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(71) Applicant: **BOWATER-SCOTT CORPORATION LIMITED**
Bowater House Knightsbridge
London SW1X 7LR(GB)

(72) Inventor: **Arduini, Gianni**
Via Conte Rosso 18
Milan(IT)

(72) Inventor: **Del Corno, Marco**
Via Sandro Sandri 2
Milan(IT)

(72) Inventor: **Salvemini, Franco**
Via Ugo Foscolo 30
Binasco (Milan)(IT)

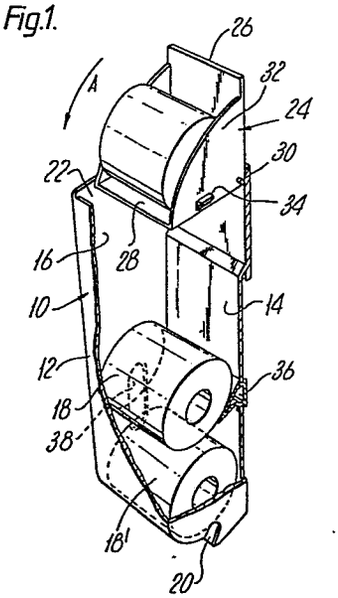
(72) Inventor: **Braid, William**
40 Glenwood
Glenrothes Fife(GB)

(74) Representative: **Lowe, Elizabeth Anne et al,**
Page, White & Farrer 27 Chancery Lane
London WC2A 1NT(GB)

(54) **Dispenser for paper in roll form.**

(57) A pilfer-proof dispenser for paper or the like in roll form comprises a housing (10) for holding one or more rolls of paper (18, 18'), the housing having an aperture (22) through which the rolls may be loaded and a paper dispensing slot (20), and movable loading means (24) adapted for admitting a paper roll (18) to the housing through the aperture, the loading means being movable between an open position, in which it can receive a roll and a closed position, in which it loads the roll into the housing (10), the loading means (24) being so shaped and so disposed in relation to the aperture (22) that, for all its possible positions, removal of a roll from the housing through the aperture (22) is prevented.

Fig.1.



EP 0 058 078 A2

DISPENSER FOR PAPER IN ROLL FORM

The invention relates to a dispenser for paper in roll form, such as rolled toilet tissue or paper towel.

There are two particular problems associated with providing toilet tissue or rolled paper towels in public lavatories and washrooms. Because of high janatorial labour costs it is desirable to provide spare paper rolls, yet a supply of spare rolls is likely to be pilfered.

Various types of thief-proof apparatus for dispensing rolled toilet tissue or paper towels in public conveniences are known. Such dispensers may include a lockable housing or spindle for a single roll. The measures do not overcome the problem of providing spare rolls which will not be stolen and, in fact, suffer a further disadvantage of the janitor requiring specialised equipment, such as a key for releasing the housing or spindle. Furthermore the key or the spindle may become lost.

In other known dispensers, there are provided, adjacent the aperture through which full rolls are loaded, flaps or flanges which allow the rolls to be pushed past them into the dispenser, but impede roll removal. These usually necessitate deformation of the rolls, thus spoiling them, and in any case are not entirely proof against pilfering as they allow a hand into the dispenser far enough for it to be possible to deform a roll in the dispenser sufficiently to allow it out past the flaps or flanges.

There is described, in British Patent No. 888,012, a toilet paper holder into which rolls are loaded without having to crush the rolls to insert them. This holder comprises two compartments, a reserve compartment for holding a spare

roll and a main compartment holding the roll in use. The spare roll is secured against pilfering by the lid not being able to open, because it will abut the spare roll. Once the roll in use is exhausted and the spare roll pushed down into the main compartment, the lid can then be opened and a hand fully inserted into the reserve compartment. Although this holder is satisfactory for a maximum of two rolls, one in use and one spare, if it were used to hold more than one spare roll, the lid could be opened once the first spare roll has been pushed into the main compartment so that the other spare rolls could be stolen. The mechanism is also relatively complicated and hence likely to malfunction.

The present invention aims to minimise or overcome the above difficulties and disadvantages.

According to the invention there is provided a dispenser for paper in roll form comprising a housing for holding one or more rolls of paper, the housing having an aperture through which the rolls can be loaded, and a paper dispensing slot, and movable loading means adapted for admitting a paper roll to the housing through the aperture, said movable loading means being movable between an open position, in which it can receive a roll, and a closed position, said movable loading means being so shaped and so disposed, relative to said aperture that, for all possible positions of the loading means, removal of a roll from the housing through the aperture is prevented.

Preferably, the loading means are so shaped and so disposed relative to the dispenser's loading aperture that, for all possible positions of the loading means, access of a hand to the interior of the housing is not even possible.

Suitably, the loading means comprises a first element which effectively closes the aperture when the loading means is in its closed position, and a second element which effectively closes the aperture when the loading means is in its open position.

The second element may act as a support for a roll during loading of that roll into the housing.

The first and second elements of the loading means may be integral.

In one embodiment, the loading means comprises a first plate and a second plate mutually angled and rigidly interconnected along a respective one of their edges, the plates being hinged on the housing for limited pivotal movement relative thereto, about an axis parallel to their interconnected edges, between an open and a closed position, said first plate acting as a lid for the housing closing the aperture when the loading means is in its closed position, said second plate being pivotable within the housing and being angled with respect to the first plate by an angle great enough to receive a paper roll between said plates yet not so great as to allow removal of a roll past that edge of the second plate remote from its edge connected to the first plate for all possible pivotal positions of the loading means, the second plate being dimensioned so as to obstruct said aperture in the housing when the loading means is in its open position, whereby, after pivoting the loading means into its open position, a paper roll may be inserted between the two plates and, on pivoting the loading means into its closed position, the roll is released from between the plates and admitted to the interior of the housing.

Such a loading means preferably further comprises a pair of spaced walls extending between respective edges of the plates, those edges being adjacent the interconnected edges of the plates.

The pivotal movement of the plates is preferably limited by stop means to define the open position of the loading means. The stop means preferably comprise a flange projecting from the housing into the aperture and adapted to abut that edge of the second plate remote from its edge connected to the first plate when the loading means in in its open position. The stop means may instead comprise at least one projection disposed on the walls of the loading means and adapted to abut the housing when the loading means is in its open position.

In an alternative embodiment, the loading means comprise a pair of spaced walls extending between respective edges of the plates, those edges being adjacent the interconnected edges of the plates.

In a yet further alternative embodiment, the loading means comprises an inverted drawer having first and second mutually opposite walls and being slidable through the aperture in the housing between a closed position, in which said first wall obstructs said aperture, and an open position in which said second wall obstructs said aperture, whereby, when the drawer is in the open position, a paper roll may be inserted into the drawer, and, on closing the drawer, the paper roll is released from the drawer and admitted to the interior of the housing.

Embodiments of the invention will now be described, by way of example only, and with reference to the accompanying drawings, in which:

Figure 1 is a perspective view, partly broken away, of a first embodiment of a dispenser in accordance with the present invention;

Figure 2 is a longitudinal section through the dispenser of Figure 1;

Figure 3 is a side elevation of a second embodiment of a dispenser in accordance with the invention;

Figure 4 is a partial perspective view from the front of the dispenser of Figure 3;

Figure 5 is a perspective view of a third embodiment of a dispenser in accordance with the invention;

Figure 6 is a longitudinal section through a fourth embodiment of dispenser in accordance with the invention; and

Figure 7 is a longitudinal section through a fifth embodiment of dispenser according to the invention.

Referring to Figures 1 and 2 of the drawings, there is shown a dispenser comprising a housing 10 having a front wall 12, a rear wall 14, and two opposite side walls 16. The housing is of a size suitable to take one or more paper rolls, such as toilet tissue or paper towel. Preferably, however, the housing is of suitable capacity to hold a plurality of cylindrical rolls 18 one above the other.

At one end of the housing, in this case the lower end, there is provided a paper dispensing slot 20 through which paper from that roll 18' adjacent the slot 20 may be withdrawn from the roll.

There is also provided in the housing 10 an aperture 22,

which, in this case, is disposed at that end of the housing remote from the dispensing slot 20. It is through this aperture 22 that paper rolls 18 are loaded into the housing 10.

Loading means 24 are arranged to load a roll 18, one at a time, through the aperture 22, into the interior of the housing 10. In the embodiment illustrated by Figures 1 and 2, the loading means 24 comprise a first plate 26 disposed substantially at right angles to a second plate 28, the plates being joined along one of their edges. The plates are hinged to the rear wall 14 of the housing 10 so as to pivot about an axis 30 coincident with their joined edges. The loading means, in this embodiment, further comprises two side walls 32 of a generally quadrant configuration and each extending between respective edges of the plates 26, 28.

The loading means 24 is adapted to pivot between an open position (Figure 1) in which a roll 18 may be received therein for loading into the housing 10, and a closed position (Figure 2) in which the roll 18 is released for admission to the interior of the housing 10. In the closed position of the loading means 24, the first plate 26 acts as a lid for the housing 10, closing off its aperture 22, and in the open position, the second plate 28 closes the aperture. The pivotal movement is limited, the closed position being defined when the first plate 26 engages one or more of the walls 12, 14, 16 of the housing 10 and the open position of the loading means 24 being defined by a projection 34 engaging stop means (not shown in Figures 1 and 2) on the side wall or walls 16 of the housing 10.

The loading means 24 are so constructed and so arranged in relation to the aperture 22, that in the open and the closed positions, as well as positions therebetween, removal of a roll 18, 18' from the housing through the aperture 22 is prevented.

In use, the loading means 24 are pivoted into the open position (Figure 1) by lifting the first plate 26 and a roll 18 placed on the second plate 28. The loading means 24 are then pivoted in the direction of arrow A, either by pushing downwardly or because of the weight of the roll 18, into the closed position (Figure 2), the roll 18 dropping into the housing.

Disposed within the housing, in this case attached to the rear wall 14, are roll position limiting means 36. The limiting means hold rolls 18 clear of roll 18', nearest the dispensing slot 20 so that paper may be unrolled freely from the roll in use 18', without rotation of roll 18' being impeded by frictional engagement of rolls 18 resting on it. Once the paper has been exhausted from roll 18', the roll core of roll 18' may be removed through the slot 20. The next roll 18 may then be brought into a position for use by manipulating the roll 18 which is resting on the limiting means 36 past the limiting means to a position resting adjacent the slot 20. Manipulation of the roll may be carried out through one or more openings 38 provided in one or more walls, in the illustrated case in the side walls 16, of the housing 10.

Referring to Figures 3 and 4 of the drawings, there is shown a second embodiment of a dispenser according to the invention. This dispenser is similar in many respects to that of the first embodiment, having loading means 24 hinged for pivotal movement relative to the housing 10. In this case, however, the first plate 26 is not directly connected to the second plate but is connected to it via a rear plate 40.

In this embodiment, the projection 34 engages stop means on the housing which comprise an inwardly projecting rim

42 of the side walls 16. The roll position limiting means 36 are in the form of two curved resilient flanges 44, 46 secured respectively to the front wall 12 and rear wall 14 of the housing 10.

In either of the embodiments described above, the projections 34 may be omitted, the pivotal movement of the loading means being instead limited by abutment of the free edge of the second plate 28 against the inwardly extending rim 42 or (Figure 5) against an inwardly projecting ledge 43. The ledge has the added advantage of making the passage for a hand into the dispenser through the aperture 22 more tortuous.

Figure 5 illustrates further desirable features of the dispenser which may be incorporated into any of the other embodiments described herein.

The lower region 12' of the front wall 12 may be made of a transparent material, so that a user can assess how much paper is left on the roll in use.

There may be provided an opening 39, through which it is possible to manipulate the roll which is in use and resting on the bottom wall. For instance, it would be possible to rotate a new roll until the free end of the paper is adjacent the slot 20.

The free end of the roll is often glued to the rest of the roll to prevent premature unravelling. So as to make it easier for a user to start a new roll, there may be provided a cut-away portion 21 in the lower region 12' of the dispenser front wall which opens into the slot 20 to facilitate release of the glued end of the roll.

Referring to Figure 6 of the drawings, there is shown a fourth embodiment of dispenser in accordance with the invention. The loading means 24 in this embodiment is again movable with respect to the housing 10 but is not hinged thereto. Instead, the loading means 24 comprises an inverted drawer 48 slidably mounted on the side walls 16 of the housing 10. The drawer comprises a front wall 50, a rear wall 52 and side walls 54. In the closed position of the drawer 48, this position being defined when the rear wall 52 of the drawer 48 abuts the rear wall 14 of the housing 10, the front wall 50 of the drawer 54 substantially fills and therefore closes the aperture 22 in the housing 10. In this embodiment, the aperture 22 comprises a rectangular opening in the front wall 12 of the housing 10 of a size just big enough to receive a roll 18 therethrough. In the open position of the drawer 48, defined by the drawer engaging stop means on the housing 10, the rear wall 52 of the drawer again substantially fills and therefore closes the aperture 22. Clearly, in neither of these two positions nore in positions in between, is there sufficient access to the housing to be able to remove a roll therefrom. Although this embodiment has been illustrated by the drawer being arranged to be slidable through an aperture 22 in the front wall 12 of the housing 10, it would equally be possible for a drawer to be arranged to slide through an aperture in one of the side walls 16.

Referring to Figure 7 of the drawings, there is shown a fifth embodiment of dispenser. In this case, the upper region of the housing 10 is dome shaped and has the aperture 22 disposed therein. Rotatably mounted within the domed portion of the housing 10 is a hollow cylindrical drum 60, which is rotatably mounted on the side walls 16 of the housing 10. The drum 60 has a slot 62 in its wall 64

extending along substantially its full length, the slot 62 being at least equal to the diameter of a roll 18 which is to be loaded into the dispenser. The drum 60 is rotated until its slot 62 is coincident with the aperture 22. In this position, the entire wall 64 of the drum 60 effectively closes the aperture 22. A roll 18 is then inserted through the aperture 22 and through slot 62 into the drum 60, and the wall 64 of the drum supports the roll 18. On rotation of the drum 60 into the position shown in Figure 7, the roll 18 will fall through the slot 62 into the interior of the housing 10. In this position of the drum 60, it is a portion 64' of its wall 64 which closes the aperture 22.

Again, although the drum has been illustrated as being rotatable about an axis parallel to the front wall 12 and rear wall 14 of the housing 10, the drum 60 could equally well be arranged to be rotatable about an axis perpendicular thereto, i.e. parallel to the side walls 16 of the housing 10, the aperture 22 being arranged in one of the side walls 16.

The dispenser may be made of any suitable material such as enamel-coated mild steel, or a tough plastics material.

CLAIMS:

1. A dispenser for paper in roll form comprising a housing (10) for holding one or more rolls (18, 18') of paper, the housing having an aperture (22) through which the rolls can be loaded and a paper dispensing slot (20), and movable loading means (24) adapted for admitting a paper roll (18) to the housing through the aperture, said movable loading means being movable between an open position, in which it can receive a roll, and a closed position, said movable loading means being so shaped and so disposed, relative to said aperture (22) that, for all possible positions of the loading means, removal of a roll from the housing through the aperture (22) is prevented.

2. A dispenser as claimed in Claim 1, wherein said loading means (24) are so shaped and so disposed relative to the aperture (22), that, for all possible positions of the loading means, access of a user's hand to the interior of the housing is prevented thereby preventing removal of a roll therefrom.

3. A dispenser as claimed in Claim 1 or Claim 2, wherein the loading means (24) comprises a first element (26; 50; 64') which effectively closes the aperture (22) when the loading means is in its closed position, and, a second element (28; 52; 64) which effectively closes the aperture when the loading means is in its open position.

4. A dispenser as claimed in Claim 3, wherein the second element (28; 64) acts as a support for a roll (18) during loading of that roll into the housing (10).

5. A dispenser as claimed in Claim 3 or Claim 4, wherein said first and second elements are integral.

6. A dispenser as claimed in any preceding claim, wherein the loading means (24) comprises a first plate (26) and a second plate (28) mutually angled and rigidly interconnected along a respective one of their edges, the plates being hinged on the housing (10) for limited pivotal movement relative thereto, about an axis parallel to their interconnected edges, between an open and a closed position, said first plate (26) acting as a lid for the housing closing the aperture when the loading means is in its closed position, said second plate (28) being pivotable within the housing and being angled with respect to the first plate by an angle great enough to receive a paper roll (18) between said plates yet not so great as to allow removal of a roll past that edge of the second plate remote from its edge connected to the first plate for all possible pivotal positions of the loading means, the second plate being dimensioned so as to obstruct said aperture (22) in the housing when the loading means is in its open position, whereby, after pivoting the loading means into its open position, a paper roll may be inserted between the two plates and, on pivoting the loading means into its closed position, the roll is released from between the plates and admitted to the interior of the housing.

7. A dispenser as claimed in Claim 6, wherein said loading means further comprises a pair of spaced walls (32) extending between respective edges of the plates, those edges being adjacent the interconnected edges of the plates.

8. A dispenser as claimed in Claim 6 or Claim 7, further comprising stop means to limit the pivotal movement of the loading means and thereby define its open position, said stop means comprising a flange (42, 43) projecting from the housing (10) into the aperture (22) and adapted to abut that edge of the second plate (28) remote from its edge connected to the first plate (26) when the loading means is in its open position.

9. A dispenser as claimed in Claim 7, further comprising stop means to limit the pivotal movement of the loading means and thereby define its open position, said stop means comprising at least one projection (34) disposed on the walls (32) of the loading means and adapted to abut the housing when the loading means is in its open position.

10. A dispenser as claimed in any of Claims 1 to 5, in which the loading means comprises a hollow cylindrical member (60) rotatably mounted on the housing (10) to rotate about the axis of the cylindrical member, and having an opening (62) in its cylindrical wall, the cylindrical member being rotatable between an open position, in which its opening is in register with the aperture in the housing, and a closed position in which its cylindrical wall substantially closes the aperture, whereby, when the cylindrical member is in its open position, a paper roll may be inserted into the cylindrical member through both the housing aperture (22) and the opening (62) in the member, and, on rotating the member into the closed position, the roll is released from the cylindrical member through the opening and admitted to the interior of the housing.

11. A dispenser as claimed in any of Claims 1 to 5, in which the loading means comprises an inverted drawer (48) having first and second mutually opposite walls (50, 52) and being slidable through the aperture (22) in the housing between a closed position, in which said first wall (50) obstructs said aperture, and an open position in which said second wall (52) obstructs said aperture, whereby when the drawer is in the open position, a paper roll may be inserted into the drawer, and, on closing the drawer, the paper roll is released from the drawer and admitted to the interior of the housing.

Fig.1.

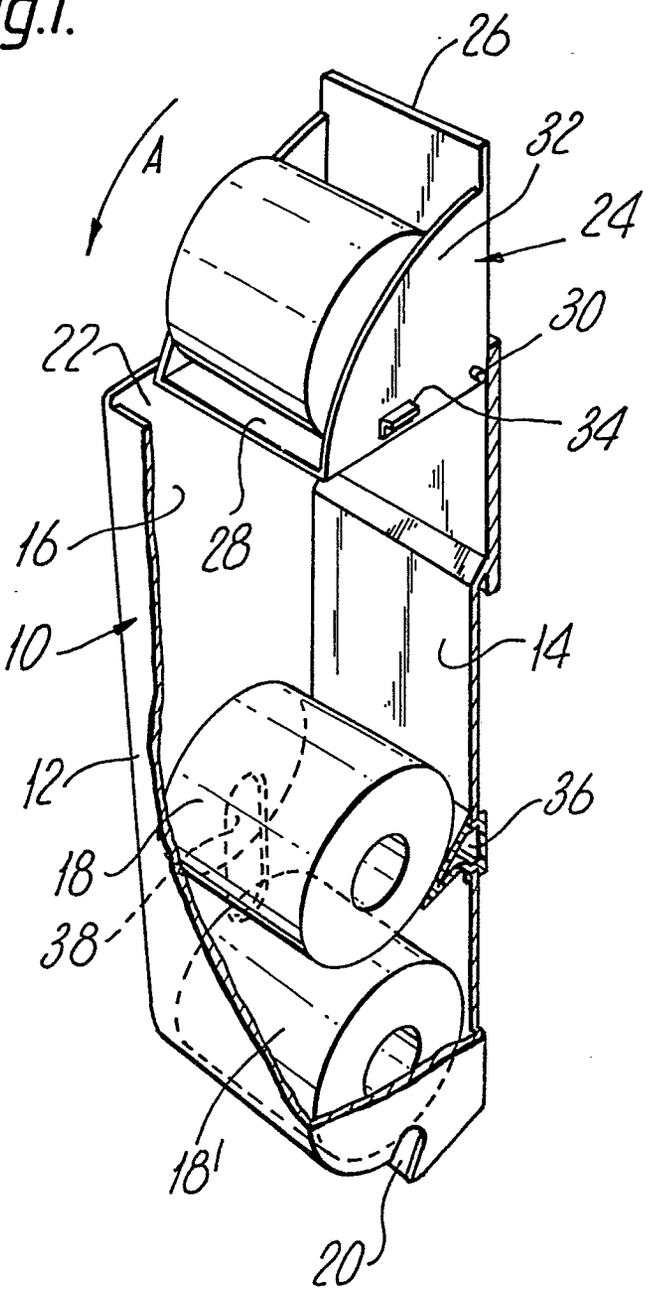


Fig.2.

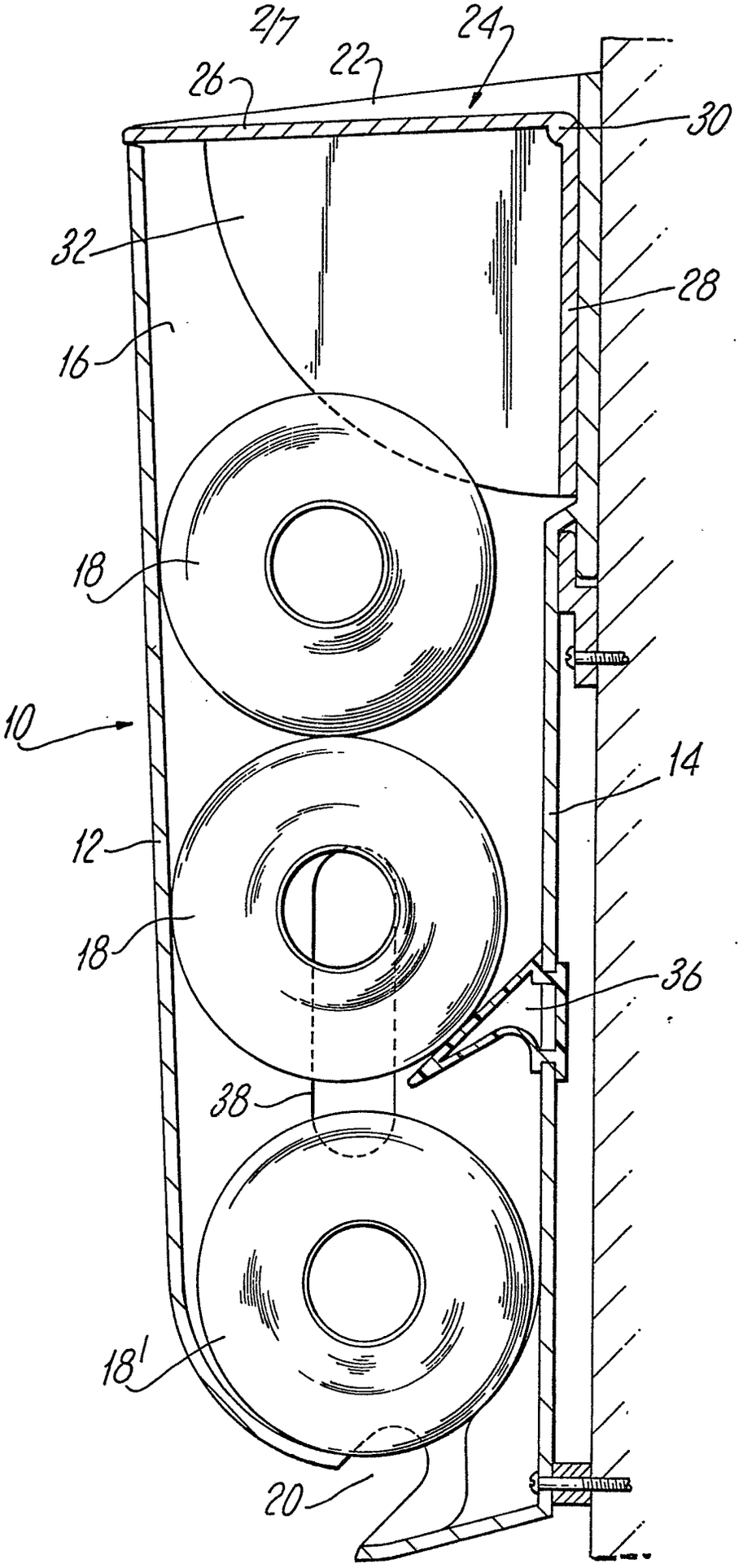


Fig.3.

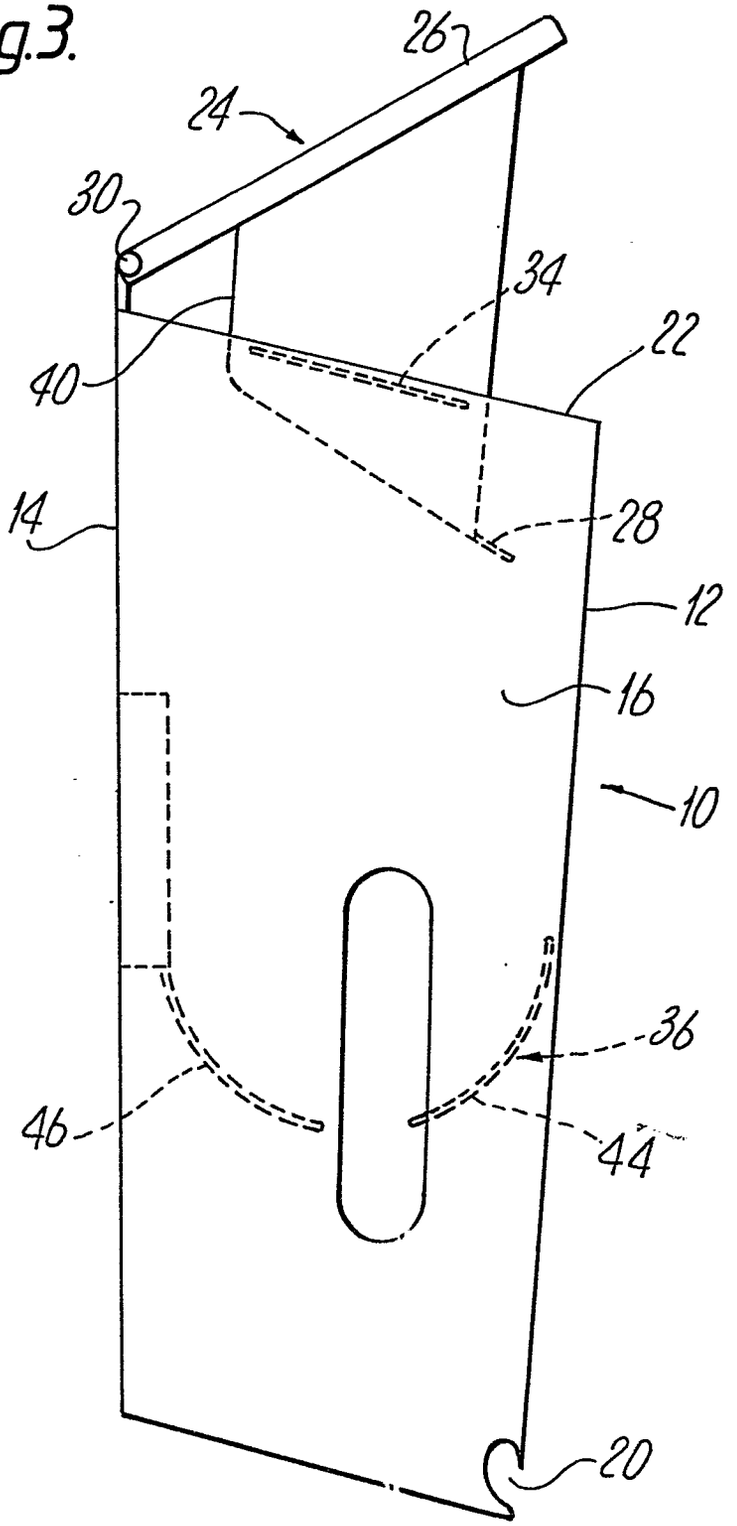


Fig. 4.

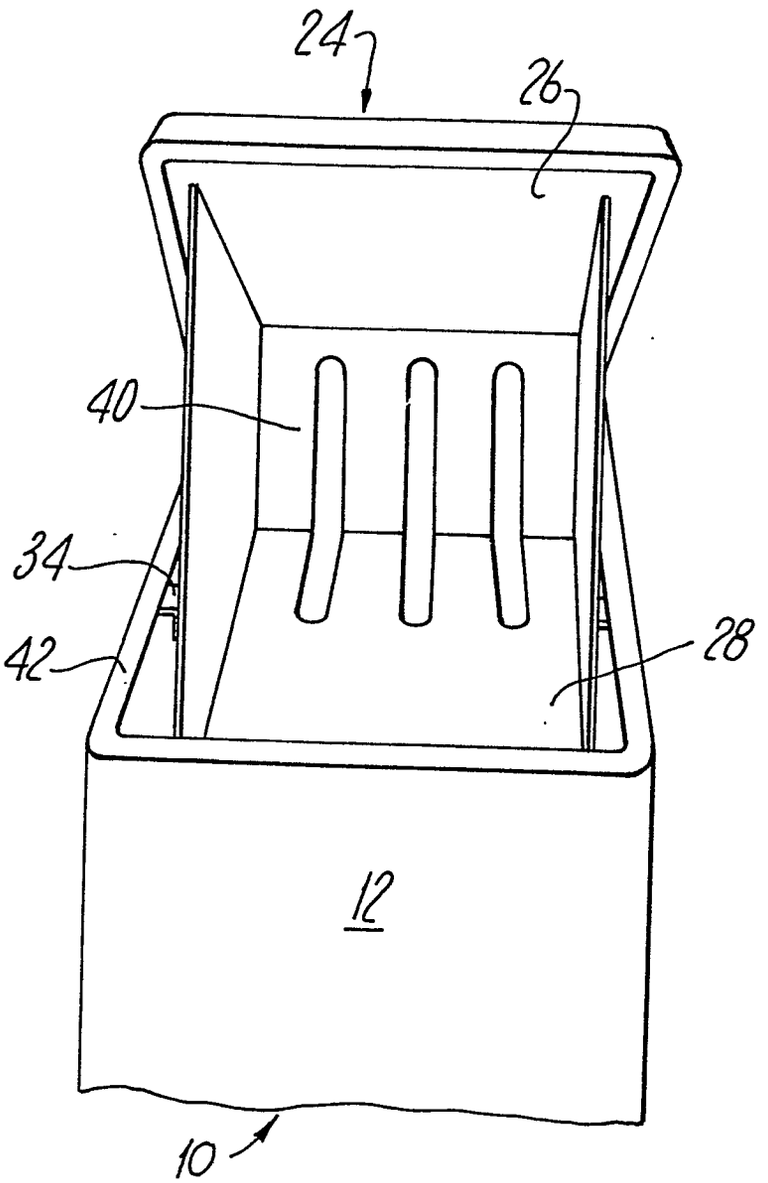


Fig.5.

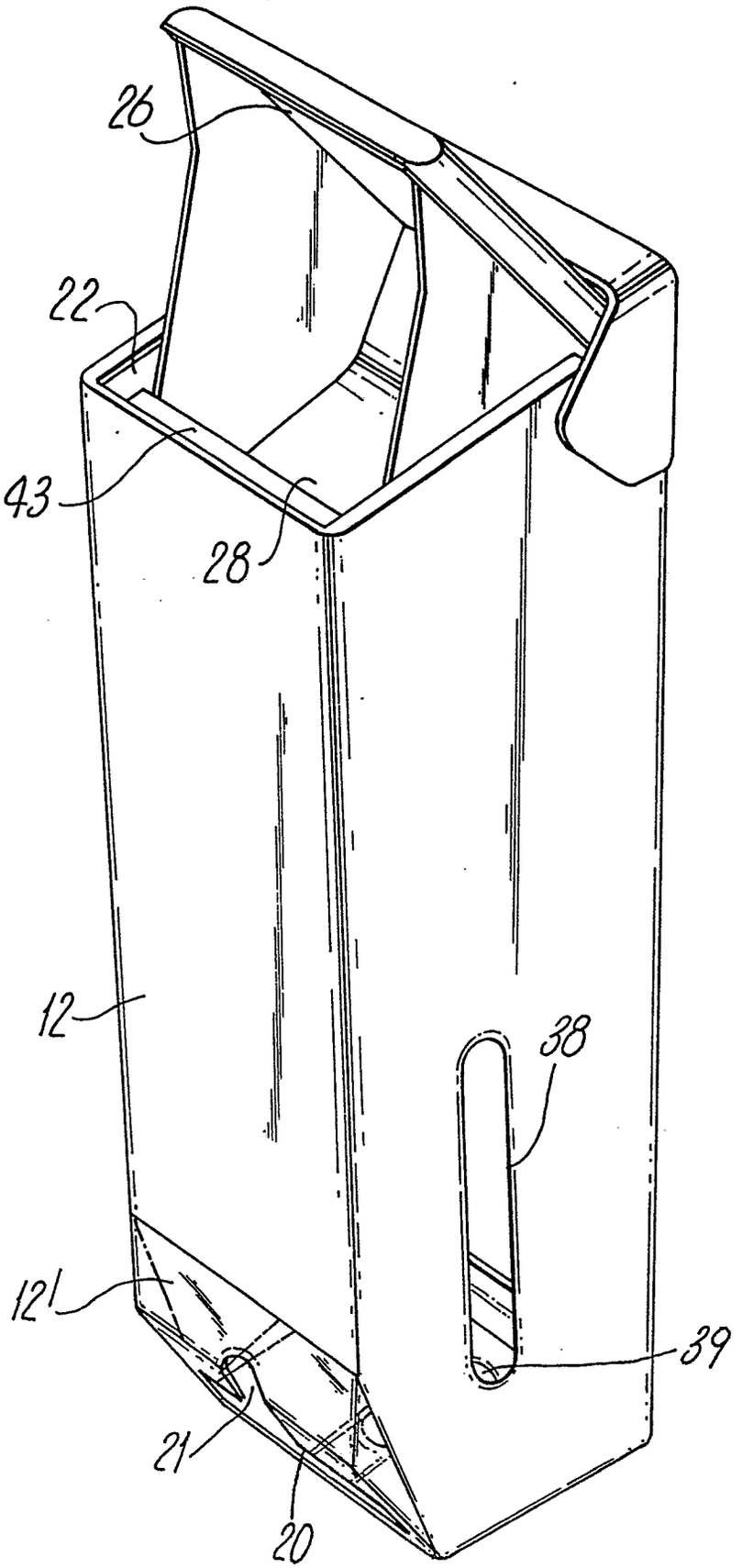


Fig.6.

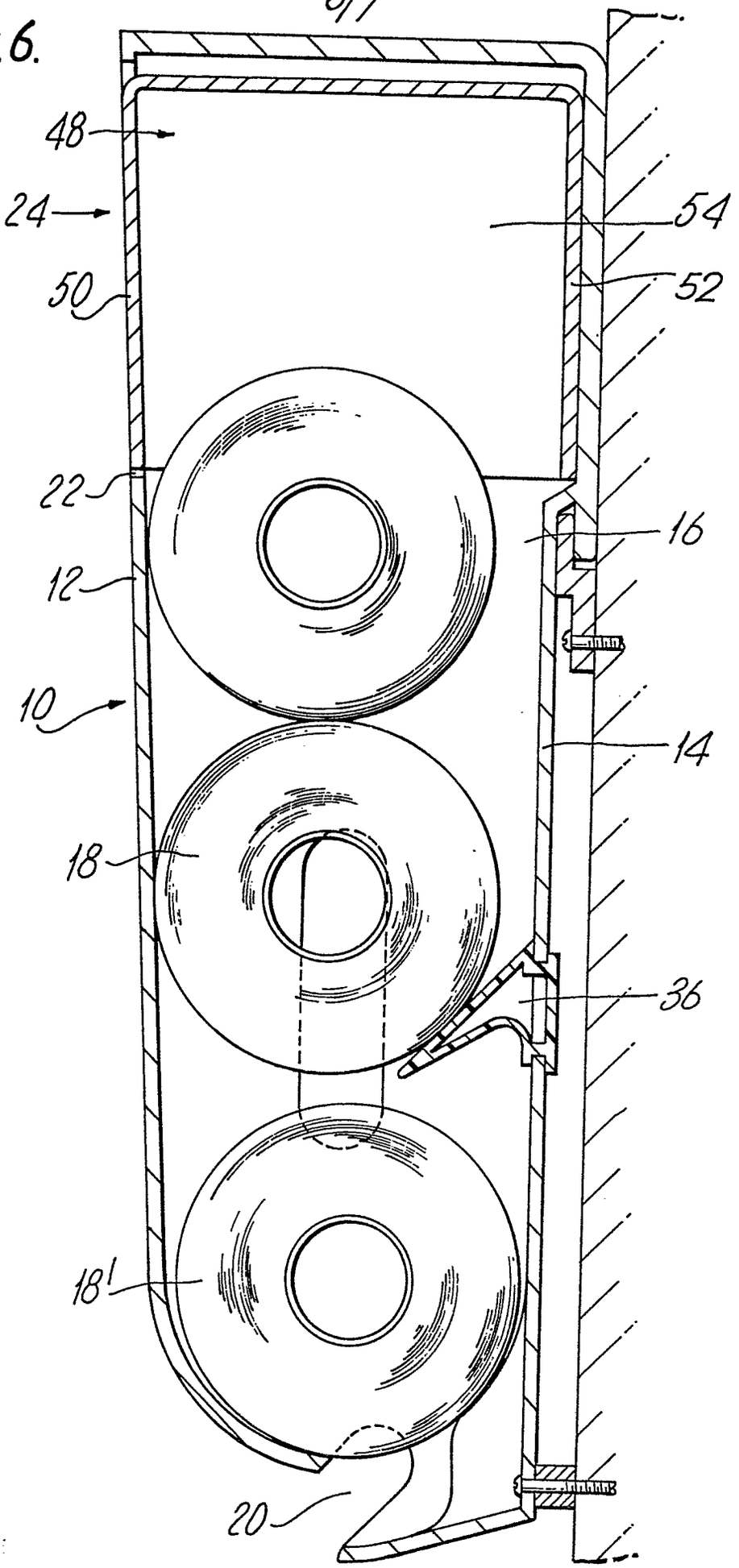


Fig.7.