June 23, 1942. H. F. MAYFIELD 2,287,387

VENDING MACHINE

Filed July 27, 1940 4 Sheets-Sheet 1

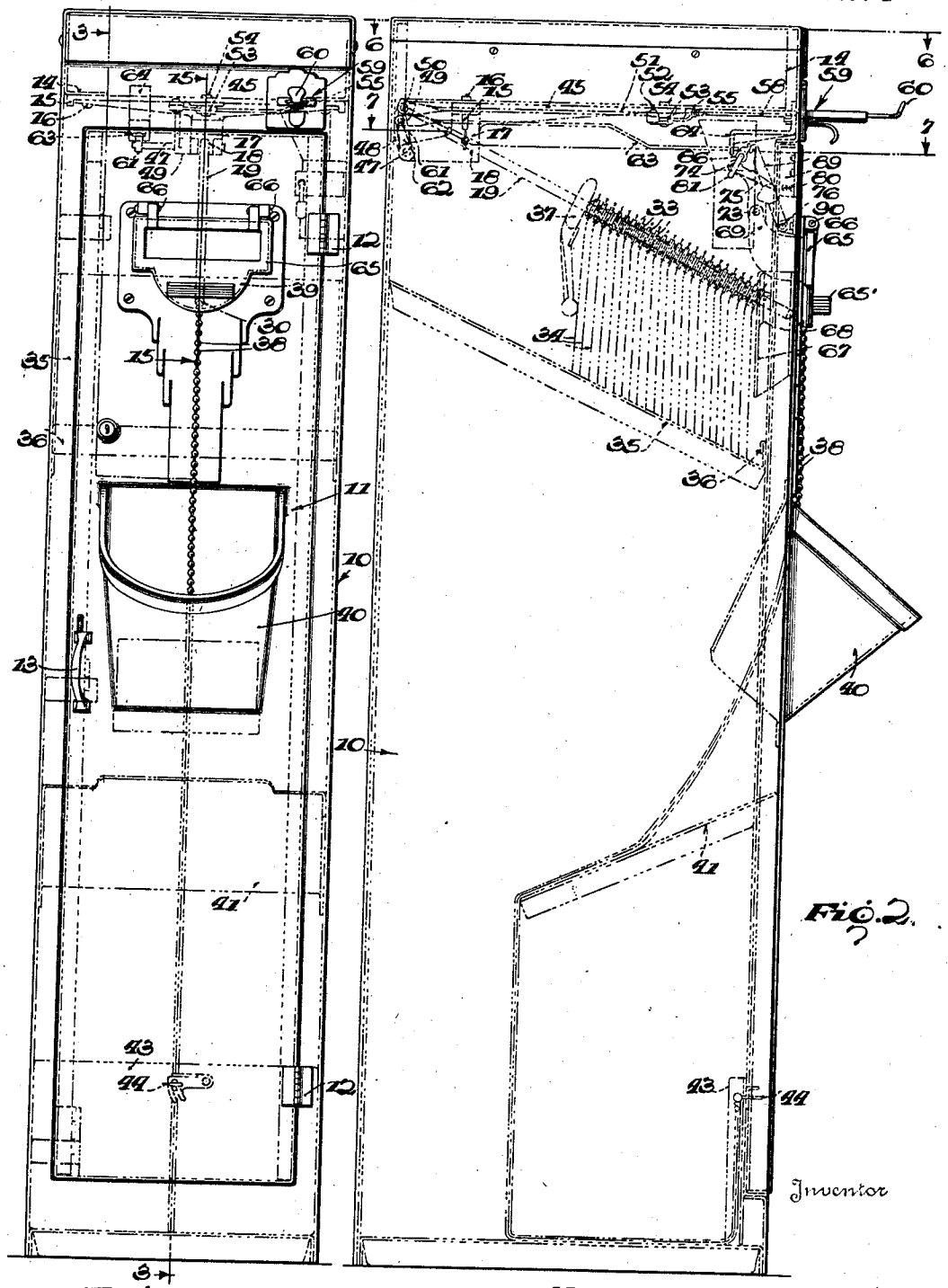

Fig. 1.

Fig. 2.

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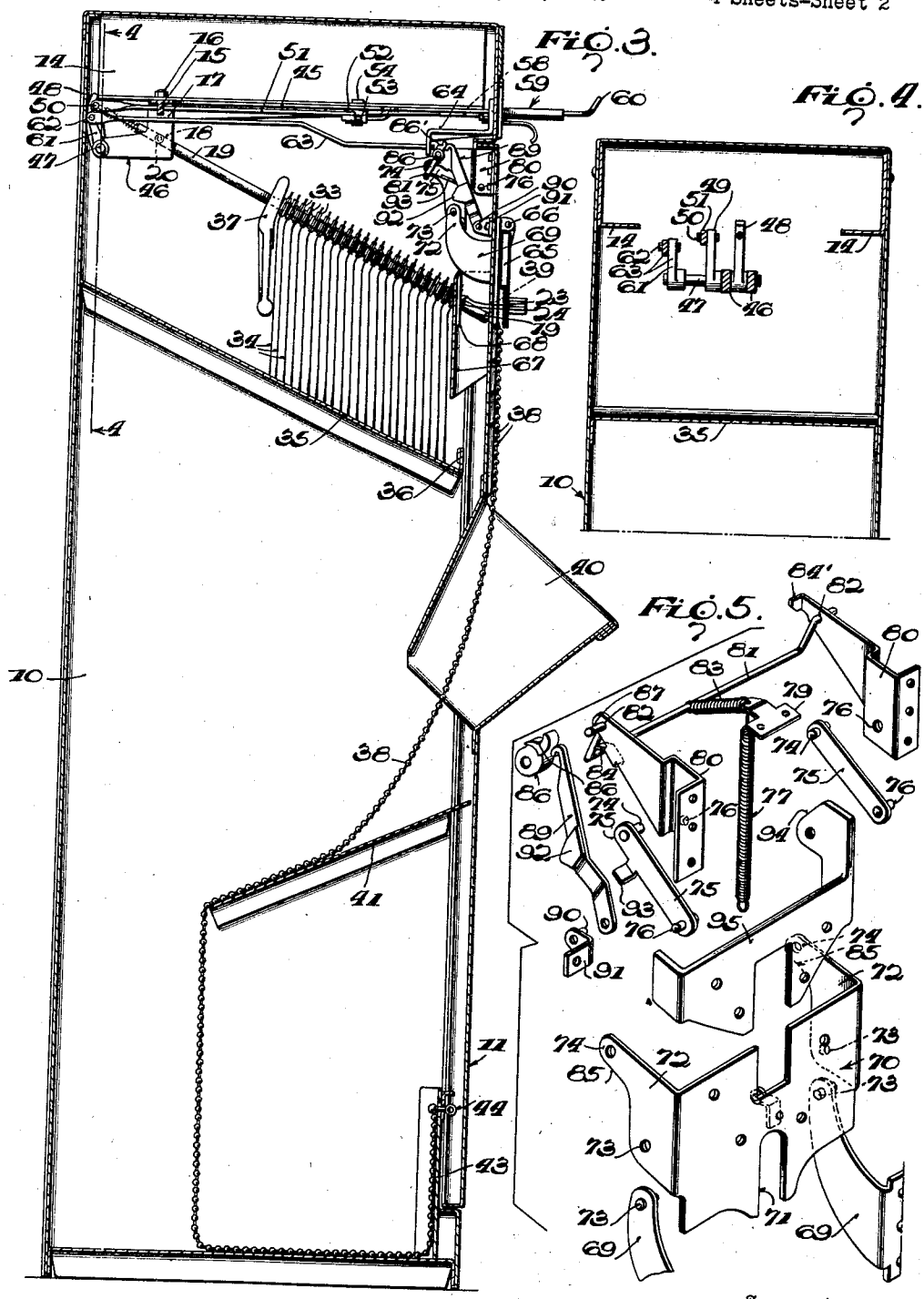

Fig. 3.

Fig. 4.

Fig. 5.

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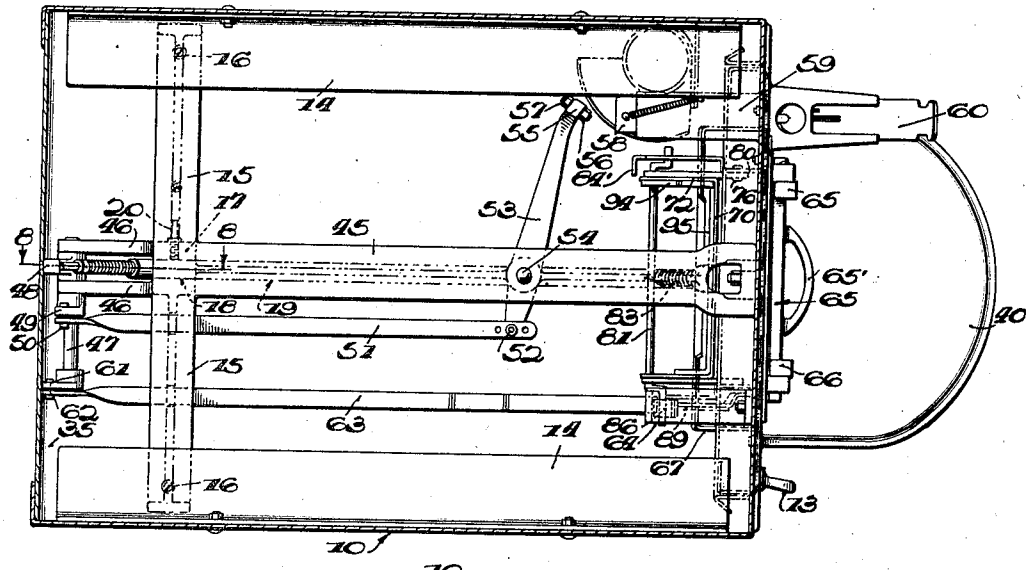
Fig. 6.



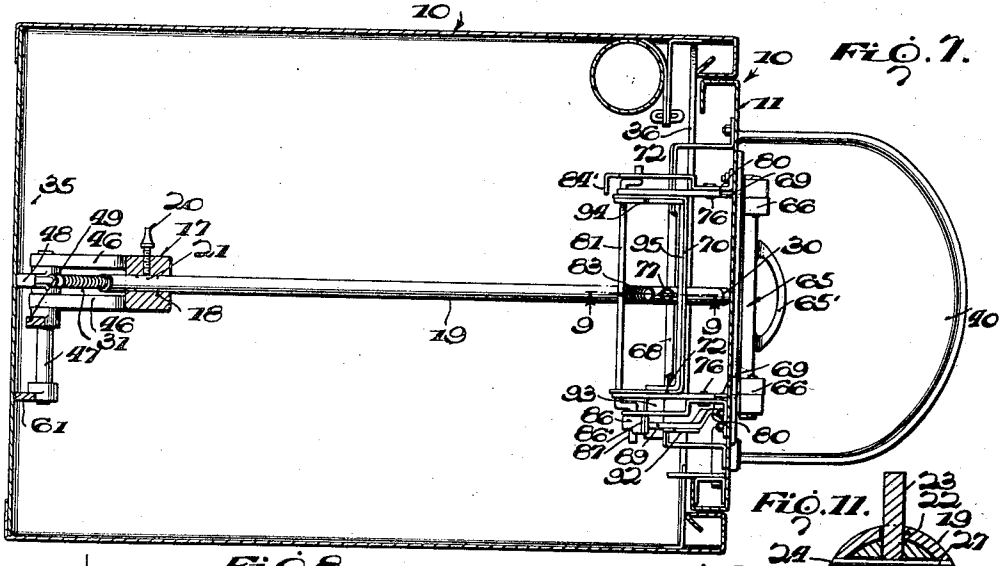


Fig. 7.

Fig. 8.

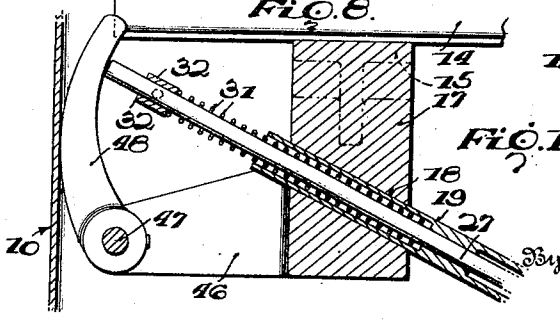


Fig. 9.

Fig. 10.

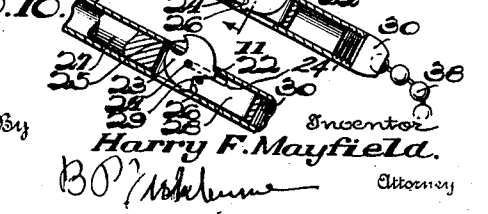


Fig. 11.

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VENDING MACHINE

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Fig. 12.

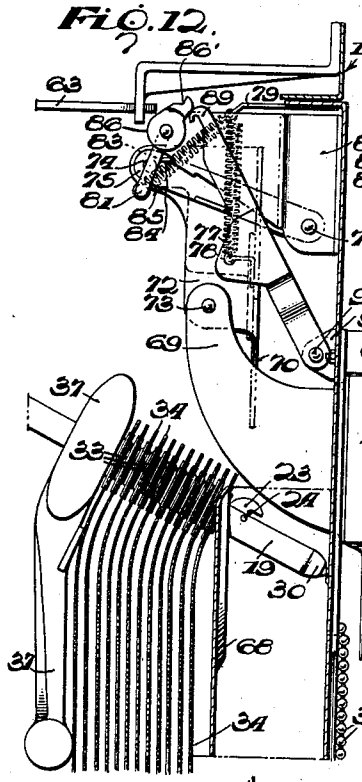


Fig. 13.

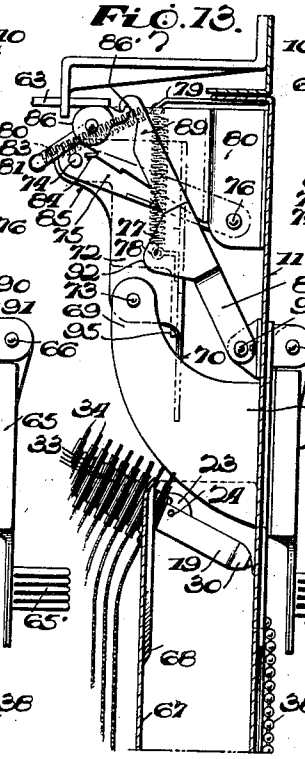


Fig. 14.

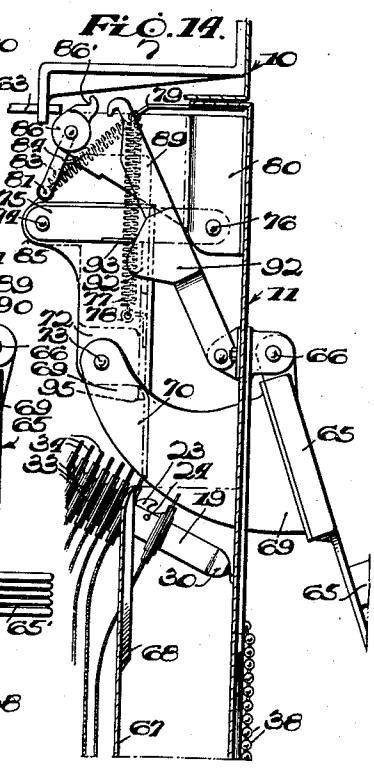


Fig. 15.

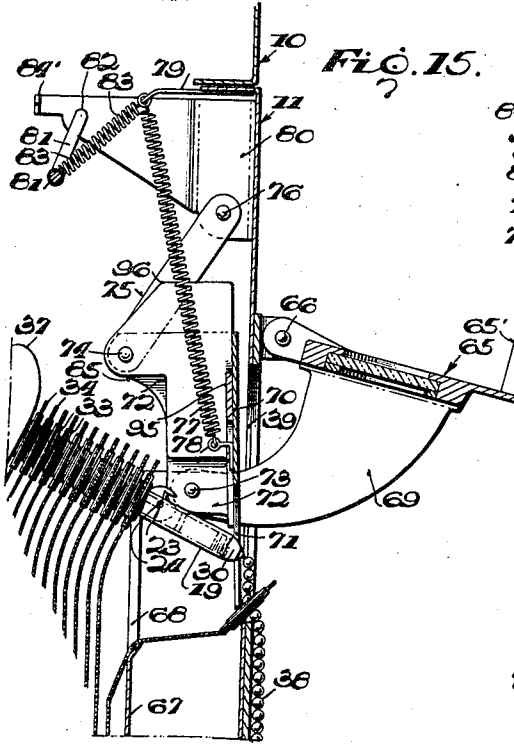
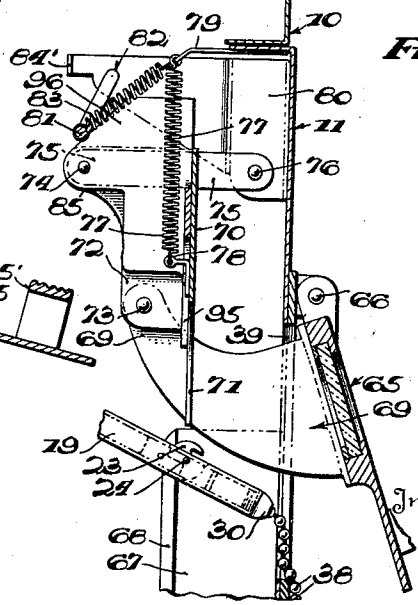


Fig. 16.



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Patented June 23, 1942 2,287,387

UNITED STATES PATENT OFFICE

2,287,387

VENDING MACHINE

Harry F. Mayfield, Anderson, S. C., assignor to Barnhardt, Inc., Concord, N. C., a corporation of North Carolina

Application July 27, 1940, Serial No. 347,973

11 Claims. (Cl. 312—37)

My invention relates to a machine for vending articles having grommets, such as towels or the like.

An important object of the invention is to provide a simplified construction for transmitting the movement from the coin controlled mechanism to the grommet dispensing element.

A further object of the invention is to provide means to move the grommet dispensing element which means cannot be operated back from the grommet dispensing element.

A further object of the invention is to provide a closure element which is unlocked when the grommet dispensing element is actuated to free a towel.

A further object of the invention is to provide means for advancing or feeding the released towel when the closure element is shifted to the open position.

A further object of the invention is to provide means to prevent the grommet dispensing element being tampered with when the machine is operated to vend a towel.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a front elevation of a vending machine embodying my invention,

Figure 2 is a side elevation of the same,

Figure 3 is a vertical section taken on line 3—3 of Figure 1,

Figure 4 is a vertical section taken on line 4—4 of Figure 3,

Figure 5 is an exploded perspective view of the closure element and associated elements,

Figure 6 is a horizontal section taken on line 6—6 of Figure 2,

Figure 7 is a horizontal section taken on line 7—7 of Figure 2,

Figure 8 is a detailed section taken on line 8—8 of Figure 6, parts in elevation,

Figure 9 is a detailed section taken on line 9—9 of Figure 7, the dispensing element or wheel being shown in the forward position,

Figure 10 is a similar view, showing the dispensing element or wheel in the rear position,

Figure 11 is a transverse section taken on line 11—11 of Figure 9,

Figure 12 is a view similar to Figure 3, upon an enlarged scale and parts broken away, showing the latch or bail in the holding position,

Figure 13 is a similar view, showing the latch or bail moved to the releasing position and latched in this position, the closure element being closed,

Figure 14 is a similar view, showing the closure element partly opened and the latch releasing the bail,

Figure 15 is a vertical section through the combined guard and towel feed element, taken on line 15—15 of Figure 1, showing the same in the lowermost position, associated elements in elevation, and,

Figure 16 is a similar view, showing the combined guard and towel feed element returned to the partly raised position.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a case which is closed upon its sides, back, top, and bottom, and has a vertical opening at its front which is covered by a horizontally swinging door 11, hinged at 12. This door is retained closed by a combined handle and lock 13, or by any other suitable means.

Rigidly mounted within the top of the case 10 are horizontal supporting rails 14, having a transverse bar 15 rigidly secured thereto by bolts 16 or the like. Depending from the transverse bar 15 and preferably formed integral therewith is a block 17, having an inclined opening 18.

Removably mounted within the opening 18 is a tubular rod or tube 19, clamped therein by a set screw 20, Figure 7. The tubular rod 19 inclines downwardly in a forward direction and it is provided near its forward end and in its top with a horizontal slot 22, receiving a dispensing element or wheel 23, pivoted upon a transverse pin 24, extending through slots 24' in the tubular rod 19 and carried thereby. The dispensing element or wheel 23 is provided upon the upper portion of its periphery with a preferably curved notch 25 and upon the lower portion of its periphery with a preferably V-shaped notch 26. When the dispensing element or wheel 23 is in the forward or discharging position, the upper wall of the V-shaped notch 26 is then substantially parallel with the longitudinal axis of the tubular rod 19, and when the wheel 23 is in the rear holding position the upper wall of the notch 26 occupies a position generally parallel with the longitudinal axis of the tubular rod 19. Mounted to reciprocate within the tubular rod 19 is an operating rod 27, having a vertical slot 28 formed in its forward portion and this slot is elongated to receive the dispensing element or wheel 23. The rod 27 carries a transverse pin 29 extending through the

slot 28 and engaging within the notch 26. The forward movement of the operating rod 27 is limited by engagement with a plug 30, having screw-threaded engagement within the forward end of the tubular rod 19. The operating rod 27 is moved rearwardly by a compressible coil spring 31 engaging a sleeve 32 which is secured to the rear end of the rod 27. This sleeve is removable through the opening 18.

The tubular rod 19 is removable from the block 17 and its rear end is adapted to be threaded through grommets 33, carried by towels 34. The grommet is preferably of the construction as shown in my co-pending application for Means for vending towels or the like having grommets and grommets, Serial No. 340,833, filed June 15, 1940. The grommet is preferably secured to the top of the towel adjacent to its vertical central axis and the lower end of the towel rests upon and slidably engages an inclined tray 35, rigidly secured within the case 10, and arranged beneath and parallel with the tubular rod 19. The tray 17 is provided at its forward end with an up-turned flange 36. The purpose of the tray 35 is to aid in supporting the towels, as they are fed down the inclined tubular rod 19, by a weight 37, thereby reducing the frictional engagement between the grommets and the rod.

When the towel having the grommet passes from the forward end of the tubular rod 19 it is discharged upon a flexible element, such as a chain 38, which is attached to the cap 30. This chain passes outwardly through an opening 39 formed in the door 11 and then downwardly exteriorly of the door and then inwardly through a tubular towel guide or hopper 40, rigidly carried by the door. Both ends of the hopper 40 are open, as shown, and a rearwardly inclined partition 41 is rigidly mounted within the lower portion of the case 10 and positioned near and beneath the hopper. The used towels thrown into and through the hopper 40 slide down the chain 38 and become deposited within the bottom of the case 10, beneath the partition 41 and hence cannot be removed. The lower end of the chain 38 is detachably connected with a vertical partition or wall 43, as shown at 44 and this wall is rigidly secured to the lower portion of the case at its front. The used towels are removed from the chain 38 by disconnecting its lower end from the wall 43 after which the chain is again attached to the wall 43.

A horizontal longitudinal bar 45 is rigidly secured to the transverse bar 15 and to the front of the case 10. Extending rearwardly from the block 17 are spaced brackets or arms 46, within which is mounted a horizontal rock shaft 47. This rock shaft has an up-standing crank 48 rigidly secured thereto and this crank is arranged between the arms 46 and disposed to engage the rear end of the operating rod 27. The rock shaft 47 has another up-standing crank 49 rigidly secured thereto and this crank is pivotally connected, at 50, with a link 51, extending forwardly for pivotal connection, at 52, with a transverse horizontal lever 53. This lever is pivoted at 54 upon the bar 45. The lever 53 is provided at its free end with a head 55, screw-threaded for receiving an adjustable contact element, in the form of a bolt 56, which is locked in the selected adjusted position by a nut 57. The contact element 56 is arranged in the path of travel of a plunger 58, of coin control means 59, including an outer coacting plunger 60. This coin control means includes means whereby the plunger 60 is connected with the plunger 58, upon the insertion of a coin, so that they move inwardly together. Any suitable form of coin control means may be employed to swing the free end of the lever 53 rearwardly. When the free end of the lever 53 is swung rearwardly the rock shaft 47 turns clockwise, Figure 6, and the crank 48 turns clockwise, Figures 6, 7, and 8, moving rod 27 forwardly.

The rock shaft 47 is provided with a further up-standing crank 61, rigidly secured thereto, and this crank is pivoted at 62 with a latch releasing bar 63, the forward end of which extends through an opening in a stationary guide 64, fixed to the front of the case 10. When the rock shaft 47 turns clockwise, Figure 3, the rod 63 moves forwardly, for a purpose to be described.

The towel 34 after being released by the dispensing element or wheel 23 is manually withdrawn outwardly through the opening 39. This opening 39 is covered by a closure element or door 65, which is hinged to the door 11, at its top, as shown at 66. This door has a handle 65', as shown. A vertical guard 67 is secured to the inner face of the door 11 and has a curved recess 68, corresponding to the lower curved portion of the opening 39. The door 65 has inwardly extending arms 69 rigidly secured thereto which project inwardly through the opening 39 and extend above the top of the door 65 when this door is closed. These arms 69 swing about pivots of the hinges 66 when the door 65 is raised whereby the free ends of these arms first move downwardly principally and then horizontally principally.

Disposed upon the inner side of the door 11 is a combined guard and towel feed element or plate 70, provided in its lower end with a vertical slot 71, to receive the tubular rod 19. This plate is provided at its vertical edges with wings 72, rigidly secured thereto and these wings are pivotally connected at 73 with the arms 69. The wings 72 are pivotally connected, at 74 with links 75. These links are pivotally supported by fixed pivots 76, carried by the door 11. The plate 70 is moved upwardly by a retractile coil spring 77, attached thereto at 78 and the upper end of this spring is secured to a stationary bracket 79. The fixed pivots 76 are carried by brackets 80, rigidly mounted upon the door 11 and these brackets have a depending U-shaped latch or bail 81, pivotally mounted within openings 82 formed therein. This U-shaped latch is moved inwardly or downwardly by a retractile coil spring 83 secured to the bracket 79. The downward movement of the latch or bail 81 is limited by a stop 84, carried by one bracket 80, and its upward movement limited by a stop 84' carried by the other bracket 80. The latch or bail 81 is adapted to move beneath the shoulders or edges 85 of the wings 72, and when in that position the latch 81 serves to lock the plate 70 against downward movement and the door 65 against upward movement. Means is provided to swing the latch inwardly out of the path of travel of the shoulders 85, comprising a cam 86 having a hook 86', rigidly mounted upon one end 87 of the latch 81, and arranged in the path of travel of the releasing bar 63. When the bar 63 moves forwardly it engages the cam 86 and swings it clockwise, Figures 12 and 13, whereby the free hook 86' of the cam engages the hooked end of a latch 89. The latch 89 is

gravity operated and is supported at its lower end by a fixed pivot 90, carried by a bracket 91 secured to the door 11. The pivoted latch 89 is equipped with a double-face cam 92 and this double-face cam is engaged by a trip 93, rigidly mounted upon one link 75. One wing 72 has a cam 94 disposed adjacent thereto and this cam is carried by a plate 95 disposed upon the inner side of the plate 70 and rigidly secured thereto. The cam 94 projects above the adjacent wing 72 and serves to swing the latch or bail 81 outwardly when the plate 70 rises whereby this latch or bail will again engage beneath the shoulders 85.

The operation of the machine is as follows:

Before the insertion of the coin the latch element or bail 81 is engaging beneath the shoulders 85, whereby the closure element 65 is in the lowered closed position and the combined guard and towel feed element or plate 70 is in the raised rear position and the towel dispensing element 23 is in the forward holding position, Figure 9. The coin is now deposited in the coin control means and the outer plunger 60 is moved inwardly or rearwardly which shifts the inner plunger 58 inwardly and rearwardly so that it engages the free end of the lever 53. This free end of the lever 53 is swung rearwardly so that its opposite end is swung forwardly, drawing the link 51 forwardly. This movement of the link turns the rock shaft 47 clockwise, Figures 3 and 8, and the crank 48 is thereby swung clockwise. The crank 48 presses against the operating rod 27, shifting it longitudinally toward the dispensing element or wheel 23. The pin 29 will now engage the vertical face of the notch 26 whereby the dispensing element or wheel 23 is turned counter-clockwise, Figures 9 and 10, so that the notch 25 will receive the edge of the grommet of the leading towel. After the completion of the operation of the coin control means the inner plunger 58 moves outwardly and the spring 31 shifts the operating rod 27 rearwardly and the rock shaft 47 and associated elements are returned to the starting position. This action turns the dispensing element or wheel 23 clockwise, Figure 9, whereby the grommet of the leading towel engaging within the notch 25 is transferred to a position in front of the dispensing element or wheel 23 and is released by the dispensing wheel. The leading towel may therefore be withdrawn from the rod 19, when the closure element 65 is swung to the open position. When the rock shaft 47 is turned clockwise, upon the inward movement of the inner plunger 58, as described, the releasing bar 63 moves toward the front of the case and engages the cam 86, swinging the cam clockwise, Figures 12 and 13, so that the latch element 81 is moved from beneath the shoulders 85. The arms 69 are therefore free to move downwardly and outwardly and the closure element or door 65 is free to move upwardly and outwardly. When the cam is moved forwardly, it is held in the shifted position by the pivoted latch 89, engaging the hook 86' of the cam. The operator now raises the closure element or door 65 and the arms 69 move downwardly and outwardly. Upon the downward movement of these arms the combined guard and towel feed element 70 moves downwardly and passes behind the grommet of the leading towel which has just been released by the dispensing element or wheel 23. Upon the further movement of the arms 69 the element 70 continues to move downwardly but moves forwardly until it contacts with the inner face of the door 11. The leading towel is therefore fed forwardly so that the grommet is arranged exteriorly of the door 11. There is a vertical space between the lower edge of the element 70 and the lower wall of the recess 39 whereby the operator may pull the towel forwardly from the machine. After the element 70 has moved downwardly so that the wings 72 are positioned at an elevation beneath the latch element 81, the trip 93 engages the upper surface of the cam 92 and swings the latch 89 forwardly to release the hook 86'. The latch element 81 is then free to engage beneath the shoulders 85 when the element 70 returns to its uppermost position. The latch element 81 follows the cam 94 but this cam 94 limits the rearward turning movement of the cam 86 through the medium of the latch element 81 so that its hook 86' cannot engage beneath the hook of the latch 89, except when the cam 86 is moved forwardly for an increased distance by the bar 63, the spring 83 swinging the latch element 81 toward the cam 94, and thereby cooperating in this action. It is thus apparent that upon each cycle of operation of the machine, the grommet of the leading towel passes the dispensing element 23, is fed by the element 70 adjacent to and exteriorly of the door 11, and the leading towel is then pulled from within the case until it is entirely exteriorly of the front door 11. The operator then uses the towel in the ordinary manner and dumps it into the hopper 40 and the towel gravitates down the flexible element or chain 38 and is finally collected in the bottom of the case beneath the partition 41. When the closure element or door 65 is released it returns to the lower closed position and is automatically locked closed by the latch element 81 engaging beneath the shoulders 85.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. In a machine for vending towels or the like having grommets, a case, a support arranged within the case, a grommet receiving rod arranged within the case, means for detachably securing the grommet receiving rod to the support, an operating rod extending longitudinally of the grommet receiving rod and having its rear end projecting beyond the rear end of the same, a rock shaft arranged near the rear end of the operating rod, a crank carried by the rock shaft and disposed to engage the rear end of the operating rod to move it forwardly, a spring to move the operating rod rearwardly, a second crank mounted upon the rock shaft, a pivoted lever arranged within the case, a link connecting the pivoted lever and the second crank, a reciprocatory plunger to move the lever, and a dispensing element carried by the grommet receiving rod and moved by means of the operating rod.

2. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a movable dispensing element carried by the rod, a movable closure element to control the withdrawal of the towel passing the dispensing element, means to lock the closure element in the closed position, and common means to actuate the movable dispensing element and the locking means to release the closure element.

3. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a movable dispensing element carried by the rod, a movable closure element to control the withdrawal of the towel passing the dispensing element, a movable member, means operated by the movable member to actuate the dispensing element, latch means to hold the closure element closed, means operated by the movable member to actuate the latch means to release the closure element, and means to move the movable member.

4. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a dispensing element carried by the rod, a reciprocatory rod to operate the dispensing element, a rock shaft arranged near the reciprocatory rod, a crank carried by the rock shaft to engage the reciprocatory rod and move the same, a second crank carried by the rock shaft, means to turn the rock shaft, a movable closure element for controlling the withdrawal of the towel passing the dispensing element, a latch device to hold the closure element in the closed position, and a reciprocatory bar connected with the second crank and operating the latch device to release the closure element.

5. In a machine for vending towels or the like having grommets, a case, a door for affording access to the interior of the case, said door having an opening therein, a movable closure element to cover the opening of the door, a grommet receiving rod arranged within the case and having its free end disposed adjacent to the opening when the door is closed, a dispensing element carried by the rod, means to actuate the dispensing element, a latch device mounted upon the door for holding the closure element closed, and means operated by the first named means and adapted to contact with the latch device to actuate the same to release the closure element and having no connection with the latch device.

6. In a machine for vending towels or the like having grommets, a grommet receiving rod, a movable closure element arranged adjacent to the free end of the rod, a movable latch to control the opening movement of the closure element, means to shift the latch to a position to release the closure element, a latch to hold the first named latch in the shifted position, and means operated upon the movement of the closure element to operate the second named latch for releasing the first named latch.

7. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a dispensing element carried by the rod, a pivoted closure element arranged adjacent to the free end of the rod, a combined guard and towel feed element disposed inwardly of the closure element, means for connecting the combined guard and towel feed element with the closure element so that it is moved by the closure element, a latch device to hold the combined guard and towel feed element against movement, and means to actuate the dispensing element and the latch device.

8. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a dispensing element carried by the rod, a closure element mounted upon the exterior of the case and pivoted to be swung upwardly in opening, the closure element being arranged adjacent to the free end of the rod, arms carried by the closure element and extending into the case, a combined guard and towel feed element arranged within the case, vertically swinging links arranged within the case and pivotally connected with the combined guard and towel feed element, the combined guard and towel feed element being arranged adjacent to the free end of the rod, means pivotally connecting the arms with the combined guard and towel feed element, a latch element to prevent the downward movement of the combined guard and towel feed element, and means to actuate the dispensing element and to move the latch element to free the combined guard and towel feed element for downward movement.

9. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a dispensing element carried by the rod, a closure element arranged adjacent to the free end of the rod, a combined guard and towel feed element arranged adjacent to the rod and having a slot to receive the rod, means carried by the closure element to move the combined guard and towel feed element downwardly and forwardly when the closure element is moved to the open position, a latch device for controlling the movement of the closure element, means to actuate the latch device to release the closure element, and means to operate the dispensing element.

10. In a machine for vending towels or the like having grommets, a case, a grommet receiving rod arranged within the case, a vertically swinging closure element arranged adjacent to the free end of the rod, a combined guard and towel feed element arranged adjacent to the free end of the rod and having a slot to receive the rod, vertically swinging links pivotally connected with the case and pivotally connected with the combined guard and towel feed element, arms carried by the closure and pivotally connected with the combined guard and towel feed element, a spring to move the combined guard and towel feed element in one direction, a latch to hold the combined guard and towel feed element against movement in an opposite direction, and means to actuate the latch to release the combined guard and towel feed element.

11. In a machine for vending towels or the like having grommets, a grommet receiving rod, a closure element pivoted to swing vertically and arranged adjacent to the free end of the rod, a substantially vertical combined guard and towel feed element arranged adjacent to the free end of the rod, vertically swinging links pivotally connected with the case and pivotally connected with said combined element, shoulders carried by said combined element, stationary supports, a generally U-shaped latch pivoted to the stationary supports and adapted to engage beneath the shoulders, means to move the generally U-shaped latch out of the path of travel of the shoulders, arms carried by the closure element and pivotally connected with said combined element, a latch to hold the generally U-shaped latch in the shifted position, and means operated upon the downward movement of the element to actuate the latch.

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