May 28, 1940. P. A. WOOSTER 2,202,183

DISPENSING DEVICE

Filed Oct. 7, 1936

Fig. 1.

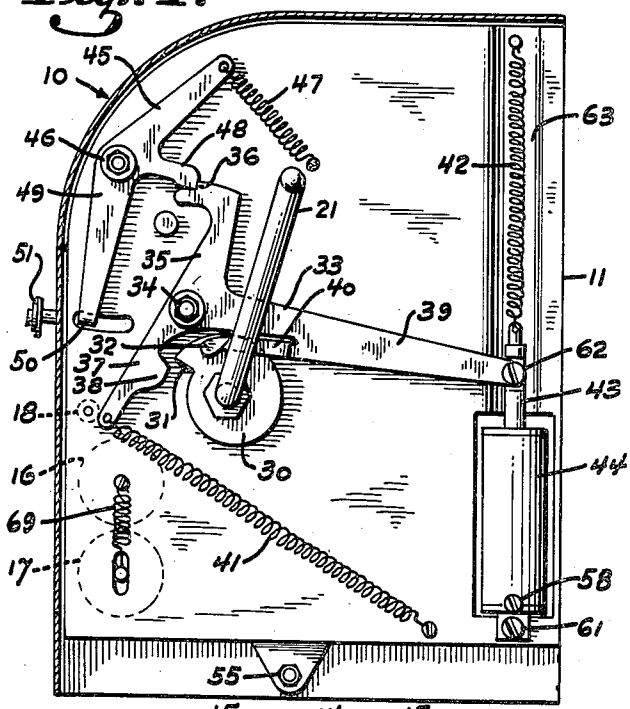


Fig. 3.

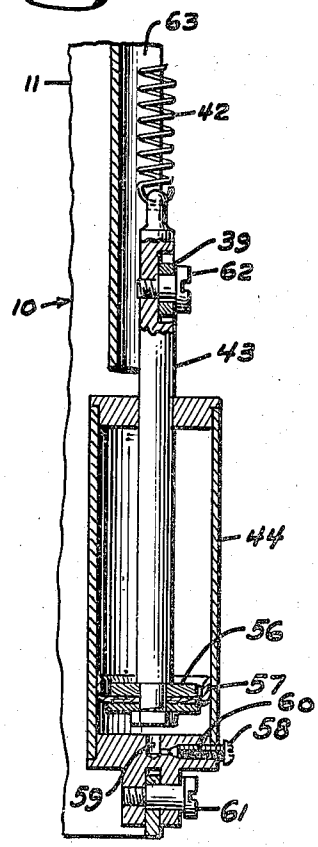
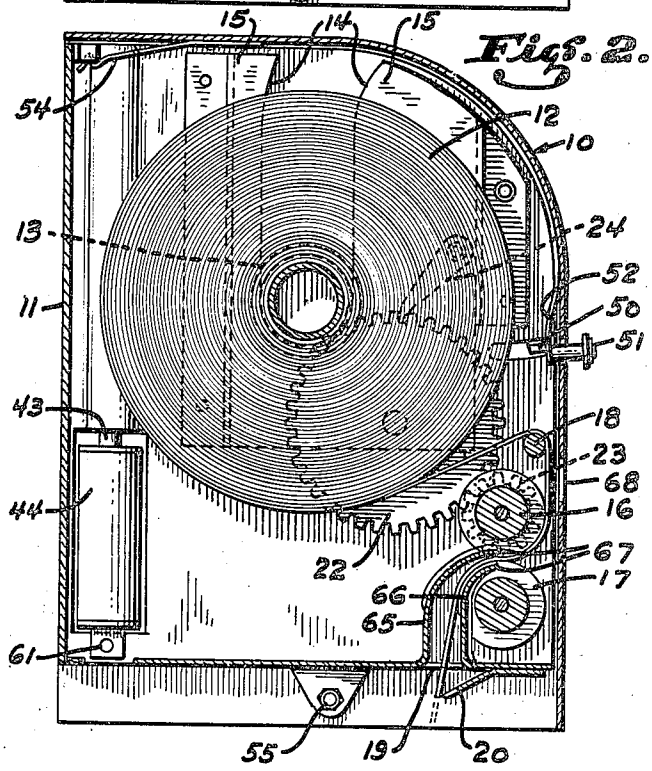


Fig. 2.



INVENTOR.
Philip A. Wooster.

BY
Chas. E. Townsend.
ATTORNEYS.

Patented May 28, 1940 2,202,183

UNITED STATES PATENT OFFICE

2,202,183

DISPENSING DEVICE

Philip A. Wooster, San Francisco, Calif.

Application October 7, 1936, Serial No. 104,456

2 Claims. (Cl. 271—2.3)

The present invention relates to improvements in dispensing devices, and particularly to improvements in devices for dispensing articles such as towels, napkins, paper cups, and the like.

Paper towels which are dispensed free of charge in public washrooms are usually of such size and material that a single towel, if properly used, will serve amply to dry the hands.

There are now in use various types of dispensing devices, designed to discourage the wasteful and improper use of toweling and the like that is furnished to the public free of charge.

There is one class of dispenser which, in order to prevent wasteful use, employs a time delay mechanism, effective upon dispensing one article to prevent operation of the dispenser until the lapse of a predetermined time period. This class of device is to some extent ineffective to prevent wasteful use, as in the case of towels for example, the first towel is used during the lapse of said time period and a second towel may be dispensed immediately when it is wanted. If the time period is made long enough to overcome this disadvantage there is likely to be undesirable delay in the dispensing of towels to successive patrons.

Other classes of dispensers are those in which some resistance is applied to retard the operation of the dispensing mechanism or the operation of a latch which controls said mechanism. Two such devices are described in detail in my copending applications Serial No. 84,308, filed June 9, 1936, and Serial No. 86,485, filed June 22, 1936, both entitled "Dispensing device".

The present invention contemplates the provision of a dispensing device which differs from all of the types above mentioned principally in that it comprises mechanism having a period of delay commencing with the release of a latch which controls the dispensing mechanism.

It is an object of the present invention to provide improvements in dispensing apparatus for the purpose of limiting the operation of the apparatus in a manner discouraging wasteful and improper use of the articles dispensed. It is a further object of the invention to provide a dispensing device in which a delay of predetermined duration will be effected between the release of a latch and operation of dispensing mechanism which is controlled by said latch. A still further object of the invention is the provision of simple, durable mechanism for dispensing toweling in measured quantities from a cabinet without wrinkling or mussing the towel and without the possibility of it becoming jammed or torn during the dispensing operation. Still further objects and advantages of the invention will be made apparent in the following specification, wherein reference is made to the accompanying drawing in which one form of the invention is exemplified.

In the drawing:

Fig. 1 is an end elevation of a towel dispenser embodying my invention and having the end wall of the casing removed to disclose the operating mechanism.

Fig. 2 is a vertical, transverse, sectional view looking from a point within the cabinet toward the end illustrated in Fig. 1, and

Fig. 3 is an enlarged sectional view of a vacuum cylinder which forms a part of the mechanism illustrated in Fig. 1.

The invention is illustrated in the accompanying drawing as applied to a well-known type of paper towel cabinet or dispenser, but it will become apparent as the description proceeds that the form of the invention disclosed in the drawing, as well as various modified forms thereof, is typical to the dispensing of cloth towels and many other types of dispensable articles.

In the drawing, a towel dispensing cabinet is generally indicated at 10. The cabinet has a flat back 11 adapted to be secured against the wall in a convenient position adjacent to a lavatory. A roll 12, of paper toweling, is disposed within the cabinet and supported for rotation so that the toweling may be unwound therefrom by a flanged journal member 13, shown in dotted lines in Fig. 2, received within the slot 14 of a bracket 15 secured to the inner side wall of the cabinet. The mechanism for supporting the roll of paper toweling for rotation is standard and any conventional mechanism may be employed for this purpose.

A pair of friction rolls is shown at 16 and 17 and directly above the uppermost friction roll 16 a guide bar 18 extends transversely of the cabinet in parallelism with the friction rolls. The bar 18 may be rotatably mounted, if desired, or may simply be provided with a polished surface to facilitate the sliding of the paper towel thereover. The toweling from the supply roll 12 is led over the top of the guide bar 18, thence between the friction rolls 16 and 17, and extends outwardly through a slot 19, formed in the bottom of the cabinet, where it passes over a serrated tearing edge 20 so that a length of toweling may be torn from the main supply after it has been advanced through the slot.

A crank 21, which is operable from the ex-

terior of the cabinet, carries a gear 22 positioned within the cabinet. The gear 22 meshes with a small gear 23 fixed to one end of the friction roll 16 so as to impart rotation to the friction rolls to draw the towel from the main supply and advance it through the slot when desired. A pawl 24, shown in dotted lines in Fig. 2, is employed to prevent reverse rotation of the crank 20 by its engagement with the teeth of the gear 22.

In Fig. 1 there is shown mechanism for causing a measured length of toweling to be advanced upon each single rotation of the crank 21 and for preventing successive rotations of the crank 21 except upon action of a release mechanism and the lapse of a predetermined period of time after the release has been actuated.

A cam 30 of generally helical shape and provided with a shoulder 31 and an outwardly extending lug 32 is carried by the shaft of the crank 21. A lever 33, pivoted by a pin 34 to the side wall of the cabinet, comprises an upwardly extending arm 35 with a shoulder 36 thereon, a downwardly extending arm 37 with an ear 38 thereon, and a rearwardly extending arm 39 having a finger 40 cooperating with the lug 32 on the face of the cam. The finger 40 is formed as an integral part of the arm 39, but is bent or offset slightly so as to overlie the cam 30 in a position to engage the lug 32 thereon. Lever 33 is urged to swing in a counter-clockwise direction by a spring 41 connected with the arm 37 thereof and by a spring 42 which exerts an upward pull on the piston rod 43 of a vacuum cylinder 44, presently to be described in detail.

A latch lever 45 is pivoted to the cabinet by a pin 46 and urged to swing in a clockwise direction by a spring 47. The latch lever 45 comprises a rearwardly extending arm 48 which engages the shoulder 36 of the lever 33 to latch it against movement in a counterclockwise direction. A downwardly depending arm 49 of the latch lever 45 has an inwardly turned ear 50, at its lower end, engageable by a button 51 (see Fig. 2) extending through the forward wall of the casing and supported by a flat spring 52 secured to the inner surface of said wall. Owing to this manner of mounting the button 51 the casing wall may be removed for the replacement of toweling by the release of a spring lock 54 at the upper end thereof and swinging it about supporting pivots 55 disposed adjacent its lower edge without in any way interfering with the mechanism carried interiorly of the casing.

Construction of the vacuum cylinder 44 is illustrated in detail in Fig. 3. The piston rod 43 is provided with a plunger 56, at its lower end, which comprises a flexible cup leather 57 and which is normally disposed at the bottom end of the cylinder. The speed of the upward movement of the piston rod may, therefore, be regulated by controlling the admission of air to the lower end of the cylinder which is accomplished by a needle valve in the form of a screw 58 cooperating with a port 59 entering the cylinder. The screw 58 may be slotted, as at 60, to admit air through the portion of the port which is occupied by the threaded portion of the screw and the rate of entry of the air is controlled by regulation of the screw, the pointed end of which serves to open or close the port through which the air enters. The lower end of the cylinder 44 is pivotally connected, as by a screw 61, with the side wall of the casing which is cut away to receive the cylinder; and the upper end of the rod 43 is pivotally connected by a screw 62 with the rearwardly extending arm 39 of the lever 33. The casing wall is indented, as at 63, to receive the spring 42 and permit free upward movement of the piston rod 43. A slight swinging movement imparted to the piston rod, due to the arcuate movement of the end of the lever 39 is accommodated by the pivotal connection formed by the screw 61 at the lower end of the cylinder.

In operation, when a patron wishes to withdraw a towel from the cabinet, the button 51 is depressed against the ear 50 of the lever arm 49. This swings the lever about its pivot 46, lifting the arm 48 away from the shoulder 36. This permits the lever 33 to move in a counterclockwise direction under tension of the springs 41 and 42, both of which tend to rotate it in the same direction. The spring 42, being connected directly with the piston rod of the vacuum cylinder 44, prevents any tendency of the piston to become crammed in the cylinder as it moves upwardly. The counterclockwise movement of the lever 33 carries the finger 40 away from the lug 32 on the cam 30. This movement, however, is delayed by the actuation of the vacuum cylinder 44.

When the lever 33 has completed its retarded movement, the crank 21 is rotated to effect a dispensing of a towel. During rotation of the crank 21 the cam 30 is also rotated, and when the high portion of the cam contacts the ear 38 on the lever 33 the lever is returned to its original position and the piston is moved thereby into its original position at the lower end of the cylinder. Meanwhile the lever 45 is being urged in a clockwise direction by the spring 47 and the arm 48 thereof again falls behind the shoulder 36 to latch the lever 33 in its original position with the finger 40 preventing further rotation of the crank through its engagement with the lug 32. Therefore the patron operating the dispenser simply depresses the button 51, waits a short time, for example about four or five seconds, depending upon the adjustment of the screw 58 in the vacuum cylinder, and then turns the crank to deliver the towel to a position where it may be torn off against the serrated edge 20. The slight delay which is designed to discourage wasteful use of the toweling takes place after operation of the latch release and not after the towel-dispensing operation.

With this arrangement, each patron of the dispensing device is required to wait exactly the same amount of time and no patron is required to wait an additional time because of the fact that the dispenser has just been used by someone else. The timing of the operation of the vacuum cylinder should be such as to discourage unnecessary or improper use of toweling, but not long enough to cause any great inconvenience in its proper use.

The slot 19, through which the towel is dispensed, is formed by bending up flanges 65 and 66 from the bottom of the cabinet. The upper ends of these flanges are split and bent to form comb-like teeth 67. The teeth 67 on the flange 65 extend into grooves formed in the upper roller 16, while the teeth 67 on the flange 66 extend into similar grooves in the roller 17. Thus in placing the toweling in the cabinet it is simply necessary to tuck one end of it between the rollers 16 and 17 and rotate the crank. As the end of the towel is fed by the rollers 16 and 17, it is confined by the teeth 67 and flanges 65 and 66 to remain within the slot 19 and there is, there-

fore, no possibility of its becoming jammed or led to an improper position in the bottom of the cabinet or wound about the rollers 16 and 17. The bar 18, which extends transversely of the cabinet above the roller 16, prevents the toweling from becoming so tightly stretched over the surface of this roll that it might gather into the grooves which receive the ends of the teeth 67. This bar also serves to lead the towel in a flat vertical plane directly behind the front face of the cabinet at a position opposite a sight opening 68.

The sight opening 68 is used to determine the quantity of toweling in the cabinet with toweling that has been marked with indicia in the form of a line drawn diagonally from one end of the toweling to the other for the purpose of indicating the proportion of the toweling on a roll that has been withdrawn. The rolls 16 and 17 are urged toward each other by means of a spring, indicated at 69 in Fig. 1, engaging the journals of both rolls as is common practice. One of the rolls, preferably the lower roll 17, may be crowned or formed slightly greater in diameter towards its center to insure smooth, regular feeding of the toweling and also to prevent its being drawn into the grooves on the rollers 16 and 17.

While certain features of the invention are more or less specifically described herein, it is to be understood that various changes may be resorted to in the construction and arrangement of its several parts within the spirit of the appended claims.

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

1. A towel dispensing device comprising a rotatable crank for feeding toweling in measured lengths from a supply roll, a cam rotatable with said crank, a lug on said cam, a pivoted lever having a portion engageable with said lug to prevent rotation of the crank, spring means tending to swing said lever out of engagement with said lug, a pivoted latch lever engaging the first named lever to prevent such swinging movement thereof, means to release the latch lever, and means to automatically retard the swinging of the first lever, said cam being effective upon rotation of the crank to reset the first lever and cause it to be latched by the latch lever.

2. In a device for dispensing measured quantities of toweling, an operating member to effect dispensing of the toweling, latch mechanism normally preventing operation of said operating member, latch releasing mechanism, manually actuated means for operating the latch releasing mechanism, and a time delay mechanism interposed between said manually actuated means and the release mechanism to effect a period of delay between actuation of the release mechanism and actual release thereby.

PHILIP A. WOOSTER.