

FIG 2

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FIG. 8

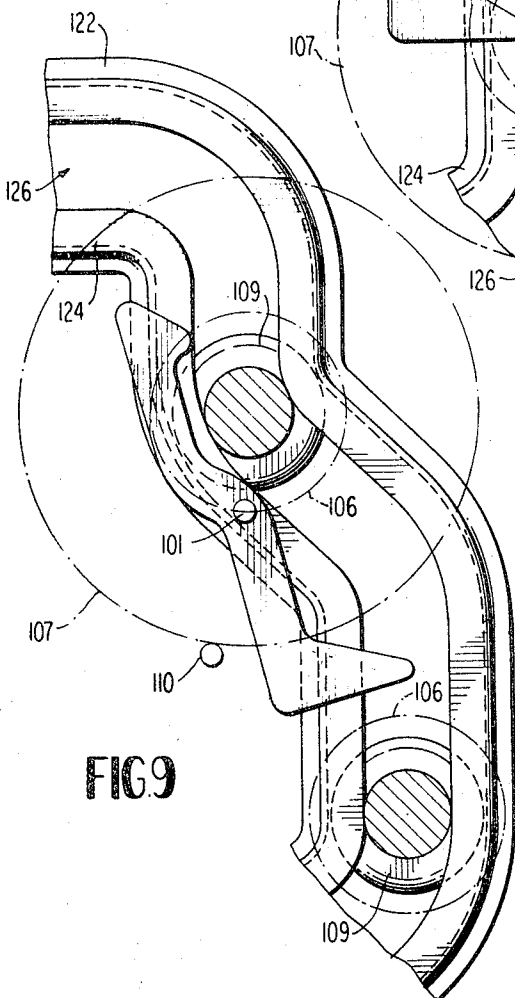
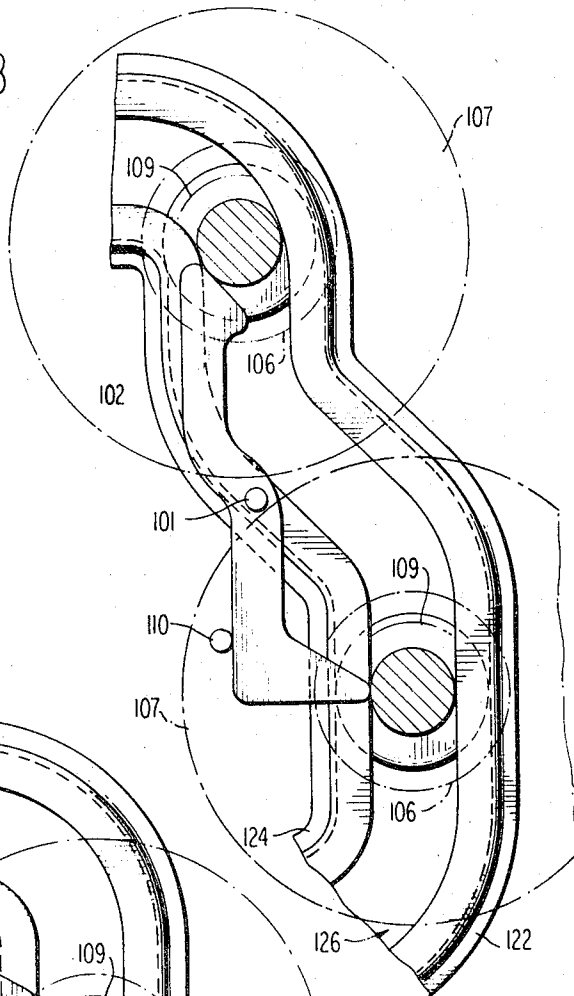


FIG. 9

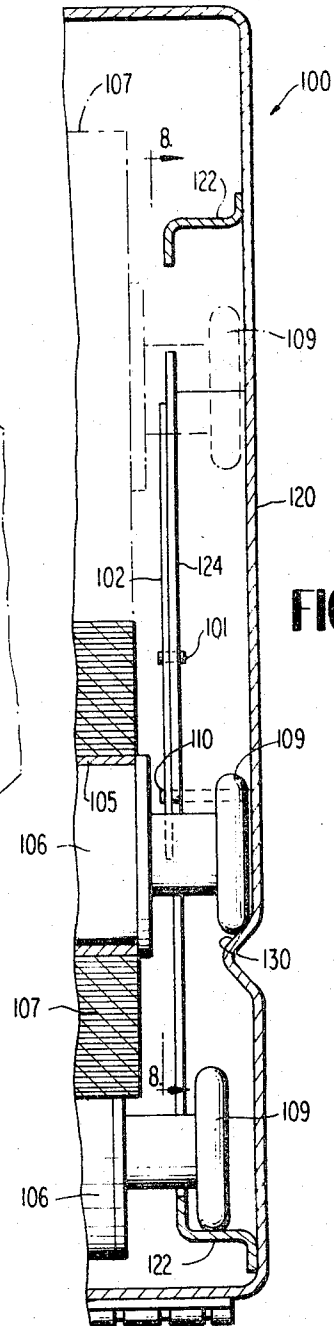


FIG. 7

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# DISPENSER FOR ROLLS OF FLEXIBLE SHEET MATERIAL HAVING MEANS FOR HOLDING A ROLL IN A RESERVE POSITION

## RELATED APPLICATIONS

The present application is a continuation-in-part application of application Ser. No. 36,855, filed May 13, 1970, now U.S. Pat. No. 3,690,580; and the latter application is a continuation-in-part of application Ser. No. 784,307, filed Dec. 17, 1968, now abandoned.

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates to dispensers for flexible sheet material rolls, and specifically to a dispenser having means for holding a roll in a reserve position and releasing such roll automatically for movement to a dispensing position.

### 2. Description of the Prior Art

Many different types of dispensers for flexible sheet material rolls are known in which one roll is supported in a dispensing position, and an additional roll or rolls are held in a reserve position and moved to the dispensing position when the roll in the dispensing position is exhausted. Representative of the prior art dispensers of this type are the dispensers disclosed in Britt et al. U.S. Pat. No. 2,299,301, McCants U.S. Pat. Nos. 2,758,800 and 2,767,930, Mott et al. U.S. Pat. Nos. 3,058,682, 3,197,149, 3,416,744 and 3,474,977 and De Woskin U.S. Pat. No. 3,382,021. The mechanisms disclosed in these patents for holding a roll in a reserve position and releasing such roll for movement to a dispensing position are relatively complex and therefore expensive to manufacture. Also, such mechanisms generally must be actuated manually to release a roll from the reserve position, and therefore do not operate automatically.

Thus, while dispensers which include means for holding a roll in a reserve position and releasing such roll for movement to a dispensing position are desirable for the convenience of users and custodial personnel, and particularly in public washrooms, the prior art dispensers of this type are not economically attractive and generally do not operate automatically.

## SUMMARY OF THE INVENTION

The dispenser of the present invention obviates the above-mentioned difficulties, and in particular provides an economic and automatic mechanism for releasably holding a roll of flexible sheet material in a reserve position. Basically described, the dispenser of the invention comprises; means for supporting a first roll having spindle means extending axially outwardly beyond the ends thereof in a dispensing position from which flexible sheet material may be withdrawn from the dispenser by a user, said supporting means being operable to move the spindle means of the first roll from a first position when the first roll is full to a second position when the first roll is substantially exhausted; means for releasably holding a second roll having spindle means extending axially outwardly beyond the ends thereof in a reserve position above the dispensing position and consisting of at least one pivotally mounted lever member extending from the dispensing position to the reserve position, said lever member being engageable with the spindle means of the first roll and operative to sense the position thereof, said lever member being further operative to hold the second roll in the

reserve position while said first roll spindle means moves from said first position to said second position and to automatically release the second roll from the reserve position when said first roll spindle means has moved to said second position; and means for guiding the second roll from the reserve position to the dispensing position when the lever member releases the second roll.

In two of the preferred embodiments of the dispenser of the invention, the releasable holding means consists of two opposed pivotally mounted lever members which extend from the dispensing position to the reserve position adjacent opposite ends of the rolls. In one of these embodiments, the guiding means is integral with the lever members and comprises a flange affixed to each of the lever members. In other of the preferred embodiments, the guiding means comprises a pair of opposed guide channels, and the lever member or members are pivotally mounted adjacent such channels for cooperation therewith.

In all of the embodiments of the dispenser of the invention, the mechanism for holding a roll in the reserve position and releasing such roll for movement to the dispensing position is relatively simple and operates automatically.

With the foregoing in mind, it is an object of the present invention to provide an improved dispenser for flexible sheet material rolls.

It is also an object of the invention to provide an improved dispenser having means for holding a roll of flexible sheet material in a reserve position and automatically releasing such roll for movement to a dispensing position.

It is a further object of the invention to provide a dispenser as described in the preceding object in which the releasable holding means consists of a lever member which senses the position of a roll in the dispensing position.

These and other objects of the invention will be apparent upon a consideration of the following detailed description of the preferred embodiments thereof given in connection with the following drawings, wherein like reference numerals identify like elements throughout.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view, partially broken away, of a first embodiment of the dispenser of the invention; FIG. 2 is a sectional view taken on line 2—2 of FIG.

1; FIG. 3 is a sectional view taken on line 3—3 of FIG. 2, showing a first roll in the dispensing position and a second roll in the reserve position;

FIG. 4 is a sectional view similar to FIG. 3, showing a roll moving from the reserve position to the dispensing position;

FIG. 5 is a sectional view taken on line 5—5 of FIG. 3;

FIG. 6 is a sectional view of a second embodiment of the dispenser of the invention;

FIG. 7 is a sectional view of a portion of a third embodiment of the dispenser of the invention;

FIG. 8 is a sectional view taken on line 8—8 of FIG. 7, showing a first roll in the dispensing position and a second roll in the reserve position;

FIG. 9 is a sectional view similar to FIG. 8, showing a roll moving from the reserve position to the dispensing position.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

A first embodiment of the dispenser of the invention is shown in FIGS. 1-5, as designated by reference numeral 10. Dispenser 10 includes a cabinet 12 comprising a case 14 and a cover 16. Case 14 includes a back wall 20, adapted to be attached to a building wall or the like, opposing sidewalls 22 and 24, and a front wall 26. The top and bottom of case 14 are open. Cover 16 covers the open top of case 14 and includes a top wall 28, the front portion of which slopes downwardly, opposing sidewalls 30 and 32, and a front wall 34. The rear edge of top wall 28 is pivotally connected to the top edge of back wall 20 by a hinge 18 to permit cover 16 to be raised and lowered with respect to case 14. Case 14 and cover 16 conveniently are formed from sheet metal stock. A locking mechanism 36, and preferably a combination locking and latching mechanism as disclosed in U.S. Pat. No. 3,500,667, owned by the assignee of the present application, is mounted on front wall 34 to secure cover 16 to case 14.

Dispenser 10 is adapted to dispense flexible sheet material from rolls 38 and 40. Each of rolls 38 and 40 includes a centrally disposed cardboard core 46 and a spindle means which extends axially outwardly beyond the ends of the roll. The spindle means may comprise a pair of trunnions 42 and 44 of the type disclosed in U.S. Pat. No. 3,438,589, owned by the assignee of the present application. Trunnions 42 and 44 are mounted in the ends of core 46 and include inner portions 48 and 50, respectively, which extend axially outwardly beyond the associated ends of rolls 38 and 40.

A pair of generally C-shaped members 52 are affixed to sidewalls 22 and 24 in opposing relationship. Members 52 preferably have an L-shaped transverse cross-section defined by flanges 54 and 56. Flange 54 is affixed to the associated sidewall and flange 56 extends inwardly therefrom. Each member 42 extends rearwardly and slightly downwardly from the upper front edge of the associated sidewall to the upper central portion of the wall, then vertically downwardly to the lower central portion of the wall, and then forwardly and downwardly in a slight arcuate path to the lower front edge of the wall.

A pair of lever members 58 are pivotally mounted on sidewalls 22 and 24 by pivot pins 60 in opposing relationship and adjacent members 52. Each member 58 includes an upper portion which extends generally vertically downwardly and a lower portion which extends forwardly and downwardly in a slightly arcuate path. A flange 62 is affixed to each of members 58 and extends inwardly from the associated sidewall. Each flange 62 is spaced from the associated flange 56 and defines therewith a generally L-shaped guide channel 64. Also, each lever member 58 and the associated flange 62 define a protuberance 66 which extends into the associated channel 64.

A pair of stops 68 and 70 are affixed to each sidewall 22 and 24 adjacent and spaced from the upper and lower ends of lever member 58 to limit the range of pivotal movement of the lever member.

To load dispenser 10, cover 16 is opened and trunnion portions 48 and 50 of roll 38 are inserted into the upper ends of guide channels 64. As shown in FIG. 2, portion 48 preferably has a greater diameter than portion 50, and guide channels 64 preferably have differ-

ent widths corresponding to the different diameters of portions 48 and 50 so that roll 38 may be loaded in the dispenser only when portion 48 is inserted into the guide channel associated with sidewall 22 and portion 50 is inserted into the guide channel associated with sidewall 24. Roll 38 gravitates downwardly until portions 48 and 50 encounter protuberances 66. The distance between protuberances 66 and the associated flanges 56 is less than the diameters of portions 48 and 50. However, the weight of roll 38 bearing on protuberances 66 causes lever members 58 to pivot counterclockwise, as seen in FIGS. 3 and 4, until the upper ends of the lever members abut stops 68. The distance between protuberances 66 and the associated flanges 56 is then greater than the diameters of portions 48 and 50, thereby permitting roll 38 to continue its downward movement. As roll 38 gravitates downwardly, portions 48 and 50 pass pivot pins 60, whereupon lever members 58 are rotated progressively clockwise by the weight of the roll until the lower ends of the lever members abut stops 70. The downward movement of roll 38 is arrested by the engagement of the periphery of the roll with the inner surface of front wall 26, as shown in FIG. 3. In this position, trunnion portions 48 and 50 are disposed in the lower portions of guide channels 64, and roll 38 is thus supported by lever members 58, flanges 62 and front wall 26 in a dispensing position from which flexible sheet material may be removed from the roll through the open bottom of case 14.

After roll 38 has been loaded in dispenser 10, roll 40 may be loaded therein by inserting trunnion portions 48 and 50 of roll 40 into the upper ends of guide channels 64. When trunnion portions 48 and 50 encounter protuberances 66, downward movement of the roll is arrested. Lever members 58 are prevented from rotating in a counterclockwise direction by the trunnion portions 48 and 50 of roll 38 in the dispensing position. Thus, roll 40 is held in a reserve position by protuberances 66 and the adjacent portions of flanges 56.

As roll 38 is consumed, trunnion portions 48 and 50 progressively move down guide channels 64 from the position of the full roll to the position of the exhausted roll shown in FIG. 3, with the periphery of the roll remaining in contact with front wall 26. When the roll has been substantially consumed, trunnion portions 48 and 50 move beyond the lower ends of lever members 58 and flanges 62, whereupon the exhausted roll 38 falls out of the dispenser through the open bottom of case 14, as shown in FIG. 4.

Upon the discharge of exhausted roll 38, lever members 58 are again free to pivot counterclockwise. Due to the weight of roll 40 on protuberances 66, lever members 58 are so pivoted, thereby permitting roll 40 to gravitate downwardly past protuberances 66, as seen in FIG. 4.

As will be apparent from the foregoing description, lever members 58 sense the position of trunnion portions 48 and 50 of roll 38, and while the trunnion portions move from the full roll position to the exhausted roll position, as seen in FIG. 3, lock protuberances 66 in position for holding roll 40 in the reserve position. When trunnion portions 48 and 50 have moved to the exhausted roll position, lever members 58 unlock protuberances 66 and thereby release roll 40 automatically for movement to the dispensing position.

A second embodiment of the dispenser of the invention is shown in FIG. 6, as designated by reference nu-

meral 80. Dispenser 80 includes a cabinet 82 and a pair of generally L-shaped members 84 and 86 affixed to each sidewall of the cabinet. Members 84 and 86 include inwardly projecting flanges which define a guide channel 88 therebetween. An L-shaped lever member 90 is pivotally mounted on each sidewall of cabinet 82 by a pivot pin 92 adjacent to the associated channel 88, and a stop 93 is affixed to each sidewall to limit the pivotal movement of the associated lever member.

Dispenser 80 is adapted to dispense flexible sheet material from rolls, each of which includes a core 94 and a spindle 96. The ends of spindle 96 extend axially outwardly beyond the ends of the associated roll. The rolls are loaded in dispenser 80 through the top thereof with the ends of spindles 96 being inserted into guide channels 88. The first roll loaded in the dispenser gravitates downwardly until the ends of the spindle encounter the upper ends of lever members 90. The weight of the roll then pivots the lever members counterclockwise, as seen in FIG. 6, permitting the roll to gravitate downwardly until the periphery of the roll engages the front wall of cabinet 82. The roll is then positioned in a dispensing position with the ends of spindle 96 contacting the lower legs of lever members 90. Lever members 90 thus are rotated clockwise with the lower legs of the lever members abutting stops 93 and the upper ends of the lever members positioned in the path of a spindle 96 moving down channels 88. A second roll is then loaded in the dispenser and gravitates downwardly until the spindle ends contact the upper ends of lever members 90, whereupon the roll is held by the lever members in channels 88 in a reserve position.

When the first roll has been consumed, the spindle of such roll falls off the lower ends of members 86 to thereby free lever members 90 to pivot counterclockwise. The second roll in the reserve position so pivots the lever members, permitting such roll to move into the dispensing position automatically.

If desired, an inclined plate 98 may be mounted in the bottom of cabinet 82 below members 84 and 86 to retain the cores and spindles of consumed rolls.

A third embodiment of the dispenser of the invention is shown in FIGS. 7-9, as designated by reference numeral 100. Dispenser 100 is of the type disclosed in U.S. Pat. No. 3,690,580 and includes a cabinet 120 and a pair of track members 122 and 124 affixed to each of the sidewalls of the cabinet. Members 122 and 124 define a guide channel 126 therebetween.

A lever member 102 is pivotally mounted on the inner flange of member 122 by a pivot pin 101, and a stop pin 110 is affixed to the sidewall of cabinet 120 to limit the counterclockwise rotation of the lever member, as seen in FIGS. 8 and 9.

Dispenser 100 is adapted to dispense flexible sheet material from rolls 107 having cores 105 and spindles 106. Spindles 106 include enlarged end portions 109 which are received within guide channels 126. The first roll loaded in the dispenser gravitates downwardly between the guide channels until spindle 106 encounters the upper end of lever 102, whereupon the weight of the roll pivots the lever clockwise, as seen in FIGS. 8 and 9, to permit the roll to gravitate downwardly to a dispensing position in which end portions 109 engage supporting means, such as a camming surface 130 defined by an indentation formed in the sidewall of cabinet 120. When the first roll is in the dispensing position, spindle 106 engages the lower end of lever member 102

and pivots the lever member counterclockwise so that the lever member abuts pin 110.

A second roll is then loaded in the dispenser, and gravitates downwardly until spindle 106 encounters the upper end of lever member 102. The second roll is thus held in a reserve position by lever member 102 until the lever member senses that the spindle 106 of the first roll has moved out of the dispensing position. As disclosed in the aforementioned parent applications, when the roll in the dispensing position has been exhausted, spindle 106, core 105 and any remaining portion of the roll are shifted axially of the spindle so that end portion 109 moves off camming surface 130, whereupon the spindle, core and remaining roll portion gravitate downwardly between guide channels 126 to the position shown in FIG. 7. Upon the discharge of the first roll from the dispensing position, lever 102 is again free to pivot clockwise, thereby releasing the second roll automatically and permitting such roll to gravitate downwardly into the dispensing position.

While the foregoing constitutes a detailed description of the preferred embodiments of the invention, it is recognized that various modifications thereof will occur to those skilled in the art. Therefore, the scope of the invention is to be limited solely by the scope of the appended claims.

I claim

1. A dispenser for rolls of flexible sheet material, each of said rolls having spindle means extending axially outwardly beyond the ends thereof, said dispenser comprising:

means for supporting a first roll in a dispensing position from which flexible sheet material may be withdrawn from the dispenser by a user, said supporting means including two pivotally mounted guide track members engageable with the spindle means of said first roll and permitting movement of the spindle means of said first roll, under the influence of gravity, from a first position in contact with said pivotally mounted members when said first roll is full to a second position out of contact with said pivotally mounted members when said first roll is substantially exhausted; and

means for releasably holding a second roll in a reserve position above said dispensing position, said releasable holding means consisting of said two pivotally mounted guide track members and two fixed guide track members respectively opposed to said pivotally mounted members, said pivotally mounted and fixed members extending from said dispensing position to said reserve position, said pivotally mounted members being operative to sense the present of said first roll spindle means between said pivotally mounted and fixed members, and said pivotally mounted and fixed members being further operative to hold said second roll in said reserve position while said first roll spindle means moves from said first position to said second position and to automatically release and guide said second roll, under the influence of gravity, from said reserve position to said dispensing position when said first roll spindle means has moved to said second position.

2. A dispenser as recited in claim 1, further comprising stop means limiting the range of pivotal movement of said pivotally mounted guide track members.

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3. A dispenser as recited in claim 1, wherein said supporting means includes means for engaging the periphery of said first roll when the first roll is in said dispensing position.

dispenser further comprises a cabinet; and wherein said first roll periphery engaging means comprises a wall of said cabinet.

4. A dispenser as recited in claim 3; wherein said dis-

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