

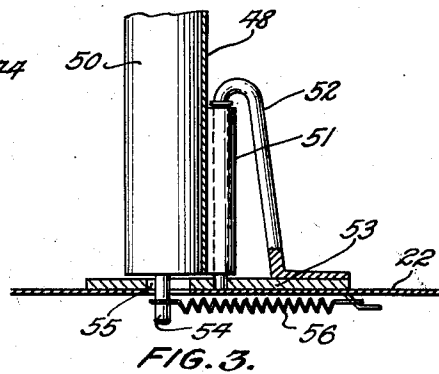
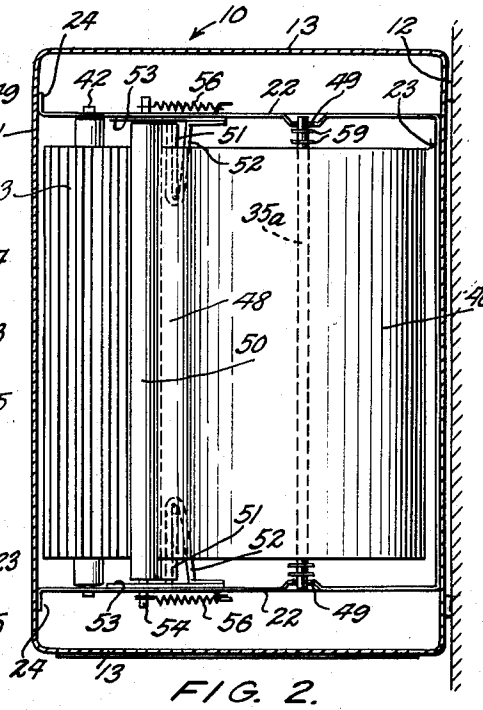
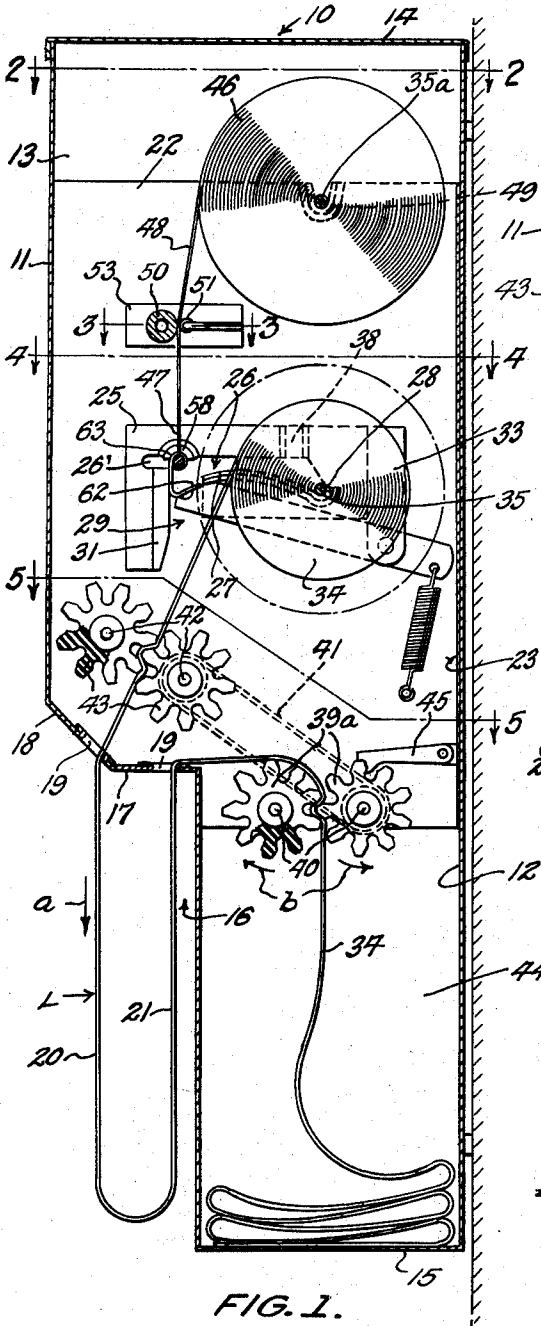
Aug. 12, 1958

L. R. TANSLEY  
MECHANISM FOR SUPPORTING AND UNITING ROLLS  
COMPOSED OF SPIRALLY WRAPPED WEBS

2,847,264

Filed Sept. 16, 1954

3 Sheets—Sheet 1



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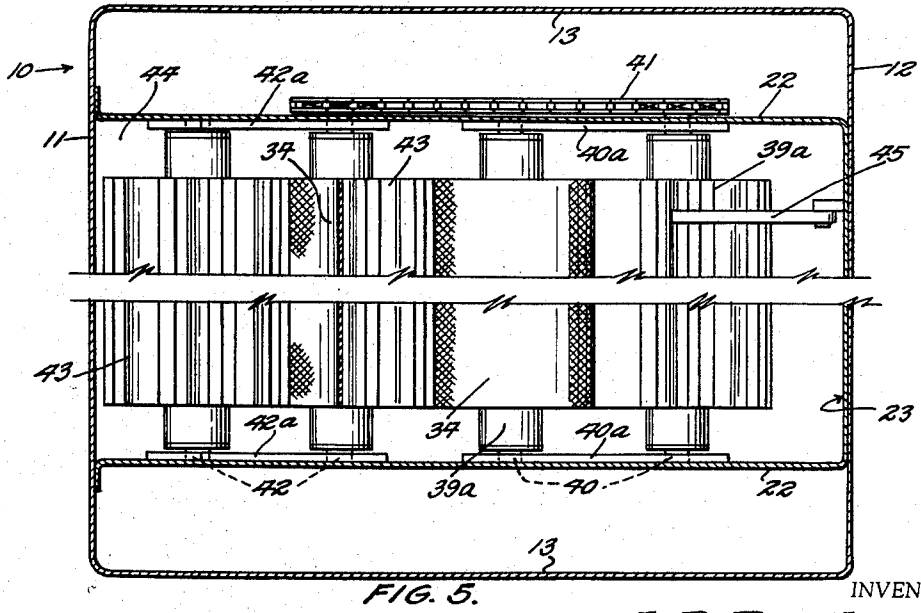
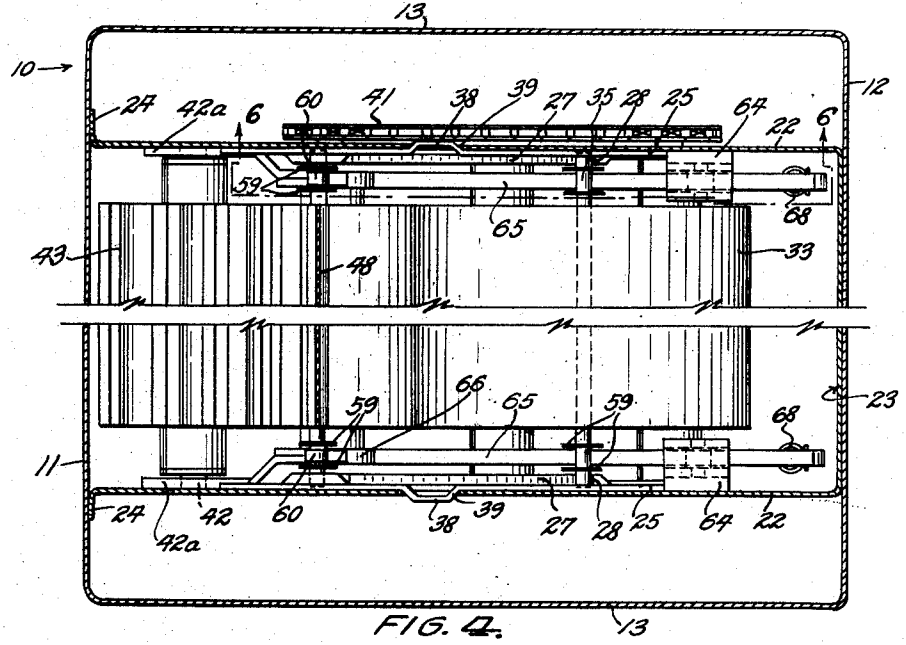
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3 Sheets-Sheet 3

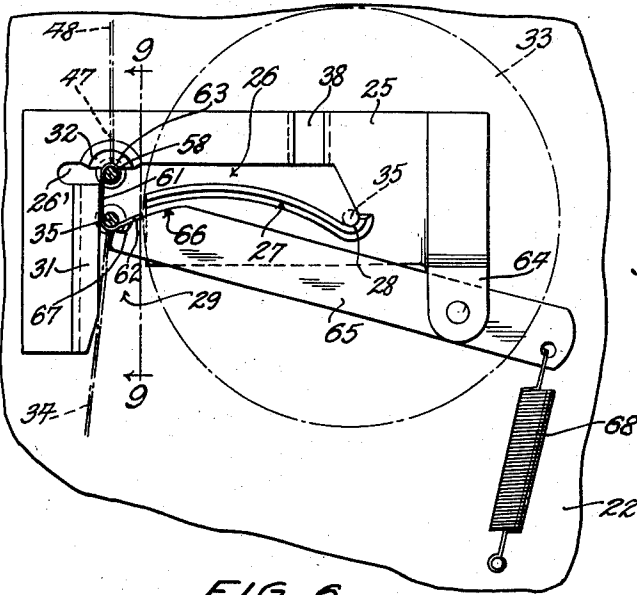


FIG. 6.

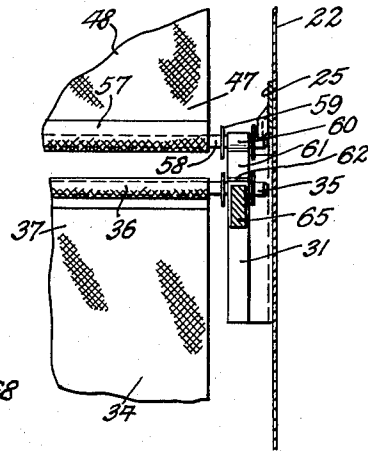


FIG. 9.

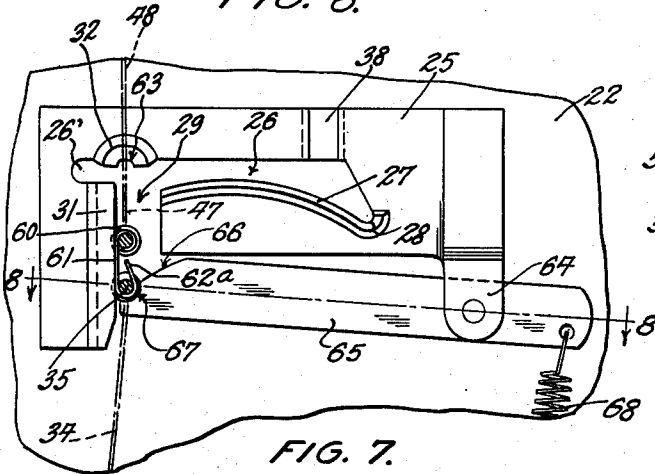


FIG. 7.

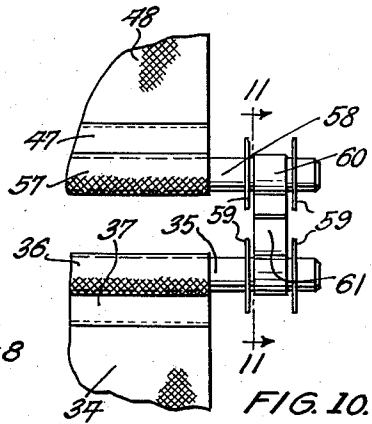


FIG. 10.

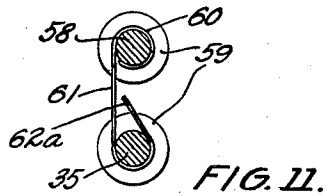


FIG. 11.

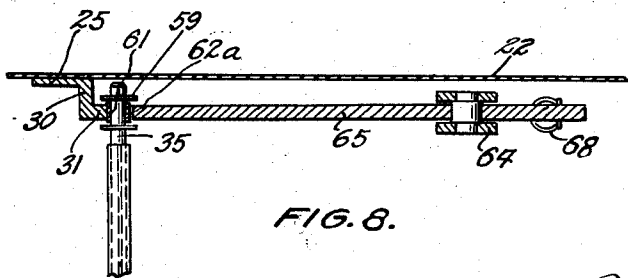


FIG. 8.

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## MECHANISM FOR SUPPORTING AND UNITING ROLLS COMPOSED OF SPIRALLY WRAPPED WEBS

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Application September 16, 1954, Serial No. 456,381

7 Claims. (Cl. 312—38)

This invention relates to wall-mounted holders for supporting fabric towel rolls, the invention being directed particularly to a holder adapted for the support of a plurality of such rolls.

In the ordinary cabinet type of wall-mounted holder for towel rolls, such as those commonly found in public and other lavatories, the same is usually constructed to receive a single roll of clean toweling. Such a towel roll is mounted normally for rotation in a concealed position in the upper part of the wall cabinet. A strip or web is adapted to be withdrawn from the roll and is trained outwardly through a slot or opening formed in front of the cabinet. This is accomplished in a manner producing in the length of the withdrawn towel strip or web a loose, slack, loop-forming region of clean toweling adapted for flexible use in the drying of the faces or hands of the users thereof. Usually, in such devices, means are provided for regulating the length of the toweling which may be withdrawn from the cabinet in producing the looped, externally accessible, drying region in a given period of time. In such apparatus, used or soiled lengths of the strip or web are wound on and about a soiled towel roll arranged in the bottom of the cabinet, or such soiled toweling is deposited loosely in an internal receiving compartment therefor provided within the cabinet.

Due to limitations imposed by practical conditions, such as the volumetric space occupied by such cabinets when mounted on lavatory walls and the laundering of soiled toweling, the size of such rolls is restricted. As a result of such restrictions, it frequently occurs that during the course of a day's use the ordinary single towel roll installed in such a cabinet will become exhausted before the day or other period adapted for its use is over. Due to delays and other practical difficulties in installing a fresh clean roll in such a cabinet in substitution for the removed soiled toweling, it is often a matter of some considerable time before the substitution is effected, during which such towel facilities are unavailable for use.

While such cabinet-mounted, rolled, fabric towels have proved to be highly satisfactory in meeting sanitary towel needs of users and those supervising the use of public lavatories and rest rooms, as compared with other forms of towels and hand-drying devices, nevertheless, the problem above outlined and which is presented when a given roll becomes depleted of unused web area remains unsolved.

Therefore, it is an object of the present invention to provide improved holding and dispensing apparatus in which a plurality of clean towel rolls are revolvably supported in a wall-mounted cabinet of standard dimensions, and wherein the apparatus is so designed that when the full web length of toweling found on a first or active roll has been completely used, provision is made for automatically joining the trailing edge or end of this web with the leading edge or end of a second or reserve towel roll, whereby to provide an unbroken and continuously sustained towel-forming web of a length equal to the combined lengths of the individual webs.

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Another object of the invention is to provide a multiple roll-holding and dispensing mechanism for wall-mounted towel machines in which a roll, having a partially used webbing, may be transferred from its originally placed position within the cabinet of the machine and caused to occupy an active roll position, thereby permitting another reserve roll to be inserted into the reserve roll position of the machine, to provide an adequate supply of towel webbing for the next forthcoming period of active usage.

The invention consists generally in the constructions and combinations hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification:

Fig. 1 is a vertical transverse sectional view taken through a wall-mounted cabinet in which is housed the roll-supporting and dispensing mechanism of the present invention;

Fig. 2 is a horizontal sectional view taken through the upper portion of the housing or substantially the line 2—2 of Fig. 1;

Fig. 3 is a detail horizontal sectional view taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is another horizontal sectional view taken substantially on the line 4—4 of Fig. 1;

Fig. 5 is a similar view on the line 5—5 of Fig. 1;

Fig. 6 is a detail vertical sectional view taken substantially on the line 6—6 of Fig. 4, and in addition showing in full lines the forward position which an axle rod of the active roll assumes at the time of union with hook members carried by the leading edge of the web of a reserve roll and in broken lines its normal position;

Fig. 7 is a similar view disclosing the movable anvil bars of the apparatus in positions deforming and closing the lower ends of the hook members around an axle rod positioned in the trailing edge of webbing which formed an active roll in uniting the webbing of active and reserve rolls;

Fig. 8 is a detail horizontal sectional view taken on the line 8—8 of Fig. 7;

Fig. 9 is a detail vertical sectional view taken on the line 9—9 of Fig. 6;

Fig. 10 is a fragmentary front elevational view disclosing the trailing and leading edges of the webs respectively of active and reserve rolls and disclosing the hook-carrying connecting rod carried by the leading edge of the reserve roll web united with the axle rod of the active roll;

Fig. 11 is a detail vertical sectional view on the line 11—11 of Fig. 10.

In the drawings, the numeral 10 represents the cabinet of my improved roll web uniting and dispensing mechanism. While in this instance my invention has been exemplified in its adaptation to wall-mounted towel cabinets for lavatory use, it will be understood that the mechanism, in whole or in part, may be embodied in various other machines or appliances where it is advantageous to unite automatically, and during operation of such machines or appliances, the webs of separate material rolls mounted thereon.

In the apparatus, as shown, the cabinet illustrated comprises vertically extending front, rear and side walls 11, 12 and 13 and horizontally disposed top and bottom walls 14 and 15, respectively. The top and bottom walls may be in the form of hinged members to render the interior of the cabinet accessible. The front and side walls in this instance have their lower portions inwardly and laterally offset at 16 to form a recessed area disposed adjacent to the lower part of the cabinet for the reception, exteriorly of the cabinet, of the looped hand-contacting region L of a depending textile towel web. Such inward offsetting provides in the front wall a horizontally extending wall formation 17 and a continuing upwardly and angularly

disposed wall formation 18, both wall formations constituting integral parts of the complete front wall 11. Slots 19 are formed in these wall formations for the passage therethrough of the depending, parallel, front and back sections 20 and 21, respectively, of the web loop L.

As shown more particularly in Fig. 4, the interior of the cabinet includes a vertically extending, channel-shaped, reinforcing and supporting member comprising vertically extending, transversely spaced side panels 22 which have their rear edges merged into a uniting back panel 23 placed directly against and secured to the rear wall 12 of the cabinet. The forward vertical edges of the side panels 22 terminate in outturned flanges 24 which are suitably secured to the inner face of the front wall 11. The lower portions of the side panels 22 are inwardly recessed to correspond with the inwardly offset region of the cabinet front.

Mounted in registering order on the inner faces of the side panels 22 are stationary supporting and guiding brackets 25. Each of these brackets comprises in this instance a flat, metallic plate which is welded, or otherwise fastened, in a secure, stationary manner on the inner face of one of the side panels 22 at a position directly opposite to, and in transverse registry with, the other complementary bracket on the opposite side panel. Each bracket plate is recessed as shown at 26. The lower edge of each of these recesses is arcuately flanged at 27, the inner end of each flange terminating in an axle-journaling seat 28 disposed at the closed end of each recess 26. The outer or open end of each recess 26 provides a vertical downwardly extending passage 29, each of which being open at the bottom thereof, as shown in Figs. 6 and 7, each passage having spaced, parallel, vertical sides.

The outer side of each of these passages is formed by inwardly and laterally offsetting each bracket 25 at the front thereof at 30 to provide an anvil flange 31, the purpose of which will appear presently. Above and in registry with the flange 31 each of said brackets is formed with an inwardly projecting and downwardly directed bearing seat formation 32 which is separated from the upper end of the flange 31 by the outer region 26' of the recess 26 of each bracket.

An active roll 33 composed of spirally wrapped web 34 of fabric toweling is supported for rotation in the casing by the provision of an axle rod 35. This rod is removably inserted in a selvage hem 36 formed in the inner or trailing edge 37 of the web 34. The rod extends axially of and through the roll and, as shown in Fig. 4, has its opposite ends positioned for rotation in the journal seats 28 of the brackets 25. The latter, in this instance, are formed with localized outwardly recessed regions 38 which occupy slots 39 in the side panels 22, the regions 38 being so formed and disposed as to permit the roll 33 to be bodily lowered in the cabinet with the axle rod 35 inserted therein without bracket interference and to maintain gravitationally an operative position in the seats 28.

The outer or leading edge or end of the roll web 34 is trained downwardly and outwardly, as shown in Fig. 1, the web passing through the slot 19 in the angular wall formation 18 of the cabinet and producing there below the depending loop-forming region L, by which fresh unused areas of the web may be presented to patrons as the web is removed from the roll.

In preserving the form of the loop, the back section 21 thereof is passed upwardly to extend through the slot 19 in the horizontal formation 17 of the front cabinet wall and from this slot the web 34 passes between the somewhat loosely intermeshing teeth of a pair of lower web-feeding gears 39a of rubber or other yieldable material. The gears carry axial shafts 40 which have their end portions journaled in bearing openings provided therefor in plates 40a secured to the panels 22. One of these axles carries a sprocket around which is trained

an endless chain 41. This chain is also trained over a complementary sprocket fixed to the outer end of one of a pair of upper gear-carrying shafts 42.

Fixed on the shafts 42 is a pair of upper web-feeding gears 43 of resilient composition. The latter gears contact opposite sides of the roll web 34 at a position between the roll 33 and the slot 19 of the wall 18. It will be seen that by drawing downwardly on the outer section 20 of the looped portion of the web, the latter will be removed from the roll and advanced in the direction of the arrow *a* of Fig. 1. Such linear movement of the web produces rotation of the upper set of rubber gears 43, and through the chain and sprocket drive 41, corresponding rotation of the lower set of gears 39a.

By these means the length of the loop L is continuously maintained. The soiled or used webbing, after passing through the lower set of gears 39a, drops into a compartment 44 formed to receive the same, and from which the soiled webbing may be removed from time to time for laundering and re-rolling purposes. A pivoted detent 45 is carried by the back panel 23, the front end of the detent having gravitational engagement with one of the gears 39a to restrict the rotation of these gears to the web-feeding directions indicated by the arrows *b* in Fig. 1. The ends of the shafts 42 are received in bearing openings formed in plates 42a carried by the panels 22.

In order to construct the apparatus so that it may receive therein a reserve roll 46 of the toweling and to couple automatically the trailing edge 37 of the web 34 of the active roll 33 with the leading edge 47 of the web 48 of the reserve roll, the upper edges of the side panels 22 are provided with slotted journaling seats 49. Adapted to occupy these seats are the ends of the axle rod 35a of the reserve roll, the rod 35a being disposed in the web of the reserve roll in the same manner as is the rod 35 in the active roll. The web 48 is drawn outwardly and downwardly from the body of the roll 46 and passed into engagement with the rear of a guide roll 50 and in front of a pair of short length guide rolls 51 mounted at the rear of the longer single front roll 50. The rolls 51, as shown in Fig. 3, are rotatably mounted on the forward parallel portions of looped axle rods 52, these rods having their opposite ends secured in mounting plates 53 stationarily positioned on the inner faces of the side panels 22 in a plane above the active roll 33. The ends of the axle 54 of the guide roll 50 are supported for rotation in slots 55 formed in the plates 53. Coil springs 56 are united with the ends of the axle 50 and on the side panels 22 and serve to maintain the rolls 50 and 51 in firm contact with the web 48 of the reserve roll 46 as said web is advanced toward the bearing seats 32. The short, longitudinally spaced guide rolls 51 facilitate the positioning of the web 48 of the reserve roll between the guides 50 and 51.

The leading edge 47 of the web 48 is formed with a selvage hem 57 for the reception of a removable longitudinally extending connecting rod 58. The outer ends of this rod carry, as does the rod 35, spaced collars 59. Positioned on the ends of the rods 58 and disposed between the collars thereon are the fully turned eye-forming terminals 60 of a pair of readily deformable metal connecting links or hooks 61, the lower ends of these links, when the same are first mounted on the ends of the rod 58, being formed with partially closed eye-forming extensions 62, which possess the open configuration disclosed in Fig. 6.

When the reserve roll is first mounted within the cabinet following placement of the active roll 33, and rests on the seats 49, the web 48 thereof is trained between the guide rolls 50 and 51. The connecting rod 58, carried by the leading edge of the web, has its ends positioned in the inverted downwardly facing sockets 63 of the bearing seat formations 32, with the connecting links or hooks depending therefrom, as in Fig. 6, the open extensions 62 of the links or hooks 61 being disposed in registry with the

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forward ends of the arcuate seating flanges 27 of the plates 25. By the action of gravity, the axle rod 35 of the active roll is maintained in seated engagement with the journal seats 28 in the closed end of each recess 26 until the active roll is about exhausted of its rolled webbing. At this time further downward pulling on the loop L causes the axle rod 35 to be unseated and drawn forwardly over the arcuate flanges 27 and into the open lower ends of the links or hooks 61, whereby to unite the trailing end 37 of the web 34 with the leading edge 47 of the web 48.

To secure this union of the active and reserve roll webs, the plates or brackets 25, in this instance, are provided with depending ears 64 to which are pivoted movable anvil bars 65. Each of these bars is formed to provide an outer end having an inclined or beveled surface 66 which, at its lower end, terminates in a forming socket 67. The inner end of each bar 65 is connected with one end of a coil spring 68, the opposite end of each of these springs being anchored on an associated panel 22.

When the web 34 is pulled to draw the axle rod 35 thereof forwardly into the full line position thereof shown in Fig. 6, the rod will have its ends deposited in the open lower ends of the links or hooks 61. To bend the extensions 62 of these links or hooks to form closed eyes 62a, shown in Fig. 11 and thus securely unite the two roll webs for sustained movement, it is merely necessary to continue downward pulling movement on the web 34 to move the axle rod from the full line position of Fig. 6 to that of Fig. 7. During this movement, the ends of the rod 35 are maintained between the vertical inner surfaces of the stationary anvil flanges 31 and the socketed outer ends 67 of the movable anvil bars 65. As the web 34 moves downwardly, the bars 65 move with it and the wall formation of the sockets 67 in the outer ends of the bars is such as to cause the latter to flex and bend the extensions 62 from their original open positions, in which the extensions rest on the beveled surfaces 66 of the anvil bars, to the closed eye-forming positions of Fig. 7, wherein the hooks or connecting links are finally united with the rods 58, as in Figs. 10 and 11.

It will be evident from the foregoing that the present invention provides in a towel-dispensing appliance a means for supporting a plurality of towel rolls with one of the rolls in an active position of towel withdrawal and the other roll in an inactive or reserve position. A web of toweling is adapted to be withdrawn from the active roll in a manner common to wall-mounted towel appliances of this character. When the full length of the web, from which the original active roll was formed, has been about fully withdrawn from the cabinet of the appliance, the removable axle rod 35 is moved into coupling engagement with the depending links or hooks 61 provided on the leading edge of the web of the reserve roll, the coupling thus made serving without interruption in the use of the appliance, to join automatically the two roll webs, so that the combined lengths of the webs will be available for use by patrons of the appliance. The rods 35 and 58 are removably carried by the ends of each of the rolls. When the webs comprising such rolls are gathered for laundering and re-rolling purposes, the rods are removed from the web hems in which they are positioned and reinserted when clean, laundered rolls are inserted in the cabinet of the appliance. Thus, the metal rods do not interfere with laundering operations, nor do they interfere with the rotation of the yieldable gear devices employed in advancing the webs and in maintaining the web loops L. The hooks or links 61 are disposed beyond the ends of the gear-like web-feeding rolls and, therefore, cannot obstruct or interfere with their operation. The clips, hooks or links 61 are formed from a readily bent ductile metal and, therefore, the closing of the eyes 62a can be performed by normal hand-applied pulling forces on the loop lengths 20.

The construction enables the appliance to be conveniently loaded with the toweling rolls. At the end of a

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day's use, for example, if an attendant should find that the reserve roll has not been fully utilized, the machine may be readily resericed for a succeeding day's use by transferring the partially utilized reserve roll from its original position on the seats 49 to the seats 28 of the active roll. When this is done a new roll of toweling is seated in the vacated reserve roll position and its web and connecting rod 58 trained into engagement with seats 63. These operations are simple and convenient to execute and the arrangement provides a towel-dispensing appliance having a reserve capacity capable of meeting demands of the patrons thereof. While a single reserve roll has been shown it will be understood that the apparatus may be extended to receive any desired number of such reserve rolls.

I claim:

1. Supporting and dispensing mechanism for rolls composed of spirally wrapped bodies of textile webbing; said mechanism comprising a supporting frame; two sets of spaced axle journal seats provided on said frame; roll-supporting axle members each detachably carried by the inner trailing ends of the webbing and removably seated on said journal seats; guide devices carried by said frame for directing a web of material withdrawn from an active roll carried by one of said axle members along a confined course of travel; complementary guide devices carried by said frame for directing the leading edge of a web of material withdrawn from a reserve roll, supported on said frame in spaced relation from said active roll, to a position of connection with the trailing edge of the web of the active roll; removable connecting devices carried by the leading edge of the reserve roll web; and means operative upon the exhaustion of webbing from the active roll and upon application of pulling forces to such webbing to guide the axle member connected with the trailing edge of the active roll web laterally from its normal seated position on said journals and into united relation with said connecting devices, whereby to join automatically the trailing end of the active roll web with the leading edge of the reserve roll web in providing for sustained uninterrupted advance of the joined webs along said guide devices.

2. Supporting and dispensing mechanism for rolls composed of spirally wrapped textile webs, comprising: supporting means having two sets of spaced axle bearings; removable axle members each carried by one of said sets of bearings and supporting spaced active and reserve rolls on said means; guide appliances on said supporting means directing a web drawn from the active roll along a confined course of linear travel; complementary guide means for maintaining a leading edge of the web of said reserve roll in a stationary position of attachment on said means for joinder with the trailing edge of the active roll web; removable coupling appliances carried by the leading edge of the reserve roll web disposed in said position of attachment, and means operative when the active roll becomes exhausted and upon application of pulling forces to the web thereof to move the axle member of said active roll laterally from its position on the bearings of said supporting means to one of engagement with said coupling devices, whereby to unite the roll webs for uninterrupted advance in response to sustained pulling forces thereon.

3. Connecting mechanism for joining roll webs, comprising: a stationary supporting and web-joining means arranged vertically in parallel longitudinally spaced relation, said means including registering forward and rearwardly disposed rod seats, said rearwardly disposed seats supporting for rotation an active roll composed of spirally wound webbing; an axle rod disposed axially and longitudinally of the roll and removably retained in connection with a hem formed in the trailing edge of the roll webbing, said rod having opposite ends thereof seated in said rearward seats to provide for bodily rotation of said roll in the removal of web lengths therefrom; a re-

serve roll of said webbing rotatably mounted in said supporting means in a fixed position spaced from said active roll; guide means for directing the leading edge of the web of the reserve roll to the forward of said seats; a connecting rod removably positioned in the leading edge of the reserve roll web and normally arranged, during use of the active roll, in the forward seats of said supporting means; hooks depending from the ends of said connected rod when the latter is positioned in said forward seats; and guides formed with said supporting means for directing said axle rod upon application of pulling forces applied to the last of the webbing constituting the active roll to transfer said axle rod from its rotational seat into united engagement with said hooks, whereby to join the leading edge of the webs of the reserve roll with the trailing edge of the web from which the active roll was formed to constitute and uninterrupted length of webbing.

4. The method of uniting webs withdrawn successively from a pair of spirally wrapped rolls composed of said webs to effect sustained uninterrupted web movement which comprises: forming the leading and trailing ends of the web of each roll with a hem, removably inserting an axle rod in the hem of the trailing end of each web for rotatably mounting each roll on a supporting base, the ends of the axle rods projecting beyond the opposite side edges of the web receiving the same; inserting a removable connecting rod in the hem provided in the leading end of each roll web with the ends of each connecting rod extended beyond the opposite parallel side edge of the associated web; withdrawing the web from a first roll while the second roll is idle and passing the web of said first roll along a confined course of travel; stationarily positioning the leading edge of the web of the second roll contiguous to the confined course of travel of the first web; and providing the projecting ends of a connecting rod positioned in the hem of the second web beyond the side edges of the latter with yieldable connecting devices projecting into said course of web travel; and continuing the advance of the first web to cause the ends of the connecting rod carried by the hem of its trailing end to enter said yieldable connecting devices and to thereby join the leading end of the second web with the trailing end of the first web in providing uninterrupted web movement along said confined travel course.

5. Roll towel dispensing apparatus comprising: a cabinet; roll-supporting and web-guiding means mounted within said cabinet, said means including upper and lower sets of bearings for supporting, respectively, in relatively vertical order, reserve and active towel rolls, each of said rolls including a cylindrical body composed of a spirally wrapped web of textile material having a trailing inner end and a leading outer end; axle members carried by the trailing ends of said webs, the ends of said axle members being receivable in said bearings for the rotatable support of said rolls about their longitudinal axes; seats

formed in said supporting means in laterally spaced relation from the lower set of bearings; axle guide means extending laterally from said lower set of bearings to said seats; a connecting rod carried by the leading end of the web of said reserve roll, said rod having its ends disposed for engagement with said seats; bendable fastening clips carried by and depending from said rod when the latter is engaged with said seats, said clips having open ends disposed in registry with said lower set of bearings, whereby pulling forces applied to the web of the active roll, following unwinding thereof from its axle member, serve to move the latter laterally along said guide means toward said seats and into engagement with the open ends of said clips; and anvil means operative upon continued application of pulling forces to the unwound web of the active roll to bend and close the open lower ends of said clips around the axle member of the active roll, whereby to unite the leading end of the web of the reserve roll with the trailing end of the web of the active roll for movement in unison.

6. Supporting and dispensing mechanism as defined in claim 2, and wherein the coupling appliances carried by the leading edge of the reserve roll web are formed with bendable, depending, open, lower ends disposed to receive the axle member of said active roll when the same is moved laterally from its normal position; and anvil means operative upon advancing movement of said webs to bend and close the lower ends of said coupling appliances about the axle member of the active roll in positively uniting the trailing end of the web of the active roll with the leading end of the web of the reserve roll.

7. Supporting and dispensing mechanism as defined in claim 2, and wherein the coupling appliances carried by the leading edge of the reserve roll web are formed with bendable, depending, open, lower ends disposed to receive the axle member of said active roll when the same is moved laterally from its normal position; anvil means operative upon advancing movement of said webs to bend and close the lower ends of said coupling appliances about the axle member of the active roll in positively uniting the trailing end of the web of the active roll with the leading end of the web of the reserve roll, said anvil means embodying a stationary, vertical flange formed on said supporting means beneath the complementary guide means; and a pivotally mounted, spring-biased, forming bar mounted on said supporting means, said bar having a free end disposed in engagement with the bendable lower ends of said coupling appliances.

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