

March 7, 1961

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2,973,958

PAPER TOWELING DISPENSER

Filed July 28, 1955

3 Sheets-Sheet 1

FIG. 1

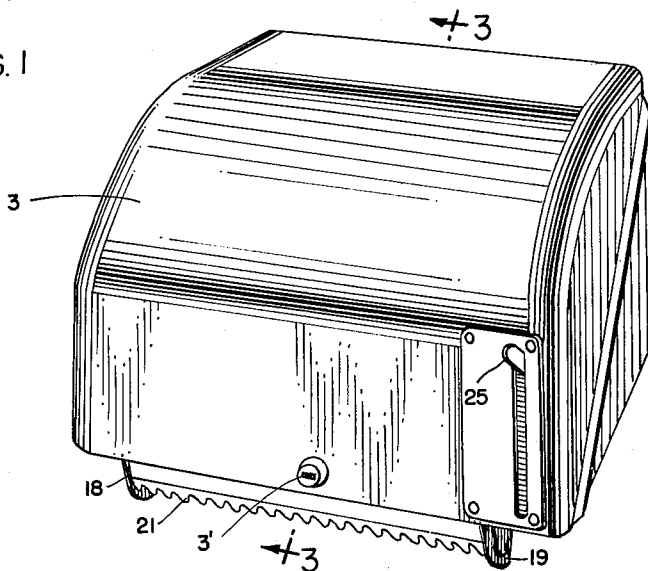
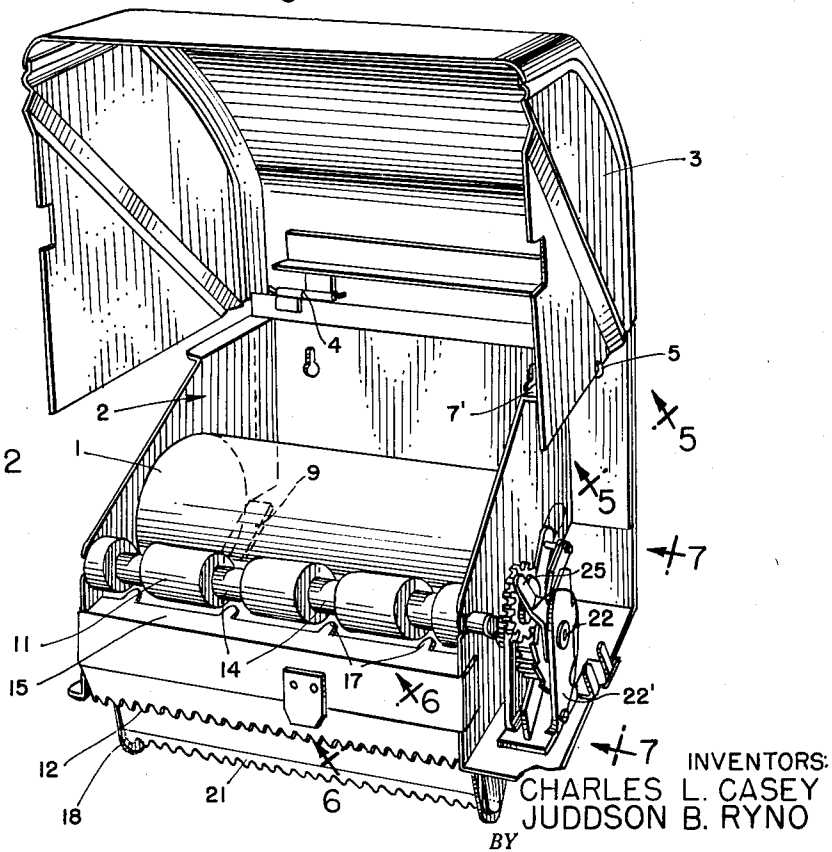


FIG. 2



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FIG. 3

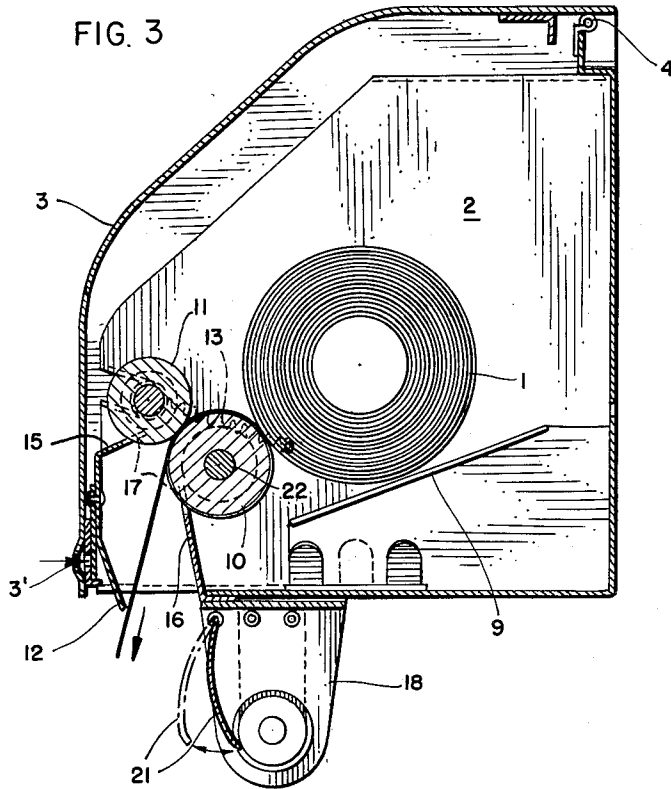


FIG. 5

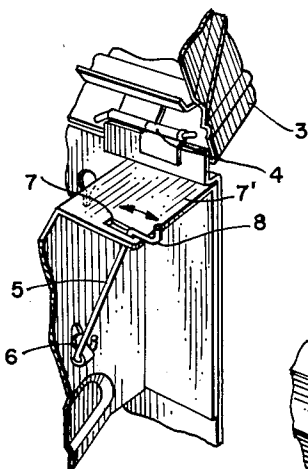


FIG. 4

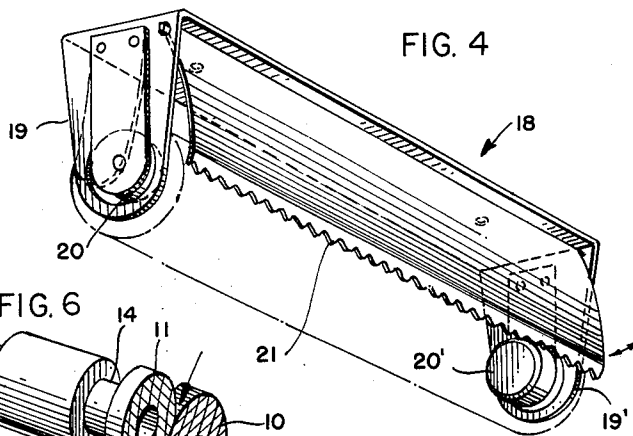
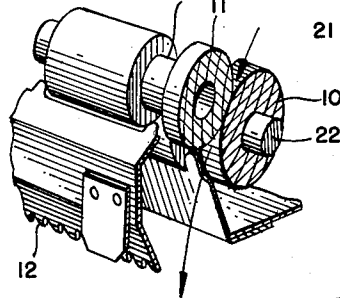


FIG. 6



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FIG. 7

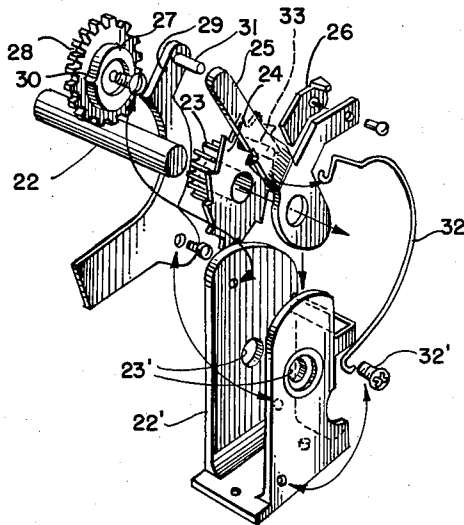


FIG. 8

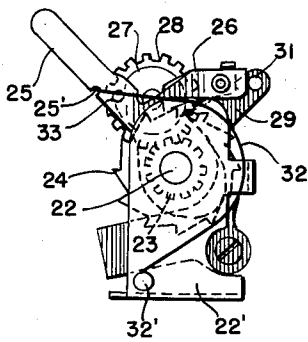


FIG. 9

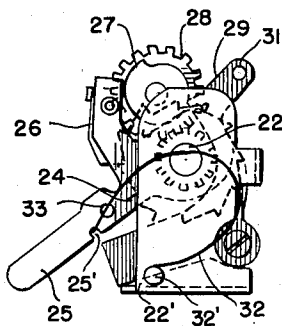


FIG. 10

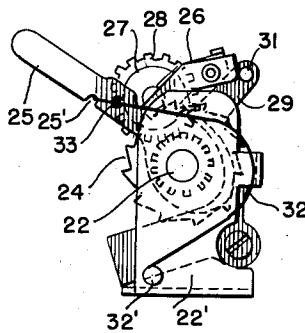


FIG. 11

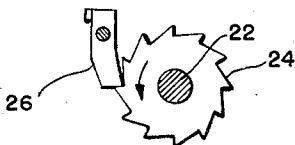
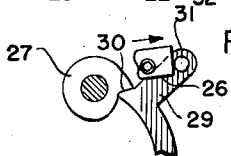


FIG. 12



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PAPER TOWELING DISPENSER

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5 Claims. (Cl. 226—130)

This invention relates to means for dispensing paper toweling, and more particularly to improved apparatus for dispensing paper toweling in predetermined amounts and in a general economical manner.

Paper toweling dispensers are widely used in washrooms frequented by the public and in washrooms frequented by employees of industrial plants and the like. In such locations it has proved economical to provide dispensers which permit only a predetermined amount of paper toweling to be withdrawn therefrom with each hand operation. Such washrooms are normally attended by a janitor who makes regular rounds and replaces rolls of toweling in the dispensers at periodic intervals. It has been found that when a janitor notices that a dispenser contains a roll with only a small remaining portion of toweling thereon that he is prone to replace that small remaining roll and to dispose of it.

It is an object of this invention to provide an improved dispenser for permitting only a predetermined amount of toweling to be withdrawn therefrom with a single hand operation.

It is a further object to provide a paper toweling dispenser having a principal holder for dispensing toweling, and having an auxiliary holder for effecting further economy by permitting a janitor or other attendant to place a small remaining portion of a toweling roll thereon and to thereby assure that it will be completely used.

Another object is to provide a paper toweling dispenser having a simple means for loading a storage cavity and having a pair of rollers frictionally engaging the toweling and permitting it to be controllably ejected from the dispenser.

A further object is to provide a complete and compact paper toweling dispenser wherein a cover mounted on hinges may be raised and self-supported for convenient replacement of a paper toweling roll.

According to this invention, the paper toweling is ejected from a storage cavity between two rollers which are frictionally engaged with the toweling. The rollers are turned by the operation of a hand lever thereby commencing an ejection of toweling; the rollers are then permitted to turn freely for a limited number of turns wherein means are provided to stop the rollers until the next successive hand operation.

Other objects and advantages of the invention will become apparent upon reading the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a perspective view of the toweling dispenser with the cover closed and illustrating the position of the hand lever;

Fig. 2 is a perspective view of the toweling dispenser showing the cover in a raised position, thereby exposing the interior and showing the operating mechanism;

Fig. 3 is a vertical transverse sectional view of the paper toweling dispenser taken along the line 3—3 in Fig. 1;

Fig. 4 is a perspective view of the structure of the

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auxiliary roll holder adapted to be attached beneath the principal toweling dispenser;

Fig. 5 is a fragmentary perspective view on an enlarged scale of a detail looking along the plane of line 5—5 in Fig. 2 and illustrating the manner of operation of the supporting means for holding the cover in a raised position;

Fig. 6 is a fragmentary perspective view on an enlarged scale of a detail looking along the plane of line 6—6 in Fig. 2 and showing the two rollers for frictionally engaging the paper toweling;

Fig. 7 is an exploded perspective view looking generally along the line 7—7 in Fig. 2 and illustrating the manner of assembly of the operating mechanism;

Figs. 8, 9, and 10 are end elevational views illustrating in detail the operating mechanism wherein it is shown in three separate positions of operation;

Fig. 11 is an end elevational view showing a detail of the means for turning the roller by operation of the lever and comprises a pawl engaging a ratchet wheel, and

Fig. 12 is an elevational view of a detail showing the stop means limiting the number of turns of the rollers and comprising a dog engaging a cam.

In the principal holder for a roll of paper toweling 1, a storage cavity 2 is enclosed by a cover 3 which is mounted upon hinges 4. For convenience of replacing rolls the cover 3 may be raised by inserting an appropriate key in the slot 3' to depress a catch therein provided. The cover may be supported in a raised position as shown in Fig. 2 by a wire member 5. This member 5 is pivotally supported by a linkage 6 with the frame of the dispensing unit. The member 5 extends diagonally upward through a slot or elongated hole 7 in a flange 7' (see Fig. 5) above which the member is bent into a stop portion 8. When the dispenser is mounted in its normally upright position and the cover 3 is raised, gravity will urge the member 5 against the outer end of the slot 7, and in such a position the part 8 will engage and support the cover 3, as shown in Fig. 2.

With the cover in a raised position, a roll of toweling may be placed within the storage cavity 2 where it will rest upon inclined end supports 9 and will settle naturally against a roller 10 (Fig. 3). The end of the toweling is then fed between the rollers 10 and 11 and permitted to protrude from the dispensing unit past the sawtooth cutting edge 12. The roller 11 is urged against the roller 10 by a spring 13 and the toweling therebetween is frictionally engaged with both rollers. Rollers 10 and 11 are of cylindrical form with several smaller diameter sections 14. Paper guide members 15 and 16 are provided with fingers 17 which extend into the smaller diameter portions 14 of the rollers 10 and 11. The fingers 17 assure that the paper toweling will not adhere to a roller and be carried around with it beyond the limits provided by the guide members 15 and 16.

An auxiliary roll holder 18 may be positioned beneath the principal holder. This holder comprises a pair of end supports 19 and 19' upon which are mounted protruding parts 20 and 20' for insertion into the ends of a roll of toweling and for support thereof. The auxiliary roll holder 18 is further provided with a sawtooth tearing edge 21 which is hinged to lie against the roll as it is used and varies in diameter. In replacing a roll in the principal holder, the janitor may remove a small remaining part of a roll of toweling, and by placing it upon the auxiliary holder, he assures a further economy inasmuch as that remaining portion of toweling will thereby be used.

The mechanism for dispensing paper toweling in predetermined amounts is shown in detail in the exploded view, Fig. 7, and in side elevation in Figs. 8, 9 and 10.

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A shaft 22 is secured to the roller 10 and extends through the mechanism supporting a gear 23, a ratchet wheel 24 and a hand lever 25. A U-shaped supporting bracket 22' is provided with holes 23' into which the shaft 22 is journaled. The gear 23 and the ratchet wheel 24 are mounted on and secured to the shaft; the hand lever 25 is mounted to pivot about the shaft, but is not secured thereto.

The lever assembly 25 supports a pawl 26 for engagement with the ratchet wheel 24 as the lever 25 is depressed from its normal position. Therefore, when the lever 25 is depressed the ratchet wheel is turned, the roller 10 is correspondingly turned, and the leading edge of the paper toweling, which is frictionally engaged with the roller 10 by pressure of the roller 11, is ejected from the dispenser past the sawtooth tearing edge 12. Release of the lever 25 moves pawl 26 in the opposite direction without movement of the ratchet wheel. The toweling may then be grasped and pulled downward, thereby further turning the roller 10 until a predetermined amount of toweling has been ejected.

The means for limiting the amount of toweling to be dispensed includes a cam 27. The cam 27 is fixed to a gear 28 rotatably mounted on the U-shaped support 22' and which engages the gear 23 mounted on the roller shaft 22. As the roller turns in a counter-clockwise direction as viewed in Figs. 8, 9 and 10, the cam 27 likewise turns but in a clockwise direction. Two separate means are provided for engaging the cam and stopping its rotation and the corresponding ejection of paper toweling. One such means is a dog 29 which is urged by gravity towards engagement with the cam 27. When the dog 29 rides against the cam 27, engagement with a stop part 30 of the cam occurs, as illustrated by Fig. 12, when the cam is turned to the limiting position so shown.

The dog 29 is provided with a stop 31 for engagement with a part of the pawl 26 which is mounted upon the lever 25. An arcuate spring 32 has one end thereof fastened to the U-shaped bracket 22' by means such as a machine screw 32', and has the other end thereof formed in a hook and engaged in a notch 25' on the lever 25. The lever 25 is thus urged into a normal upper position by the spring 32 and in that position a part of the pawl 26 engages the stop 31 of the dog 29, as seen in Fig. 8, and causes the dog 29 to disengage from the cam 27. Therefore, the dog 29 engages the cam 27 and limits the amount of turning of the roller 10 when the lever 25 is depressed, but when the lever 25 is in its normal position the dog 29 is not permitted to engage the cam 27.

A second means for limiting the turning of the roller 10 and of the cam 27 is provided by a stop 33 fixed upon the lever 25. The stop 33 will engage the cam 27 only when the lever 25 is in its normal upper position. When the lever 25 is in its uppermost position where the dog 29 is out of engagement with cam 27, and the cam is rotated clockwise a sufficient distance, the stop 30 thereon will come against the stop 33. It will be appreciated, therefore, that the rotation of the cam 27 will be limited either by means of the dog 29 or by means of the stop 33, depending upon the positioning of the lever 25.

To more clearly demonstrate the manner in which the dispensing mechanism operates, we may study Figs. 8, 9 and 10, which illustrate the mechanism in successive steps of operation. In Fig. 8 prior to the commencement of the dispensing operation, the lever 25 is in its normal uppermost position and the stop 33 is in engagement with and restrains the cam 27. In this position the roller 10 is held stationary, and by its frictional engagement with the paper toweling it prevents any ejection thereof.

During the downward movement of lever 25 to the position thereof as shown in Fig. 9, pawl 26 pivotally carried thereby will engage and rotate ratchet wheel 24, gear 23, shaft 22 and roller 10 thereon, thereby ejecting a portion of the paper toweling. Since gear 23 is in mesh with gear 28, its rotation will also rotate gear 28 and cam 27 fixed thereto a short distance in a clockwise direction

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as viewed in Fig. 9. When lever 25 is released, the spring 32 will return it upwardly to the position thereof shown in Fig. 10 where stop 33 thereon engages against the edge of cam 27. In this position of the parts dog 29 is held out of the path of movement of stop 30 on cam 27 as heretofore explained, so that the toweling may be grasped at its leading edge and pulled outwardly, whereupon the rollers 10 and 11 will be rotated. This movement will also rotate cam 27 until stop 30 thereon engages stop 33 on lever 25, thus limiting the amount of toweling to be ejected for any one cycle.

The purpose of the dog 29 is to prevent a person from withdrawing an unlimited or excessive amount of toweling while holding the lever 25 depressed. As mentioned above, when lever 25 is depressed, pawl 26 is moved away from stop 31 on dog 29, thus allowing it to move by gravity against cam 27 and into the path of movement of stop 30 thereon. If the lever 25 is depressed and is held in that position while the toweling is withdrawn by hand, such withdrawal will rotate rollers 10 and 11 and cam 27 to the point where stop 30 thereon will engage dog 29, as seen in Fig. 12. At this point further withdrawal of toweling will be prevented until lever 25 is released, whereupon further withdrawal will be permitted until stop 30 on cam 27 engages stop 33 on lever 25.

Although in the drawing and in the foregoing description, the shaft 22 is shown and described as a single unit extending through the roller 10 and through the operating mechanism within the U-shaped bracket 22'; it is obvious that the operating mechanism could be separately assembled having a shortened shaft adapted to be subsequently secured to the roller 10 in a later stage of assembly.

Changes may be made in the form, construction and arrangement of parts from those disclosed herein without in any way departing from the spirit of the invention or sacrificing any of the attendant advantages thereof, provided, however, that such changes fall within the scope of the claims appended hereto.

The invention is hereby claimed as follows:

1. Apparatus for dispensing paper toweling in predetermined amounts, said apparatus comprising a roller frictionally engaged against the toweling, a manually actuated member, means cooperating between said roller and said manually actuated member for turning said roller as said member is actuated, a first means for limiting the amount of turning of said roller, a second means for limiting the amount of turning of said roller, said first limiting means being operative when said manually actuated member is in a normal position and being disabled when said member is actuated, said second limiting means being disabled when said manually operated member is in the normal position and being operative when said member is actuated.

2. Apparatus for dispensing paper toweling in predetermined amounts, said apparatus comprising a roller frictionally engaged against the toweling, a lever adapted to be manually moved from a normal position, means cooperating between said roller and said lever to turn said roller when said lever is moved, means carried on said lever engagable with means connected to said roller to limit the amount of turning of said roller when said lever is in the normal position and further means engagable with said means connected to said roller for limiting the amount of turning of said roller when the lever has been moved away from its normal position.

3. Apparatus for dispensing paper toweling in predetermined amounts, said apparatus comprising a roller frictionally engaged against the toweling, a ratchet wheel mounted to turn with the roller, a manually operated member having means engaging and turning the ratchet wheel when said member is moved from its normal position, a cam coupled to rotate when the ratchet wheel and roller turn, a first means for engaging the cam and limiting the turning of the roller, and a second means for engaging the cam and limiting the turning of the roller, said

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first cam engaging means being coupled to the manually operated member and being operative to engage the cam only when said manually operated member is in a normal position, and means coupled between the manually operated member and the second cam engaging means to dis- 5
able the second cam engaging means when said manually operated member is in the normal position.

4. Apparatus for dispensing paper toweling in prede- 10
termined amounts, said apparatus comprising a roller frictionally engaged against the toweling, a ratchet wheel mounted to turn with the roller, a hand lever adapted to be depressed from a normal position, said lever having a pawl for engaging and turning said ratchet wheel as said lever is depressed, a cam geared to rotate as said 15
ratchet wheel and said roller turn, said lever having a stop engaging said cam when said lever is in the normal position, a dog mounted to engage the cam when the lever is depressed, the amount of rotation of said cam being limited by engagement of the cam with the stop on said lever when the lever is in the normal position and 20
by the dog when the lever is depressed.

5. Apparatus for dispensing paper toweling in economic amounts comprising a cavity for holding a roll of toweling, a first roller and a second roller for control- 25
lably ejecting toweling from the cavity, said second roller

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being urged against the first roller by spring loading to frictionally engage the toweling between said rollers, a lever adapted to be manually moved from a normal position, means cooperating between said lever and said 5
roller for turning said rollers when said lever is moved, means coupled to said lever to limit the turning of said rollers when said lever is in the normal position, further means for limiting the turning of the rollers when the lever is moved from the normal position.

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