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PUSH BUTTON OPERATED PAPER TOWEL ROLL HOLDER

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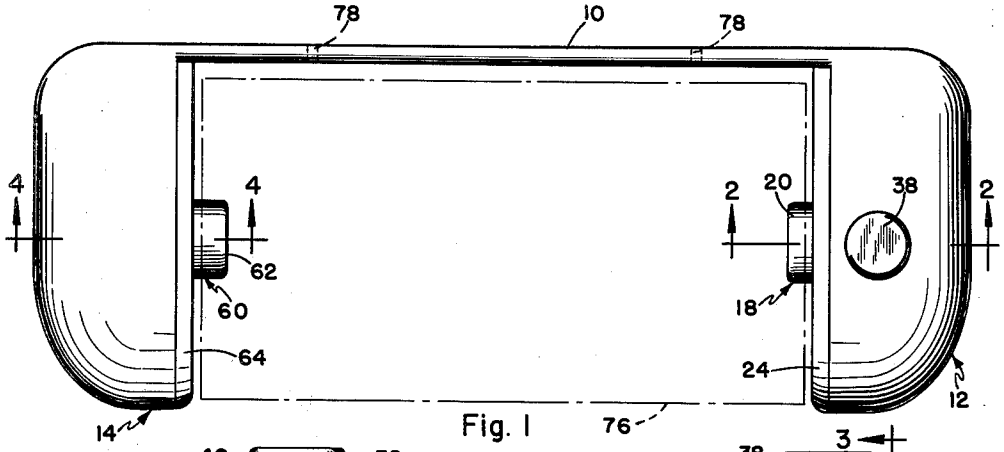


Fig. 1

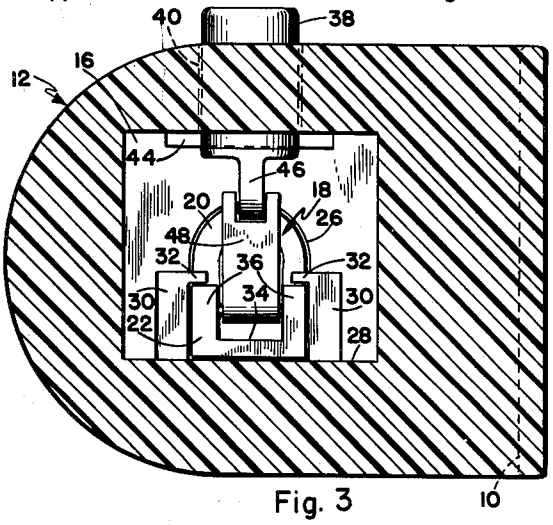


Fig. 3

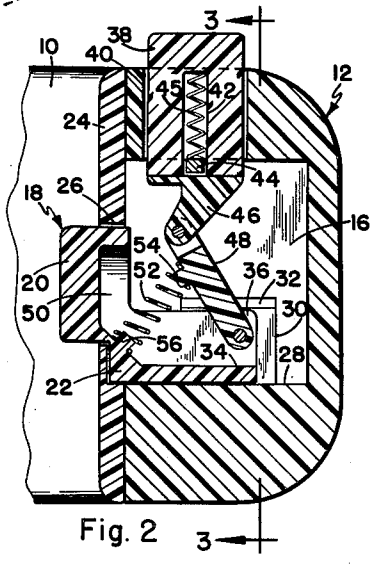


Fig. 2

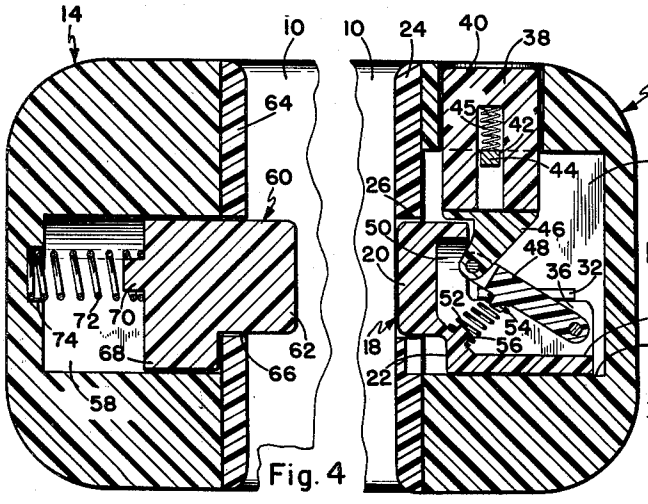


Fig. 4

Fig. 5

INVENTOR.
MAYNARD W. ANDERSON
BY
Knox & Knox

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PUSH BUTTON OPERATED PAPER TOWEL ROLL HOLDER

Maynard W. Anderson, 4831 Briercrest, Lakewood, Calif.

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4 Claims. (Cl. 242—55.2)

The present invention relates generally to paper roll holders and more particularly to a push button operated paper towel roll holder.

The primary object of this invention is to provide a paper towel roll holder having a push button actuated retractable trunnion at one end to facilitate insertion and removal of the paper roll.

Another object of this invention is to provide a paper towel roll holder of sturdy, rigid construction which will hold a roll securely yet freely rotatably in place, the roll being impossible to remove without actuating the push button trunnion.

Another object of this invention is to provide a push button trunnion-actuating mechanism which will occupy minimum space in the holder.

Another object of this invention is to provide a paper towel roll holder in which the push button and trunnion both have rectilinear motions and are principally biased by a single spring, the simple actuating mechanism being made virtually jam proof by the provision of a second spring acting directly and axially on the push button.

Another object of this invention is to provide a paper towel roll holder which is adapted for fabrication from many different materials, so that the choice of material can be according to the dictates of availability and price considerations, the exact sizes and proportions being matters easily determined to suit particular conditions and needs.

Another object of this invention is to provide a paper towel roll holder which is practicable and inexpensive to manufacture.

Finally, it is an object to provide a paper towel roll holder of the aforementioned character which is simple and convenient to use and which will give generally efficient and durable service.

With these and other objects definitely in view, this invention consists in the novel construction, combination and arrangement of elements and portions, as will be hereinafter fully described in the specification, particularly pointed out in the claims, and illustrated in the drawing which forms a material part of this disclosure, and in which:

Figure 1 is a top plan view of the holder, a paper towel roll being indicated in broken line;

Figure 2 is an enlarged fragmentary sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is an enlarged fragmentary sectional view taken on the line 4—4 of Figure 1; and

Figure 5 is a sectional view similar to Figure 2, but showing the trunnion retracted.

Similar characters of reference indicate similar or identical elements and portions throughout the specification and throughout the views of the drawing.

The holder comprises a flat, generally rectangular back plate 10 having a pair of housings 12 and 14 at opposite ends thereof, said housings extending parallel to each other forwardly of said back plate. The housings 12 and 14 may be fixed to or made integral with the back plate 10 and can be decoratively shaped or finished to suit requirements, the controlling consideration being the dimensions required to enclose the retractible trunnion mechanism. The housing 12 has a deep cavity 16 which contains the retractible trunnion 18, said trunnion having a cylindrical hub 20 and an integral guide block 22 of non-circular cross-sectional shape and extending parallel to and below the axis of said hub. The cavity 16 is closed by an end plate 24 secured to the inner face of the housing 12, said end plate having a circular opening 26 through which the hub 20 protrudes. The guide block 22 rests on the flat floor 28 of the cavity 16 and is slidable between a pair of upright guide plates 30, said guide plates having inwardly turned opposed flanges 32. The guide block 22 has a longitudinal channel 34 defining a pair of upright side walls 36 with flanges 32 at the top of said side walls so that the trunnion 18 is limited to an axial sliding motion. The guide plates 30 may be fixed to the cavity floor 28 or formed integral with the housing 12.

Mounted in the upper part of the housing 12 is a push button 38, which is axially slidable in a bore 40, the axis of said bore being substantially normal to the axis of the hub 20. The push button 38 has an axially extending slot 42 through which is fitted a cross bar 44 fixed to the housing 12 at the lower end of the bore 40, so that the push button is prevented from rotating. A coiled spring 45 is enclosed within the slot 42 and compressed between the cross bar 44 and the inner end of the slot 42 to provide for positive, axial biasing of the push button 38 toward its inoperative position as illustrated in Figure 2. Fixed to, or integral with, the lower end of the push button 38 is a lug 46, to which is pivotally attached one end of an inflexible connecting link 48, the other end of said link being pivotally held between the side walls 36 at the outer end of the guide block 22. The lug 46 is turned inwardly toward the end plate 24, so that the connecting link 48 is obliquely disposed. Since the push button 38 and trunnion 18 are both limited to axial movements, when the push button is depressed, the connecting link 48 forces said trunnion outwardly and retracts the hub 20, as in Figure 5. To provide ample clearance for the connecting link 48 and to reduce the size of the mechanism to a minimum, the hub 20 has an internal socket 50 aligned with the channel 34. To ensure return of the hub 20 to the extended position, a compression spring 52 is fitted between the connecting link 48 and the trunnion 18, said link having a small boss 54 to retain one end of the spring and said trunnion having a similar boss 56 at the inner end of the channel 34.

The housing 14 has a small cavity 58 containing a trunnion 60, said trunnion having a cylindrical hub 62 coaxially aligned with the hub 20. The cavity 58 is enclosed by an end plate 64 secured to the inner face of the housing 14, said end plate having an opening 66 through which the hub 62 protrudes. The trunnion 60 has a block portion 68 on the lower side thereof and the cavity 58 is a reasonably close fit around the hub 62 and said block portion, so that the trunnion is axially slidable but non-rotatable in said cavity. The outer end of the trunnion 60 has a small boss 70 on which is fitted a compression spring 72 extending axially from the trunnion, the other end of said spring fitting into a small socket 74 in the outer end of the cavity 58. Thus the trunnion 60 is biased inwardly to the extended position, as in Figure 4.

The roll of paper towels, indicated at 76, is inserted by placing one end over the trunnion 60, which retracts sufficiently to facilitate the insertion and then snaps into

the hollow core of the roll. The push button 38 is then depressed to retract the trunnion 18, allowing the other end of the roll 76 to be moved into place, said push button then being released to allow the trunnion to snap into the core of the roll. The roll is then held securely between the trunnions 18 and 60 and cannot be removed without retracting the trunnion 18. Due to the rigid structure of the holder, the ends will not spring apart to allow the roll to be displaced. The back plate 10 may be provided with suitable screw holes 78 for attachment to a wall or other surface.

The operation of this invention will be clearly comprehended from a consideration of the foregoing description of the mechanical details thereof, taken in connection with the drawing and the above recited objects. It will be obvious that all said objects are amply achieved by this invention.

It is understood that minor variation from the form of the invention disclosed herein may be made without departure from the spirit and scope of the invention, and that the specification and drawing are to be considered as merely illustrative rather than limiting.

I claim:

1. A paper towel roll holder, comprising: a generally flat back plate having a housing at each end; a pair of inwardly projecting, opposed trunnions mounted in said housings in coaxial relation to hold a paper towel roll therebetween; one of said housings having a cavity therein; guide plate means in said cavity in fixed relation to said one housing; one of said trunnions having a guide block slidably mounted on said guide plate means for movement axially of said one trunnion; a push button mounted on said one housing and operatively connected to said one trunnion to retract said one trunnion into said one housing upon movement of the button in one direction.

2. A paper towel roll holder, comprising: a generally flat back plate having a housing at each end; a pair of inwardly projecting, opposed trunnions mounted in said housings in coaxial relation to hold a paper towel roll therebetween; one of said housings having a cavity therein; guide means fixed in said cavity; one of said trunnions having a portion thereof slidably mounted on said guide means for movement of said one trunnion axially thereof; a push button mounted in the housing containing said one trunnion and being axially slidable substantially normal to the axis of the trunnion; a connecting link pivotally attached to said push button and said one trunnion; said link being angularly disposed with the end of the link attached to said trunnion being disposed outwardly from the other end of said link, said one trunnion being spring biased to move toward the other trunnion and depression of said push button toward said one trunnion causing outward axial retraction of said one trunnion.

3. A paper towel roll holder, comprising: a generally flat back plate having a housing at each end; a pair of inwardly projecting, opposed trunnions mounted in said housings in coaxial relation to hold a paper towel roll therebetween; one of said trunnions being axially slidable; a push button mounted in the housing containing said one trunnion and being axially slidable substantially normal to the axis of the trunnion; a connecting link pivotally attached to said push button and said one trunnion; said link being angularly disposed with the end of the link attached to said trunnion being disposed outwardly from the other end of said link, whereby depression of said push button toward said one trunnion causes outward axial retraction of the trunnion; and a coiled spring obliquely mounted and compressed between said one trunnion and said link and simultaneously biasing said one trunnion into extended, operative position and biasing said push button toward extended position.

4. A paper towel roll holder, comprising: a generally flat back plate having a housing at each end; one of said housings having a cavity therein; an end plate secured to the inner face of said one housing and closing said cavity; a trunnion mounted in said cavity for axial sliding motion substantially parallel to the plane of said back plate; said trunnion having a hub portion extending through said end plate to hold one end of a paper towel roll; a push button mounted in said one housing and being axially slidable substantially normal to the axis of said trunnion; a connecting link pivotally attached to said push button and said one trunnion; said link being angularly disposed with the end of the link attached to said trunnion being disposed outwardly from the other end of said link, whereby depression of said push button toward said one trunnion causes outward axial retraction of the trunnion; a coiled spring obliquely mounted and compressed between said one trunnion and said link and simultaneously biasing said one trunnion into extended, operative position and biasing said push button toward extended position; and a second spring operatively connected with said push button and positively, directly biasing said push button to move axially toward the extended, inoperative position thereof; the other of said housings having a second trunnion mounted therein in opposed coaxial relation with said first mentioned trunnion to hold the other end of a paper towel roll.

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