Feb. 3, 1959

E. L. RIAL ET AL

2,872,125

APPARATUS FOR STORING AND DISPENSING SHEET MATERIAL IN ROLL FORM

Filed June 4, 1956

3 Sheets-Sheet 1

FIG. 1

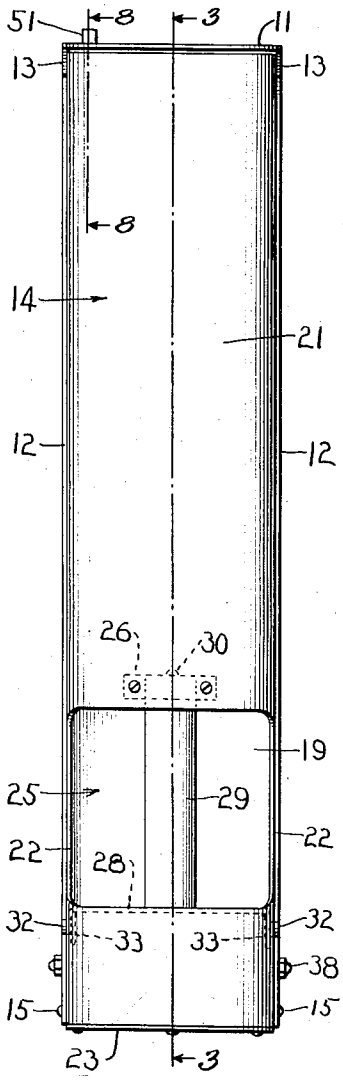


FIG. 2

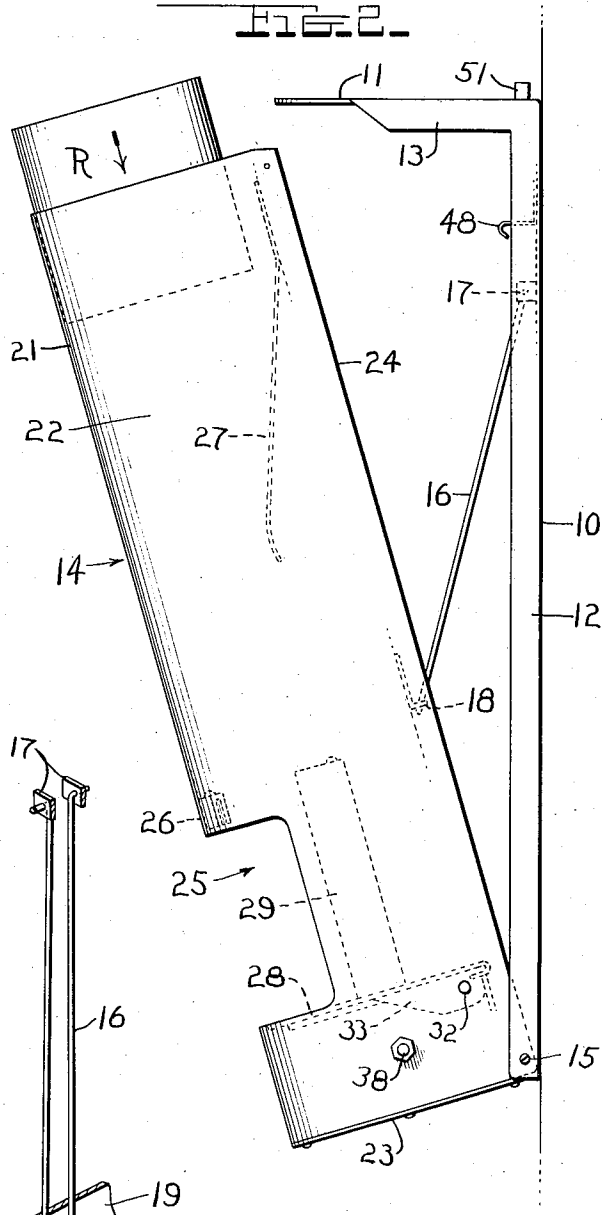


FIG. 3

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Filed June 4, 1956 3 Sheets-Sheet 2

FIG. 5

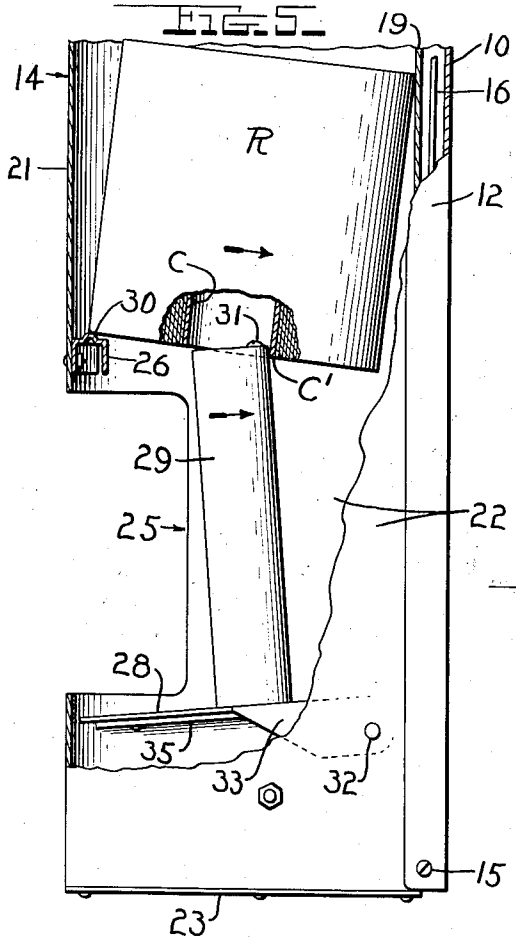


FIG. 7

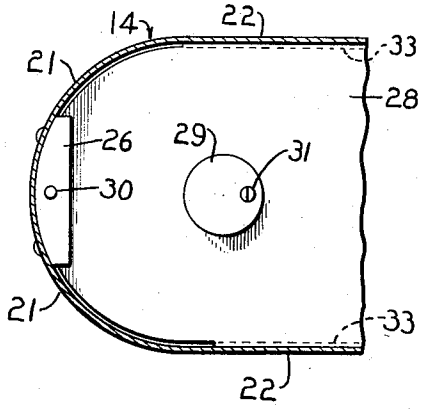


FIG. 8

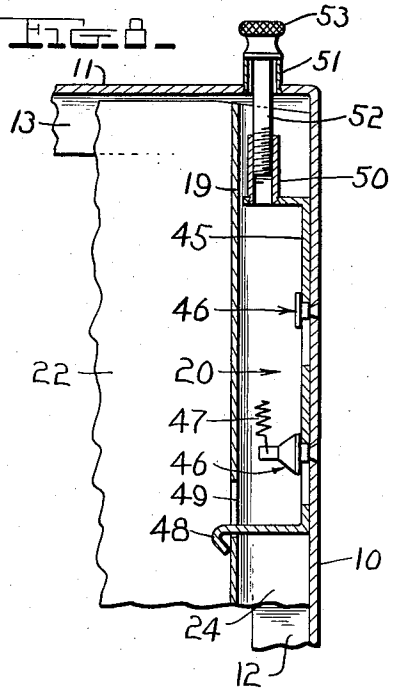
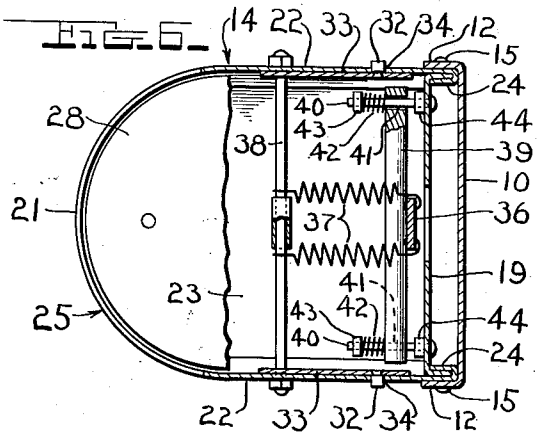


FIG. 6



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Feb. 3, 1959 E. L. RIAL ET AL 2,872,125

APPARATUS FOR STORING AND DISPENSING SHEET MATERIAL IN ROLL FORM

Filed June 4, 1956 3 Sheets-Sheet 3

FIG. 3

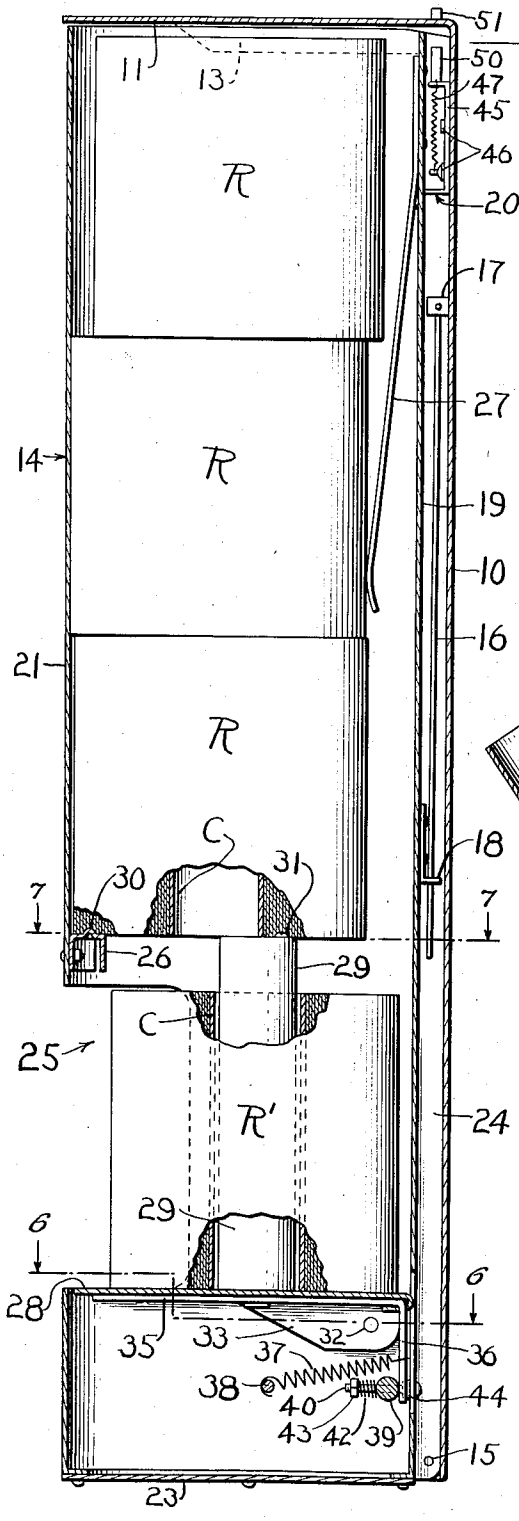
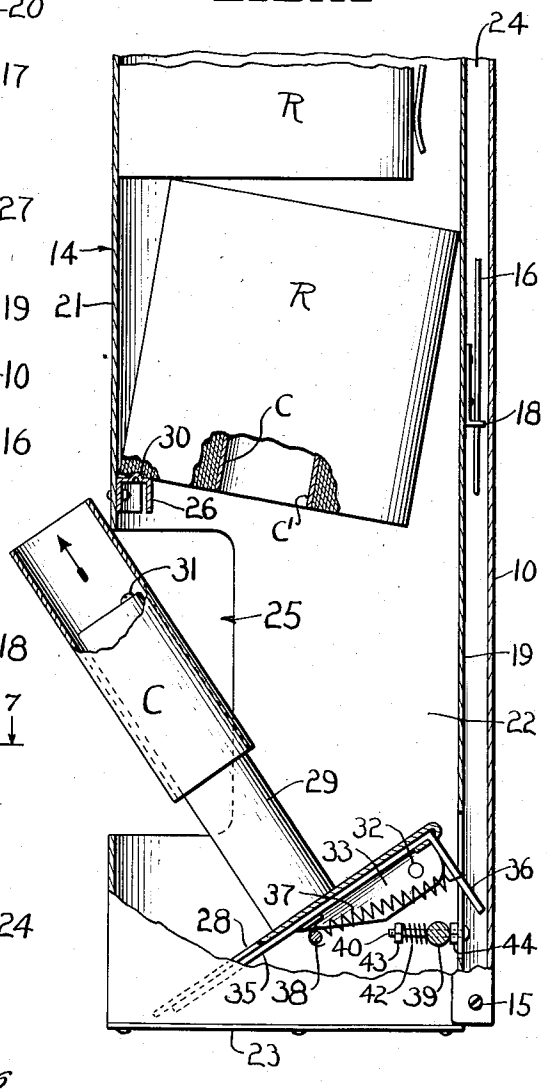


FIG. 4



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APPARATUS FOR STORING AND DISPENSING SHEET MATERIAL IN ROLL FORM

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Application June 4, 1956, Serial No. 589,292

12 Claims. (Cl. 242—55.42)

The present invention relates to a dispensing apparatus, and in its specific phases to an apparatus for automatically dispensing roll stock such as toilet paper, under conditions of use.

Quite frequently, full or partly used rolls of toilet paper are stolen from the toilet paper holders in public rest rooms, such as those of railway and bus stations, gas stations and department stores. Not only is the property loss considerable, but great inconvenience is caused to rest room attendants and to the predominantly honest members of the public who must rely upon such rest rooms. Some efforts to devise dispensers for toilet paper have been made with a view to meeting this situation, but in general such devices have been of complex construction which easily get out of order, and consequently are expensive as well as sometimes difficult for the user to operate when the next roll of paper is to be dispensed. Most of these devices are also adapted for horizontal mounting of the paper rolls, and where the dispensing slot is narrow the end of the paper may be difficult to start and keep accessible for continuous use. It was a recognition of these problems and difficulties, and the knowledge that no wholly satisfactory solution had been commercially attained, which led to the conception and development of the present invention.

Accordingly among the objects of the present invention is the provision of a new and improved toilet paper holder from which it is impossible to remove a roll of paper unless it has been reduced by use to negligible diameter.

The invention also aims to provide a new and improved toilet paper holder having a casing in which a vertical stack of rolls, disposed end to end, may be stored, and in which the operations performed in removing an empty roll core insure the dropping of another full roll from the stack ready for use.

A post is provided for reception in the usual tubular core of the roll dropped endwise from the stack for use, said post being yieldably held in vertical position but being forwardly tiltable by hand to a position just sufficient for permitting removal of the core, when empty; and another object of the invention is to provide a novel construction in which the upper end of said post normally coacts with a roll stop in the front portion of the casing to support the lower roll of the stack, and in which the forward tilting of said post for used core removal leaves said lower roll supported only by said roll stop, whereby this roll will then slightly drop or rearwardly tilt to a position in which the rear lower end portion of its tubular core is in the return path of the upper end of the post. Thus, upon return of said post to vertical position, its upper end will strike said core portion, thereby forcing said roll from said roll stop and causing it to drop from the stack with its core surrounding the post in readiness for use.

Yet another object is to provide the upper end of the post and the aforesaid roll stop with slight upward dome-

like projections to embed in the lower end of the lower roll of the stack and prevent this roll from accidental slipping from or being jarred from its proper position.

A further object is to mount the aforesaid post on a platform which supports the dropped roll in position for use, the post being pivotally movable by pivoting said platform in the casing.

Spring means is provided for returning the post to vertical position and the platform to horizontal position, and a still further object is to provide novel yieldable stop means for limiting the return movement of said post and platform.

Yet another object is to provide a novel construction in which the lower end of the casing is pivoted to a back plate and in which the upper end of said casing is connected by releasable means with the upper end of said back plate, said upper end of said back plate being provided with a forward extension normally overlying and closing said upper end of said casing, this casing being forwardly swingable to permit loading the rolls into the same.

A still further object is to guard the aforesaid releasable means against access, to provide this means with a threaded operating member which must be moved upwardly to release said means, and to provide the enclosing means with an opening through which a threaded releasing member may be inserted for engagement with said operating member to release said releasable means, thus prohibiting unauthorized access to the rolls within the casing.

Yet another object is to make novel provision for limiting the forward tilting of the casing for loading.

Still further objects and advantages of the invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the dispensing means hereinafter fullly described and particularly pointed out in the claims, the annexed drawings, and the following description setting forth in detail certain means for carrying out the invention, such disclosed means illustrating, however, but one of various ways in which the principle of the invention may be used.

In the annexed drawings:

Figure 1 is a front elevation of the improved toilet paper holder.

Figure 2 is a side elevation showing the casing tilted forwardly to loading position.

Figure 3 is an enlarged vertical sectional view on line 3—3 of Figure 1, looking in the direction of the arrows and showing a stack of rolls supported in the casing, and with one roll supported in readiness for use.

Figure 4 is a fragmentary sectional view showing the post and platform tilted for removal of an empty toilet paper roll core and showing the lower roll of the stack tilted into position for reception on the post when the latter returns to its normal position.

Figure 5 is a view similar to Figure 4 but showing the post returning to its normall vertical position and the lower roll of the stack about ready to drop around said post.

Figures 6 and 7 are horizontal sectional views on lines 6—6 and 7—7 of Figure 3, looking in the direction of the arrows.

Figure 8 is an enlarged detail vertical sectional view on line 8—8 of Figure 1, looking in the direction of the arrows.

Figure 9 is a perspective view showing the link which limits forward tilting of the casing.

The construction illustrated in the drawings may be considered as preferred but it is to be understood that variations may well be made within the spirit and scope of the invention as set forth. Also, it will be seen that

the invention may be constructed for handling rolls of material other than toilet paper, for instance rolls of paper toweling, rolls of waxed paper, rolls of sheet plastic, et cetera. Therefore, reference to toilet paper is to be considered as illustrative rather than limiting.

A vertically elongated back plate 10 is provided for attachment to a wall, said back plate having a forward extension 11 at its upper end. The vertical edges of the back plate 10 are provided with parallel forwardly projecting flanges 12, and downwardly projecting flanges 13 are provided on the longitudinal edges of the extension 11.

A vertically elongated casing 14 is disposed in front of the back plate 10 and has an open upper end which is normally closed by the extension 11. The casing 14 is received between the flanges 12 and 13 and the lower end of said casing is pivoted at 15 to the flanges 12 to allow forward tilting of said casing for loading, as shown in Figure 2. A stop link 16 is provided to limit this forward tilting, said link being pivoted at its upper end to ears 17 on the back plate 10. The lower end portion of the link 16 is loosely and slidably connected with a bracket 18 on the rear wall 19 of the casing 14.

The upper end of the casing 14 is connected with the back plate 10 by releasable means 20 which normally may be released only by an authorized person having the appropriate releasing means.

The casing 14 is composed of a curved front wall 21, parallel side walls 22, the aforementioned rear wall 19 and a lower end wall 23. The side walls 22 are seamed at 24, Figure 6, to the rear wall 19 and the seams project rearwardly from said rear wall, thereby spacing said rear wall 19 from the back plate 10 to accommodate the link 16 and the releasable means 20. The above mentioned pivots 15 connect the lower ends of the seams 24 with the side flanges 12 of the back plate 10.

The casing 14 is dimensioned to receive a vertical stack of rolls R and the lower portion of the front wall 21 is formed with an opening 25 for giving access to a roll R' dropped from said stack into position for use. Over this opening 25, a roll stop 26 is secured to the casing front wall 21, and a suitable spring arm 27 is provided in the casing to press the rolls R forwardly as they descend, to insure that the lower roll of the stack shall always encounter said roll stop, as seen in Figure 3. The upper end of the spring arm 27 is suitably secured to the casing rear wall 19, and the lower end of said spring arm 27 is spaced above the plane of the roll stop 26 a distance greater than the length of a roll R, to insure that the lower roll of the stack shall be free of said spring arm and thus capable of rearward tilting, as shown comparatively in Figures 3 and 4.

A pivoted normally horizontal platform 28 is provided in the casing 14, at the lower end of the opening 25, to support the roll R' in position for conventional use. Rigidly attached to this platform 28 is a post 29 normally standing upright and of a diameter for reception in the usual tubular core C of any roll resting on said platform 28. The upper end of the post 29 is normally disposed in substantially the same horizontal plane with the top of roll stop 26, and the axis of said post is spaced rearwardly from the casing front wall 21 a distance somewhat greater than the radii of the rolls R. Thus, as is shown in Figure 3, while one roll R' is held in readiness for use, the lower roll of the stack is supported jointly by the upper end of the post 29 and the roll stop 26. To insure that the roll shall remain in this position without danger of being accidentally shifted rearwardly or so shifted by jarring the casing 14, the roll stop 26 and post 29 are provided with slight upward dome-like projections 30 and 31, respectively, to embed in the lower end of the roll which they directly support.

The platform 28 is connected by pivots 32 with the casing side walls 22 to allow forward tilting of said platform and the post 29 to the position of Figure 4 for removal of the empty core C from said post when the roll R' has been used up. As this tilting occurs, the lower roll of the stack tilts rearwardly as shown in Figure 4 and remains supported solely by the roll stop 26. Thus, the rear lower end portion C' of the core C of said lower roll is disposed in the path upon which the upper end of the post 29 must travel during return of said post to its normal vertical position. Consequently when the returning post strikes the core portion C' it forces the roll off the roll stop 26 (see Figure 5). The roll then drops around the post 29 onto the platform 28 in position for use, as shown in Figure 3.

The platform 28 is provided with downwardly projecting flanges 33 carrying the pivots 32, the latter being preferably in the form of short studs received in openings 34 of the casing side walls 22 as seen in Figure 6.

The platform 28 is reinforced on its lower side by a central bar 35 suitably secured thereto, and the rear end of this bar is turned downwardly to form a stop arm 36. Tension springs 37 are connected to this arm 36 and to an anchor rod 38 for returning the platform 28 and post 29 to their normal positions after tilting.

In front of the stop arm 36 and normally in contact therewith, a horizontal stop rod 39 is provided, to coact with said stop arm 36 in limiting the return movement of the platform 28 and post 29 from tilted to normal position. Forwardly projecting studs 40 on the casing rear wall 19 extend through openings 41, Figure 6, in the ends of the stop rod 39, and compression springs 42 surround said studs, said springs acting rearwardly on said stop rod and reacting against abutments 43 on said studs. When the stop arm 36 moves rearwardly as the platform 28 and post 29 are tilted, Figure 4, the springs 42 move the stop rod rearwardly to the limit allowed by suitable stops 44. When the post 29 is released from its tilted position and the springs 37 return said post and the platform 28 to normal position, the stop arm 36 strikes the stop rod 39 and the latter moves forwardly against the compression of the springs 42, thereby cushioning the shock. The springs 37, arm 36, and rod 39 then coact in holding the platform 28 and post 29 in normal upright position but allow tilting of said platform and post by hand for removal of a used roll core.

The releasable connecting means 20 between the upper end of the casing 14 and the back plate 10, is preferably constructed as shown in Figures 3 and 8. A vertically movable slide 45 is mounted at 46 on the front side of the back plate 10 and is yieldably held in lowered position by a spring 47.

The lower end of the slide 45 has a rigid hook 48 normally engaging the lower edge of an opening 49 in the casing rear wall 19, as seen in Figure 8. The upper end of the slide 45 rigidly carries a vertical, internally threaded operating sleeve 50. Above and in alignment with this sleeve 50, the extension 11 of the back plate 10 is provided with an opening in which an unthreaded sleeve 51 is secured. A releasing screw 52 having a knurled head 53, is provided for downward insertion through the sleeve 51 into threaded engagement with the sleeve 50. By means of this screw, the slide 45 may be lifted to release the hook 48 and allow tilting of the casing 14 for initial loading and for reloading, but release and tilting of the casing by an unauthorized person lacking a releasing screw 52 is prevented.

When initially filling the casing, the latter is filled from the roll stop 26 to the upper end of the casing and the latter preferably moved back into latched position. The post 29 is then pulled forwardly and released. The return movement of this post, effected by the springs 37, causes the lower roll of the stack to drop around said post onto the platform 28. The stack lowers as this occurs and the casing is then reopened and another roll placed in the upper end of the casing, and this casing is

then restored to its vertical position and secured by the releasable means 20. When the platform-supported roll R' has been used up, the post 29 is tilted forwardly, the empty core C removed and said post released, causing the next roll to drop into position for use.

From the foregoing, it will be seen that a novel and advantageous construction has been disclosed for attaining the desired ends. Attention is again invited, however, to the possibility of making variations to the dispensing apparatus without departing from the spirit and scope of the invention as hereinafter claimed.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the storage and dispensing apparatus herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:

1. A toilet paper holder comprising a vertically elongated casing dimensioned to receive a vertical stack of rolls disposed end to end, the lower front portion of said casing having an opening for access to a roll dropped from said stack for use, a vertical post in said casing behind said opening for reception in the usual tubular core of the dropped roll, the axis of said post being spaced rearwardly from the casing front a distance greater than the radius of the rolls, means pivotally mounting said post for forward tilting to said opening for removal of a used core, yieldable means normally holding said post in vertical position, and a roll stop secured in the front portion of said casing over said opening, said roll stop and the upper end of said post being normally in substantially the same horizontal plane, said casing having roll guiding means for so positioning the rolls that the lowermost roll of the stack will normally rest jointly on said roll stop and said post, said roll guiding means being upwardly spaced from the aforesaid horizontal plane a distance greater than the length of a roll; whereby upon forward tilting of said post for removal of a used core, the lowermost roll of the stack will be supported only by said roll stop and will consequently tilt rearwardly to position the rear lower end portion of its core in the return path of the upper end of said post; and whereby, upon return movement of said post, the upper end of the latter will enter the lower end of the core and force the roll from said roll stop, permitting the roll to drop into position for use.

2. A structure as specified in claim 1; the upper end of said post and said roll stop being each provided with a slight upward dome-like projection to embed in the lower end of the lower roll of the stack.

3. A structure as specified in claim 1; said roll guiding means which allows one roll at a time to freely slide endwise past same to its position of rest ready for dropping onto said post after same has been tilted completely forward to remove a used core comprising a forwardly declined spring arm secured at its upper end to the casing back.

4. A toilet paper holder comprising a vertically elongated casing dimensioned to receive a vertical stack of rolls disposed end to end, the lower front portion of said casing having an opening for access to a roll dropped from said stack for use, a platform in said casing positioned to support the dropped roll, said platform having a vertical post for reception in the usual tubular core of the dropped roll, the axis of said post being spaced rearwardly from the casing front a distance greater than the radius of the rolls, means pivotally mounting said platform and allowing forward tilting of said post to said opening for removal of a used core, yieldable means normally holding said platform in horizontal position and said post in vertical position, and a roll stop secured in the front portion of said casing over said opening, said roll stop and the upper end of said post being normally in substantially the same horizontal plane, said casing having roll guiding means for so positioning the rolls that the lowermost roll of the stack will normally rest jointly on said roll stop and said post, said roll guiding means being upwardly spaced from the aforesaid horizontal plane a distance greater than the length of a roll; whereby upon forward tilting of said post for removal of a used core, the lowermost roll of the stack will be supported only by said roll stop and will consequently tilt rearwardly to position the rear lower end portion of its core in the return path of the upper end of said post; and whereby, upon return movement of said post, the upper end of the latter will enter the lower end of the core and force the roll from said roll stop, permitting the roll to drop into position for use.

5. A structure as specified in claim 4; the upper end of said post and said roll stop being each provided with a slight upward dome-like projection to embed in the lower end of the lower roll of the stack.

6. A structure as specified in claim 4; said platform having a downwardly projecting stop means arm, and a yieldable stop in said casing and cooperable with said stop arm for engaging same and limiting the return movement of said platform under the influence of said yieldable means which normally holds said platform in horizontal position.

7. A structure as specified in claim 4; said platform having a downwardly projecting stop arm at its rear end, a transverse stop rod in the casing and normally contacting with the front side of said stop arm, fixed studs projecting forwardly from the casing back at the ends of said stop rod, said rod ends having openings through which said studs pass to mount said stop rod for slight forward and rearward movement, means for limiting the rearward movement of said stop rod, and compression springs surrounding said studs and exerting rearward force on said stop rod, said studs having abutments against which said springs react, said stop arm being rearwardly movable from said stop rod when said platform is tilted by forward tilting of said post.

8. In a toilet paper holder having a vertically elongated casing, said casing having a back wall and an open upper end; a back plate for mounting on a wall, said back plate being disposed behind the back wall of said casing and having a forwardly projecting extension on its upper end, said extension extending over said open upper end of said casing in position for closing same, means pivotally connecting the lower end of said casing to the lower end of said back plate to permit forward tilting of said casing for loading toilet paper thereinto, and releasable means connecting the upper end of said casing with said back plate.

9. A structure as specified in claim 8; said releasable means being within said toilet paper holder and disposed under said extension and having a threaded operating member which must be moved upwardly to release said releasable means and permit said casing to be moved about the pivotal means which connects same to said back plate, said extension having an opening through which to insert a threaded releasing member for engagement with said threaded operating member when said releasable means is to be released.

10. A structure as specified in claim 8; said back plate being spaced rearwardly from said casing and having parallel vertical forwardly projecting flanges embracing the rear portion of said casing, said releasable means being confined between the elements consisting of said back plate and casing, and a stop link for limiting the forward tilting of said casing from said back plate, said stop link being pivoted to one of said elements consisting of said back plate and casing and slidably connected with the other thereof.

11. In a dispenser for roll material on a core such as toilet paper rolls, the combination of a vertically elon-

gated casing for holding said roll material on end, means in said casing for releasably supporting said roll material, a platform in said casing to support a single roll of said material spaced below said supporting means and in position for free dispensing by unrolling, a vertical post projecting above said platform for reception in the usual core of such roll material to be dispensed, said casing having an opening in the lower portion of same through which said dispensing can take place, means pivotally mounting and allowing forward tilting of said post to said dispensing opening for removal therethrough of the used core of a dispensed roll, yieldable means for normally holding said post upright when said housing is in substantially vertical position, and means for releasing the lowermost roll of said roll material in said casing when said post is returned to dispensing position following removal of an empty core therefrom, said released roll dropping into dispensing position on said post.

12. A structure as specified in claim 11; wherein said post is mounted in upright position on said platform, and said platform is pivotally mounted on said casing substantially at the bottom thereof.

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