

April 8, 1969

P. W. JESPERSEN

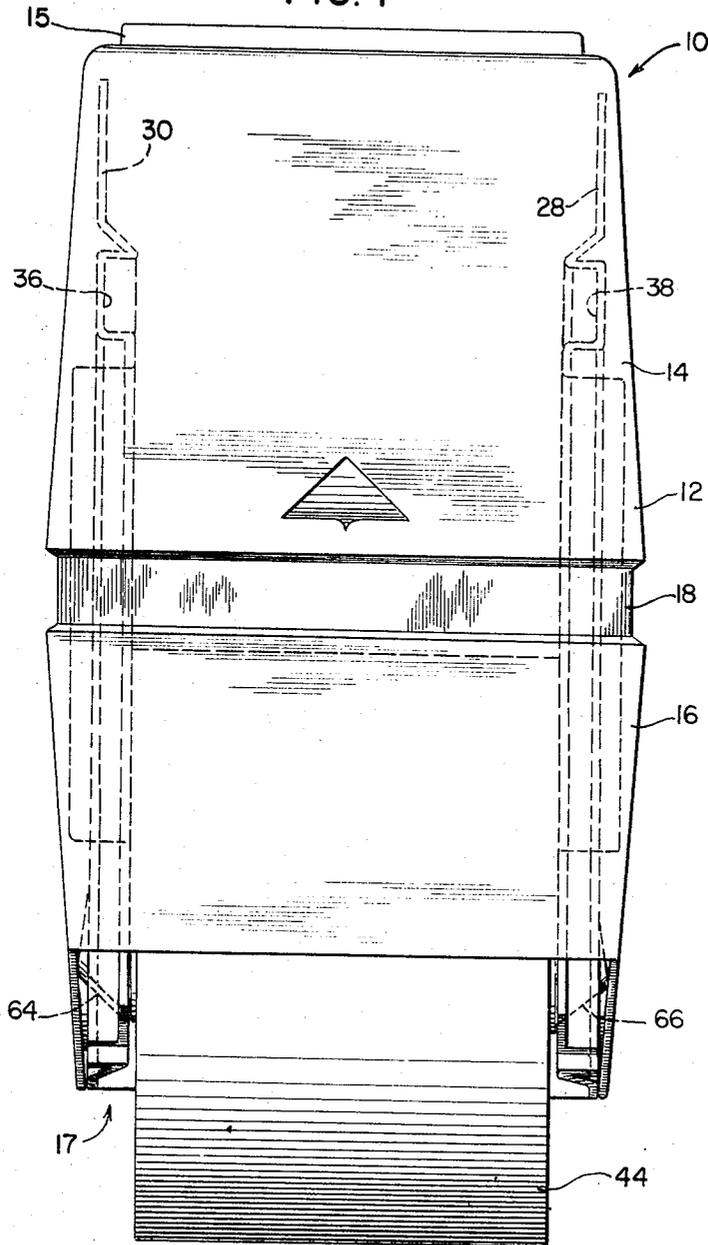
3,437,388

DISPENSER FOR ROLLS OF FLEXIBLE SHEET MATERIAL

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FIG. 1



INVENTOR

PAUL W. JESPERSEN

BY *Irons, Bich, Quindler & McKee*

ATTORNEYS

April 8, 1969

P. W. JESPERSEN

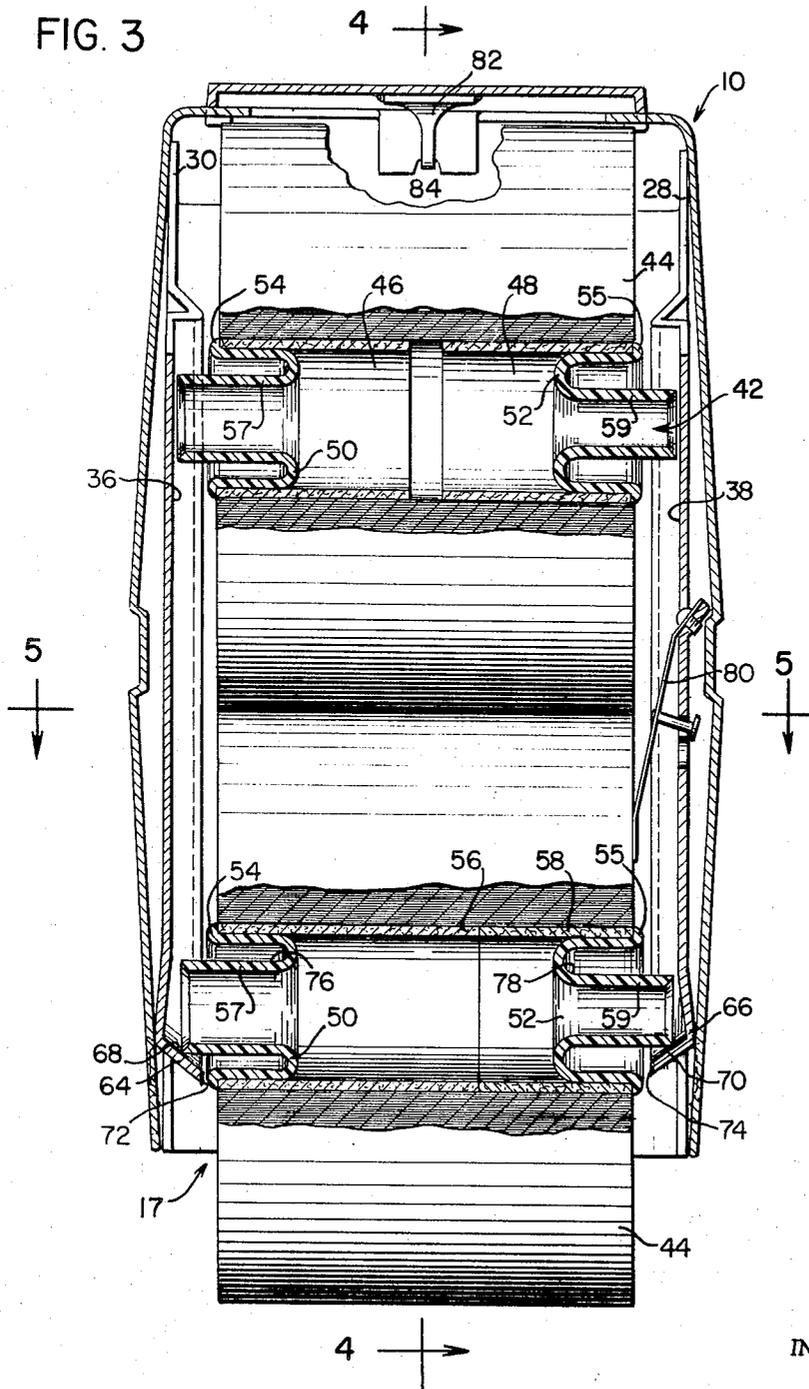
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DISPENSER FOR ROLLS OF FLEXIBLE SHEET MATERIAL

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FIG. 3



INVENTOR

PAUL W. JESPERSEN

BY *Stone, Bick, Swinder & McKie*

ATTORNEYS

April 8, 1969

P. W. JESPERSEN

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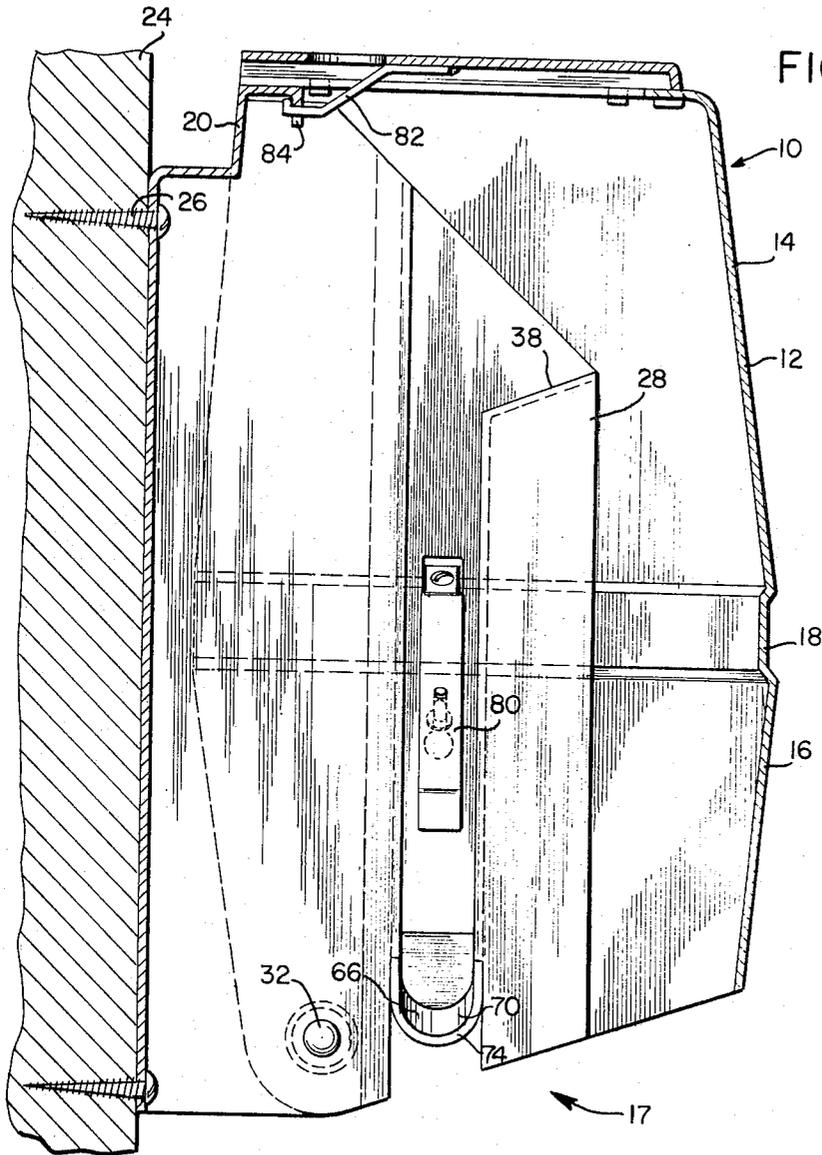


FIG. 4

INVENTOR

PAUL W. JESPERSEN

BY *Irond, Birch, Swindler & M. Kie*
ATTORNEYS

April 8, 1969

P. W. JESPERSEN

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FIG. 5

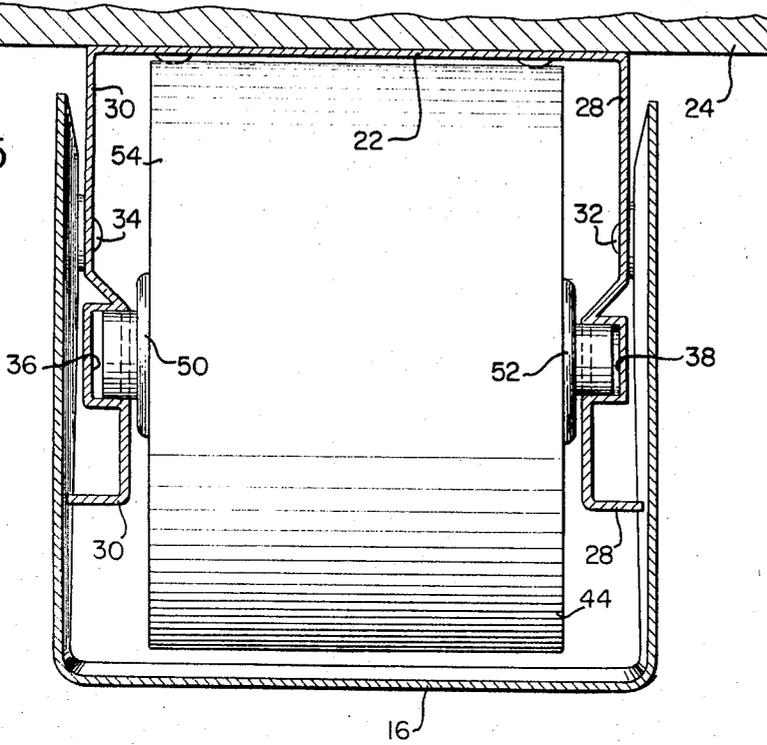
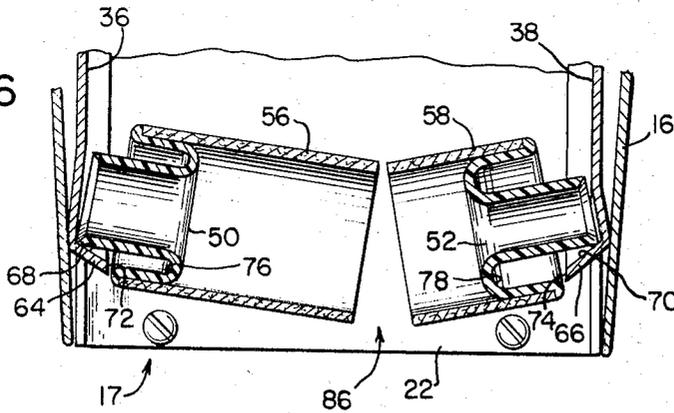


FIG. 6



INVENTOR

PAUL W. JESPERSEN

BY *Irwin, Birch, Swindler & McKel*

ATTORNEYS

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DISPENSER FOR ROLLS OF FLEXIBLE SHEET MATERIAL

Paul W. Jespersen, Westport, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg., a corporation of Georgia

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13 Claims

ABSTRACT OF THE DISCLOSURE

A device for dispensing a roll of flexible sheet material having an internal supporting means which extends axially beyond the ends of the roll and which includes a plurality of axially aligned, separable core sections frictionally engaged by the roll, comprising; a framework including a pair of horizontally opposed supporting elements for rotatably engaging the ends of the supporting means to position the roll for rotation about a substantially horizontal axis, wherein at least one of the supporting elements includes integral means for urging the supporting means downwardly so that when the sheet material is substantially exhausted from about the supporting means and the core sections disengaged thereby, the downward urging imparted to the supporting means will facilitate separation of the core sections causing the supporting means to collapse and be discharged from the device.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to dispensers for rolls of flexible sheet material, such as toilet paper. Specifically, the invention concerns a dispenser for rolls of flexible sheet material having internal supporting means which extend outwardly beyond the ends of the rolls and which include a plurality of axially aligned, separable core sections, as disclosed in my copending application Ser. No. 621,633. The dispenser includes supporting elements for rotatably engaging the ends of such a supporting means to appropriately position the roll for dispensing. The supporting elements continually urge the supporting means downwardly out of the dispenser so that when the roll is substantially exhausted from about the supporting means, separation of the core sections will be facilitated and the supporting means will collapse and be discharged from the dispenser.

Description of the prior art

Dispensers for rolls of toilet paper having internal supporting means comprising a plurality of axially aligned, separable core sections are known in the art, as exemplified by Bump Patent 3,211,504. However, in dispensers of the type disclosed in the Bump patent there is a tendency for the core sections to remain in position after the toilet paper has been exhausted from thereabout. This tendency results from the lack of means within the dispenser for facilitating separation of the core sections.

Therefore, a dispenser for rolls of toilet paper having multi-section core structures is needed which includes means for facilitating separation of the core sections after the toilet paper has been exhausted from thereabout. Such dispenser desirably also should be of a rugged construction and be easy to load and maintain.

SUMMARY OF THE INVENTION

The dispenser of the present invention obviates the above-mentioned problem associated with the prior art dispensers for toilet paper rolls having multi-section core

structures, by providing a means which facilitates separation of the core sections after the toilet paper has been exhausted from thereabout.

In its broadest aspects, the dispenser of the invention comprises; a framework including a pair of substantially horizontally opposed supporting elements for rotatably supporting therebetween a roll of flexible sheet material having an internal supporting means which extends axially outwardly beyond the ends of the roll and which includes a plurality of axially aligned core sections; wherein the ends of the supporting means are rotatably engaged by the supporting elements, and at least one of the supporting elements includes integral means engageable by one end of the supporting means for urging the supporting means downwardly so that when the flexible sheet material is substantially exhausted from thereabout, the downward urging imparted to the supporting means will facilitate separation of the core sections causing the supporting means to collapse and be discharged downwardly out of the dispenser.

Generally described, a preferred embodiment of the dispenser of the invention comprises; a housing having an opening therein for dispensing therefrom a roll of flexible sheet material having a supporting means positioned internally thereof which extends axially outwardly beyond the ends of the roll and which includes a plurality of axially aligned core sections, and a framework within the housing including a pair of substantially horizontally opposed supporting elements positioned adjacent said opening for rotatably engaging the ends of the supporting means to position the roll within the opening; wherein at least one of the supporting elements includes a bearing surface engageable by one end of the supporting means and inclined downwardly and inwardly toward the other supporting element so that when the sheet material is substantially exhausted from about the supporting means, said one end of the supporting means will be urged downwardly into the opening to facilitate separation of the core sections causing the supporting means to be discharged downwardly out of the dispenser through the opening.

With the foregoing in mind, it is an object of the present invention to provide a dispenser for rolls of flexible sheet material having a plurality of axially aligned core sections internally thereof which dispenser includes means for facilitating separation of the core sections after the flexible sheet material has been exhausted from thereabout.

It is an other object of the invention to provide a dispenser for rolls of flexible sheet material having internal supporting means which extend axially outwardly beyond the ends of the rolls and which include a plurality of axially aligned core sections, which dispenser includes means for urging the supporting means downwardly to facilitate separation of the core sections when the flexible sheet material has been substantially exhausted from about the supporting means.

It is a further object of the invention to provide a dispenser for rolls of flexible sheet material embodying a sturdy construction and which may be loaded and maintained with relative ease.

These and other objects of the invention will become apparent from a consideration of the following detailed description of one embodiment thereof given in connection with the following drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of the dispenser of the invention;

FIG. 2 is a side elevational view of the dispenser shown in FIG. 1;

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FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3;

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

FIG. 6 is a sectional view of a portion of the dispenser of the invention, showing the manner in which the internal supporting means for a roll of flexible sheet material embodying a multi-section core structure is discharged from the dispenser.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The flexible sheet material dispenser of the invention is designated in the drawings by reference numeral 10. Dispenser 10 comprises an external housing 12 having an upper portion 14 and a lower portion 16. Portions 14 and 16 are open at the rear and have mating front and side panels which are attached to a decorative median strip 18, and which enclose the front and sides of dispenser 10. Upper portion 14 has a top panel 15 which encloses the top of the dispenser, while lower portion 16 is open at the bottom defining a dispensing opening 17 therein.

Positioned within housing 12 is a framework 20, having a rear member 22 which may be attached to a bearing wall 24 by appropriate fasteners, such as screws 26, for appropriately positioning dispenser 10 for use. Framework 20 also includes opposed side members 28 and 30 which, as shown in FIG. 5, are integrally connected to rear member 22.

Housing 12 is pivotally connected to the lower, rear portions of side members 28 and 30 by pivot pins 32 and 34, respectively. As shown in phantom lines in FIG. 2, housing 12 may be pivoted about the pivot pins outwardly from about framework 20 to permit dispenser 10 to be loaded, as described below.

Side members 28 and 30 include substantially vertically extending guide channels 36 and 38, respectively. Guide channels 36 and 38 have enlarged, open upper ends and lower ends which communicate with supporting elements 64 and 66, respectively.

The guide channels receive the ends of the internal supporting means for the rolls of toilet paper to be dispensed from dispenser 10. Such rolls and the internal supporting means therefor are best seen in FIG. 3, including rolls of toilet paper 44 having supporting means 42 positioned internally thereof. Each supporting means 42 includes a pair of axially aligned, separable core sections, such as axially spaced apart sections 46 and 48 or axially abutting sections 56 and 58. These different types of core sections are merely illustrative of the various multi-section core structures which may be used with dispenser 10. Inserted into the outer ends of the core sections are trunnions 50 and 52 which rotatably support rolls 44 in dispenser 10.

Outer annular portions 54 and 55 of trunnions 50 and 52, respectively, are substantially coterminous with the outer ends of the core sections and the ends of roll 44. Inner annular trunnion portions 57 and 59 extend outwardly beyond the ends of the roll and comprise the ends of trunnions 50 and 52, respectively, and the ends of supporting means 42.

As will be noted in FIG. 5, trunnion portions 57 and 59 are cylindrically shaped and preferably are of different diameters. The ends of trunnions 50 and 52 are received within guide channels 38 and 36, respectively, which are of different widths corresponding to the different diameters of the trunnion ends. This arrangement insures that rolls 44 will be loaded into dispenser 10 in the correct manner for the proper withdrawal of toilet paper from opening 17.

Supporting elements 64 and 66 rotatably engage the

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ends of trunnions 50 and 52, and thereby position supporting means 42 so that roll 44 is disposed for rotation about a substantially horizontal axis within opening 17. As shown in FIGS. 3 and 6, supporting elements 64 and 66 comprise outwardly extending pockets formed at the bottom of guide channels 36 and 38, and include integral bearing surfaces 68 and 70, respectively, on which the ends of the trunnions ride and which are inclined downwardly and inwardly toward the respectively opposed supporting element. Bearing surfaces 68 and 70 are also arcuately shaped, as shown in FIG. 4 with respect to bearing surface 68, for accommodating the cylindrically shaped ends of the trunnions therein.

Preferably, the lower portions of supporting elements 64 and 66 terminate in narrow arcuately shaped lips 72 and 74, respectively. The lips may be received within axially extending, annular recesses 76 and 78 formed in trunnions 50 and 52, respectively, between the inner and outer trunnion portions, to facilitate the separation of axially abutting core sections 56 and 58, as described below.

Attached to side member 28 of framework 20 is a biasing means, such as a small leaf spring 80, which engages the end of roll 44 when the roll is disposed in the dispensing position within opening 17. Spring 80 acts as a brake on the end of the roll to prevent uncontrolled spinning thereof and consequent wastage of the toilet paper.

Affixed to top panel 15 of upper housing portion 14 is a means for releasably locking housing 12 to framework 20. Such means may comprise a spring arm 82 which releasably engages a flange 84 formed as an integral part of framework 20. If desired, for commercial installations, a key-operated releasable locking means may be substituted for spring arm 82 to prevent unauthorized personnel from removing rolls 44 from dispenser 10.

To load the dispenser, spring arm 82 is depressed by pushing inwardly on top panel 15 to disengage the arm from flange 84, and housing 12 is pivoted about pivot pins 32 and 34 outwardly from about framework 20 to expose the upper open ends of guide channels 36 and 38. One or more rolls 44 may then be inserted between the guide channels, depending on the length thereof, with the ends of trunnions 50 and 52 being received within and guided by the channels. If only a single roll is loaded into the dispenser, it falls downwardly between the guide channels until the ends of trunnions 50 and 52 are engaged by bearing surfaces 68 and 70. In this manner, the roll is appropriately positioned within dispensing opening 17 for a user to withdraw toilet paper sheets therefrom as desired.

If a second roll is loaded into the dispenser at the same time, it is disposed between guide channels 36 and 38 similarly to the first roll, with the periphery of the second roll engaging the periphery of the first roll, as shown in FIG. 3. After the first roll has been exhausted and supporting means 42 therefor discharged from the dispenser, the second roll automatically drops into the dispensing position between supporting elements 64 and 66.

While a roll is disposed in the dispensing position, bearing surfaces 68 and 70 continually urge the ends of trunnions 50 and 52 axially of supporting means 42 and downwardly into opening 17. However, as long as the quantity of toilet paper frictionally engaging the core sections is sufficient to maintain the rigidity of the supporting means, the ends of trunnions 50 and 52 will be prevented from sliding off of bearing surfaces 68 and 70, due to the abutment of outer trunnion portions 54 and 55 and the ends of roll 44 against the inner edges of the adjacent guide channels. There is an insufficient amount of lateral space between the outer trunnion portions and roll ends, which define substantially vertical planes, and the inner edges of the adjacent guide channels, which also define substantially vertical planes, to permit supporting means 42 to shift laterally in either direction far enough for one

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of the trunnion ends to be disengaged from the bearing surface on which it is supported.

The collapsing and discharge sequence of a supporting means embodying axially abutting core sections 56 and 58 after substantially all of the toilet paper has been exhausted from about the supporting means occurs in substantially the following manner and as illustrated in FIG. 6. When the quantity of paper engaging core sections 56 and 58 is insufficient to maintain the rigidity of the supporting means, the inward and downward urging imparted to the trunnion ends causes the lower portions of the abutting edges of the core sections to pivot downwardly and outwardly away from each other, defining an ever increasing opening 86 therebetween.

During the initial stages of this separation, the upper portions of the abutting edges of the core sections will continue to abut another so that a cross-section of opening 86 taken axially of the supporting means is substantially V-shaped. As the abutting edges of the core sections continue to pivot downwardly, the lower portions of trunnions 50 and 52 will shaft axially outwardly, and lip 72 will be received within recess 76 and lip 74 will be received within recess 78. It is extremely important that the dispenser include means such as this for permitting the ends of the supporting means to move axially outwardly or otherwise the abutting edges of the core sections may bind against each other preventing the sections from separating.

After the abutting edges of core sections 56 and 58 pivoted downwardly a short distance, the upper portions of the abutting edges separate, as shown in FIG. 6, and the core sections and attached trunnions fall downwardly out of dispenser 10 through opening 17.

The core section separation, and supporting means collapsing and discharge sequence of a supporting means embodying axially spaced apart core sections 46 and 48 is much simpler, since there is no tendency for such core sections to bind against each other after the toilet paper has been exhausted from thereabout. The inward and downward urging imparted to the trunnion ends by bearing surfaces 68 and 70 merely causes the core sections and attached trunnions to fall downwardly out of the dispenser through opening 17 as separate units. However, a supporting means embodying an axially spaced apart core section construction is more expensive to manufacture than an abutting core section construction, and therefore supporting means embodying the latter construction may be more desirable from an economic viewpoint.

While the foregoing is believed to constitute a complete description of a preferred embodiment of the invention, it is recognized that various modifications thereof will occur to those skilled in the art.

I claim:

1. A device for rotatably supporting, in a dispensing position, a roll of flexible sheet material having a supporting means positioned internally thereof which extends axially outwardly beyond the ends of said roll and which includes a plurality of axially aligned, separable core sections frictionally engaged by said roll; said device comprising:

a framework including a pair of substantially horizontally opposed support elements for rotatably engaging the ends of said supporting means to position said roll for rotation about a substantially horizontal axis;

at least one of said supporting elements including integral means engageable by one end of said supporting means for urging the supporting means downwardly so that when the flexible sheet material is substantially exhausted from about the supporting means and the core sections are substantially disengaged thereby, the downward urging imparted to the supporting means will facilitate separation of the core sections causing the supporting means to collapse and be discharged downwardly out of the device.

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2. A device for rotatably supporting, in a dispensing position, a roll of flexible sheet material having a supporting means positioned internally thereof which extends axially outwardly beyond the ends of said roll and which includes a plurality of axially aligned, separable core sections frictionally engaged by said roll; said device comprising:

a framework including a pair of substantially horizontally opposed supporting elements for rotatably engaging the ends of said supporting means to position said roll for rotation about a substantially horizontal axis;

at least one of said supporting elements including a bearing surface engageable by one end of said supporting means, said bearing surface being inclined downwardly and inwardly toward the other of said supporting elements so that when the flexible sheet material is substantially exhausted from about the supporting means and the core sections are substantially disengaged thereby, said one end of the supporting means will be urged axially of the supporting means and downwardly to facilitate separation of the core sections causing the supporting means to collapse and be discharged downwardly out of the device.

3. A device as recited in claim 2 wherein said framework further includes means associated with said supporting elements for permitting the ends of the supporting means to move axially outwardly while the core sections are separating.

4. A device as recited in claim 2 wherein said downwardly and inwardly inclined bearing surface is arcuately shaped for accommodating said one end of the supporting means therein.

5. A device as recited in claim 2 wherein each of said supporting elements includes a bearing surface inclined downwardly and inwardly toward the other of said supporting elements so that both ends of the supporting means will be urged axially of the supporting means and downwardly to facilitate separation of the core sections when the flexible sheet material is substantially exhausted from about the supporting means.

6. A device as recited in claim 5 wherein each said bearing surface is arcuately shaped for accommodating one end of the supporting means therein.

7. A device as recited in claim 2 wherein said framework further includes a pair of opposed, elongated guide channels, one end of each of said channels being open for receiving one end of the supporting means therein and the other end of each of said channels communicating with one of said supporting elements, whereby said channels guide the ends of the supporting means from said open ends thereof to said supporting elements with the roll disposed therebetween.

8. A device as recited in claim 7 wherein said guide channels are long enough to accommodate a plurality of rolls therebetween with one roll at a time being guided into a dispensing position between said supporting elements.

9. A device as recited in claim 7 wherein the ends of said supporting means are cylindrically shaped and are of different diameters, and wherein said guide channels are of different widths corresponding to the different diameters of the ends of the supporting means, whereby the roll may be disposed between the guide channels only when each end of the supporting means is received by the corresponding guide channel.

10. A device as recited in claim 2 further comprising a housing having an opening in the lower portion thereof, and wherein said framework is positioned within said housing with the supporting elements being positioned adjacent said opening so that flexible sheet material may be withdrawn from the opening by a user.

11. A device as recited in claim 10 wherein said hous-

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ing is pivotally connected to said framework so that the housing may be pivoted outwardly from about the framework to permit the roll to be disposed between said supporting elements, and then pivoted inwardly about said framework to cover the roll after it has been so disposed.

12. A device as recited in claim 11 further comprising means for releasably locking said housing to said framework to prevent the housing from being pivoted outwardly from thereabout.

13. A device as recited in claim 2 further comprising a biasing means attached to said framework for engaging one end of the roll when the ends of the supporting means are engaged by said supporting elements to prevent uncontrolled spinning of the roll.

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BOBBY R. GAY, *Primary Examiner.*

J. L. KOHNEN, *Assistant Examiner.*

U.S. Cl. X.R.

242—55.53