on the towel web after releasing the delivery feed roll the revolution of the roll through the engagement of the finger 40 and the stud 39 will raise the plunger rod 34 to a position in the path of the release plunger 28 and positively prevent the operation of this plunger and release of the bolt 26 until a certain period of time has elapsed after the disengagement of the finger 40 from the stud 39 which disengagement will take place at a predetermined point in the initial revolution of the delivery feed roll as indicated in Figure 3 of the drawing. As soon as the plunger 34 is released, its weight and the weight of the disk in the cylinder will cause it to settle down in the inelastic fluid contained in the cylinder, the speed of descent depending upon the character of the liquid in the cylinder and the size or number of the holes in the disk through which the fluid must flow as the plunger rod descends. This timing movement will be regulated by the time the attendant thinks should elapse between the operation of the release plunger and the delivery of towel and the next operation and in any event it is intended to be of such length that the same person having once released the delivery roll and obtained a length of towel will have no inclination to stand and wait for the mechanism to again become operative so that he can again press

in the release plunger and free the delivery feed roll. The length of stroke of the plunger rod may also be a factor in determining the period of time which must elapse between the release operations. All this may, of course, be varied to suit different conditions as they may arise.

In Figures 6 and 7, I have shown a modification which consists in providing a wall 41 in a cylinder forming a by-pass 42 leading around the plunger disk and providing an increased flow of the fluid from one side to the other of the disk. Figure 7 illustrates how all the inelastic fluid is compelled to flow through the by-pass, on the down stroke of the plunger 34, the disk 43 being imperforate or closed to the passage of the fluid therethrough. The modification is, however, provided with the washer weights 38 which may be increased or decreased in number as the attendant or caretaker of the cabinet may find desirable. Figure 7 shows the position assumed by the disk 43 on the down stroke of the plunger. It will be evident upon an examination of these drawings that the user of the cabinet having released the delivery feed roll and operated the control mechanism will be utterly unable to again release the locking bolt and obtain a further length of clean towel until the control devise has moved out of the path of the release plunger and the interval of time required for such movement has elapsed. The length of such interval will, as explained, depend upon the construction of the cylinder and the means for allowing the flow of the inelastic fluid from one side to the other of the disk which may be attached to the reciprocating plunger rod.

I claim as my invention:

1. A towel cabinet comprising a roll, a lock therefor normally holding it from turning, means operative for releasing the lock, and time control means operative by the roll to be positioned in front of the releasing means to prevent operation of the releasing means until after a predetermined length of time from the time the roll is operated.

2. In a towel cabinet, delivery and take up feed rolls having a driving connection between them, a take up roll whereon a web of towel is wound for contact with the take up feed roll, a bolt slidable in said delivery feed roll, a stop for normally engaging said bolt and preventing revolution of said feed roll, a plunger device adapted to be operated by the towel user for moving said bolt to its release position and means adapted to be interposed in the path of said plunger device by the initial movement of said delivery feed roll to prevent the repeated operation of said plunger device until after a predetermined length of time following the first operation.

3. In a towel cabinet, a delivery feed roll, a locking device therefor, a release device adapted to be operated by the towel user, a plunger rod and cylinder therefor adapted to contain an inelastic fluid wherein said plunger rod is movable, a finger mounted on said feed roll and adapted to engage said plunger rod to move it into the path of said release device, said finger becoming disengaged from said plunger during the initial movement of said feed roll, said plunger preventing operation of said release device until after a predetermined interval.

4. In a towel cabinet, a roll, a device for locking said roll, a reciprocating means adapted to be operated by the towel user for engaging and moving said lock device to its release position, and means temporarily interposed between said locking device and said reciprocating means to prevent operation of the latter for a predetermined period following the initial movement of said roll.

In witness whereof, I have hereunto set my hand this 4th day of February, 1927.

FRANK G. STEINER.