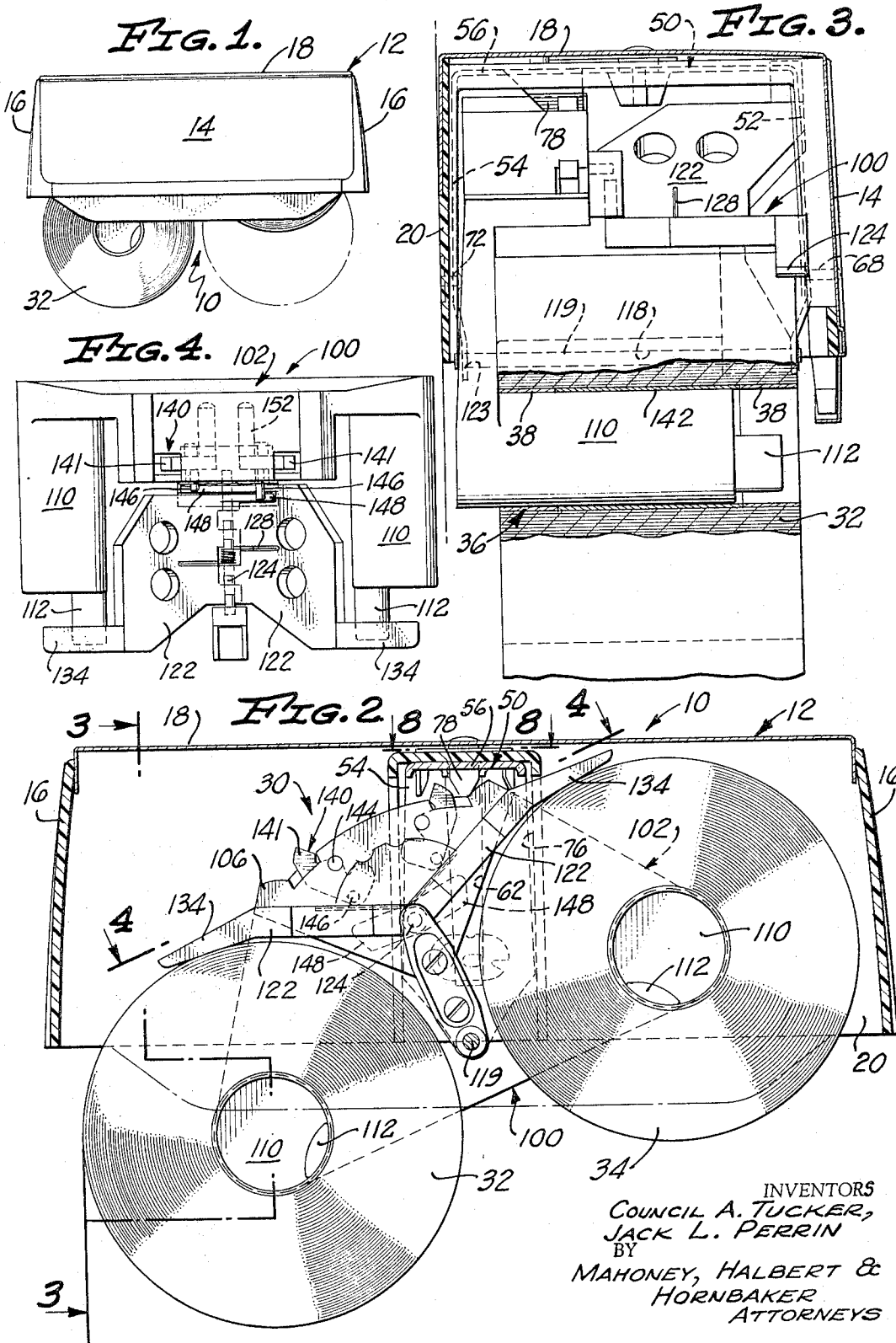


METHOD AND APPARATUS FOR DISPENSING STRIP MATERIAL

Filed Jan. 27, 1964

4 Sheets-Sheet 1



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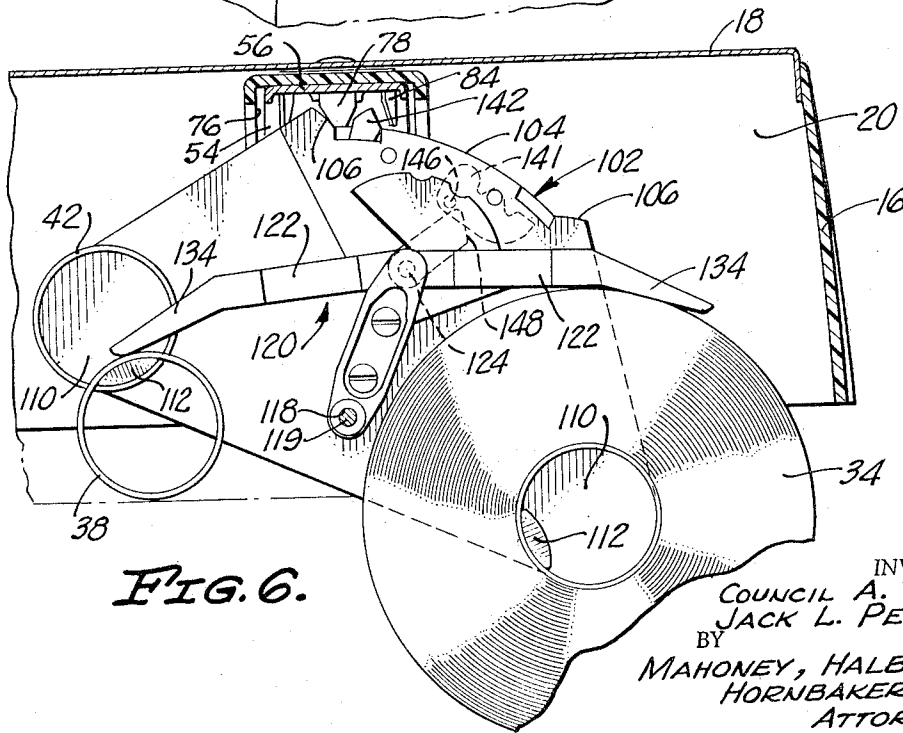
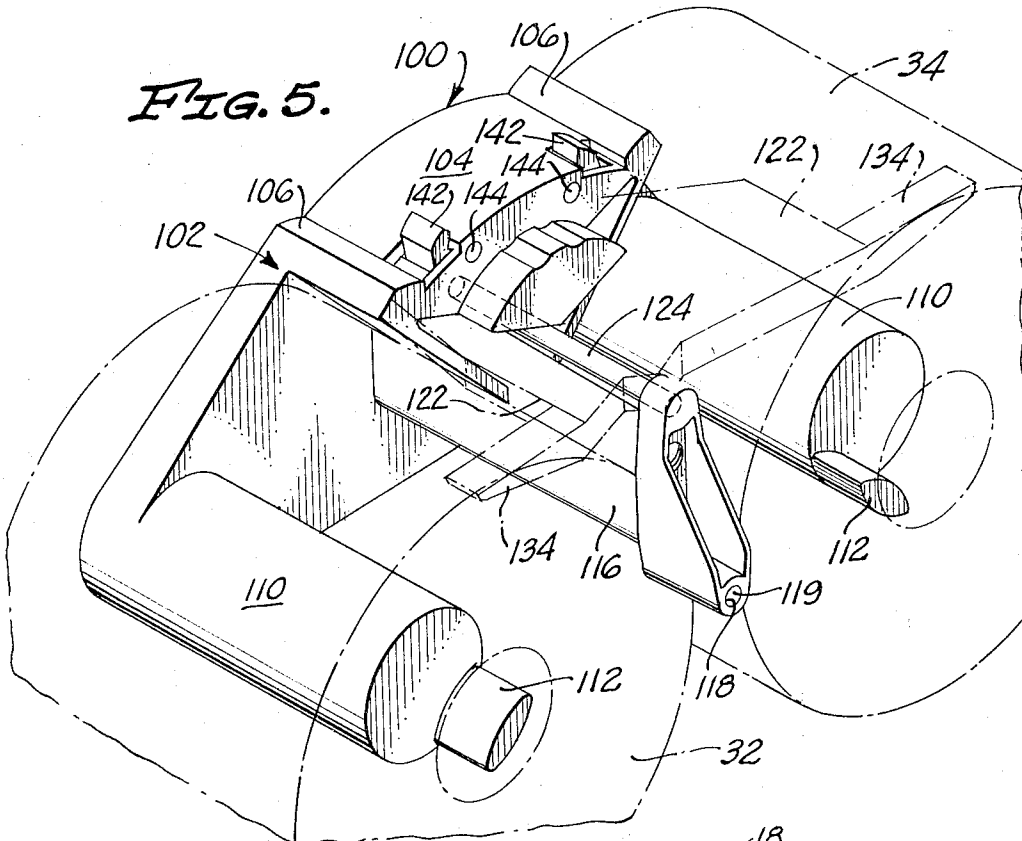
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METHOD AND APPARATUS FOR DISPENSING STRIP MATERIAL

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4 Sheets-Sheet 2



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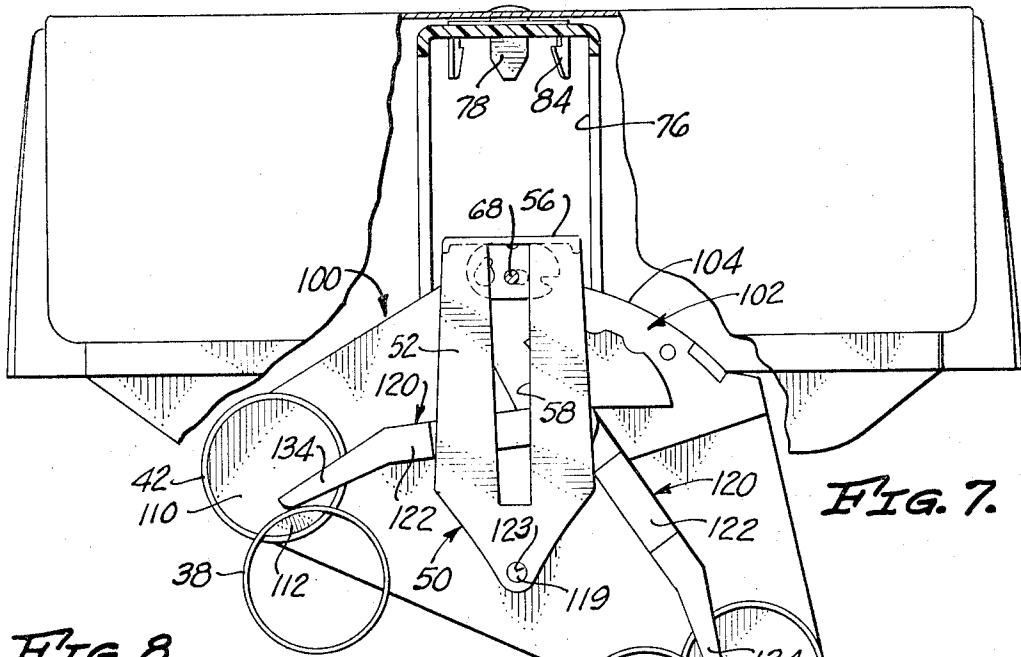


FIG. 7.

FIG. 8.

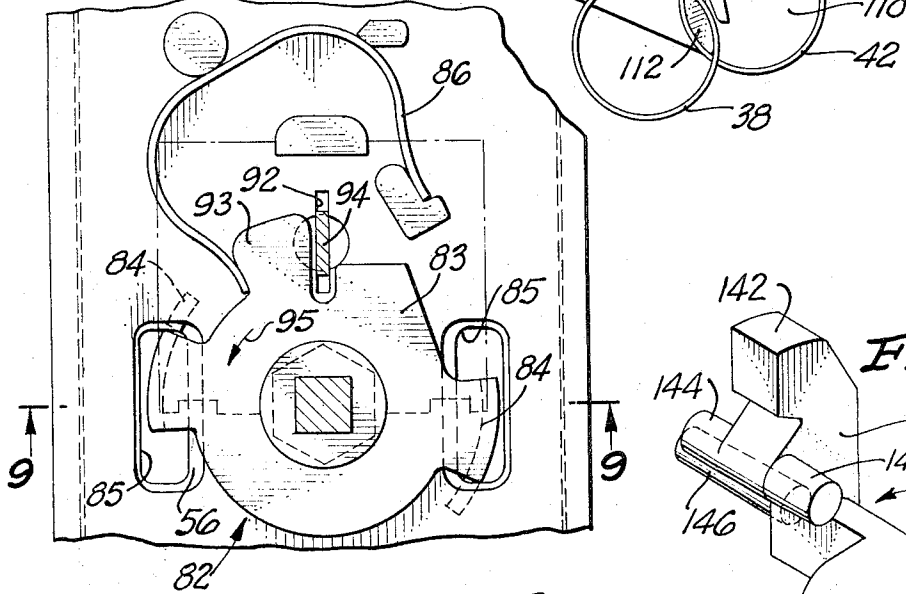


FIG. 9.

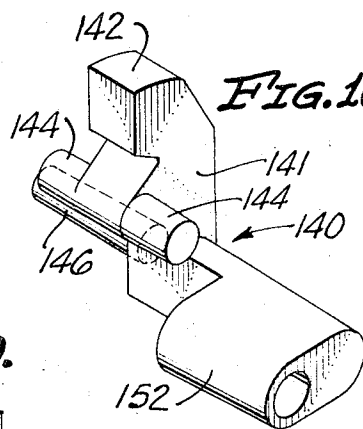
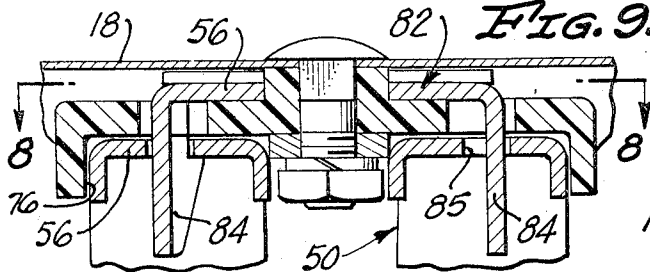


FIG. 10.

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METHOD AND APPARATUS FOR DISPENSING STRIP MATERIAL

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FIG. 11.

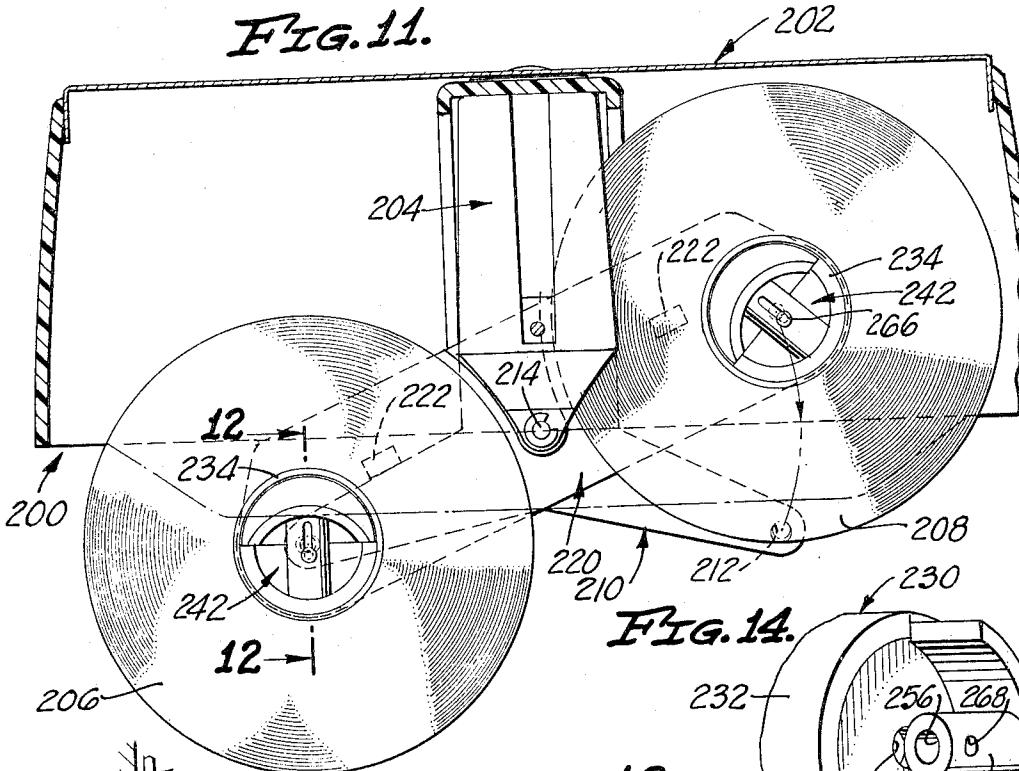


FIG. 14.

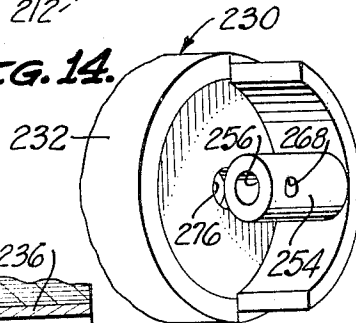


FIG. 12.

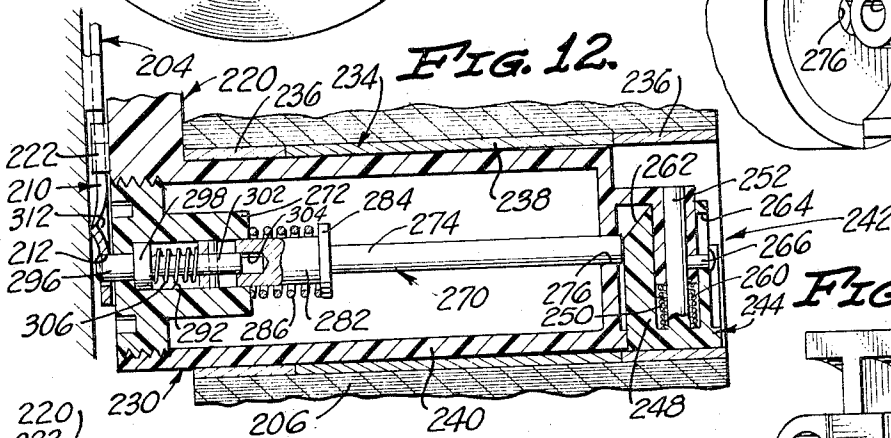


FIG. 15.

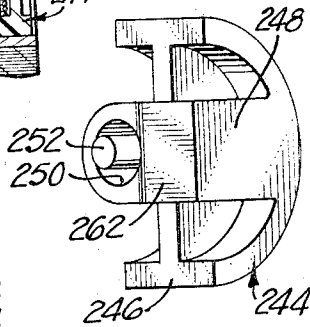
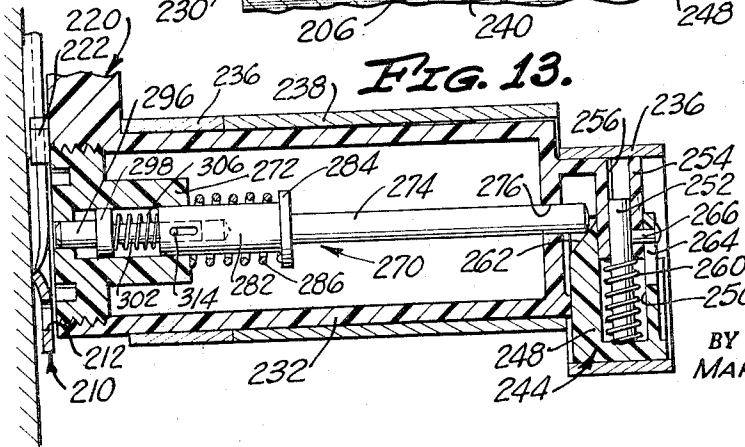


FIG. 13.



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## METHOD AND APPARATUS FOR DISPENSING STRIP MATERIAL

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Filed Jan. 27, 1964, Ser. No. 340,389  
10 Claims. (Cl. 242—55.3)

This invention relates to a method and apparatus for dispensing strip material, the apparatus being embodied in a dispenser adapted to dispense a plurality of rolls of strip material sequentially while maintaining one of the rolls in a dispensing position and the other of said rolls in a reserve position.

To facilitate the consideration of the construction and mode of operation of the dispenser of the invention, it will be described as embodied in a dispenser for sequentially dispensing a plurality of rolls of toilet tissue, but it will be obvious to those skilled in the art that the principles of the invention may be applied with equal cogency to various types of dispensers for dispensing different types of rolls of strip material.

One of the major problems encountered with conventional toilet tissue dispensers is the fact that, when dispensers for a single roll of tissue are utilized, the tissue is frequently exhausted before the custodian has an opportunity to replace the same with consequent inconvenience. On the other hand, where a dispenser mounting a plurality of rolls of toilet tissue is provided, wastage of toilet tissue frequently results because of the simultaneous exposure of both rolls of tissue for use.

It is, therefore, an object of the invention to provide a toilet tissue dispenser which is characterized by the fact that it is adapted to support a plurality of rolls of toilet tissue while maintaining one of the rolls in a dispensing position and the other of the rolls in a reserve position until the complete consumption of the roll which is disposed in the dispensing position.

Another object of the invention is the provision, in a device of the aforementioned character, of roll holder means adapted to maintain the rolls of toilet tissue thereupon in a dispensing and reserve relationship whereby only one roll of toilet tissue is exposed for use at one time so that the waste incident to the simultaneous exposure of a plurality of rolls of toilet tissue is eliminated.

One of the major problems encountered with conventional toilet tissue dispensers for a plurality of rolls of tissue is the fact that such dispensers entail relatively complex manipulation of either the dispenser or toilet tissue in order to bring a reserve roll into the dispensing position.

Another object of the invention is the provision of a dispenser of the aforementioned character which is adapted to automatically locate the reserve roll in a dispensing position after the complete consumption of a roll of strip material previously located in the dispensing position. Therefore, the elaborate manipulation of either the dispenser or the rolls of toilet tissue to locate the reserve roll in the dispensing position characteristic of prior art devices is eliminated.

Another object of the invention is the provision, in a dispenser of the aforementioned character, of a housing incorporating a pivotally mounted roll holder which is adapted to be maintained in a first dispensing position by associated latch means and to be automatically located in a second dispensing position upon the automatic release of said latch means.

An additional object of the invention is the provision, in a dispenser of the aforementioned character, of detector means adapted to detect the complete consumption of a roll of strip material located in the dispensing position and further adapted to automatically release the roll

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holder latch means in order that said roll holder may be moved into the second position in which the reserve roll will be located in a dispensing position.

Another object of the invention is the provision of a dispenser of the aforementioned character which includes a housing having a roll holder mounted for pivotal movement therein, said roll holder having a plurality of roll supports thereupon adapted to receive rolls of strip material characterized by the incorporation of cores having a plurality of core elements, the roll supports being provided with reduced portions adapted to permit the displacement of the core elements with respect to each other when the strip material upon the core elements has been completely consumed.

Another object of the invention is the provision, in a dispenser of the aforementioned character, of detector means mounted in operative relationship with the roll holder and adapted to displace a core element of an associated core upon the complete dispensing of the strip material associated with said core.

An additional object of the invention is the provision, in a dispenser of the aforementioned character, of latch means operatively associated with the roll holder and adapted to prevent pivotal movement of the roll holder within the housing until movement of the detector means occasioned by the displacement of an associated core element releases said latch means to permit said pivotal movement of said roll holder.

Another object of the invention is the provision of a dispenser of the aforementioned character which may be readily refilled prior to the complete exhaustion of the rolls of toilet tissue being dispensed therefrom. Therefore, it is not necessary to remove a partially exhausted roll in order that a full roll may be placed in the dispenser but merely necessary that a full roll be placed in the reserve position while the partially consumed roll being dispensed is maintained in the dispensing position.

A further object of the invention is the provision of a method for detecting the complete consumption of a roll of strip material having a multi-sectional core, said method including the step of placing detector means in engagement with the roll of strip material to displace a section of the core when the roll is completely consumed.

Other objects and advantages of the invention will be apparent from the following specification and the accompanying drawings, which are for the purpose of illustration only, and in which:

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

FIG. 2 is a longitudinal, sectional view;

FIG. 3 is a vertical sectional view taken on the broken line 3—3 of FIG. 2;

FIG. 4 is an enlarged, fragmentary top plan view taken from the broken line 4—4 of FIG. 2;

FIG. 5 is an isometric view showing various operative components of the dispenser;

FIG. 6 is a longitudinal, sectional view showing the reserve roll located in the dispensing position;

FIG. 7 is a sectional view illustrating the carriage of the invention in its second, lower position;

FIG. 8 is an enlarged, fragmentary sectional view taken on the line 8—8 of FIG. 9 and showing the second latch means of the invention;

FIG. 9 is a longitudinal, sectional view taken on the line 9—9 of FIG. 8;

FIG. 10 is an isometric view illustrating one of the first latch means of the dispenser of the invention;

FIG. 11 is a transverse sectional view showing an alternative embodiment of the dispenser of the invention;

FIG. 12 is a longitudinal sectional view taken on the broken lines 12—12 of FIG. 11;

FIG. 13 is a view similar to FIG. 12, showing the component parts illustrated in a different orientation from that of FIG. 12;

FIG. 14 is an isometric view of a portion of the dispenser shown in FIGS. 11-13; and

FIG. 15 is an isometric view of another portion of the dispenser.

Referring to the drawings, and particularly to FIGS. 1-3 thereof, we show a dispenser 10 constructed in accordance with the teachings of our invention and including a housing 12 of generally rectangular configuration which is adapted to be mounted in operative relationship with a wall or other supporting surface, not shown. The housing 12 is of substantially rectangular configuration and includes a front wall 14, end walls 16, a top wall 18 and a rear wall 20.

The housing 12 is open at the bottom and serves as an enclosure for a dispensing mechanism 30 for a plurality of rolls 32 and 34 of strip material, said rolls, in the present embodiment of the invention, being constituted by rolls of toilet tissue. The rolls 32 and 34, utilized in conjunction with the dispenser 10, are characterized by the incorporation of cores 36 which are constituted by a plurality of core elements 38 and 42, the core elements 38 being considerably shorter than the centrally located core element 42 and being adapted to be located adjacent the front wall 14 of the dispenser 10. The function and purpose of the multi-element core 36 will be described in greater detail below in describing the construction and mode of operation of the dispenser 10 and is also described in co-pending application entitled Separable Core Structure for Roll of Strip Material, Ser. No. 275,075, filed Apr. 23, 1963, now Patent No. 3,214,014.

It will be noted that the dispenser 10 is designed to locate one roll 32 of toilet tissue in a dispensing position in which the bulk of the perimeter of the roll of toilet tissue 32 is exposed, and to locate the other roll 34 of toilet tissue in a position in which it is substantially concealed within the housing 12, as best shown in FIG. 2 of the drawings.

The dispensing mechanism 30 includes a carriage 50 which is formed from sheet metal, and which is, as best shown in FIGS. 2 and 3 of the drawings, of substantially inverted, U-shaped configuration. The carriage 50 includes front and back legs 52 and 54, respectively, and an intermediate horizontal leg 56 adapted to be juxtaposed in contiguity to the underside of the top wall 18 of the housing 12 when the carriage 50 is located in the first, upper position shown in FIG. 2 of the drawings. The carriage 50, as best shown in FIG. 7 of the drawings, is adapted to be moved downwardly within the housing 12 to locate it in a second, lower position, for a purpose which will be described in greater detail below. Although a carriage 50 is provided with the present embodiment of the invention, it will be obvious that the carriage 50 may be dispensed with in other embodiments of the invention.

The front leg 52 of the carriage 50 incorporates an elongated slot 58 and a corresponding slot 62 is formed in the rear leg 54, as best shown in FIGS. 2 and 7 of the drawings. A rivet 68 mounted on the front wall 14 of the housing 12 has its shank located in the slot 58 in the front leg 52 of the carriage 50, and a similar rivet 72 mounted in the rear wall 20 has its shank located in the corresponding slot 62 in the back or rear leg 54 of the carriage 50.

The rear wall 20 of the housing 12 includes an elongated recess 76 which conforms, generally, to the configuration of the rear legs 54 of the carriage 50 and, thus, serves as a guide for the carriage 50 during its movement between the first, upper position and the second, lower position of said carriage. Of course, equivalent means can be utilized to guide the carriage 50 such as ribs formed in the rear wall 20, or the like.

Located centrally of and depending from the underside of the top wall 18 of the housing 12 is a substantially

rectangular rib 78. A lock 82 is mounted on the top wall 18 of the housing 12 and includes a rotatable plate 83 having depending dogs 84 thereupon. The dogs 84, as best shown in FIGS. 8 and 9, depend through openings 85 in the top leg 56 of the carriage 50 and serve to maintain the carriage in its first, upper position by underlying the underside of the top leg 56 adjacent said openings.

A spring 86, FIG. 8, rotates the plate 83 into an operative position in which the dogs 84 hold the carriage 50 in its upper position.

An elongated key receiving slot 92 is provided for the lock 82, as best shown in FIG. 8 of the drawings, and is located in overlying relationship with a lobe 93 on the plate 83. The key receiving slot 92 is adapted to receive a key 94 which, as best shown in FIG. 8 of the drawings, is adapted to engage the lobe 93 of the plate 83 to rotate the plate 83 in the direction of the arrow 95 and release the carriage 50 for downward movement.

Pivotaly mounted upon the carriage 50, as best shown in FIGS. 2-7 of the drawings, is a roll holder 100, which includes a body 102 having an arcuate upper surface 104 incorporating a plurality of detent lugs 106 at the opposite extremities thereof, for a purpose to be described in greater detail below. The body 102 of the rollholder 100 can be fabricated as a unitary structure, as by means of injection molding of a suitable plastic material and incorporates substantially cylindrical roll supports 110 at its opposite extremities, said roll supports having reduced, substantially elliptical portions 112, which are of the same length as the core elements 38, for a purpose to be described in greater detail below.

The body 102 incorporates a centrally located web 116 having a longitudinal bore 118 therein for the reception of a pin 119 which, as best shown in FIGS. 2-3 and 5-6 of the drawings, pivotaly supports the body 102 in operative relationship with the carriage 50 because the opposite extremities of the pin 119 are located in corresponding openings 123 in the lower extremities of the front and back legs 52 and 54, respectively, of the carriage 50.

Mounted in operative relationship with the roll holder 100 and adapted to control the pivotal movement thereof with respect to the carriage 50, is sensor or detector means 120 constituted by elongated detector arms 122 pivotaly mounted with their extremities disposed in overlying relationship with each other upon a common pivot pin 124 for independent rotation with respect to the body 102 of the roll holder 100. Each of the sensor or detector arms 122 is urged downwardly toward an associated roll support 110 by the torsion spring 128 secured to the pivot pin 124. Therefore, the torsion spring 128 serves to urge fingers 134 on the outer extremities of the arms 122 into engagement with the perimeters of the rolls 32 and 34 of toilet tissue, as best shown in FIG. 2 of the drawings.

Mounted for pivotal movement upon the body 102 of the roll holder 100 is first latch means 140 constituted by a pair of latch dogs 141 whose dogging extremities 142 are juxtaposed to the detent lugs 106 and adapted to cooperate with said lugs to maintain the roll holder 100 and, more particularly, the body 102 thereof in a predetermined orientation with respect to the housing 12 of the dispenser 10 by engagement with the lower extremity of the centrally located rib 78 on the underside of the top wall 18 of the housing 12. Each of the latch dogs 141 is mounted for rotation upon an integral pivot pin 144, as best shown in FIG. 10 of the drawings.

Each latch dog 141 has an actuating pin 146, FIG. 10, formed integrally therewith and engageable by a finger 148 on the associated extremity of the associated sensor or detector arm 122, as best shown in FIGS. 2, 4 and 6 of the drawings. Also incorporated in each of the latch dogs 141 is a counterweight 152 which serves to project the dogging extremity 142 of each latch dog above the arcuate surface 104.

Each sensor or detector arm 122 has its finger 148 engaged with the latch dog 141 which is oppositely oriented

from said sensor or detector arms. For instance, as best shown in FIGS. 2, 4 and 6 of the drawings, the left-hand detector arm 122 which is operatively engaged with the roll 32 of toilet tissue being dispensed, is operatively connected to the right-hand latch dog 141, and the right-hand sensor or detector arm 122 operatively engaged with the reserve roll 34 of toilet tissue is operatively connected to the left-hand latch dog 141.

The function of the detents 106 and latch dogs 141 is to maintain the roll holder 100 and, more particularly, the body 102 of said roll holder against pivotal movement with respect to the carriage 50 and, thus, to maintain the roll 32 in a dispensing position while the other roll 34 is maintained in a reserve position. This is accomplished by causing the fingers 134 on the arms 122 to engage the corresponding surfaces of the rolls 32 and 34. With the roll 32 positioned in the dispensing position, it is maintained in that position by the co-operative relationship between the right-hand latch dog 141 and the right-hand detent lug 106, as best shown in FIG. 2 of the drawings. In other words, the right-hand latch dog 141 has its latching extremity 142 engaged upon the left-hand side of the centrally located rib 78 and the detent lug 106 is engaged upon the right-hand side of said rib to prevent pivotal movement of the body 102 of the roll holder 100.

However, when all the strip material on the roll 32 in the dispensing position is exhausted, the torsion spring 123 associated with the left-hand sensor or detector arm 122 will urge said arm downwardly into the position of FIG. 6 of the drawings wherein it displaces the core element 38 with respect to the roll support 110 causing the core element 38 to be deflected downwardly into engagement with the corresponding reduced portion 112 of the roll support 110.

When the left-hand sensor or detector arm 122 moves downwardly into the position shown in FIG. 6, the finger 148 on said arm engages the actuating pin 146 and pivots the latch dog 141 downwardly into an inoperative position in which it releases the body 102 for rotation in a clockwise direction. When the body 102 is so released, the greater weight of the reserve roll 34 causes said body to be so rotated as to expose the reserve roll for use.

It will be noted that the fingers 134 of the sensor arms 122 also serve to prevent excessively free rotation of the rolls on the roll supports 110 by engagement with the perimeters of said rolls and also serve to catch and hold core segments from dropping on the floor.

In order to service the dispenser 10, it is merely necessary to place the key 94 in the slot 92 and to rotate the plate 83. When this occurs, the dogs 84 are withdrawn from operative engagement with the horizontal leg 56 of the carriage 50 to permit it to drop downwardly into the second, lower position shown in FIG. 7 of the drawings. The core elements 38 and 42 of the consumed rolls can then be removed and the arms 122 lifted to permit new rolls to be placed on the roll supports 110.

When the carriage 50 is moved downwardly, the latch dogs 141 are freed from operative engagement with the centrally located rib 78 and the body 112 may be freely rotated upon the pivot pin 119.

Therefore, the rolls of toilet tissue can be easily installed upon the associated roll supports 110. In addition, since the body 102 is freely pivotable in the lowermost position thereof, a new roll of tissue can be placed in operative relationship therewith without the necessity for dismounting the portion of the roll of tissue then in use.

Referring to the drawings, particularly FIGS. 11-15 thereof, there is shown another embodiment 200 of the tissue dispenser of the invention which includes a housing 202 of the same basic configuration and construction as the housing 12 of the previously discussed embodiment of the invention.

Mounted for vertical movement within the housing 202 is a carriage 204 of the same basic construction and opera-

tion as the carriage 50 in the previously discussed embodiment of the invention. In other words, the carriage 204 is adapted to move between a first uppermost position and a second lowermost position, the first uppermost position being that in which tissue may be dispensed from one or the other of two rolls 206 or 208 of tissue but never simultaneously. The lowermost position is that in which the carriage permits the dispenser 200 to be serviced in a manner which will be described in greater detail below.

Provided upon the carriage 204 is a bracket 210 of substantially V-shaped configuration, said bracket including detent openings 212 at its opposite extremities for a purpose which will be described in greater detail below. Pivotaly secured to the lower extremity of the carriage 204 by means of a pivot pin 214 is a roll holder 220 which incorporates stops 222 upon its inner surface adapted to impinge upon the upper edges of the arms of the V-shaped bracket 210, as best shown in FIGS. 11-13 of the drawings.

Mounted upon or formed integrally with the opposite extremities of the roll holder 220 are roll supports 230, one of which is shown in detail in FIGS. 12-13 of the drawings. Each of the roll supports 230 includes an elongated cylindrical body 232 adapted to receive the composite core 234 of one of the rolls 206 or 208, said core consisting of end sections 236 which are spaced from each other by intermediate sections 238, as best shown in FIG. 12 of the drawings.

Each of the roll supports 230 has a roll sensor or detector means 242 mounted in operative relationship therewith to detect the presence of a full roll of toilet tissue upon the associated roll support 230 and to indicate, in a manner to be described in greater detail below, the complete consumption of the roll of toilet tissue and, further, to automatically operate the dispenser 200 in such a manner as to locate the reserve roll of toilet tissue in the dispensing position. The roll sensing and detecting means 242 includes a radially movable sensing or detecting arm 244 which, as best shown in FIGS. 12-13 and 15 of the drawings, is constituted by a substantially semi-circular body 246 having a centrally located radial boss 248 provided thereupon which incorporates a cylindrical bore 250 in the center of which is located a guide pin 252.

The roll detecting arm 244 is mounted for reciprocation upon a cylindrical guide 254 which incorporates a cylindrical bore 256 adapted to receive, as best shown in FIGS. 12 and 13 of the drawings, the correspondingly shaped guide pin 252. Interposed between the lower extremities of the cylindrical guide 254 and the bottom of the bore 250 in which it is received is a compression spring 260 which is adapted to urge the detector arm 244 radially outwardly into the position shown in FIG. 13 of the drawings, for a purpose and in the manner which will be described in greater detail below.

A beveled portion 262 is provided upon the upper extremity of the centrally located boss 248 and an elongated limit slot 264 is incorporated in the boss which communicates with the interior of the bore 250, thus permitting a stop pin 266 mounted in a corresponding aperture 268 of the cylindrical guide 254 to be located in the slot 264 to limit relative radial movement between the detector arm 244 and the roll support 230 with which it is associated.

The roll holder 220, the roll supports 230 and the detecting arm 244 may be fabricated from synthetic resins, such as "Delrin," which is an acetal resin manufactured by E.I. du Pont de Nemours and Company, or similar resins.

Operatively connected with the detector arm 244 is latch means indicated generally at 270, said latch means being cooperative with the corresponding detent opening 212 in the associated arm of the bracket 210 in a manner to be described in greater detail below. The latch means 270 is intended to maintain the roll support 220 in either

one of two positions, that shown in FIG. 11 of the drawings in which the left-hand roll 206 is disposed in the dispensing position, or the alternative position in which the right-hand roll 208 is disposed in the dispensing position. In addition, the detector arm 244, in conjunction with the latch means 270, in a manner to be described in greater detail below, controls the operation of the latch means 270.

Incorporated in the inner extremity of the cylindrical body 232 of the roll support 230 is a threaded mounting boss 272 which, as best shown in FIGS. 12 and 13 of the drawings, supports the inner extremity of a reciprocable rod 274 whose outer extremity projects through an opening 276 in the cylindrical body 232 immediately adjacent the perimeter of the cylindrical guide 254.

The inner extremity of the rod 274 has an enlarged cylindrical portion 282 formed integrally therewith which terminates in a flange 284. A compression spring 286 is interposed between the flange 284 and the inner extremity of the mounting boss 272 to bias the outer extremity of the rod 274 which projects through the opening 276 into contiguity and engagement with the upper extremity of the boss 248 in immediate proximity to the beveled portion 262 thereof.

The enlarged portion 282 of the rod 274 is reciprocable in a bore 292 of the boss 272 and is juxtaposed to a latch bolt 296 whose outer extremity is engageable in a corresponding detent opening 212 in the associated arm of the bracket 210, to prevent movement of the roll holder 220 relative to the carriage 204.

The bolt 296 incorporates a flange 298 intermediate its extremities and has a reduced cylindrical outer extremity 302 which is disposed in a corresponding bore 304 in the enlarged cylindrical portion 282 of the rod 274. A compression spring 306 is interposed between the flange 298 and the inner extremity of the enlarged cylindrical portion 282 of the rod 270 and biases the latch bolt 296 outwardly into engagement with the juxtaposed detent opening 212.

In utilizing the dispenser 200, it is first necessary to load the dispenser and to accomplish this desired end, the lock 82 is rotated to release the carriage 204 and permits the carriage to move downwardly, which causes downward movement of the bracket 210 which is connected to said carriage. When the carriage 204 is disposed in the lowermost position, rolls 206 and 208 of tissue can be disposed in operative engagement with the roll supports 230, the detector arms 244 being urged radially inwardly against the bias of the springs 260 to align the semi-circular bodies 246 thereof with the correspondingly circular adjacent extremities of the elongated cylindrical bodies 232 constituting said supports.

Radial inward movement of the detector arms 244 causes the beveled portions 262 thereof to engage the outer extremities of the rods 274 urging said rods inwardly against the bias of the springs 286 and causing the inner extremities of the enlarged cylindrical portions 282 of said rods to compress the springs 306 sufficiently to cause the latch bolts 296 to be urged outwardly into an adjacent detent opening 212.

Therefore, either one of the rolls 206 or 208 can be located in the dispensing position by merely urging the projecting latch bolt 296 against the curvilinear edge 312 of the associated arm of the bracket 210. Such latching action occurs because of the fact that the detector arms 244 are urged inwardly by engagement with the interior of the composite core 234, thus causing the latch bolts 296 to be biased outwardly.

After the rolls of tissue have been located respectively in the dispensing and reserve positions, as in the case of the rolls 206 and 208, as shown in FIG. 11 of the drawings, the carriage 204 is urged upwards until it is engaged by the lock 82 to hold the carriage in its first uppermost position within the housing 202. When the detector arms are engaged upon the interiors of associated cores 234

they tend to prevent excessively free rotation of the rolls 206 and 208.

After the complete consumption of the roll 206 of tissue, the spring 260 urges the detector arm 244 outwardly into the position of FIG. 13 of the drawings, because the section 236 of the core 234 is radially displaceable. When this occurs, the rod 274 is shifted outwardly, as best shown in FIG. 13, of the drawings, through the opening 276 by the action of the spring 286, thus releasing the latch bolt 296 from the associated detent opening 212 because the inner extremity 302 of the latch bolt is pinned, as at 314, to the enlarged cylindrical portion 282 of the rod 274.

Therefore, displacement of the detector arm 244 is attributable to the consumption of the roll 206 disposed in the dispensing position which permits the withdrawal of the latch bolt 296, causing the reserve roll 208 to move downwardly by gravity into the dispensing position. Then the latch bolt 296, associated with the reserve roll 208, will engage the corresponding detent opening 212 in the associated arm of the bracket 210. The projecting extremity of the latch bolt 296 is biased inwardly against the curvilinear edge 312 of the arm of the bracket 210 prior to engagement with the detent opening 212. Therefore, the multi-sectional core 234 acting in conjunction with detector arm 244 automatically locates the reserve roll 208 in the dispensing position without the necessity for any manipulation by the person utilizing the dispenser. Moreover, the stop blocks 222 prevent the latch bolts 296 from bypassing the associated detent openings 212.

There is thus provided by our invention a dispenser adapted to automatically dispense rolls of toilet tissue in series, maintaining one roll in a dispensing position and the other roll in the reserve position. Incorporated in the dispenser in conjunction with the rolls, is detector means adapted to detect the complete consumption of a roll of tissue to permit the automatic positioning of the reserve roll in dispensing position.

Also, within the scope of the invention is a method of detecting the complete consumption of a roll of strip material having a multi-sectional core which involves the displacement of a section of the core by associated detector means when the roll of strip material has been exhausted.

We claim:

1. In a dispenser for dispensing a plurality of rolls of strip material sequentially, the combination of: a support adapted to be secured to a surface; a roll holder pivotally mounted on said support and including spaced means for mounting a plurality of rolls of strip material, said roll holder being automatically pivotal from one position locating a first roll in a dispensing position and a second roll in a reserve non-dispensing position to a second position locating said second roll in a dispensing position after consumption of said first roll; detector means for determining the consumption of said first roll, said detector means being engageable with said first roll; and latch means normally maintaining said roll holder in said one position and automatically operable by said detector means determining consumption of said first roll through said engagement with said first roll for releasing said roll holder to permit the automatic pivoting of said roll holder for said second position.

2. In a dispenser for sequentially dispensing a plurality of rolls of strip material and for maintaining one of said rolls in a dispensing position substantially outside of a housing and another of said rolls in a reserve non-dispensing position substantially within said housing, the combination of: a housing adapted to be secured to a supporting surface; a roll holder pivotally mounted on said housing and having roll supporting means thereupon for receiving said rolls of strip material, said roll holder being pivotal between one position locating one roll in a dispensing position and the other roll in a reserve non-dispensing position and a second



position locating said other roll in a dispensing position; and co-operative latch means between said roll holder and said housing adapted to maintain said roll holder in said one position with said one roll in said dispensing position until said one roll is completely dispensed and then permit pivoting of said roll holder to said second position locating said other roll in said dispensing position.

3. In a dispenser for sequentially dispensing a plurality of rolls of strip material and for maintaining one of said rolls in a dispensing position and another of said rolls in a reserve non-dispensing position, the combination of: a housing adapted to be secured to a supporting surface; a roll holder pivotally mounted on said housing and having roll supporting means thereupon for receiving said rolls of strip material, said roll holder being pivotal between one position locating one roll in a dispensing position and the other roll in a reserve non-dispensing position and a second position locating said other roll in a dispensing position; a co-operative latch means between said roll holder and said housing adapted to normally maintain said roll holder in said one position with said one roll in said dispensing position and releasable to permit pivoting of said roll holder to said second position locating said other roll in said dispensing position; and detector means engageable with said one roll and responsive to the complete consumption of said one roll and adapted to release said latch means to permit said pivoting of said roll holder to said second position.

4. In a dispenser for sequentially dispensing a plurality of rolls of strip material and adapted to maintain one of said rolls in a dispensing position and the other of said rolls in a reserve non-dispensing position, the combination of: a housing adapted to be secured to a supporting surface; a roll holder mounted for vertical movement between inward non-servicing and outward servicing positions relative to said housing and pivotal movement between first and second positions in said housing, said roll holder having roll supports for the reception of rolls of said strip material maintaining said one roll in dispensing position and said other roll in reserve non-dispensing position when said roll holder is in said first position and moving said other roll to dispensing position when said roll holder is moved to said second position; first means in said housing for maintaining said roll holder in said inward non-servicing position and against vertical movement and selectively releasable for vertical movement of said roll holder to said outward servicing position; second means in said housing for maintaining said roll holder against pivotal movement in said housing and releasable for permitting said pivotal movement; and means in said housing for detecting the consumption of said one roll of material on said roll holder in said roll holder first position and for automatically releasing said second means to permit pivotal movement of said holder in said housing to said second position.

5. In a dispenser adapted to dispense a plurality of rolls of strip material sequentially and to present one of said rolls in an accessible dispensing position while presenting the other of said rolls in a reserve non-dispensing position, said rolls having multi-sectional cores, the combination of: a housing adapted to be secured to a supporting surface; a roll holder mounted on said housing, means on said roll holder normally presenting said one roll in said accessible dispensing position while said other roll is presented in said reserve non-dispensing position and adapted to permit displacement of at least one of said one roll core sections; detector means engageable with said core of said one roll adapted to displace said at least one of said sections upon the consumption of said one roll; and latch means operable by said detector means to change said presentation of said other roll to an accessible dispensing position when said one roll is consumed and said detector means displaces said one core section of said one roll.

6. In a dispenser adapted to dispense a plurality of

rolls of strip material sequentially and to maintain one of said rolls in a dispensing position while maintaining the other of said rolls in a reserve position, said rolls having multi-sectional cores, the combination of: a housing adapted to be secured to a supporting surface; a vertically movable carriage in said housing movable between an inward non-servicing position and an outward servicing position relative to said housing; a roll holder mounted upon said carriage for pivotal movement between first and second positions with respect to said carriage and said housing whereby said one roll may be maintained in said dispensing position while the other roll is maintained within said housing in a reserve non-dispensing position when said roll holder is in said first position and said other roll is moved from said housing to dispensing position when said roll holder is moved to said second position; means in said housing for normally retaining said carriage in said non-servicing position and selectively releasable for movement of said carriage and thereby said holder to said servicing position; latch means engageable with said holder for normally retaining said holder in said first position and preventing pivotal movement thereof to said second position, said latch means being releasable and permitting said holder pivotal movement to said second position; and detector means on said holder engageable with said core of said one roll of strip material to determine when said one roll has been completely dispensed by displacement of one of said sections of said one roll and operably connected to release said latch means to permit the free pivotal movement of said holder upon said carriage to said second position.

7. In a dispenser for dispensing a plurality of rolls of strip material sequentially, the combination of: a support adapted to be secured to a surface; a roll holder pivotally mounted on said support and including spaced means for mounting a plurality of rolls of strip material, said roll holder being automatically pivotal from one position locating a first roll in a dispensing position and a second roll in a reserve non-dispensing position to a second position locating said second roll in a dispensing position after consumption of said first roll; detector means for determining the consumption of said first roll; and latch means normally maintaining said roll holder in said one position and automatically operable by said detector means determining consumption of said first roll for releasing said roll holder to permit the automatic pivoting of said roll holder to said second position.

8. In a dispenser adapted to dispense a plurality of rolls of strip material sequentially and to present one of said rolls in an accessible dispensing position while presenting the other of said rolls in a reserve non-dispensing position, said rolls having multi-sectional cores, the combination of: a housing adapted to be secured to a supporting surface; a roll holder mounted in said housing, means on said roll holder normally maintaining said rolls in said housing with said one roll presented accessible in said dispensing position while said other roll is presented in said reserve non-dispensing position, said roll holder being adapted to permit displacement of at least one of said one roll core sections; detector means engageable with said one roll core adapted to displace said at least one core section upon the consumption of said one roll; and latch means operable by said detector means to present said other roll in an accessible dispensing position when said one roll is consumed and said detector means displaces said at least one core section of said one roll.

9. In a method of sequentially dispensing a plurality of rolls of strip material, the steps of: positioning two of said rolls of strip material with one presented in a dispensing condition and the other in a reserve non-dispensing condition, at least said one roll incorporating a multi-sectional core consisting of a plurality of core sections; detecting the consumption of said one roll in said dispensing condition; displacing at least one of said core sections from the remainder of said core sections of said one roll upon said

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detecting of said consumption of said one roll; and upon said displacing of said at least one core section of said one roll, permitting the change of said presentation of said other roll from said reserve non-dispensing to a dispensing condition.

10. In a method of sequentially dispensing a plurality of rolls of strip material, the steps of: positioning two of said rolls of strip material in a housing with one presented in an accessible dispensing condition and the other in a reserve non-dispensing condition, at least said one roll incorporating a multi-sectional core consisting of a plurality of core sections maintained in core assembly by the strip material of said one roll; applying a force tending to displace at least one of said core sections from the remainder of said core sections of said one roll during the dispensing of the strip material thereof, said strip material resisting said one core section displacement; displacing said one core section of said one roll through said applied force at the consumption of said strip material of said one

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roll as a result of the lack of said strip material continuing to maintain said one roll core sections assembled through said strip material consumption; and through the movement of displacement of said one core section of said one roll, automatically changing said presentation of said other roll from said reserve non-dispensing to an accessible dispensing condition.

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