Jan. 2, 1934. A. CARD 1,941,826

TOWEL DISPENSING APPARATUS

Filed Oct. 26, 1931 2 Sheets-Sheet 1

Fig. 1.

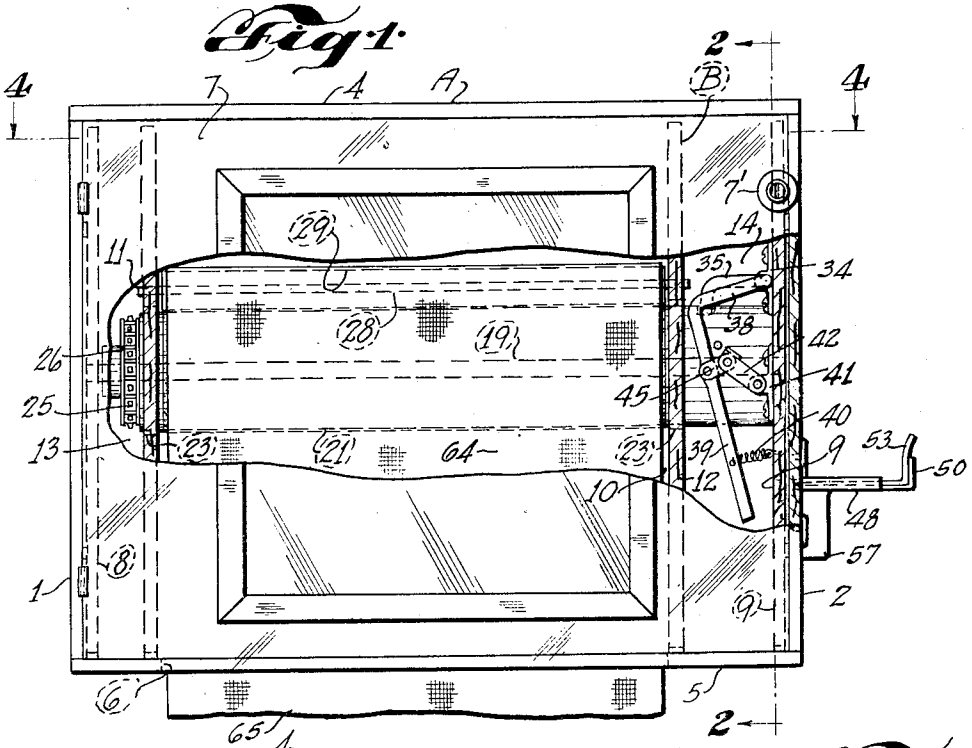



Fig. 2.

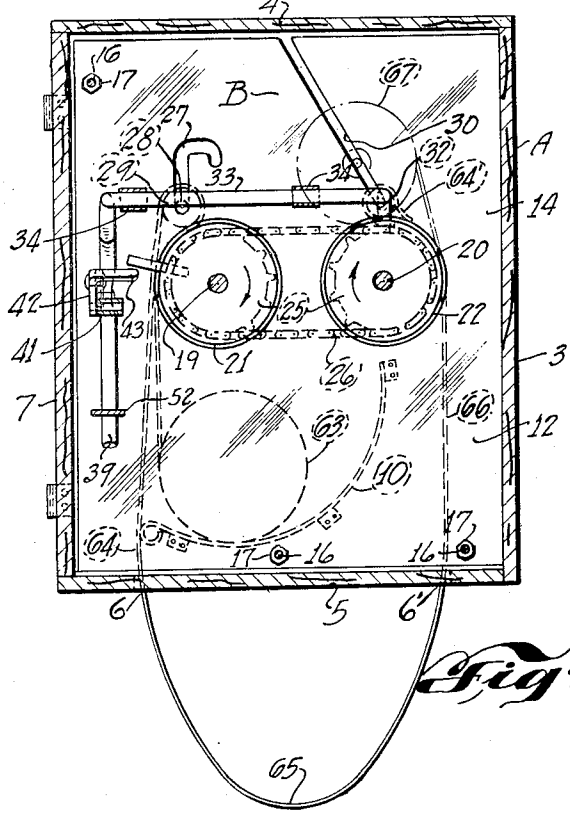
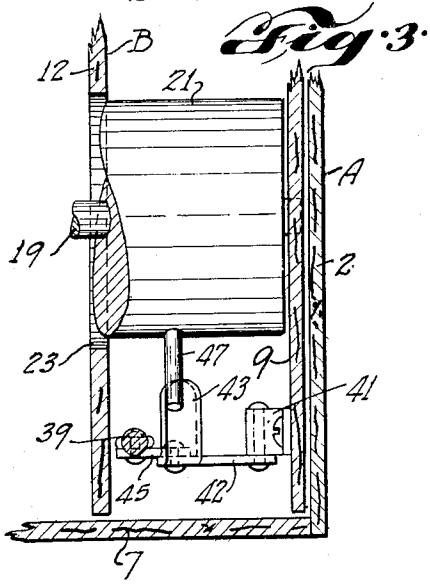



Fig. 3.



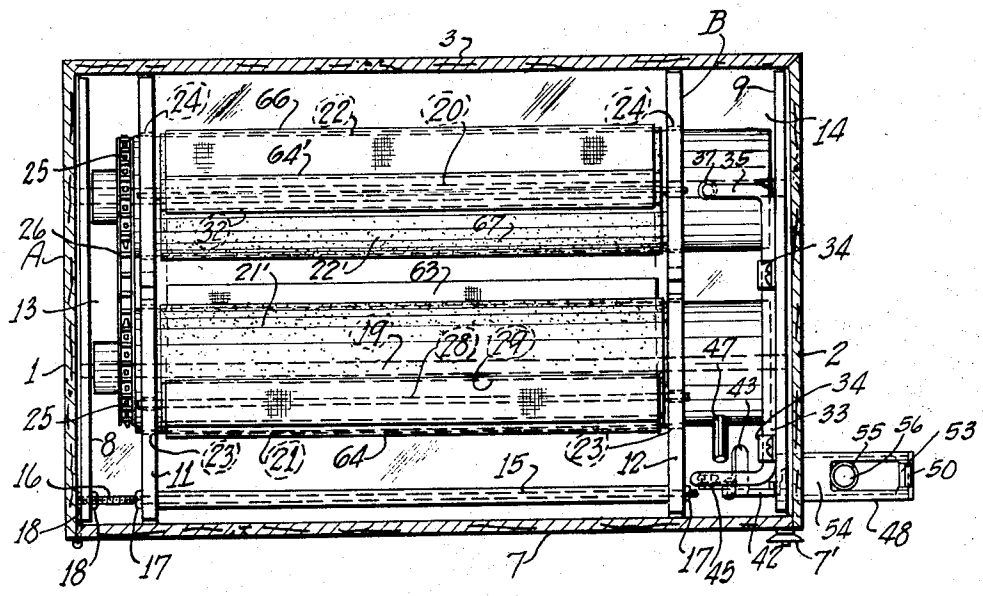

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Fig. 4.



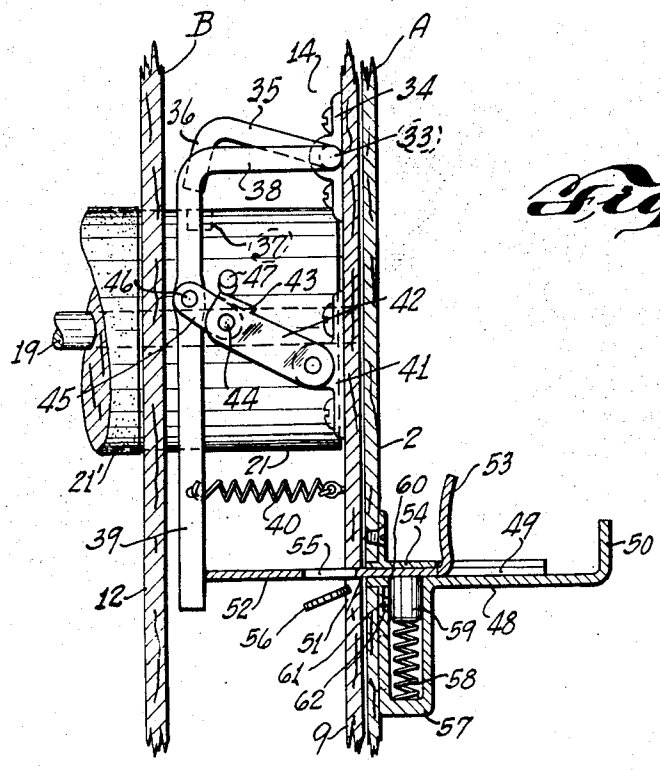




Fig. 5.

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# UNITED STATES PATENT OFFICE

1,941,826

## TOWEL-DISPENSING APPARATUS

Anice Card, St. Louis, Mo., assignor, by direct and mesne assignments, to Steiner Sales Company, Chicago, Ill., a corporation of Utah

Application October 26, 1931. Serial No. 571,166

10 Claims. (Cl. 312—38)

This invention relates generally to towel racks and has more particular reference to an apparatus or rack, preferably coin-controlled, for dispensing so-called roller or band towelling and the like.

My invention has for its prime object the provision of an apparatus for dispensing band-towelling or the like from a source of supply suitably protected for preserving the towelling in a clean, fresh, and uncontaminated condition until issued for consumer usage.

My invention has for another object the provision of apparatus for dispensing band-towelling, wherein a length or portion of the towelling is issued accessibly for use of the consumer, while the previously issued and used portion of the band is at the same time withdrawn from consumer access for preventing unhygienic contact of the customer therewith.

My invention has for still another object the provision of a towel-dispensing rack incorporating a coin-releasable locking-means for preventing unauthorized issuance of the towelling.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings (two sheets),—

Figure 1 is a front elevational view, partly in section, of a towel-dispensing apparatus or rack embodying my invention;

Figure 2 is a sectional end-view of the rack, taken approximately along the line 2—2, Figure 1, showing the drum-locking mechanism;

Figure 3 is an enlarged fragmentary detail view of the rack, showing the toggle and the toggle-flexing pin carried by the towel-feed drum;

Figure 4 is a sectional top-plan view of the rack, taken approximately along the line 4—4, Figure 1; and

Figure 5 is an enlarged fragmentary and partly sectional view of the coin-releasable drum-locking mechanism of the rack.

Referring now more in detail and by reference characters to the drawings, which illustrate a preferred embodiment of my invention, A designates a housing or wall-cabinet, which includes opposed end-walls 1, 2, a back-wall 3, a top wall 4, a bottom wall 5 provided with front and rear longitudinal towel-slots 6, 6', respectively, and a suitably glazed preferably swingable front wall or door 7 provided with a suitable form of lock-handle, as indicated at 7' in Figure 4.

B designates a frame or rack slidably mounted in the cabinet A for shiftable movement drawer-wise into and out of the opening provided by the cabinet-door 7. The rack B includes end-members 8, 9, for disposition within the housing A between the back-wall 3 and front wall 4. Intermediate the end members 8, 9, is a pair of spaced partitions 11, 12, spaced respectively from the rack end-members 8 and 9 for providing a drive-chamber 13 and a lock-chamber 14, the partitions 11, 12, being retained in such spaced relation by interposed spreader-tubes or struts 15, through which are passed rods 16 having threaded ends engaged by nuts 17 bearing on the respective partitions 11, 12, for gripping the same on the struts 15. The terminal ends of the rods 16 are suitably inserted in the respective rack end-members 8, 9, and the latter retained on the rods 16 by opposing rod-engaging nuts 18, as best seen in Figure 4.

Mounted longitudinally between and suitably spacing the partitions 11, 12, is a transversely arcuate trough-like backing or towel-roll support 10, best seen in Figure 2, and forming part of the rack B, is a towel-manipulating mechanism, which includes a pair of front and rear rotary shafts 19, 20, respectively, having their opposite ends suitably supported in and by the rack end-walls 8, 9, for extending horizontally in spaced parallel relation therebetween.

The front shaft 19 carries a towel feeding or unwinding roll 21, and the rear shaft 20 carries a towel rewinding roll 22, which rolls or drums have preferably the same diameter and extend longitudinally between, and through registering pairs of front and rear apertures 23, 24, provided in, the partitions 11, 12, for projecting their opposite ends partly into the drive-chamber 13 and wholly into and across the lock-chamber 14, respectively, as best seen in Figure 4. Between the partitions 11, 12, the rolls or drums 21, 22, are preferably provided with circumferentially applied roughened or sand-paper facings 21', 22', respectively.

Mounted on the respective shafts 19, 20, in the drive-chamber 13, are sprockets 25 co-operatively connected by a chain 26 for towel-rewinding actuation of the drum 22 by and on towel-feeding actuation of the drum 21, preferably in such manner that the drums 21, 22, rotate in unison in like directions and have like peripheral velocities.

Formed in the respective partitions 11, 12, above and in front of the axis of the drum 21, are registering inverted L-shaped slots 27, in which freely work the respective opposite ends of a floating shaft 28 carrying between the partitions 11, 12, a guide-roll 29 adapted normally, that is, when

the shaft 28 resides shiftably in the long, preferably vertical, legs of the slots 27, for gravitationally descending upon, and for peripheral or rolling engagement with, the sub-disposed drum 21. The roll 29, however, may, for training the towelling thereover, be suspended clear of the drum 21 by shifting the shaft 28 into the preferably downwardly crooked or pocketed horizontal legs of the slots 27, as will be understood from Figure 2.

Opening through the top margins of the respective partitions 11, 12, approximately midway of the vertical centers of the drums 21, 22, are registering slots 30, which extend obliquely downwardly and rearwardly toward the rewinding-drum 22, in which slots 30 freely work the respective opposite ends of a floating shaft 31 carrying a rewinding roll 32 also extending between the partitions 11, 12, for purposes presently appearing.

Disposed in the lock-chamber 14, is a drum latching mechanism, which includes a rock-shaft 33 supported for oscillation by suitable bearings 34 mounted on the rack end-wall 9 above the ends of the respective drums 21, 22. Laterally projecting from the preferably rear end of the rock-shaft 33, is an arm 35 carrying at its free end a depending detent or finger 36 for drum-locking co-operation with a notch or recess 37 provided for the purpose in the periphery of one of the drums, in the present instance, the rewinding drum 22, the detent 36 being liftable, however, for drum-releasing purposes, from the notch 37 on oscillation of the shaft 33, as presently appearing.

At its forward end, the shaft 33 terminates in an inverted L-shaped arm 38, whose depending leg 39 resides in front of the feed-drum 21 and is angularly disposed with respect to the detent-arm 35 in such manner that the leg 39 will be swingably inclined downwardly toward the rack end-wall 9 when the detent 36 is in drum-locking co-operation with the notch 37, as shown in Figure 1. The arm 39 is normally tensionally biased in such drum-locking position by a spring 40 suitably connected between the leg 39 and the rack end-wall 9, as also best seen in Figure 1.

Mounted on the rack end-wall 9 forwardly of the drum 21, is a bracket 41 pivotally supporting at one end a relatively long toggle-link 42, and presented toward the drum 21 from the upper margin of the free end of the link 42, is a lateral ear 43. Opposite the ear 43, the link 42 has knuckle-pin connection, as at 44, with a second relatively short toggle-link 45, in turn, pivotally connected, as at 46, with the arm 39.

Normally, the toggle-linkage 42, 45, is upwardly flexed or folded responsively to the tensional bias of the arm 39 in drum-locking position, as shown in Figure 1. However, on swinging actuation of the arm 39 inwardly from the rack wall 9 for lifting the detent 36 from the drum-notch 37, the links 42, 45, are adapted for gravitationally descending into toggle-extended position until the link 44 impinges the ear 43 with the knuckle pin 44 disposed below the axis of the pivot points 41, 46, for automatically in toggle-locking manner constraining the tensionally-influenced arm 39 in such detent-lifting drum-releasing position, as best seen in Figure 5.

It will be seen that the drums 21, 22, when the latter is thus released from the influence of the detent 36, may be freely rotated in a manner and for a purpose presently appearing; however, it may be here stated that desirably such rotation of the drums 21, 22, is limited to a single or unitary revolution at a time.

For such purpose, a catch or pin 47, radially projecting from the periphery of the drum 21, is adapted, during the revolution of the drum, for impinging the ear 43 for folding or flexing the toggle 42—45 from its described arm-constraining position sufficiently prior to registration of the notch 37 with the detent 36 for permitting the latter, under the influence of the spring 40, to drop into the notch 37 on completion of the desired single revolution of the drums 21, 22.

It may here also be pointed out that the pivot axis of the toggle-links 42, 45, is obliquely disposed relatively to the axis of the drum 21, in order that the pin 47 may readily disengage itself from the ear 43, the link 42, for such purpose, most rapidly swinging upwardly and away from the path of the pin 47 as the toggle 42—45 is flexed or folded by the pin 47, as will be understood from Figure 1; however, the ear 43 acts as a stop engaging the pin 47 for restraining the drum 21 against further rotation until the toggle is thus folded or flexed for returning the arm 39 to drum-locking position.

Mounted upon the outer face of the cabinet end wall 2, is a bracket 48 providing a projecting slideway 49 terminating at its outer end in an upstanding stop-member or flange 50, the way 49 extending through the cabinet end wall 2 for registration of its inner end with a suitable aperture 51 provided in the rack-end-wall 9. Slidably reciprocable in the way 49, is a coin-slide or plunger 52 having its inner end shiftable through the aperture 51 (Figure 5) into the lock-chamber 14, the slide 52 including an upstanding finger-grip 53 engageable alternately with the outer stop 50 and a way-cover or inner stop 54 for limiting the movement of the slide 52.

The slide 52 is provided with a coin-receptive aperture 55 adapted for disposition exteriorly of the way-cover 54 for coin-receptive purposes when the slide 52 is in its extreme outward position in the way 49, and for disposition sufficiently within the cabinet-chamber 14 for discharge of a carried coin 56 therein when the slide 52 is in the extreme inward way-shifted position, as best seen in Figure 5, the slide 52 being adapted on inward shifting actuation thereof for impinging the arm 39 for swinging or shifting the same from drum-latching inclined position adjacent the rack-end-wall 9 to drum-releasing approximately vertical position adjacent the partition 12.

Depending from the bracket 48 beneath the way-cover 54, is a wall or housing 57, in which is yieldingly supported, as by a tensional member or spring 58, a reciprocable plunger 59 adapted for projecting through the bottom of the way 49 and into slide-locking entry into the aperture 55 when the slide 52 is coin-free as said aperture is brought into registration with the plunger on inward manipulation of the slide, the slide being thus plunger-locked prior to engagement of the end of the slide with the arm 39.

In order that the slide 52 may be reversely shifted from plunger-locked position, however, the plunger 59 is provided on its inner edge with a beveled face or cam 60, whereby the plunger 59 will be depressed in the housing 57 on engagement of the inner wall of the coin aperture 55 with the cam-face 60 on outward movement only of the slide 52, the plunger 59 also having a lateral pin 61 working in a vertical slot 62 for preventing rotation of the plunger 59 in the housing 57.

However, when the aperture 55 is occupied by a slide-deposited coin, the slide-locking movement

of the plunger 59 is prevented, thereby rendering the apparatus coin-permissive for the completion of the movement of the slide 52 to extreme inward position for shifting the arm 39 for releasing the drums 21, 22, for towel-feeding movement, the coin, as 56, being at the same time deposited in the chamber 14, as shown in Figure 5.

Preferably the several parts are of such relative dimensions that the flexing of the toggle 42—45 requisite for movement of the pin 47 there-past necessitates such corresponding swinging actuation of the arm 39 as to outwardly shift the slide 52 for slide-locking entry of the plunger 59 into the aperture 55, thus preventing a "repeat" stroke of the slide 52 until another coin is deposited therein.

Fresh band-towelling for use in the rack B is preferably supplied in the form of a prepared roll 63, the end of the exposed or feed strand 64 of the roll 63 preferably having a tunnel-loop 64'

For replenishing the supply of towelling in the rack, the cabinet door 7 is suitably unlatched and swung open, whereby the rack B may be outwardly drawn or shifted in the cabinet A for removal of the used-roll 67 and its roller 32 from the rack, the roller 32 being withdrawn from the roll 67 for re-use in the rack as will presently appear.

With the rack B so exposed, a fresh roll 63 may with facility be deposited in the roll-support 10, the feed-strand 64 of the roll 63 being unwound from the front side thereof and trained upwardly partially around the front face of the feed-drum 21 and thence over the rear face of the roller 29, the latter conveniently for such purpose being temporarily supported in uplifted position in the L-slots 27.

Upon then dropping the roller 29 in the slots 27, the towel-strand 64 is engaged between the roller 29 and the drum 21 for closely hugging the same, the drum-friction-facing 21' thus gripping the band 64 for preventing feeding movement thereof except on and with rotatory movement of the drum 21.

From the roller 29, the towel-strand 64 descends through the cabinet-bottom-wall front slot 6 and is reversed upon itself, forming the front side of a loop 65 accessible most conveniently for customer's use exteriorly of the bottom wall of the cabinet A (Figure 2).

The used strand-portion 66, that is, the back side of the loop 65, is then brought upwardly through the rear slot 6' of the cabinet-bottom wall, and, passing rearwardly of the drum 22, is mounted upon the roller 32, the latter for such purpose being threaded through the tunnel-loop 64'. The roller 32 then gravitationally descending in the slots 30 engages the strand 66 between the periphery of the roller 32 and the upper face of the drum 22.

It will be seen that, on and with unwinding actuation of the feed-drum 21, the drum 22 will be rewindingly actuated, the drum-facing 22' frictionally gripping its engaged roller-carried strand 66 for wrapping the latter upon the roller 32, thereupon forming a roll 67 of soiled or used towelling. The roller 32, it may here be noted, rises in the slots 30 as the diameter of the roll 67 increases, as shown in dot-dash lines in Figure 2; at the same time, the diameter of the roll 63 correspondingly decreases, the rolls 63, 67, being thus complementary one to the other.

The rack B is then returned into the cabinet A, and the coins found in the lock-chamber 14 being gathered up and removed, the door 7 is closed and locked and the device is ready for customer use.

In use and operation, a customer desiring to obtain a supply of fresh towelling from the machine deposits a suitable coin in the coin-aperture 55 and, grasping the finger-grip 53, manipulates the slide 52 inwardly of the way 49. The presence of the coin in the aperture 55 prevents the locking engagement of the plunger 59 with the slide 52, whereby the latter may be shifted to final position for impinging and swinging the arm 39 for, in turn, lifting the detent 36 from the drum-notch 37 for releasing the drums 21, 22, for rotative towel-feeding movement, the coin, as 56, meanwhile dropping from the aperture 55 into the chamber 14. At the same time, the toggle 42—45 descends into toggle-locking extension for automatically retaining the arm 39 in drum-releasing position against the tension of the spring 49 during the ensuing towel-feeding actuation of the drums 21, 22.

The customer now pulls on the front side of the towel-loop 65 for unwinding a length of the towelling from the roll 63, the unwinding strand 64 descending through the cabinet and appearing as a supply of fresh towelling on the front side of the loop 65 and at the same time correspondingly actuating the drum 21, which, in turn, actuates the drum 22 for rewinding the soiled towelling from the rear side of the loop 65 onto the rewinding-roll 32, the dimensions of the loop thus being maintained substantially constant during the towel-feeding operation in such manner that, on completion of such operation, the soiled towelling will be withdrawn into the cabinet and hence will be wholly inaccessible to the customer.

As the drum 21 is rotated by the unwinding towel-strand 64, the pin 47 impinges the ear 46, flexing the toggle 42—45, thus releasing the arm 39 for biasing the detent 36 upon the drum 22 until, a length of towelling equal to the circumference of the drum 21 having been unwound, the notch 37 in the drum 22 is brought into registration with the detent 36 for entry thereof into the notch 37 for locking the drums against further rotation pending the deposit of another coin in, and drum-releasing actuation of, the slide 52.

Meanwhile, the used-towelling roll 67, having peripheral engagement with the drum 22, is caused thereby to revolve at the same circumferential speed as that of the roll 63, whereby the length of used-towelling strand 66 thus automatically rewound on the roll 67 is substantially equal to the length of fresh-towelling strand 64 unwound from the roll 63.

My new rack is relatively simple in structure, may be inexpensively manufactured, and is exceedingly efficient in the performance of its intended functions.

It will be understood that changes and modifications in the several parts of the apparatus or rack may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is,—

1. In a roll-towelling dispensing rack, in combination, a rotary drum adapted to have peripheral engagement with the towel-band for controlling the feed thereof, detent means tensionally influenced for locking said drum against rotation, and means including a toggle cooperable

with said detent means for constraining the same in drum releasing position.

2. In a roll-towelling dispensing-rack, in combination, a rotary drum adapted to have peripheral engagement with the towel-band for controlling the feed thereof, detent means tensionally biased for locking said drum against rotation, toggle means for constraining said detent means in drum-releasing position, and means for flexing the toggle for restoring the detent means to drum-locking position.

3. A rack for dispensing band-towelling comprising, in combination, a pair of rotary drums, one of which is adapted to have peripheral engagement with the towel-band for controlling the feed thereof for towel dispensing purposes, detent means tensionally biased for locking said drums against rotation, and mechanism for releasing said drums for rotation including a toggle for constraining the detent means in drum-releasing position, a toggle-flexing member carried by one of the drums, and means on the toggle engageable with said member for restraining the drums against rotation until the toggle is flexed for returning the detent means to drum-locking position.

4. A rack for dispensing band-towelling comprising, in combination, a rotary drum adapted to have peripheral engagement with the towel-band for controlling the feed thereof for towel-dispensing purposes, a detent means tensionally biased for locking said drum against rotation, means for actuating said detent means to drum releasing position, and toggle means responsive to said detent-actuation for constraining the detent means in drum-releasing position.

5. In a towel dispensing machine, a towel feed roll and a towel take-up roll, means for locking said rolls against rotation, means for releasing said locking means, means for holding said locking means in release position, and means on one of said rolls for actuating said holding means to restore said locking means to locking position.

6. In a towel dispensing machine, a towel feed roll and a towel take-up roll, means connecting said rolls for simultaneous rotation, means cooperating with one of said rolls to lock said roll against rotation, means for releasing said locking means, and means on the other of said rolls for restoring said locking means to locking position.

7. In a towel dispensing machine, a towel feed roll and a towel take-up roll, means connecting said rolls for simultaneous rotation, means cooperating with one of said rolls to lock said rolls against rotation, means for releasing said locking means, means for holding said locking means in release position, and means on the other of said rolls for actuating said holding means to restore said locking means to locking position.

8. In a towel dispensing machine, a towel feed roll and a towel take-up roll, means connecting said rolls for simultaneous rotation, one of said rolls being provided with a recess, a bolt, means movably mounting said bolt to seat in said recess to lock said rolls against rotation, means for withdrawing said bolt from said recess to permit free rotation of said rolls, and means on the other of said rolls for restoring said bolt to position in said recess.

9. In a towel dispensing machine, a towel feed roll and a towel take-up roll, means connecting said rolls for simultaneous rotation, one of said rolls being provided with a recess, a locking bolt, means movably mounting said bolt to seat in said recess to lock said rolls against rotation, means for withdrawing said bolt from said recess to permit free rotation of said rolls, means for holding said bolt in withdrawn position, and means on the other of said rolls cooperating with said holding means to restore said bolt to locking position in said recess.

10. In a towel dispensing machine, a towel feed roll and a towel take-up roll, means connecting said rolls for simultaneous rotation, one of said rolls beings provided with a recess, a locking bolt, means movably mounting said bolt to seat in said recess for locking said rolls against rotation, means for withdrawing said bolt from said recess to permit free rotation of said rolls, a toggle mechanism connected to said withdrawing means and adapted to be straightened by actuation thereof and to hold said bolt in release positon, and means on the other of said rolls for flexing said toggle mechanism to restore said bolt to locking positon in said recess.

ANICE CARD.