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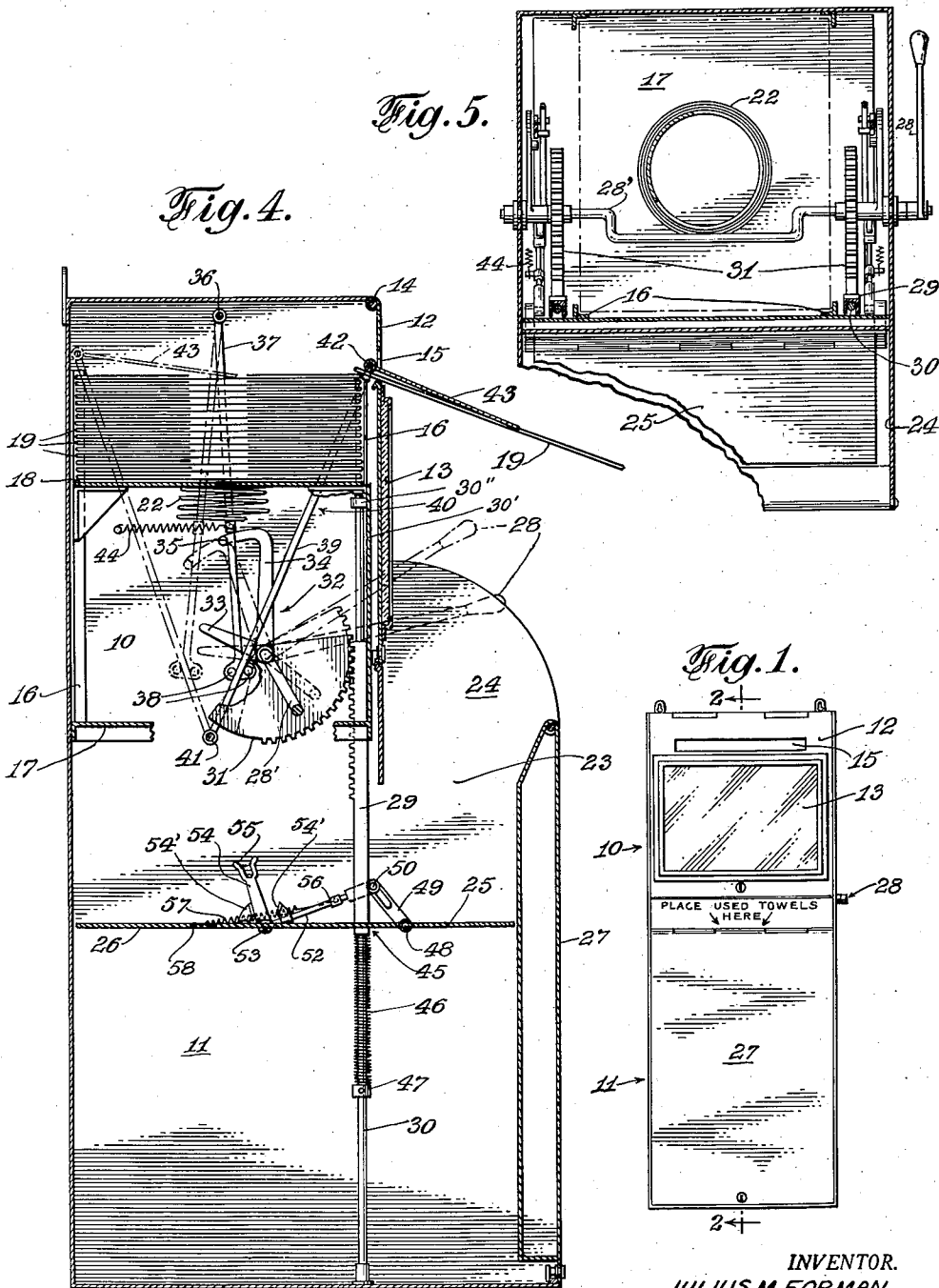
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2,478,815

COMBINATION DISPENSING AND BULK REDUCING DEVICE

Filed Feb. 20, 1945

3 Sheets-Sheet 1



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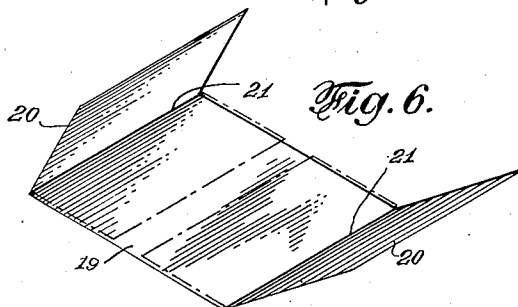
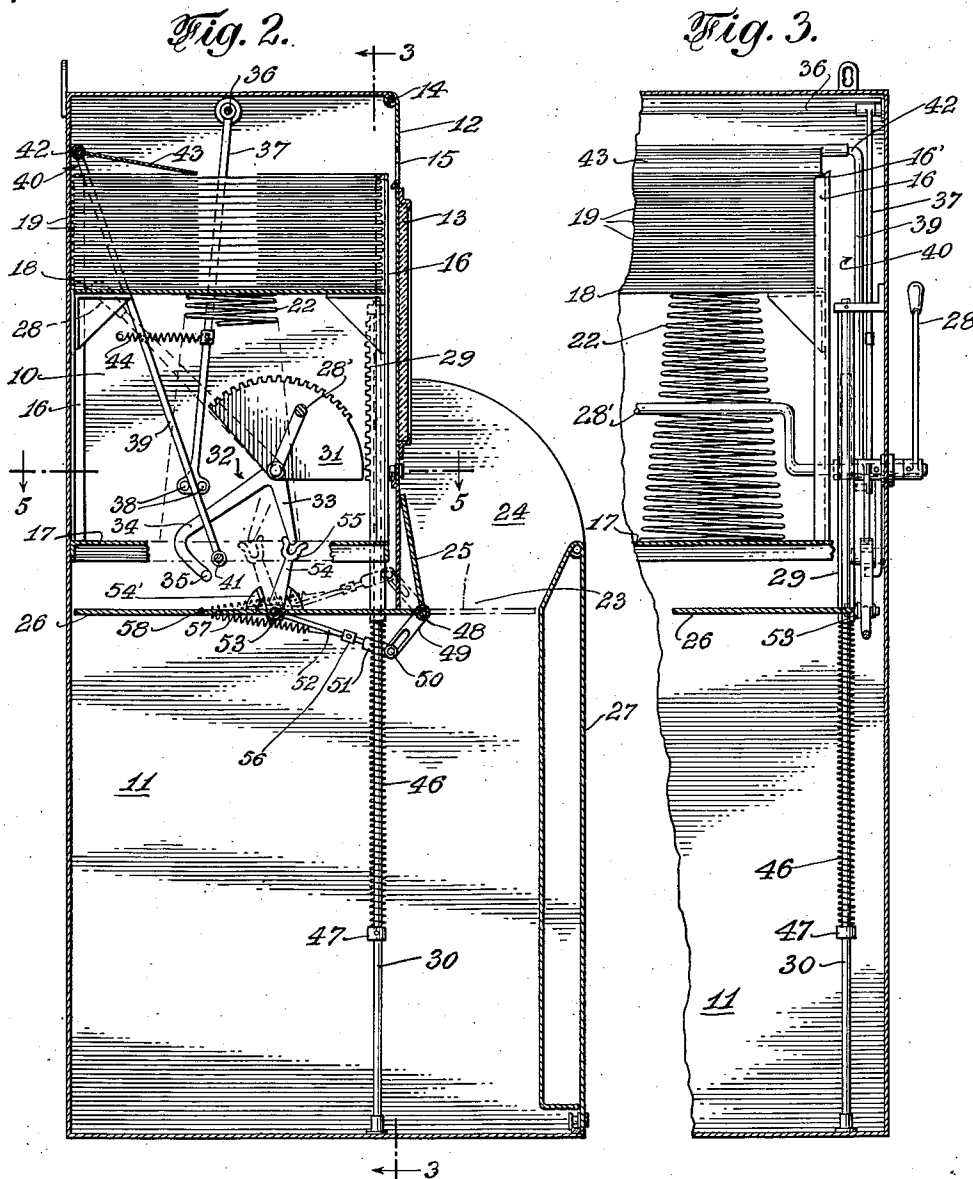
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COMBINATION DISPENSING AND BULK REDUCING DEVICE

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3 Sheets-Sheet 2



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COMBINATION DISPENSING AND BULK REDUCING DEVICE

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3 Sheets-Sheet 3

Fig. 7.

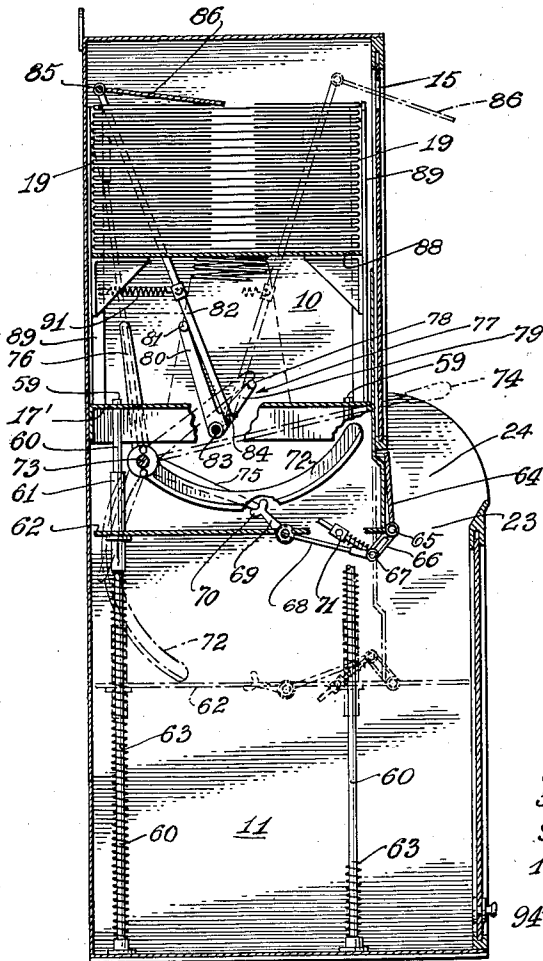


Fig. 8.

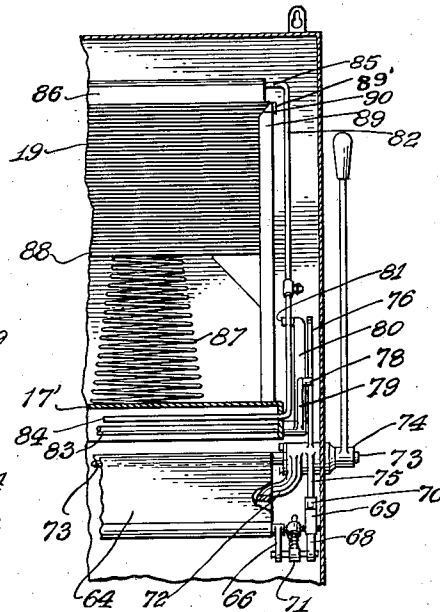


Fig. 9.

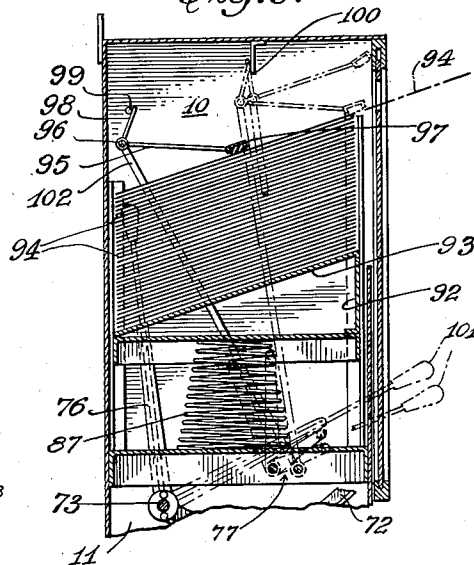
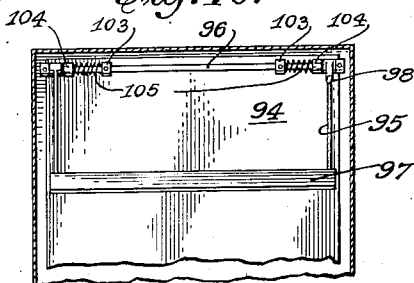


Fig. 10.



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## UNITED STATES PATENT OFFICE

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COMBINATION DISPENSING AND BULK  
REDUCING DEVICE

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9 Claims. (Cl. 312—55)

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This invention relates broadly to dispensing devices, and particularly to combination devices for dispensing utilitarian articles and for reducing the bulk of dispensed articles after their use, and is especially applicable to towel dispensing devices including means for disposing of used towels and compressing them to reduce their bulk.

Towel cabinets, mainly those for dispensing paper towels, have found universal use. They, however, present a vexing problem arising from the disposal of used towels. Open containers are usually provided for their reception. When these containers are filled, they are to be removed, emptied and replaced. Very often these containers become filled so rapidly, that before they may be removed, emptied and replaced waste towels will litter the premises where the towel cabinet is located, since the towel users seldom take the trouble of reducing the bulk of waste towels by compressing them in the containers.

Speaking broadly, the prime object of the present invention is to provide a combination article dispensing and a used article receiving device, the portion for the reception of used articles being equipped with means for automatically reducing the bulk of used articles, preparatory to their disposal.

A specific object of this invention is to provide a towel dispensing cabinet having towel supply means adapted to deliver at one time fresh towel material sufficient for one application or a single use, said cabinet including a receptacle for waste or used towel material, and which receptacle is provided with means for automatically compressing such used towel material within the receptacle, the mechanism for compressing waste towel material and for discharging new towel material being operable from without the cabinet and in a sequence whereby the period for compressing used towel material precedes the period for discharging new towel material.

Another object of this invention is to provide a combination cabinet having a compartment for storing and dispensing fresh towel material and a receptacle for storing and having means to compress used towel material, and wherein said compartment includes means for making ready for delivery a fresh towel material element of a size sufficient for a single application or use, and other means for ejecting such element from the compartment, and wherein said receptacle for used towel material is provided with a closable insert opening for used material and a compression platform equipped with an operative lid

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for closing the insert opening, and which platform is adapted, when the lid is in its closing position, to automatically bear against and to compress used towel material within the receptacle, the closing of the lid and the pressure movement of the platform preceding, in the stated sequence, the delivery of fresh towel material.

The foregoing and numerous other important objects and advantages of the present invention will become more fully understood from the following description in conjunction with the accompanying drawings, wherein:

Fig. 1 is a front view of one form of a towel cabinet according to the present invention;

Fig. 2 is a section taken on line 2—2 of Fig. 1;

Fig. 3 is a section taken on line 3—3 of Fig. 2;

Fig. 4 is a similar view to that of Fig. 2 with the towel compressing platform lowered and the towel delivery mechanism in towel discharging position;

Fig. 5 is a top view, partially in section, along line 5—5 of Fig. 2, with portions of the mechanism removed;

Fig. 6 is a perspective view of a towel element as used in connection with cabinets shown in the previous figures;

Fig. 7 is a vertical side elevation in cross section through a cabinet, similar to that shown in Fig. 2, with a modified operating mechanism;

Fig. 8 is a fragmental front elevation, partially in section, of the cabinet shown in Fig. 7;

Fig. 9 is a fragmental vertical cross sectional view through still another modified form of the cabinet for use in connection with single, plain towel sheets; and

Fig. 10 is a fragmental top view, partially in cross section, of the towel cabinet shown in Fig. 9 with the top thereof removed.

Referring now specifically to Figs. 1 to 6, inclusive, the illustrated towel cabinet includes two superimposed compartments, a smaller upper compartment 10 and a larger lower compartment 11. The interior of the upper compartment is preferably made accessible through a front door 12 to which is conveniently secured a mirror 13, the door being preferably hinged at the upper front edge 14 of the cabinet. Above the mirror there is arranged an opening 15 for the discharge of fresh towel material. Within upper compartment 10 there is provided a framework of angle bars 16 extending upward from a fixed horizontal partition 17. Guided by and operative within the framework is a movable support 18 for the reception of a stack of towel material elements

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19 made of paper tissue and shown in detail in Fig. 6, and comprising elongated, preferably rectangular sheets of towel tissue paper, the short ends 20 of which are folded along lines 21 and are turned against each other so that their inner faces rest against the body of the towel element, as indicated in broken lines in that figure.

Towel support 18 is intended to automatically move in upward direction, as the stack of towel elements diminishes, for which purpose a conically shaped spiral spring 22, resting upon partition 17, bears against the lower face of support 18 and urges the latter upwards.

Framework 16 not only serves for guiding towel support 18 but also for guiding the stack of towels resting thereon. The upper ends of front frame members 16 are cut at an angle as shown at 16' in Fig. 3, to render free only one of the towel elements, that is the uppermost element for its future removal, as will be presently explained.

Lower compartment 11, intended for the reception of used or waste towel material, constitutes a spacious receptacle provided with a generous waste towel insert opening 23, preferably flanged by arcuated side members 24. Between these side members operates a lid 25, which is normally in open position, as shown in full lines in Fig. 2. This lid is adapted to close insert opening 23 and forms an operative extension of pressure platform 26 arranged in receptacle 11. The platform is intended to move in downward direction against discarded towel material placed into the compartment, but its actuating mechanism is so arranged that the platform cannot operate until lid 25 closes insert opening 23 in the manner indicated in full lines in Fig. 4. At the front of compartment 11 there is provided a door structure 27 which may be unlocked and swung open for the removal of compressed waste towel tissue.

Within the cabinet there is provided a combination mechanism for operating platform 26 and for dispensing a single towel element from the top of the stack of elements superimposed upon support 18. This combination mechanism is preferably actuated from without the cabinet by either a suitable hand lever 28, or a foot-operated instrumentality, not shown, the latter being employed when the cabinet is intended to be placed on the floor. With lever 28 or its equivalent is associated an operating shaft which may be of the straight shaft type, such as employed with the construction shown in Figs. 7, 8 and 9, where partition 17' is disposed above the fulcrum of the lever, or may assume a crank form 28', as is the case in the construction shown in Figs. 1 to 5. In either case the operating elements controlled by the shaft and lever 28 or its equivalent are symmetrically disposed near each side of the cabinet. In the embodiment shown in Figs. 1 to 5, these operating elements comprise gear racks 29 in the form of channels, which latter are guided along vertical rods 30 extending from the bottom of receptacle 11 to about midway of compartment 10. A vertical partition 30' extends between the side walls of the cabinet adjacent to frontal guide angle bars 16, and secured to the inner face and near the upper edge of that partition, just above gear racks 29, are brackets 30'' for securing in place the upper ends of rods 30. These gear racks are engageable by gear segments 31 keyed to shaft 28'. Also keyed to the shaft is a lever combination 32 composed of short lever 33 and an L-shaped longer lever 34, which latter terminates in a transverse engaging pin 35. Sus-

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pended at 35 from the top and about the middle of compartment 10 are levers 37 provided with broadened ends from which extend two parallel pins 38. Between these pins are engaged legs 39 of an inverted U-shaped ejector lever 40 pivoted at 41. The top or cross member 42 of this U-shaped lever serves as a hinge support for a towel ejector 43 in the form of a plate which is adapted to engage an individual towel element by one of its bent-down flaps or ends 20, as indicated in Fig. 4. Levers 37 are normally urged by springs 44 towards the back of the cabinet, and take with them, by means of pins 38, U-shaped ejector lever 40, thereby normally keeping ejector 43 in rearward position against the back of the cabinet, at which position it is ready to engage and move forward another towel element when hand lever 28 is operated and actuates lever combination 32.

It will be noted from Figs. 2 and 4 that gear segment 31 is so arranged in respect to lever 34 of lever combination 32 that before that lever is brought from its full-line position shown in Fig. 2 to the full-line position shown in Fig. 4, the segments operate gear racks 29 and move them nearly to the lowermost point of their travel. During the movement of lever 34 from its broken line position in Fig. 4 to its full-line position, gear segment 31 brings gear rack 29 to its lowermost position, and at that moment ejector lever 40 is moved to its outermost position as towel ejector 43 delivers the towel to without the cabinet.

Gear racks 29 are fixedly united at 45 with platform 26, which latter is normally supported in elevated position by at least two helical springs 46 operative upon guide rods 30. The tension of these springs may be adjusted by the adjustment of collars 47.

Lid 25, normally swung open when platform 26 is in its uppermost position, is pivoted at 48. Fixedly associated with lid 25 is a slotted lever 49, in the slot of which operates a pin 50 passing through the forked end 51 of bell lever 52, which is pivoted at the side edge of platform 26 at 53 and from which pivotal point extends short leg 54 of bell lever 52. The free end of lever leg 54 terminates in an open fork 55. The movement of bell lever 52 is limited by suitable stops 54' with which leg 54 alternately contacts.

Adjustable upon lever 52 is a collar 56 to which is attached one end of an over-center spring 57, its other end being held by pin 58. Fork 55 is adapted to be operated by lever 33 of lever combination 32, and due to the arrangement of over-center spring 57, the movement of bell lever 52 will be assisted when it is swung by lever 33 and fork 55 to either of the two full line positions shown in Figs. 2 and 4. By this movement of the levers lid 25 is brought either to an open or closed position.

It will be noted from Fig. 2 that before gear segment 31 engages gear rack 29 lever 33 swings bell lever 52 from the full line position into the dotted line position, which latter corresponds to the full line position in Fig. 4. Thus lid 25 is brought to a closing position before platform 26 commences its downward or pressure movement. In other words not only the surface of the platform, but also the area of the lid is employed for compressing waste towel material within compartment 11. Similarly, after platform 26 reverts to its uppermost position, bell lever 52 is operated by lever 33 to swing lid 25 to its open position.

In the embodiment of the present invention illustrated in Figs. 1 to 5, and also in the modified form disclosed in Figs. 7 and 8, a paper towel

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element such as shown in Fig. 6 is preferably employed. However, any other type of towel elements may be conveniently substituted, in which case the construction of the towel ejector may have to be altered. In Fig. 4 ejector 43 is shown to engage the edge of the folded flap 20, however the ejector may be so arranged that it will slip between the flap and the body of the towel material and will engage the latter along folding line 21 with practically the same ultimate effect.

Referring now to the modified form disclosed in Figs. 7 and 8, the cabinet again is composed of an upper compartment 10 and a lower compartment or receptacle 11, for accommodating waste towel tissue inserted through opening 23. The exterior appearance and arrangement of this embodiment is very similar to that illustrated in Fig. 1, the only changes being found in the interior operating mechanism. Attention is directed to fixed partition 17', the counterpart of partition 17, which is placed somewhat higher than the latter and which serves for the attachment thereto at 59 of guide rods 60, along which operate guide sleeves 61 secured to pressure platform 62; the latter being normally supported by helical springs 63. Pressure platform 62 is again equipped with an operative lid 64 which is adapted to close insert opening 23 of receptacle 11. Lid 64 is pivoted at 65, from which pivot extends a slotted lever 66 secured to the lid. The slot of the lever is engaged by pin 67 on bell lever 68, the short leg 69 of which terminates in a forked end 70. An over-center spring device 71, in engagement with pin 67 is adapted to swing lid 64 to either its opening or closing position when bell lever 68 is actuated.

The movement of platform 62 in downward direction is induced by the operation of a symmetrically disposed pair of arcuate pressure levers 72, one at each side of the cabinet. These levers are secured to an operating shaft 73 extending from side to side of the cabinet and projecting through one side thereof. The projecting shaft extension is engaged by the hub of hand operated lever 74, or an equivalent foot lever, not shown. Keyed to the shaft is also lever 75 which engages fork end 70 of the short leg portion 69 of the bell lever. The shaft carries another lever 76 which is adapted to engage a lever combination 77 by way of pin 78 extending from short lever 79 of that lever combination. From longer lever 80 of the latter projects pin 81, which is intended to engage ejector lever 82 of the aforescribed inverted U-shaped construction. Lever combination 77 is pivoted at 83 while ejector lever 82 is pivoted at 84. The upper connecting bar 85 of ejector lever 82 serves as pivot for ejector plate 86.

It is to be noted that the downwardly directed flange of partition 17' serves as support for pivots 83 and 84, of, respectively, the bell combination 77 and ejector lever 82; and that operating shaft 73 is mounted below that partition.

Resting upon partition 17' is a conical spring 87 which bears against the under surface of movable towel support 88, which is guided in a framework consisting of upright angles 89 welded to partition 17'. These angles also guide towel support 88 as well as towel elements 19 resting upon the support. The front and rear guide angles 89 are joined by braces 89' Fig. 8.

Attention is again invited to the upper end of front angle 89 in Fig. 8; the front web of which is tapered at 90 so that only the uppermost towel element may be dispensed by ejector 86. The

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ejector lever arrangement 82 is normally held in its full line position by a spring 91.

From the arrangement of platform pressure lever 72, lid operating lever 75, ejector actuating lever 76 and the bell lever arrangement 68 for closing lid 64, it will be observed that when shaft 73 is operated by hand lever 74, first lever 75 will actuate the bell lever arrangement 68 and bring lid 64 to a closing position; thereupon pressure lever 72 will engage the top of pressure platform 62 and depress the latter to the position indicated in broken lines. When platform 62 is fully depressed, then lever 76 will engage pin 78 of lever combination 77, whereupon pin 81 of lever 80 will propel ejector lever 82 in outward direction to the position shown in broken lines in Fig. 7, at which moment ejector 86 will deliver the topmost towel element to without the cabinet. When hand lever 74 is released the ejector mechanism will assume its full-line position first, before pressure platform 62 will rise to its full-line position, whereupon lid 64 is brought again to its opening position by lever 75.

Another embodiment of the present invention will be found in Figs. 9 and 10, wherein towel support 92 is of substantially a wedge-like construction, with its towel element supporting surface 93 being inclined. In consequence of that incline, towel elements 94 are also inclined. The rest of the structure, including the ejector levers and the mechanism for compressing the platform in the lower compartment, not shown, remains substantially the same as that explained in connection with the structure seen in Figs. 7 and 8, the only exception being the towel ejector and the shape of the towel elements 94.

These elements constitute preferably plain sheets of towel tissue which are intended to be frictionally engaged by ejector 95. The latter is pivoted on bar 96 and is provided at its front end with a friction member 97. That member normally reposes by gravity upon the uppermost towel element of the stack of towels carried by support 92. Associated with ejector 95 is a stop lever 98 adapted to alternately contact back stop 99 and front stop 100. When hand lever 101 is actuated, first the mechanism for depressing the pressure platform in lower compartment 11 operates in the manner described in connection with Figs. 7 and 8, whereupon lever 76 comes into engagement with lever combination 77 and causes ejector lever 102 to move to its dotted line position. During this movement of ejector lever 102 friction member 97 causes the ejection of a towel element in the manner shown in broken lines in Fig. 9. The towel element is propelled about half way to without the cabinet, and when in that position stop lever 98 engages front stop 100 and swings ejector 95 upwards and away from the ejected towel elements, thus freeing the latter.

Referring now to Fig. 10, secured to bar 96 are adjustable collars 103 and loose collars 104, and between the collars are provided springs 105 which urge loose collars 104 against the hubs of ejector 95. Thus when front stop 100 causes ejector 95 to assume its upswing, broken line position, shown at the right-hand upper corner of Fig. 9, collars 104 will retain the ejector in that elevated position until ejector lever 102 reverts to its full-line position. At that moment stop lever 98 abuts with stop pin 99 whereby the ejector is caused to swing down and into engagement with the next uppermost towel element.

In the foregoing description explaining the different embodiments of the present invention; the

same basic principle prevails, that is the combination of a device for dispensing unused articles with means for reducing the volume of used articles, prior to the dispensation of an unused article.

The purpose of illustrating and describing three forms of cabinets, two forms of towel tissue and a variety of operating mechanisms, manifestly implies that the mechanism for ejecting articles, the mechanism for compressing used articles, and the combination of the two mechanisms operative in the sequence indicated, are subject to changes, improvements and modifications, and that the type of the articles to be handled, that is compressed and ejected may also vary. For the above reason it is to be understood that the specific disclosures are by no means intended in a restrictive sense, since similar devices may be designed for handling different articles intended to be used and discarded and compressed in volume after use.

Summarizing, the present invention resides in the basic principle of providing an article dispensing device in combination with volume reducing means for dispensed and used articles, and a combination mechanism in such device for effecting the delivery of articles for use and for effecting the compression of discarded articles. Thus, while the illustrations presented show a few specific embodiments of the present invention, it is to be understood that changes, improvements and modifications may be made, without departing from the broad scope of the invention as claimed below.

I claim:

1. In a towel dispensing device, a cabinet having two compartments, a supply of towel material in one of the compartments, the other compartment serving for the reception of used towel material, a towel dispensing mechanism arranged within the cabinet and having means for discharging a sufficient portion of fresh towel material for a single application or use, a compressing mechanism having means for compressing used towel material within said other compartment, common actuating means for both the dispensing mechanism and the compressing mechanism, and means for causing the operation of said compressing mechanism prior to the delivery of fresh towel material by said dispensing mechanism.

2. In a device for dispensing utilitarian articles including means for reducing the bulk of such article after their use, a cabinet having a compartment for accommodating a supply of unused articles and another compartment for the reception of used articles, a combination cooperating mechanism in the cabinet for dispensing unused articles and for simultaneously reducing used articles received in the cabinet and being operative from without the latter, said mechanism comprising means for supporting a supply of unused articles in such a manner as to facilitate the dispensing of one such article at a time, and means for compressing used articles prior to dispensing an unused article, and means for ejecting a single unused article from said supply of articles.

3. In a towel dispensing cabinet, a supply compartment for unused towels, a receptacle beneath said compartment and having a closable opening for the reception of used towels, a movable support for a stack of towels in said compartment and means for facilitating the removal of the uppermost towel from the stack, means oper-

ative from without the cabinet for dispensing such uppermost towel one at a time, a movable platform mounted in said receptacle and having an operative lid for closing the opening of said receptacle, and a lever mechanism actuated by said operative means for successively moving said lid to its closing position and for depressing said platform and the closed lid each time said towel dispensing means are operated, thereby compressing used towels within the receptacle.

4. In a towel dispensing cabinet, a supply compartment for unused towels including a movable support for a stack of towels and means for facilitating the removal of the uppermost towel from the stack, a receptacle below said compartment and having a closable opening for the reception of used towels, means for compressing used towels in the receptacle, means for closing said opening, and means, operative from without the cabinet, for simultaneously actuating said closing, said compressing and said towel removal means so that before a towel reaches its discharging position, first said closing means and next said compressing means become actuated.

5. In a towel dispensing cabinet, a supply compartment for unused towel tissue provided with an opening for the passage to without of a portion of said tissue, means for dispensing such portion of tissue from said compartment through said opening, a receptacle directly below said compartment for the reception of used towel tissue, means for reducing the bulk of used tissue within the receptacle, said tissue dispensing means being operatively connected with said used towel tissue reducing means, and single actuating means for simultaneously operating both of these tissue manipulating means.

6. In a towel tissue dispensing cabinet, as set forth in claim 10, said supply compartment being provided with an operative support for unused towel tissue, said support being adapted to place in position for ejection an amount of fresh towel tissue sufficient for a single application or use, said towel tissue dispensing means comprising an ejector adapted to engage and to propel without the supply compartment such towel tissue for a single application or use; said receptacle being provided with a closable opening for receiving used towel tissue, the means for reducing the bulk of used towel tissue within the receptacle comprising a movable platform having an operative lid for closing the opening of the receptacle, said platform being adapted to compress the contents within the receptacle while the lid is in closed position.

7. In a dispensing cabinet for towel tissue in the form of sheets, a supply compartment and a waste receptacle; said compartment containing a movable support for a stack of towel sheets, and a sheet-ejecting mechanism adapted to dispense a single sheet at one time, such sheet being the uppermost sheet of the stack, and means operative from without the cabinet for actuating said mechanism; said receptacle having an opening for facilitating the insertion of used towel sheets, a platform for compressing used towel sheets in said receptacle and having a lid for closing said opening; platform actuating means, including a lever arrangement for closing said lid prior to the movement of the platform, said platform actuating means being operative with, but moving in advance of said sheet ejecting mechanism, and being adapted to depress the platform while its lid is closed, thereby compressing waste towels

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over the largest possible area within the receptacle.

8. In a dispensing cabinet for towel tissue, upper and lower compartments, the upper compartment serving as supply source for fresh towel tissue and comprising a spring-induced, movable and guided tissue support; the lower compartment serving as receptacle for used towel tissue and including a spring-supported, depressible platform having a movable lid, the latter being adapted to close an insert opening for used towel tissue provided at the top of the receptacle; an operating mechanism within the cabinet, actuating means for the mechanism disposed exteriorly to the cabinet, said operating mechanism comprising a lever combination having means for first closing the lid of said platform, other means for moving the latter, while the lid remains in closing position, against used towel tissue container in the receptacle, thus compressing the tissue, and still other means for engaging and dispensing from the upper compartment a single towel tissue element.

9. In a device for dispensing fresh towel tissue

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and for simultaneously reducing the bulk of used or waste towel tissue, a cabinet having a compartment for fresh tissue and a receptacle below the compartment for waste tissue, a compressing mechanism for waste tissue within the receptacle and a towel-ejecting mechanism for discharging from the compartment a fresh tissue element sufficient for a single application or use, single actuating means for both mechanisms for rendering said tissue ejecting mechanism operative after the operation of the tissue compressing mechanism, said single actuating means being operative from without the cabinet.

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