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Bahnsen

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[54] **CONTINUOUS TOWEL DISPENSER**

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[73] Assignee: **Steiner American Corporation,** Salt Lake City, Utah

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[52] **U.S. Cl.** **312/38**

[51] **Int. Cl.** **B65h 19/00**

[58] **Field of Search** 312/38; 242/55, 53

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Assistant Examiner—Andrew M. Calvert
Attorney, Agent, or Firm—Prangley, Dithmar, Vogel, Sandler & Stotland

[57] **ABSTRACT**

A towel dispenser of the continuous type wherein a storage roller is shiftably and rotatably mounted in a housing and a cylindrical tubular drive roller is rotatably mounted in the housing in contact with the roll of used toweling accumulated on the storage roller. A cylindrical tubular pinch roller is shiftably and rotatably mounted in the housing and urged continually toward the drive roller. A stop mechanism is provided for limiting the feeding of clean toweling into an exposed loop of toweling during each dispensing cycle and is actuated by rotation of the pinch roller. Two guide plates at the bottom of the towel dispenser restrict the return path of the used toweling to prevent folds or waves from forming in the used toweling as it is rolled for storage in the dispenser.

18 Claims, 12 Drawing Figures

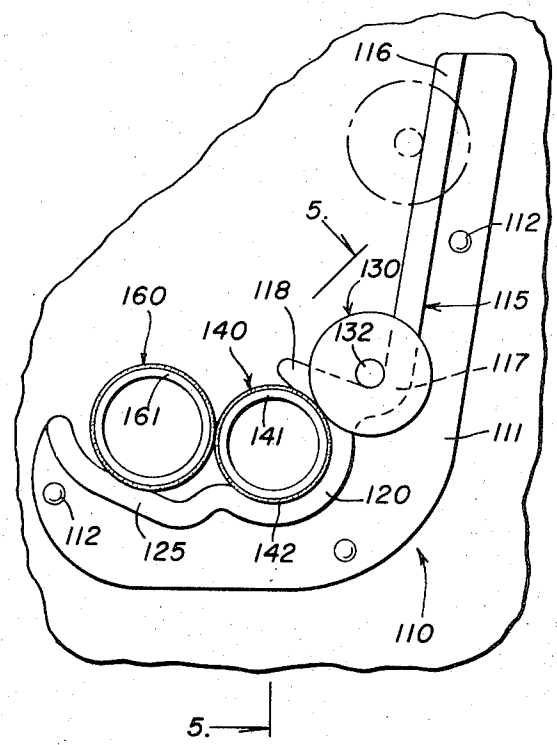


FIG. 1

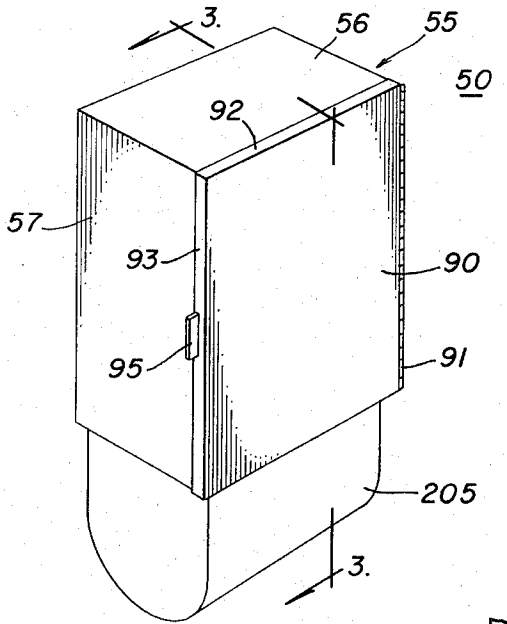


FIG. 2

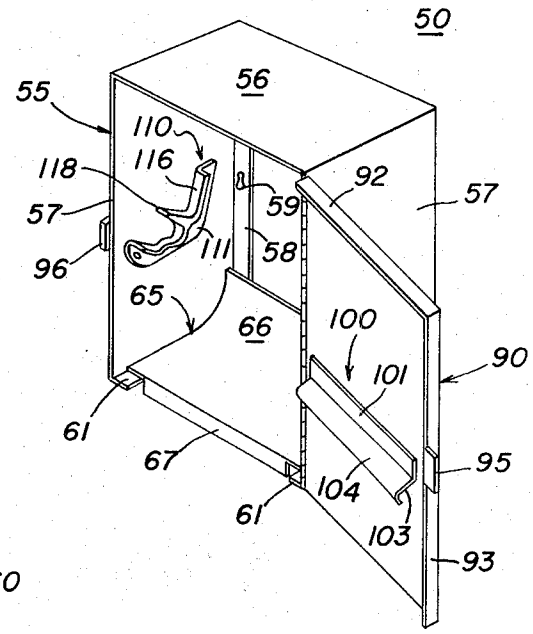


FIG. 3

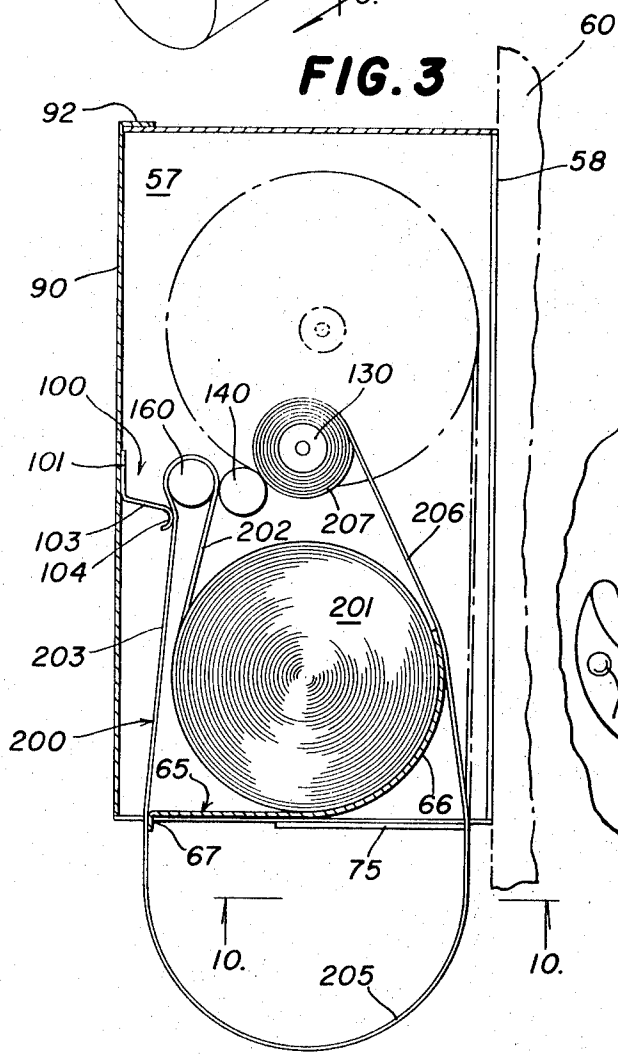


FIG. 4

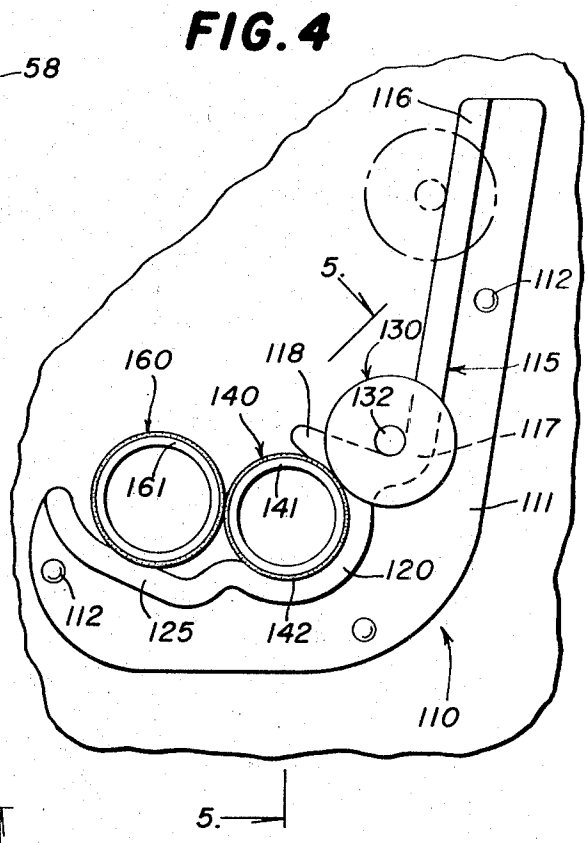


FIG. 5

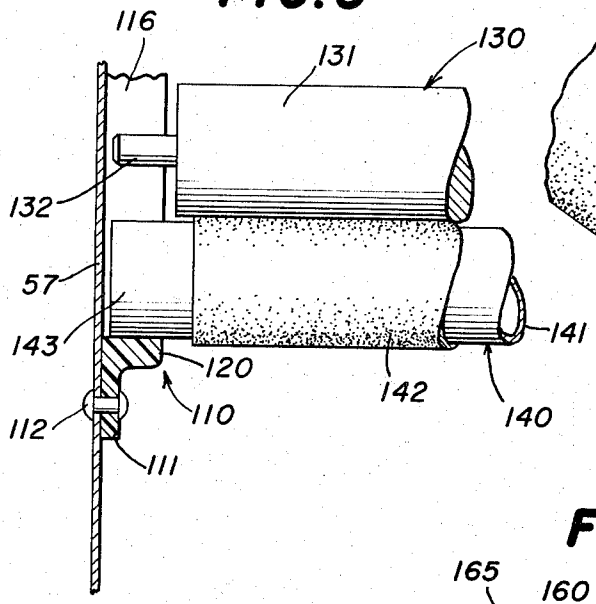


FIG. 6

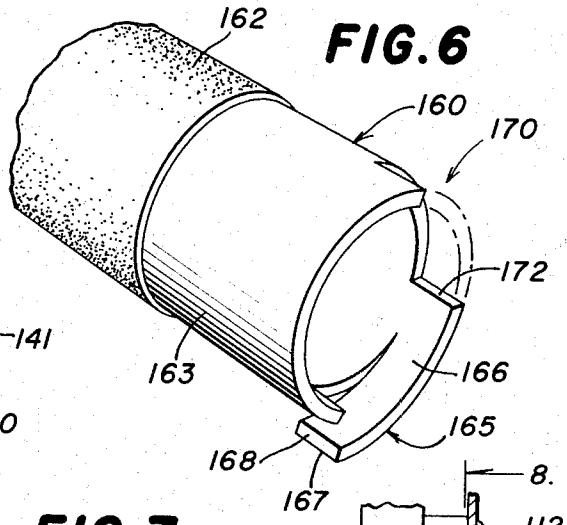


FIG. 7

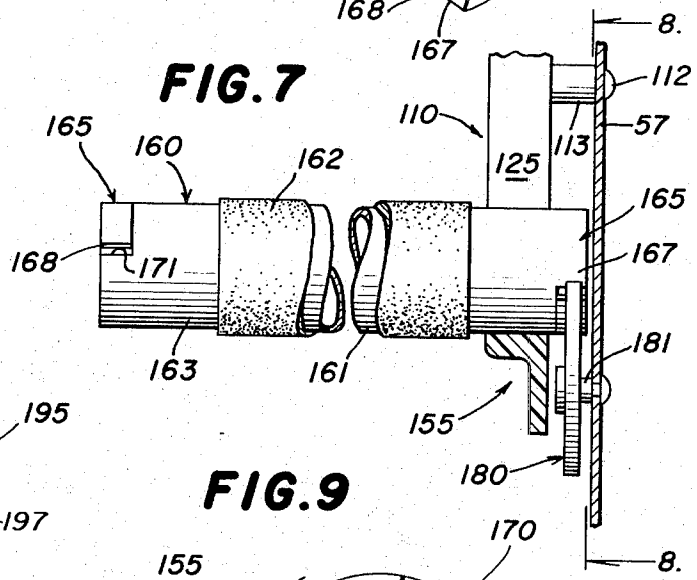


FIG. 8

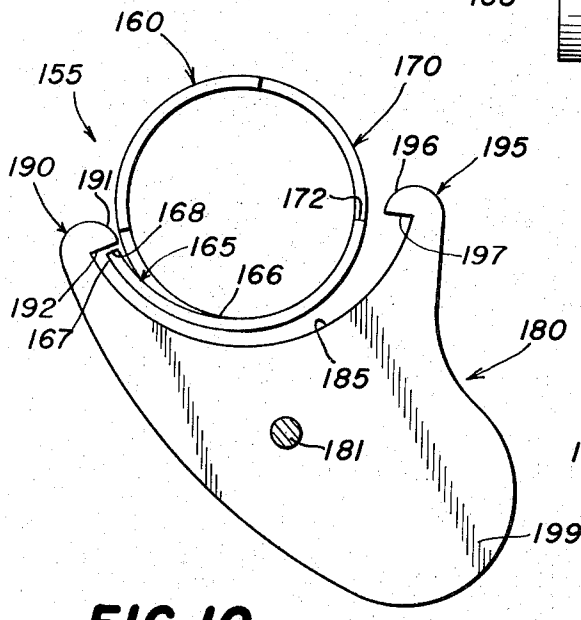


FIG. 9

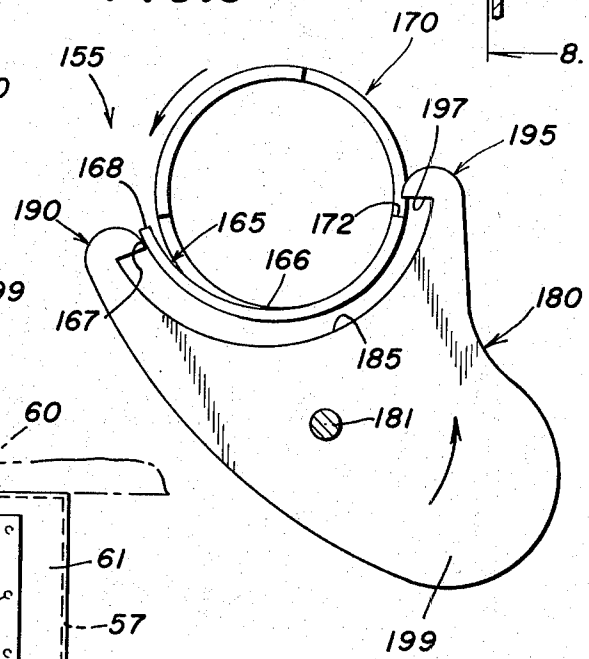


FIG. 10

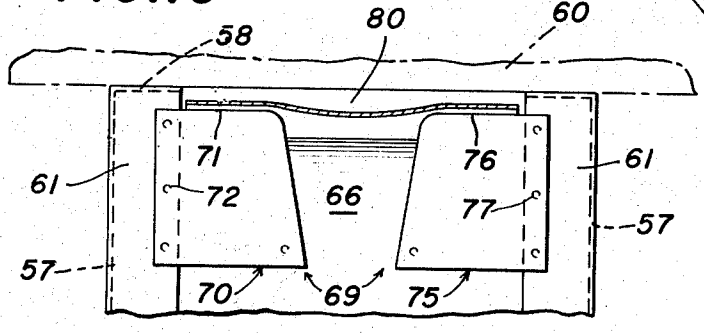


FIG. 11

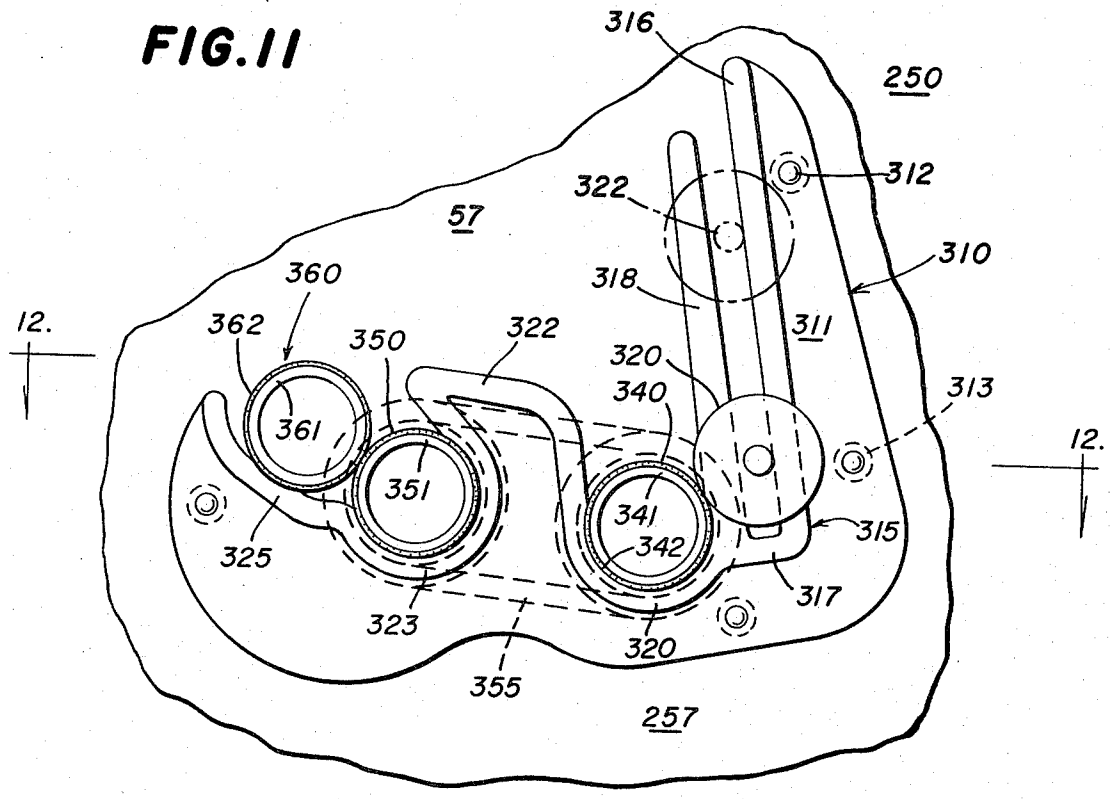
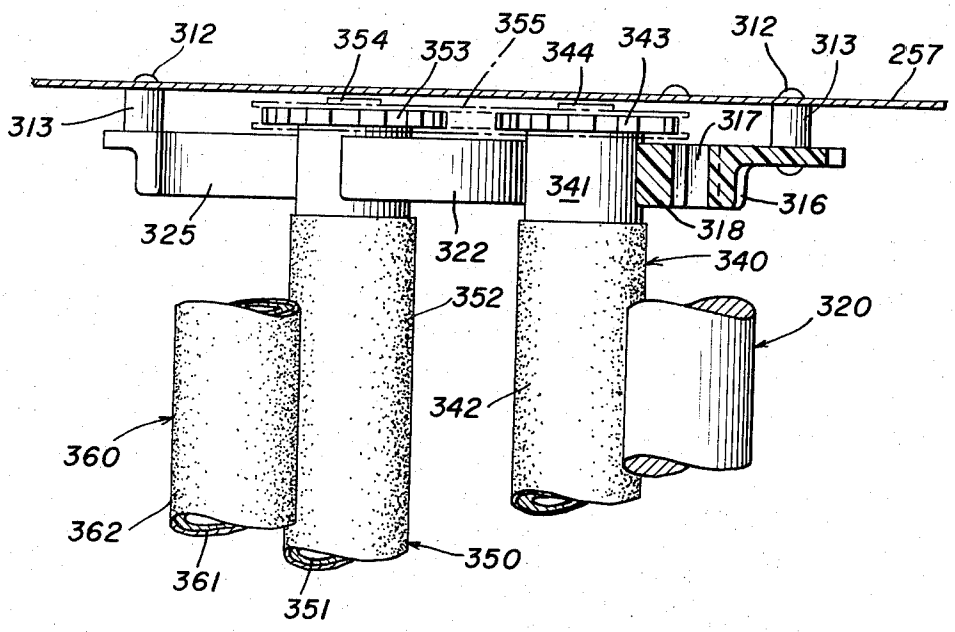

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FIG. 12


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CONTINUOUS TOWEL DISPENSER

This invention relates to a towel dispenser of the continuous type and more particularly to a towel dispenser having simple construction wherein stop mechanism is actuated by a pinch roller and used toweling is restricted in its return path to prevent folds and waves from forming therein.

It is a general object of the present invention to provide a towel dispenser of the continuous type having a simple construction which obviates the need for extensive repairs or maintenance.

Another object of the present invention is to provide a towel dispenser of the continuous type wherein the pinch roller actuates the stop mechanism and wherein the return path of the used toweling is restricted to prevent folds and waves from forming therein.

Another object of the present invention is to provide a towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into the housing to storage for used toweling, support structure mounted on each side of the housing and providing a ramp and a journal structure and a bearing surface, a storage roller shiftably and rotatably movable on the ramps in the housing for accumulating thereon a roll of used toweling, drive roller structure freely rotatably supported on the journal structures in the housing in contact with the used toweling roll for rotating the used toweling roll and the storage roller, a pinch roller freely rotatably supported on the bearing surfaces in the housing adjacent to the drive roller structure, clean toweling from the source thereof passing upwardly between the drive roller structure and the pinch roller and over the pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging the pinch roller along the bearing surfaces against the toweling between the pinch roller and the drive roller structure and urging the drive roller structure into the journal structures and against the used toweling roll, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of the pinch roller and the drive roller structure and the storage roller to accumulate the used toweling thereon during shifting and rotating movement of the storage roller to maintain a predetermined amount of toweling in the loop of toweling.

Still another object of the present invention is to provide a towel dispenser of the type set forth wherein first support structure is provided for the storage roller, second support structure is provided for the drive roller and third support structure is provided for the pinch roller.

Still another object of the present invention is to provide a towel dispenser of the type set forth wherein a one-piece support structure is provided for the storage roller, the drive roller and the pinch roller.

A further object of the present invention is to provide a towel dispenser of the type set forth wherein the drive structure includes two drive rollers drivably interconnected by a chain and sprockets.

A further object of the present invention is to provide a towel dispenser of the type set forth having a stop mechanism actuated in response to rotation of the pinch roller.

A still further object of the present invention is to provide a towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into the housing to storage for used toweling, a storage roller shiftably and rotatably mounted in the housing for accumulating thereon a roll of used toweling, drive roller structure rotatably mounted in the housing in contact with the used toweling roll for rotating the used toweling roll and the storage roller, a pinch roller shiftably and rotatably mounted in the housing adjacent to the drive roller structure, clean toweling from the source thereof passing upwardly between the drive roller structure and the pinch roller and over the pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging the pinch roller rearwardly against the toweling disposed between the pinch roller and the drive roller structure, and a stop mechanism including a latch and a cam on the pinch roller and a stop pawl pivotally mounted on the housing, the latch being angularly spaced from the cam on the pinch roller, the stop pawl including a catch for engagement with the latch and a cam follower for engagement with the cam, the stop pawl being biased at the beginning of clean toweling dispensing to position the catch from the latch, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and take-up of used toweling onto the storage roller and eventual engagement of the cam follower with the cam causing the catch to engage the latch after a predetermined angular rotation of the pinch roller in one direction to stop dispensing of clean toweling, release of the loop of toweling permitting the stop pawl to rotate in the opposite direction to disengage the cam follower from the cam and to disengage the catch from the latch thus to release the pinch roller to permit subsequent dispensing of clean toweling upon downward pulling on the loop of toweling.

Another object of the present invention is to provide a towel dispenser of the type as set forth in which a towel straightener is provided at the bottom of the housing to prevent folds and waves in the used toweling as it reenters the housing.

These and other objects of the present invention together with further objects and advantages thereof will best be understood by reference to the following specification taken in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of the towel dispenser incorporating the features of the present invention;

FIG. 2 is a perspective view of the towel dispenser having the front door open and showing a roller support positioned therein;

FIG. 3 is a view in section of the towel dispenser shown in FIG. 1 taken along lines 3—3 thereof;

FIG. 4 is a side elevational view of the roller support with the rollers positioned thereon;

FIG. 5 is an elevational view partly in section of the rollers and roller support shown in FIG. 4 as viewed along lines 5—5 thereof;

FIG. 6 is a perspective view of an end of the pinch roller;

FIG. 7 is an elevational view partly in section and partly broken away of a portion of the stop mechanism

particularly showing the relationship of the cam and the cam follower;

FIG. 8 is an end elevational view of the stop mechanism in the normal position thereof showing the relationship between the pinch roller having the cam and latch thereon and the cam follower and catch as illustrated in FIG. 7 and viewed along lines 8—8 thereof;

FIG. 9 is an end elevational view of the stop mechanism showing the relationship of the pinch roller and the cam follower just prior to engagement thereof to prevent further feeding of clean toweling into the loop;

FIG. 10 is a bottom elevational view of the towel dispenser illustrated in FIG. 3 viewed along lines 10—10 thereof;

FIG. 11 is a side elevational view like FIG. 4 of a second embodiment of the present invention; and

FIG. 12 is a top elevational view of the rollers and support therefor shown in FIG. 11 as viewed along lines 12—12 thereof.

Referring now to the drawings, there is shown a towel dispenser 50 with a housing 55 having a top wall 56 interconnected to two parallel side walls 57, each of the side walls being provided with an inwardly turned longitudinally extending flange 58. Each of the flanges 58 has a keyhole shaped slot 59 therein to facilitate mounting the towel dispenser 55 on a support surface therefor, such as a wall 60. Each of the side walls 57 further includes an inwardly turned horizontally disposed flange 61 at the bottom of the side wall opposite the top wall 56. The housing 55 has an arcuate bottom plate 65 having a curved portion 66 extending rearwardly and upwardly in the housing 55. A flange 67 extends downwardly from the bottom plate 65 intermediate the flanges 61 of the respective side walls 57 and spaced rearwardly from the front of the flanges.

As seen particularly in FIG. 10, a towel straightener 69 including a guide plate 70 having a lead edge 71, is mounted by welds 72 to the flange 61 near the rear of the housing 55. More particularly, the lead edge 71 of the guide plate 70 is spaced a small distance from the flange 58 which forms the rear of the dispenser 50. Similarly, a guide plate 75 having a lead edge 76 is fixedly mounted as by the welds 77 to the other side wall 57 and more particularly to the inwardly turned flange 61 thereof. The guide plates 70 and 75 together form the towel straightener 69 and are positioned so that the lead edges 71 and 76 respectively are parallel to the inwardly turned flanges 58 and are positioned a short distance therefrom. The lead edges 71 and 76 of the guide plates 70 and 75 respectively form a slot 80 with the wall surface 60 on which the dispenser 50 is mounted. The slot 80 has a relatively small transverse extent in comparison to its longitudinal extent at the ends thereof and a large transverse extent in the center to facilitate loading of the clean toweling, as hereinafter set forth.

The towel dispenser 50 further includes a door 90 pivotally connected by a hinge 91 to one of the side walls 57. The door 90 includes a top flange 92 constructed to fit over the top wall 56 and a side flange 93 constructed to fit over the other side wall 57. A latch 95 is mounted on the flange 93 and cooperates with the keeper 96 mounted on the side wall 57 to maintain the door 90 closed during dispensing of toweling therefrom. The door 90 is provided with a towel break or deflector 100 having a mounting flange 101 fixedly secured as by welding to the door 90 with an inwardly extending arcuate plate 103 having an abutment surface 104 thereon.

Each of the side walls 57 is provided with a roller support 110, only one of which will be described in detail since they are identical. The right-hand roller support 110 (see FIG. 7) includes a flat J-shaped plate 111 fixedly secured to the wall 57 by rivets 112 and spaced therefrom by spacers 113, while the left-hand roller support 110 is directly mounted to the wall 57 (see FIG. 5). The plate 111 has an inwardly directed sinuously shaped flange 115 which supports and guides the various towel dispensing and storage mechanism hereinafter set forth. The flange 115 has a straight ramp 116 extending from the upper rear corner of the housing 55 toward the lower front corner of the housing 55, the ramp 116 leading to a rest in the form of an elbow 117 which connects the ramp 116 with a finger 118 pointing toward the front of the towel dispenser 50. An arcuate journal 120 leads from the finger 118 to a bearing surface functioning as a pinch roller guide 125.

The roll support 110 may be made of a plurality of pieces or sections or, as shown in the preferred embodiment, of one piece. The ramp 116 extends upwardly and rearwardly to the back of the housing 55 and has a rest at one end thereof in the elbow 117. The journal 120 in cooperation with the finger 118 provides rearward and vertical restraints, all as hereinafter set forth. The segment joining the journal 120 with the bearing surface or guide 125 provides somewhat of a forward restraint but to a lesser extent than the rearward and vertical restraints of the journal 120.

Mounted for rotating and shifting movement along the ramps 116 of the two rollers supports 110 is a used towel storage roller 130. The roller 130 includes a cylindrical body portion 131 with a dowel 132 extending outwardly from each end thereof to engage the appropriate segment of the flanges 115. The roller 130 is free for rotating and shifting movement upwardly along the ramps 116 from the elbows or rests 117 as used toweling is accumulated on the roller 130, all as hereinafter will be set forth.

A drive roller 140 includes a cylindrical tubular body 141 having an abrasive covering 142, such as sandpaper, on the outer peripheral surface of the body 141. The drive roller 140 has the abrasive covering 142 thereof shorter in longitudinal extent than the tubular body 141 to provide two uncovered end portions 143 supported in the journals 120 of the support flanges 115. The drive roller 140 is, therefore, freely rotatably mounted in the journals 120 and is maintained therein by means of the vertical and rearward restraints provided by the journals and the finger 118 all as hereinbefore set forth. The diameters of the used towel storage roller 130 and the drive roller 140 are such that the abrasive covering 142 of the drive roller will contact the peripheral surface of the body portion 131 of the storage roller 130 when the dowels 132 are resting in the elbows 117 of the support flanges 115.

A pinch roller 160 has a cylindrical tubular body 161 slightly larger in diameter than the roller 140 and has an abrasive covering 162, such as sandpaper, thereon which terminates short of the ends of the body 161 to provide uncovered end portions 163. The pinch roller 160 is shiftably and rotatively mounted on the guides 125 with the center of gravity of the roller 160 disposed above the center of gravity of the roller 140, the guides causing the roller 160 to be urged toward the roller 140

for a purpose hereinafter set forth. Each of the end portions 163 of the pinch roller 160, as best seen in FIG. 6, forms one member of a stop mechanism 155 and has a cam 165 cut from the end thereof and bent outwardly from a base 166 away from the surface of the roller 160 to form a camming surface 167 which terminates in a free end 168. A notch 170 is cut out of each end 163 to form a latch 172 on the pinch roller 160 with the latch 172 being angularly disposed about 200° from the end 168 of the cam 165.

The stop mechanism 155 further includes a stop pawl 180 pivotally mounted to one of the side walls 57 by a shaft 181. The stop pawl 180 is generally Y-shaped with an arcuate edge 185 interconnecting a cam follower 190 and a catch 195. The cam follower 190 is provided with an arcuate camming surface 191 and an end surface 192 while the catch 195 is provided with a camming surface 196 and a stop surface 197. The stop pawl 180 has an enlarged and weighted end portion 199 which causes the stop pawl 180 to be biased by gravity to the position shown in FIG. 8.

The toweling 200 for use with the dispenser 55 is loaded in the form of a roll 201 of clean toweling and rests on the bottom plate 65 and more particularly on the arcuate portion 66 thereof. The free end of the roll 201 is fed upwardly to form the reach 202 between the drive roller 140 and the pinch roller 160 and over the pinch roller and downwardly past the abutment surface 104 of the towel deflector 100 to form the reach 203 leading out of the opening between the door 90 and the flange 67 into an exposed loop 205 of toweling. The loop 205 is exposed for use and extends into the housing 55 through the slot 80 formed between the mounting surface 60 and in contact with the lead edges 71 and 76 of the plates 70 and 75 respectively of the towel straightener 69. The used toweling 206 from the loop 205 extends upwardly in the housing 55 and around the used towel storage roller 130 to form a roll 207 of used toweling.

In operation, a clean roll of toweling 201 is inserted into the housing 55 after the front door 90 is opened, as shown in FIGS. 2 and 3, the roll resting on the bottom plate 65 and more particularly on the arcuate portion 66 thereof. The free end of the roll 201 is fed upwardly between the drive roller 140 and the pinch roller 160 and over the pinch roller and downwardly below the flange 67 of the bottom plate. A loop 205 of toweling is provided beneath the bottom of the towel dispenser 50 and then the free end of the toweling is fed upwardly through the slot 80 formed by the towel straightener 69 in contact with the spaced apart plates 70 and 75, the large opening between the plates facilitating the feeding of the free end of the toweling through the slot. The central opening between the plates 70 and 75 is sufficiently large to permit the attendant to insert his hand upwardly between the plates to feed the free end of the toweling onto and around the storage roller 130. After the feeding of the towel has been completed and the front door 90 closed, the towel dispenser 50 is in condition for use. It is seen, therefore, that the storage roller 130 rests in the elbows or rests 117 of the supports 115 prior to the time that the toweling is wrapped therearound. When the free end of the toweling is wrapped around the storage roller 130 the effective diameter of the storage roller 130 increases causing the roller to shift upwardly and rearwardly along the ramps 116.

Clean toweling is obtained from the roll 201 by exerting tension on the loop 205 causing the pinch roller 160 to rotate in a counter-clockwise direction as viewed in FIG. 3. Since the pinch roller 160 shiftably and rotatably mounted on the guides 125 is continually urged toward the drive roller 140 by gravity and the towel deflector 100 positions the toweling 203 somewhat below the pinch roller, downward pulling on the loop 205 of toweling will rotate the pinch roller and force the pinch roller toward the drive roller 140 causing rotation of the drive roller in a clockwise direction. Rotation of the drive roller 140 in a clockwise direction causes the storage roller 130 to rotate in a counter-clockwise direction whereby maintaining the loop 205 of toweling at a predetermined size with the used toweling 206 being wound onto the roll 207 which continuously increases in size. The abrasive covering 142 on the drive roller 140 insures that the storage roller 130 rotates in response to rotation of the pinch roller 160 and the drive roller 140.

The stop mechanism 155 which includes the cam 165 on the end of the pinch roller 160 and the stop pawl 180 pivotally mounted on the housing 55 is actuated after less than one complete rotation of the pinch roller 160. Referring to FIG. 8 of the drawings, the position of the stop mechanism 155 is shown just prior to initiating a cycle of the towel dispenser 50. The stop pawl 180 is in its normal position wherein the weighted end 199 thereof has positioned the catch 195 as shown with respect to the pinch roller 160. In this position, the cam 165 has the end 168 thereof spaced from the end 192, while the catch 195 is spaced from the latch 172. Rotation of the pinch roller 160 in a counter-clockwise direction in response to the tensioning of the loop 205 by downward pulling thereon rotates the pinch roller from the position shown in FIG. 8 to that shown in FIG. 9. After almost 360° rotation of the pinch roller 160, the parts have assumed the position shown in FIG. 9 wherein the camming surface 167 of the cam 165 is in contact with the camming surface 191, thereby pivoting the stop pawl 180 in the clockwise direction. Pivoting the stop pawl 180 moves the catch 195 and more particularly the stop 197 into position to be engaged by the latch 172 to prevent further movement of the pinch roller 160 and to prevent further feeding of toweling from the roll 201 into the loop 205 of toweling.

The stop pawl 180 achieves a considerable momentum during the rotation of the pinch roller 160 from the position shown in FIG. 8 to that shown in FIG. 9, so that the stop pawl 180 continues in the direction of the arrow in FIG. 9 to a position wherein the catch 195 and more particularly the stop surface 197 thereof, moves in the direction shown by the arrow to be interposed in the path of the latch 172. Continued rotation of the pinch roller 160 beyond the position shown in FIG. 9 causes engagement of the latch 172 with the stop surface 197 of the catch 195, thereby halting further rotation of the pinch roller 160 in a counter-clockwise direction. Once tension has been released on the loop of toweling 205, the stop pawl 180 will swing back to the gravity biased position thereof shown in FIG. 8 due to the heavily weighted end 199 which continually urges the stop pawl 180 to the position shown in FIG. 8 away from the position shown in FIG. 9. Once the stop pawl 180 has again resumed the position shown in FIG. 8, with the latch 172 spaced from the catch 195, the towel

dispenser **50** is again in condition wherein fresh toweling may be dispensed from the roll **201** thereof.

The abrasive cover **162** of the pinch roller **160,** while not absolutely necessary for operation of the dispenser **50,** is preferred and prevents slippage of the toweling from the roll **201** into the loop **205** after the stop mechanism **155** is engaged. Used toweling from the loop **205** is fed upwardly through the slot **80** in contact with the leading edges **71** and **76** of the straightening mechanism **69** to the rear of the housing **55** to prevent folds and waves from forming in the reach **206** of the toweling and, therefore, the roll **207** is substantially flat and is in better condition for later processing. As the roll **207** of toweling increases in size, the used towel storage roller **130** shifts upwardly and rearwardly and is guided by the ramps **116** of the roller supports **110.**

Advantages of the towel dispenser **50** lie in the simplicity of construction which permits the storage roller **130,** the drive roller **140** and the pinch roller **160** to be mounted without the usual bearings which may malfunction and require repair. Additionally, the stop mechanism **155** is actuated in response to rotation of the pinch roller **160** thereby preventing excessive wear of the drive roller **140,** a desirable feature which permits more consistent driving of the storage roller **130** through the lift of the towel dispenser **50.** The fact that the pinch roller **160** is larger in diameter than the drive roller **140** also insures that the abrasive covering **142** will wear evenly. Used toweling from the loop **205** is fed into the roll **207** without folds or waves due to the towel straightening mechanism **69** including the spaced apart plates **70** and **75** which maintain the used toweling substantially flat at the ends thereof while at the same time providing sufficient space for the attendant to feed the toweling onto the storage roller **130** in order to load the dispenser **50** with clean toweling.

The towel dispenser **250** shown in FIGS. **11** and **12** functions substantially the same as that just described. In the second embodiment of the present invention, two drive rollers **340** and **350** are provided and are linked together by the sprockets **343** and **353** and the chain **355.** The storage roller **320** is driven by the drive roller **340** while the pinch roller **360** drives the drive roller **350.** In this embodiment, the pinch roller **360** is of somewhat larger diameter than the drive rollers **340** and **350** to avoid wear on the drive roller **340** due to continued pressure from the pinch roller **360.** In this embodiment, the drive roller **350** is driven by the pinch roller **360** and in turn drives the drive roller **340** which causes rotation of the storage roller **320.** It should be noted that the ramps **316** and **318** for the storage roller **320** form slots which extend upwardly and forwarldy toward the front of the towel dispenser in contradistinction to the ramps **116.** Operation of the stop mechanism is the same as well as operation of the used towel straightening mechanism.

While there has been described what is at present considered to be the preferred embodiment of the present invention, it will be understood that various modifications and alterations may be made herein without departing from the true spirit and scope of the present invention, and it is intended to cover in the appended claims all such modifications and alterations as fall within the true spirit and scope of the present invention.

What is claimed is:

1. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user an thence along a return path into said housing to storage for used toweling, support structure mounted on each side of said housing and providing a ramp and a journal structure and a bearing surface, a storage roller shiftably and rotatably movable on said ramps in said housing for accumulating thereon a roll of used toweling, drive roller structure freely rotatably supported on said journal structures in said housing in contact with the used toweling roll for rotating the used toweling roll and said storage roller, a pinch roller freely rotatably supported on said bearing surfaces in said housing adjacent to said drive roller structure and movable toward and away therefrom, clean toweling from the source thereof passing upwardly between said drive roller structure and said pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller along said bearing surfaces against the toweling between said pinch roller and said drive roller structure and urging said drive roller structure into said journal structures and against the used toweling roll, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of said pinch roller and said drive roller structure and said storage roller to accumulate the used toweling thereon during shifting and rotating movement of said storage roller to maintain a predetermined amount of toweling in the loop of toweling.

2. The towel dispenser set forth in claim **1,** wherein the bearing surfaces of said support structures extend rearwardly and downwardly and the center of gravity of said pinch roller is disposed above the center of gravity of said drive roller structure continually to urge said pinch roller toward said drive roller structure.

3. The towel dispenser set forth in claim **1,** wherein said drive roller structure includes at least one cylindrical tube having an abrasive covering of sandpaper thereon.

4. The towel dispenser set forth in claim **1,** wherein said pinch roller is a cylindrical tube having an abrasive covering thereon.

5. The towel dispenser set forth in claim **1,** wherein said drive roller structure includes at least one cylindrical tube and said pinch roller is a cylindrical tube having a larger diameter than said one cylindrical tube of said drive roller structure.

6. The towel dispenser set forth in claim **1,** wherein said housing includes a door mounted for pivotal movement and a towel break mounted on the inside of said door so that the end of said towel break away from said door is positioned downwardly and underneath said pinch roller when said door is closed.

7. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into said housing to storage for used toweling, first support structure mounted on each side of said housing and having an upwardly inclined ramp terminating in rest at the bottom thereof, a storage roller shiftably and rotatably mounted on said first support structures for accumulating thereon a roll of used toweling during shifting and

rotating movement along said ramps, second support structure mounted on each side of said housing and providing a journal disposed below said ramp and having vertical and rearward restraints, a drive roller rotatably mounted in the journals of said second support structures in contact with the used toweling roll for rotating the used toweling roll and said storage roller, third support structure mounted on each side of said housing and providing a bearing surface extending rearwardly and downwardly toward the associated journal, and a pinch roller shiftably and rotatably mounted on the bearing surfaces of said third support structures movable toward and away from said drive roller for restraining forward movement of said drive roller during operation of said towel dispenser, clean toweling from the source thereof passing upwardly between said drive roller and said pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller rearwardly on the bearing surfaces of said third support structures against the toweling between said pinch roller and said drive roller to urge said drive roller into said journals on said second support structures and against the used toweling roll, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of said pinch roller and said drive roller and said storage roller to accumulate the roll of used toweling thereon during movement of said storage roller upwardly and rearwardly along the ramps of said first support structures to maintain a predetermined amount of toweling in the loop of toweling.

8. The towel dispenser set forth in claim **7**, wherein said first support structure and said second support structure and said third support structure are one piece.

9. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into said housing to storage for used toweling, support structure mounted on each side of said housing and providing a ramp and journal structure and a bearing surface, a storage roller shiftably and rotatably movable on said ramps in said housing for accumulating thereon a roll of used toweling, a first drive roller freely rotatably supported on said journal structures in contact with the used toweling roll for rotating the used toweling roll and said storage roller, a second drive roller freely rotatably supported on said journal structures in said housing drivably connected to said first drive roller, a pinch roller freely rotatably supported on said bearing surfaces in said housing adjacent to said second drive roller, clean toweling from the source thereof passing upwardly between said second drive roller and said pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller along said bearing surfaces against the toweling between said pinch roller and said second drive roller, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of said pinch roller and said first and said second drive rollers and said storage roller to accumulate the used toweling thereon during shifting and rotating movement of said storage roller to maintain a predetermined amount of toweling in the loop of toweling.

10. The towel dispenser set forth in claim **9**, wherein each of said drive rollers carries a sprocket thereon with a chain interconnecting said sprockets drivingly to connect said first drive roller with said second drive roller.

11. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into said housing to storage for used toweling, first support structure mounted on each side of said housing and having an upwardly inclined ramp terminating in rest at the bottom thereof, a storage roller shiftably and rotatably mounted on said first support structures for accumulating thereon a roll of used toweling during shifting and rotating movement along said ramps, second support structure mounted on each side of said housing and providing a journal disposed below said ramp and having vertical and rearward restraints, a first drive roller rotatably mounted in the journals of said second support structures in contact with the used toweling roll for rotating the used toweling roll and said storage roller, third support structure mounted on each side of said housing and providing a journal disposed below said ramp and having vertical and rearward restraints, a second drive roller rotatably mounted in the journals of said third support structures drivingly interconnected with said first drive roller for rotating the first drive roller, fourth support structure mounted on each side of said housing and providing a bearing surface extending rearwardly and downwardly toward the associated journal, and a pinch roller shiftably and rotatably mounted on the bearing surfaces of said fourth support structures adjacent to said second drive roller, clean toweling from the source thereof passing upwardly between said second drive roller and said pinch roller and over said pinch roller and downwardly into the loop of towling, tension on the loop of toweling urging said pinch roller rearwardly on the bearing surfaces of said fourth support structures against the toweling between said pinch roller and said second drive roller, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of said pinch roller and said drive roller and said storage roller to accumulate the roll of used toweling thereon during movement of said storage roller upwardly and rearwardly along the ramps of said first support structures to maintain a predetermined amount of toweling in the loop of toweling.

12. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into said housing to storage for used toweling, a storage roller shiftably and rotatably mounted in said housing for accumulating thereon a roll of used toweling, drive roller structure rotatably mounted in said housing in contact with the used toweling roll for rotating the used toweling roll and said storage roller, a pinch roller shiftably and rotatably mounted in said housing adjacent to said drive roller structure and movable toward and away therefrom, clean toweling from the source thereof passing upwardly between said drive roller structure and said

pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller against the toweling disposed between said pinch roller and said drive roller structure, and stop mechanism responsive to predetermined angular rotation of said pinch roller during dispensing of clean toweling for halting rotation of said pinch roller and thereby said drive roller structure to stop dispensing of clean toweling into the loop of toweling, said stop mechanism being responsive to release of the loop of toweling after actuation of said stop mechanism for automatically releasing said pinch roller and thereby said drive roller structure to permit subsequent dispensing of clean toweling, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and take-up of used toweling on said storage roller until the end of the predetermined angular rotation of said pinch roller actuates said stop mechanism to stop dispensing of clean toweling, release of the loop of toweling causing said stop mechanism to release said pinch roller to permit subsequent dispensing of clean toweling upon downward pulling on the loop of toweling.

13. The towel dispenser set forth in claim **12,** wherein said stop mechanism is actuated to halt rotation of said pinch roller in response to less than a 360° rotation of said pinch roller.

14. The towel dispenser set forth in claim **12,** wherein said pinch roller and said drive roller have different diameters to prevent wear on the surface of said drive roller.

15. A towel dispenser of the continuous type comprising a housing having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into said housing to storage for used toweling; a storage roller shiftably and rotatably mounted in said housing for accumulating thereon a roll of used toweling, drive roller structure rotatably mounted in said housing in contact with the used toweling roll for rotating the used toweling roll and said storage roller, a pinch roller shiftably and rotatably mounted in said housing adjacent to said drive roller structure and movable toward and away therefrom, clean toweling from the source thereof passing upwardly between said drive roller structure and said pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller rearwardly against the toweling disposed between said pinch roller and said drive roller structure, and a stop mechanism including a latch and a cam on said pinch roller and a stop pawl pivotally mounted on said housing, said latch being angularly spaced from said cam on said pinch roller, said stop pawl including a catch for engagement with said latch and a cam follower for engagement with said cam, said stop pawl being biased at the beginning of clean toweling dispensing to position said catch spaced from said latch, downward pulling on the loop of toweling cuasing feeding of clean toweling from the source thereof into the loop of toweling and take-up of used toweling onto said storage roller and eventual engagement of said cam follower with said cam causing said catch to engage said latch after a predetermined angular rotation of said pinch roller in one direction to stop dispensing of clean toweling, release of the loop of toweling permitting said stop pawl to rotate in the opposite direction to disengage said catch from said latch and said cam follower from said cam and thus to release said pinch roller to permit subsequent dispensing of clean toweling upon downward pulling on the loop of toweling.

16. The towel dispenser set forth in claim **15,** wherein said pinch roller is a cylindrical tube having a portion of one end thereof bent out of the plane of the cylindrical surface to form said cam and having a notch in said one end to form said latch.

17. The towel dispenser set forth in claim **15,** wherein said cam follower is biased by gravity.

18. A towel dispenser of the continuous type comprising a housing and having associated therewith a loop of toweling that extends from a source of clean toweling along an exit path to an exposed position accessible to a user and thence along a return path into said housing to storage for used toweling, a storage roller shiftably and rotatably mounted in said housing for accumulating thereon a roll of used toweling, drive roller structure rotatably mounted in said housing in contact with the used toweling roll for rotating the used toweling roll and said storage roller, a pinch roller rotatably mounted in said housing adjacent to said drive roller structure and movable toward and away therefrom, clean toweling from the source thereof passing upwardly between said drive roller structure and said pinch roller and over said pinch roller and downwardly into the loop of toweling, tension on the loop of toweling urging said pinch roller against the toweling between said pinch roller and said drive roller structure, and a towel straightener including spaced-apart plates mounted at the bottom of said housing adjacent to the return path of the toweling providing spaced apart straightening surfaces engaging the longitudinal edges of the used toweling to straighten the used toweling and to prevent the used toweling from folding during travel along the return path to the roll of used toweling, said plates being spaced apart a distance to provide an opening therebetween sufficiently large for an operator conveniently to engage the free end of a clean roll of toweling with said storage roller during loading of the towel dispenser, downward pulling on the loop of toweling causing feeding of clean toweling from the source thereof into the loop of toweling and rotation of said pinch roller and said drive roller structure and said storage roller to accumulate the used toweling thereon while said towel straightener serves to maintain the used toweling straight along its return path onto the roll of used toweling.

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