

Sept. 24, 1963

E. E. CLIFT

3,104,781

PUBLICATION DISPENSER

Filed June 29, 1960

4 Sheets-Sheet 1

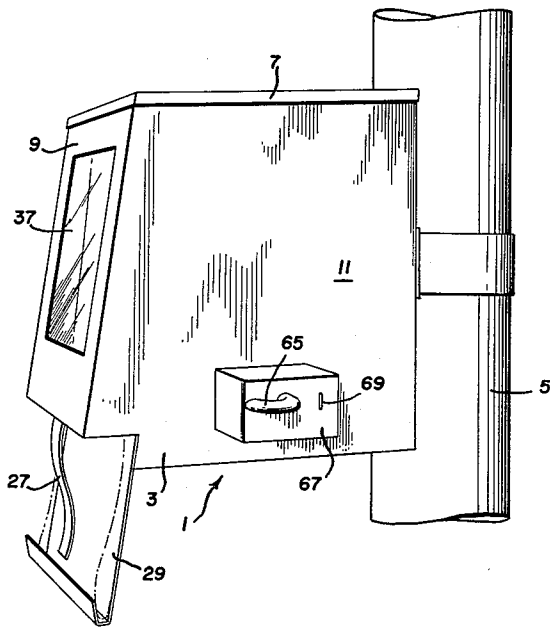


FIG. 1

FIG. 2

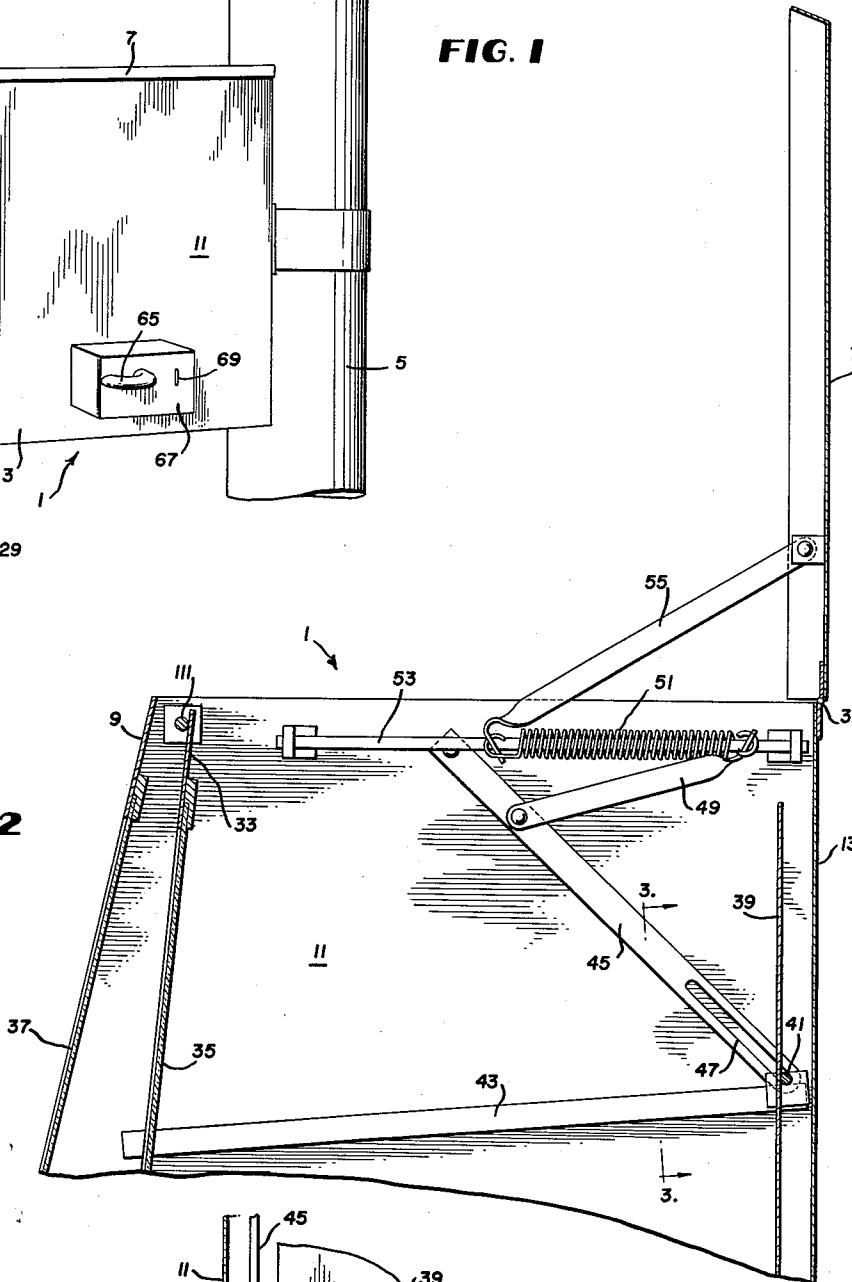
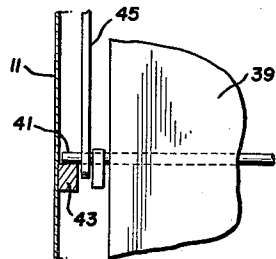


FIG. 3



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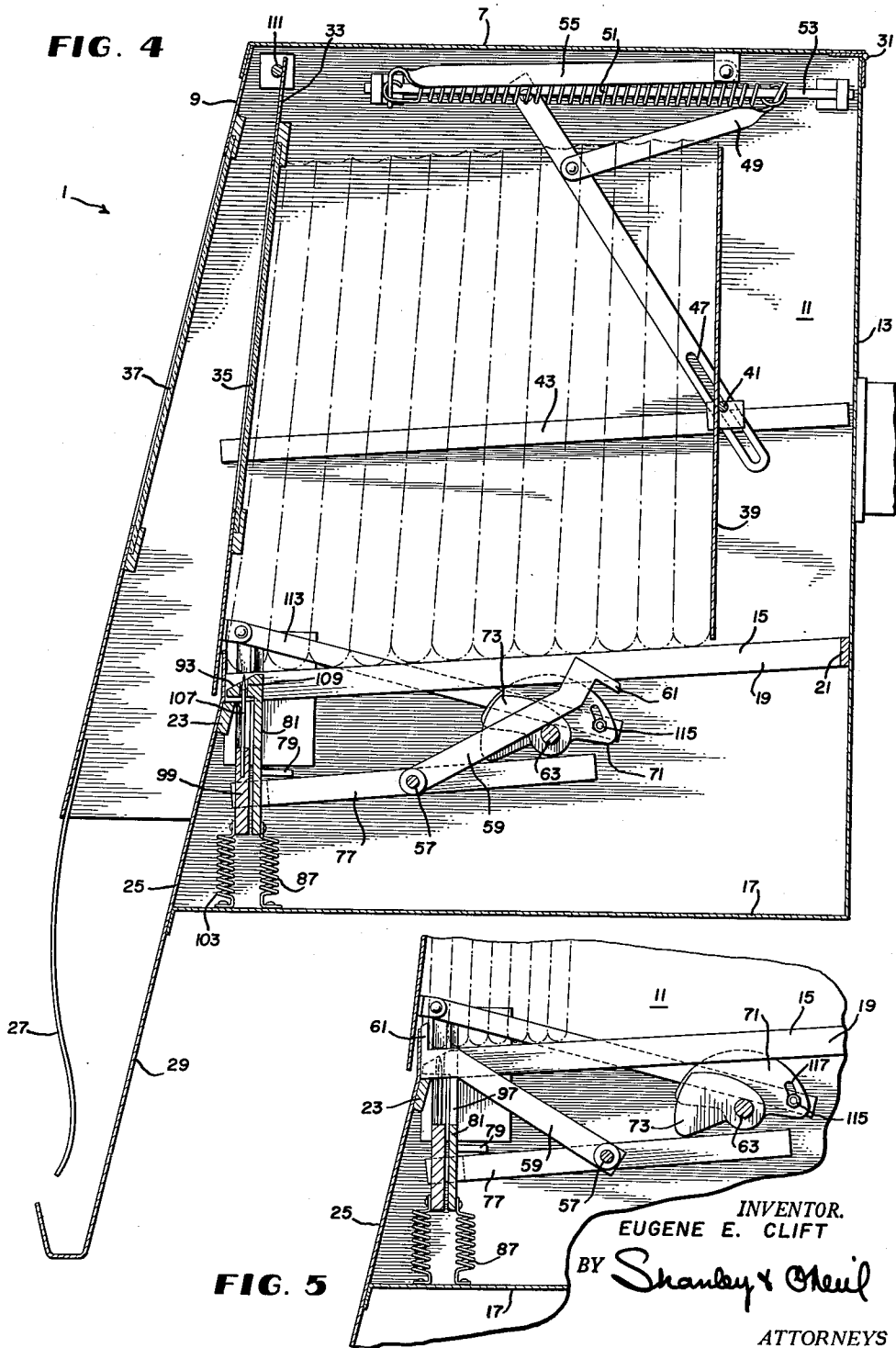
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FIG. 6

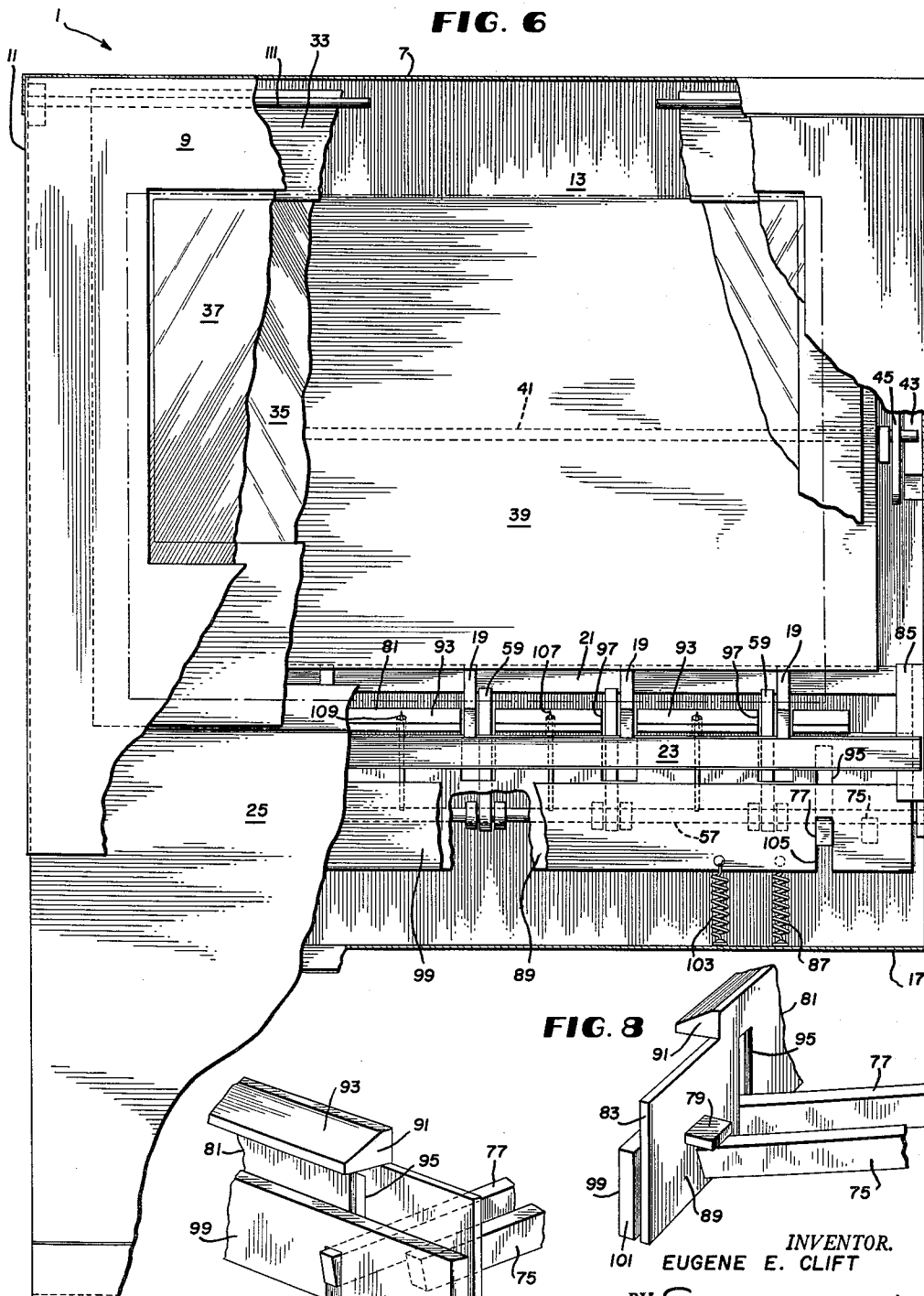


FIG. 8

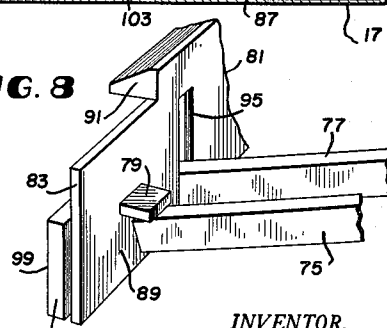
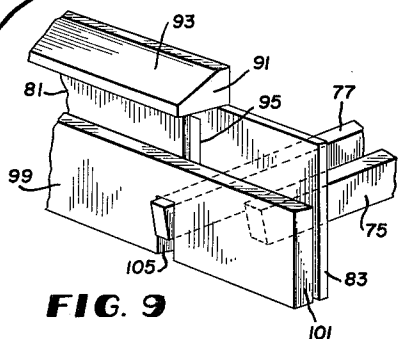


FIG. 9



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4 Sheets-Sheet 4

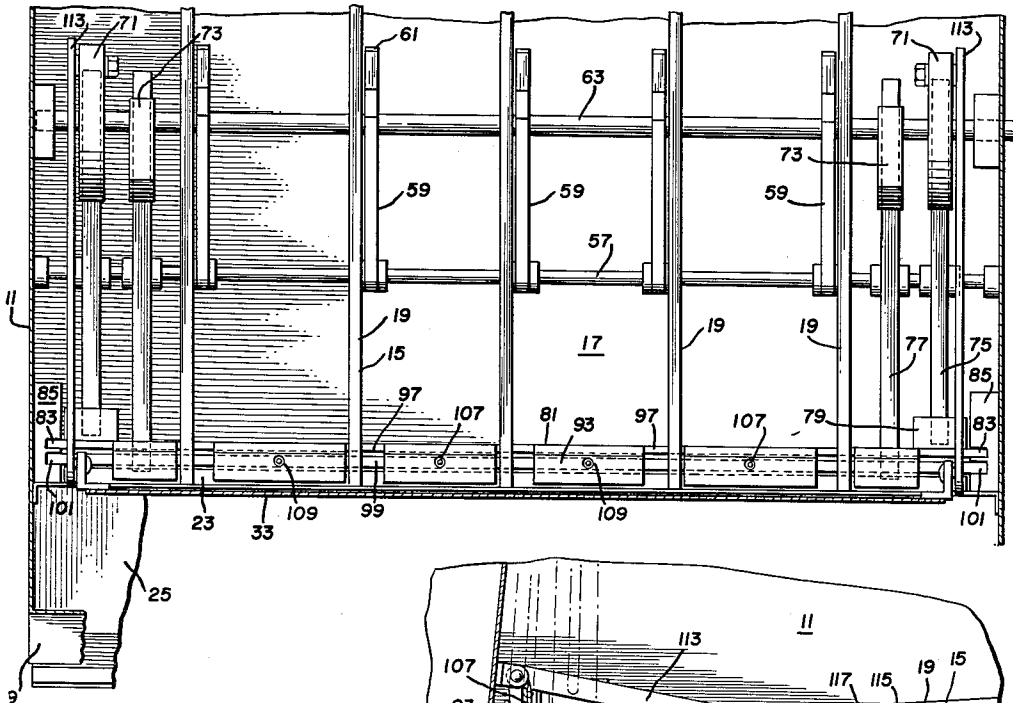


FIG. 7

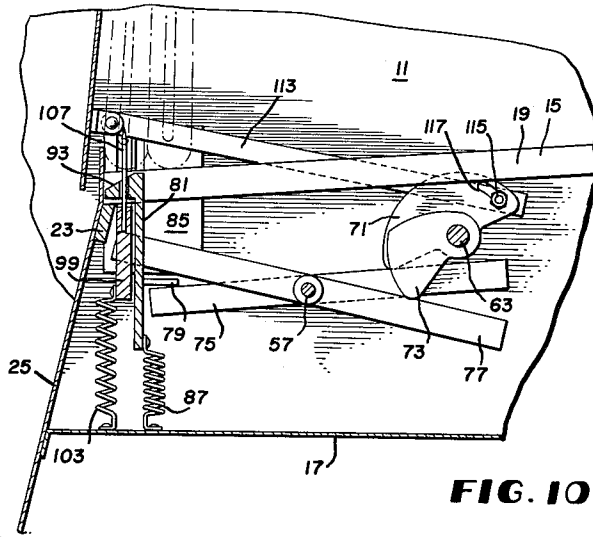


FIG. 10

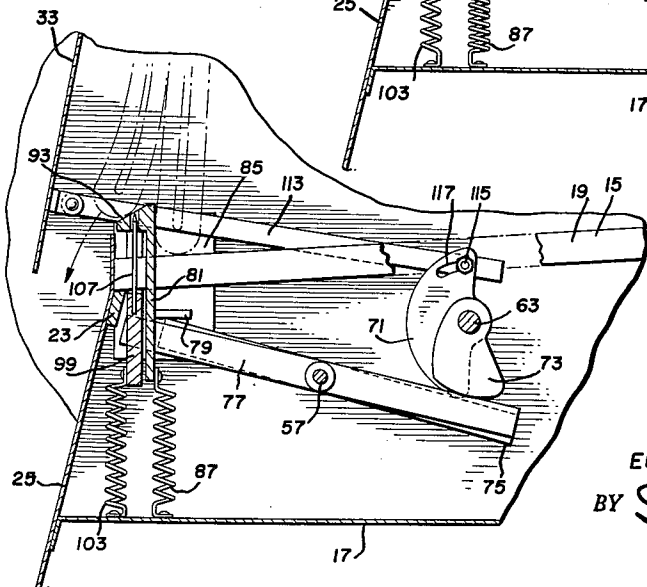


FIG. 11

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3,104,781

**PUBLICATION DISPENSER**

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 1 Claim. (Cl. 221-227)

The present invention relates to publication dispensers, and more particularly to devices for dispensing publications one at a time from a supply cabinet.

It is an object of the present invention to provide publication dispensers adapted to dispense a single publication and to position the next publication in the position previously occupied by the dispensed publication.

Another object of the present invention is the provision of publication dispensers particularly well adapted for use in dispensing publications of various thicknesses.

Still another object of the present invention is the provision of publication dispensers adapted to prevent undesired displacement or disarrangement of the publications during dispensing.

It is also an object of the present invention to provide newspaper dispensers adapted to display for sales purposes the headlines and that portion of the newspaper above the center fold.

Finally, the present invention contemplates the provision of publication dispensers that will be relatively simple to load by the publication distributor, easy to operate by the customer and easy to maintain and repair, and rugged and durable in use.

Other objects and advantages of the present invention will become apparent from a consideration of the following description, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of a publication dispenser according to the present invention installed on a support;

FIGURE 2 is a side cross-sectional view of the upper part of a dispenser according to the present invention, with the cover raised;

FIGURE 3 is a fragmentary cross-sectional view taken on the line 3-3 of FIGURE 2;

FIGURE 4 is a view similar to FIGURE 2 but showing all of the dispenser and with the cover closed and a supply of publications in the dispenser;

FIGURE 5 is a fragment of FIGURE 4 showing the operative position of the adaptor that is used when relatively thin publications are dispensed;

FIGURE 6 is a front view of a dispenser according to the present invention, with parts broken away to show their structural and functional relationships;

FIGURE 7 is a fragmentary cross-sectional top view of the dispensing mechanism of the present invention;

FIGURES 8 and 9 are fragmentary perspective views, taken from opposite sides, of the dispensing members of the present cabinet; and

FIGURES 10 and 11 are views showing the positions of the dispensing members during sequential steps of the dispensing operation.

Briefly stated, the present invention comprises a dispensing cabinet adapted to contain a plurality of publications with the folded edge or bulb of the publications down, the dispensing mechanism comprising a plurality of needles on a horizontal bar vertically movable to pierce the folded edge of the front publication from below, and means for raising the folded edge of the front publication off the needles and for urging the front publication forward away from the next publication to the rear and for blocking forward movement of that next publication during ejection of the front publication. Also, the cabinet has a front plate mounted adjacent its upper end for swinging movement about a horizontal axis, the operating

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mechanism also serving to urge the cabinet front plate forward to open the cabinet at the same time that the front publication is being urged to dispensing position.

Referring now to the drawings in greater detail, there is shown a publication dispenser indicated generally at 1 comprising a cabinet 3 which may be secured at a convenient height to a utility pole 5 or other suitable support. Cabinet 3 comprises a vertically swingable top wall or cover 7, a front wall 9, a pair of opposite side walls 11, and a rear wall 13. The bottom of the cabinet is closed by vertically spaced upper and lower horizontal floors 15 and 17, respectively, upper floor comprising a plurality of parallel rails 19 that incline gradually forwardly downward. Rails 19 are interconnected at their rear ends by a cross piece 21 which in turn is secured to rear wall 13. At their forward ends, rails 19 rest on a horizontal strap 23 mounted on the rear side of a rearwardly offset lower portion 25 of front wall 9. Front wall 9 forwardly and upwardly overlies portion 25, so that wall 9 and portion 25 are vertically coextensive for a substantial distance. The lower end of wall 9 carries a downwardly depending spring clip 27 for holding publications snugly against a catch rack 29 into which the publications fall by gravity upon being dispensed from cabinet 3.

Cover 7 is interconnected along its rear edge to the upper edge of rear wall 13 by means of a horizontal hinge 31 and is kept closed by means of a lock (not shown) at its front so as to prevent unauthorized entry. When raised, as seen in FIGURE 2, cover 7 permits publications to be loaded into the cabinet to the position shown in FIGURE 4, the publications being disposed parallel to each other in vertical planes with their bulbs down and resting on rails 19. The publications are maintained in this position by means of a swingable front plate 33 provided with a transparent window 35 so that the headlines and upper half of the publication may be viewed through window 35 and through a corresponding transparent window 37 in front wall 9.

At their rear, the publications are urged forward by a vertical follower plate 39 having secured to its rear surface a horizontal cross shaft 41 extending from side to side of the cabinet. Shaft 41 rides at its ends on fixed tracks 43 parallel to rails 19 and disposed one at either side of the cabinet fixedly secured to the adjacent side wall 11. Lever arms 45 are pivotally mounted at their upper ends on walls 11 for swinging movement about horizontal axes and are disposed one at either side of the cabinet. At their lower ends, arms 45 have slots 47 therein extending lengthwise thereof for providing lost motion between arms 45 and the ends of shaft 41 disposed in slots 47.

Means are provided for continuously urging arms 45 to swing clockwise as seen in FIGURE 4, comprising links 49 pivotally interconnected with arms 45 adjacent but spaced from the pivotal axes at the upper ends of arms 45, the other ends of links 49 being continuously urged forward by tension in coil springs 51 when the springs are extended to the position shown in FIGURE 4. Springs 51 are mounted one at either side of the cabinet adjacent the top thereof on guide rods 53 also parallel to rails 19. One end of each spring 51 is attached to a link 49, and the other end of the spring is attached to one end of a link 55, the other end of each link 55 being pivotally connected to the underside of cover 7. In this way, the tension in springs 51 aids in raising the cover to the position shown in FIGURE 2. But thereafter, further movement of the cover clockwise as seen in FIGURE 2 will tend to compress strings 51 and resist such further movement of the cover. Then, when the cover is lowered to the position of FIGURE 4, springs 51 are in tension and

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urge lever arms 45 clockwise as seen in FIGURE 4 thereby continuously to urge follower plate 39 against the rearmost publication to keep the publications pressed against front plate 33 with the forward publication in dispensing position. It should also be noted that when cover 7 is raised and springs 51 are placed in compression, lever arms 45 are urged counterclockwise as seen in FIGURE 2, so that follower plate 39 is urged to its rearmost position in the cabinet thereby to make room for the maximum number of publications inserted edgewise from above.

A transverse shaft 57 is provided extending between side walls 11 between floors 15 and 17, and a plurality of adapter bars are mounted on shaft 57 for swinging movement in vertical planes parallel to each other and to side walls 11 about the axis of shaft 57. Bars 59 may be journaled for rotation on shaft 57, but preferably they are in unitary assembly with shaft 57 and shaft 57 is journaled for rotation on the inner sides of walls 11 so that bars 59 swing together as a unit from the position shown in FIGURE 4 to the position shown in FIGURE 5. In the position shown in FIGURE 5, bars 59 have vertically extending spacer fingers 61 at their ends, these fingers 61 being disposed on the inner side of the upper edge of portion 25 of front wall 9 and serving to space relatively thin publications properly for dispensing by the mechanism to be described. Thus, the midplane of the front publication occupies substantially the same position when the publications are relatively thick as shown in FIGURE 4 as when they are relatively thin as shown in FIGURE 5; for in the case of the thin publications, the spacer fingers 61 are called into play as shown in FIGURE 5. In their operative positions as shown in FIGURE 5, adapter bars 59 rest and are supported at their forward ends on strap 23; while in their inoperative positions as shown in FIGURE 4, adapter bars 59 rest on a transverse shaft 63.

Shaft 63 is the principal operating element of the dispenser of the present invention. It extends from side to side of the dispenser between floors 15 and 17 and is horizontal and parallel to the front, top, bottom and rear walls of the dispenser. At one end, shaft 63 is journaled on a side wall 11, and at the other end, shaft 63 extends through side wall 11 and terminates in a lever 65 by which the dispenser is manually operated. This outwardly extending end of shaft 63 is housed within a coin control box 67 having a slot 69 through which a coin of appropriate denomination may be inserted to release the coin control mechanism to permit movement of lever 65 to operate the dispenser to release a publication. The coin control system may be any of the well known devices for this purpose and as such forms no part of the present invention. Suffice it to say that lever 65 may not be moved to actuate the dispenser in the absence of a coin of appropriate denomination.

Also in unitary assembly with shaft 63 is a pair of cams 71, disposed one adjacent each end of shaft 63, and a further pair of cams 73 also disposed one adjacent each end of shaft 63. Journaled for swinging movement on shaft 57 is a pair of levers 75 engageable by cams 71 and a pair of levers 77 engageable by cams 73. Levers 75 and 77 are in the form of first class levers, so that when their rear ends are depressed by the cams, their front ends are elevated.

Resting on the front ends of levers 75 are shelves 79 which in turn are secured one adjacent each end and on the rear surface of an ejector bar 81. The ends 83 of bar 81 ride in vertical slots in guideways 85 one on each side wall 11 so that the movement of ejector bar 81 is confined to vertical reciprocatory movement. The front ends of levers 75 raise bar 81, and a pair of coil tension springs 87, disposed one adjacent each end of bar 81, interconnects bar 81 and lower floor 17 continuously to urge bar 81 downward.

Ejector 81 is comprised of a main plate 89 disposed in a vertical plane, and a flange 91 along its upper edge.

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Flange 91 has a forwardly downwardly inclined upper surface 93, so that flange 91 is in effect bevelled. Flange 91 extends forward from plate 89. Plate 89 has vertical slots 95 opening downward through its lower edge for the accommodation of levers 77 and vertical slots 97 opening through its upper edge for the reception of rails 19 and adapter bars 59.

Movable vertically in close parallelism with ejector bar 81 is a needle bar 99. Bar 99 is comprised of a flat plate disposed in a vertical plane and extends from side to side of the dispenser cabinet immediately in front of plate 89 of ejector bar 81 and is disposed directly under forwardly extending flange 91 of bar 81. The ends 101 of needle bar 99, like the ends 83 of ejector bar 81, are mounted for vertical movement in guideways 85 parallel to the path of movement of ejector bar 81. Tension springs 103 interconnect needle bar 99 adjacent its ends and lower floor 17 thereby continuously to urge needle bar 99 downward. Levers 77 extend through slots 95 of ejector bar 81 and into slots 105 that open through the lower edge of needle bar 99 adjacent its ends. Clockwise swinging movement of levers 77, as seen in FIGURES 4, 5 10 and 11, moves needle bar 99 vertically by engagement between the ends of levers 77 and the upper ends of slots 105. Along its upper edge, needle bar 99 has a plurality of parallel needles 107 disposed in a common vertical plane and each of them extending vertically in parallelism with each other and terminating at their upper ends in sharp points. Needles 107 extend through and move within vertical holes 109 through flange 91 of ejector bar 81. The plane of needles 107 is also the plane in which they move, and this in turn is the plane of movement of ejector bar 81.

Means are provided for swinging front plate 33 forward upon ejection of a publication thereby to permit the publication to fall onto catch rack 29 without hindrance from front plate 33. To this end, the upper edge of front plate 33 is mounted on a cross shaft 111 journaled for rotation at its ends on opposite side walls 11. A pair of links 113 is secured pivotally one adjacent each side wall 11 adjacent the ends of the lower edges of front plate 33. At their other ends, links 113 are pivotally interconnected with cams 71 by means of pins 115 on the ends of links 113 riding in slots 117 in cams 71 thereby to provide lost motion between cams 71 and links 113 so that cams 71 turn counterclockwise as seen in FIGURES 4, 5, 10 and 11 for a predetermined distance while pins 115 move in slots 117 without movement of links 113. Thereafter, with pins 115 in the positions shown in FIGURES 10 and 11 relative to slots 117, continued counterclockwise movement of cams 71 between the positions of FIGURES 10 and 11 moves links 113 to open front plate 33 at its bottom, that is, to swing it clockwise about the pivot provided by cross shaft 111.

The operation of the dispenser is as follows:

The distributor unlocks and raises cover 7, thereby moving follower plate 39 to the rear. He inserts the publications edgewise, bulb down, and lowers and locks cover 7, thereby tensioning spring 51 and drawing follower plate 39 as far forward as possible. Assuming the publications to be of normal size, no manipulation of adapter bars 59 is necessary; but if they are relatively thin, then bars 59 are swung from the position of FIGURE 4 to the position of FIGURE 5 before insertion of the publications. In either event, the front publication is disposed as shown in FIGURE 4 or FIGURE 5, that is, with its midplane coincident with the plane of needles 107. The rest position of the device thus is the position of FIGURE 4 or the position of FIGURE 5.

To actuate the device, a customer places a coin of an appropriate denomination in slot 69 and depresses handle 65, that is, moves it downward counterclockwise as seen in FIGURE 1. This turns shaft 63 counterclockwise as seen in FIGURES 4, 5, 10 and 11. Initially, cams 73 strike the rear ends of levers 77 as shown in FIGURE 10

and raise needle bar 99 relative to eject bar 81. Needles 107 rise through holes 109 and pierce and penetrate the bulb of the publication, thereby to hold the publication in its desired orientation until the very end of the ejection operation, to prevent the publication from becoming misaligned during dispensing. Thereafter, cams 71 engage and depress the rear ends of levers 75 while cams 73 retain needles 107 in raised position. Under the influence of cams 71, the front ends of levers 75 rise and carry with them ejector bar 81. Bar 81 rises to the position shown in FIGURE 11, in which bevelled upper surface 93 first raises the bulb of the publication up and off needles 107, and then cams it downward to the front, so that the publication slides off bevelled upper surface 93 in the direction of the arrow in FIGURE 11. In its raised position, bar 81 blocks forward movement of the next publication to the rear while the front publication is being ejected.

At the same time, pins 115 on the rear ends of links 113, which were moving in slots 117 during most of the rising movement of needles 107, reach the rear ends of slots 117. Thereafter, during rising movement of ejector bar 81, the movement of cams 71 pushes links 113 generally forward to push open the lower end of front plate 33. Thus, when the bulb of the publication is ready to slide forward and downward through the opening between the ejector member and the front plate, the front plate will have reached its forwardmost position, and the publication will slide down lower portion 25 of front wall 9 and be caught in catch rack 29 beneath spring clip 27 to be removed by the customer. When the customer releases lever 65, springs (not shown) within coin control box act on shaft 63 to urge shaft 63 to turn clockwise thereby to return the parts to the position of FIGURE 4 or FIGURE 5. When the parts are returning, however, it should be noted that pins 115 move in slots 117 a certain distance before they strike the opposite ends of the slots to begin the door closing movement. This lost motion assures that lever 65 can be released a certain distance before the door begins to close, and this in turn reduces the chances of catching the upper edges of the falling publications in the closing door should the customer release lever 65 too soon.

The dispensing operation may be repeated as often as desired until the dispenser is empty. A signal may be arranged for indicating when the cabinet is empty, for example, by printing the word "Empty" on the forward face of follower plate 39 so that "Empty" finally appears through windows 35 and 37.

From a consideration of the foregoing disclosure, it will be obvious that all of the initially recited objects of the present invention have been achieved.

It is to be understood that the present invention is to be accorded a range of equivalents commensurate in scope with the advance over the prior art.

What is claimed is:

5 Apparatus for dispensing publications one at a time, comprising a cabinet adapted to contain a group of publications on edge with the free edges of the pages of the publications up, means providing a continuous fixed low abutment extending across the front of the cabinet and contacting a lower front portion of the front publication, a front door pivotally mounted at its top on the cabinet for forward and rearward swinging movement about a horizontal axis to dispose the lower edge of the door respectively farther from and closer to the abutment, means 10 for dispensing the publications one by one from the front of the group comprising a member continuously yieldably urging the publications toward the front and a vertically movable member for raising the lower edge of the front publication above the abutment thereby to permit the front publication to fall downwardly between the lower edge of the door and the abutment, a horizontal shaft mounted within the cabinet and rotatable in one direction to raise the vertically movable member and rotatable in the other direction to lower the vertically movable member, crank means mounted on and rotatable with said shaft, and link means interconnecting the crank means and the door at a location on the door spaced a substantial distance from said axis, the link means and the crank means being so disposed that when the shaft is turned in one direction to raise the vertically movable member the link means swings the door forwardly from a closed rear position to an open forward position to move the lower edge of the door forwardly away from the abutment to permit a publication to be dispensed downwardly between the lower edge of the door and the abutment, and when the shaft turns in the other direction to lower the vertically movable member the link means swings the door rearwardly to close the door.

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