

United States Patent

Hall et al.

[15] 3,655,092

[45] Apr. 11, 1972

[54] **APPARATUS FOR VENDING PERIODICALS HAVING SELF-COMPENSATING DISPENSER FOR DECREASING SUPPLY**

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[22] Filed: **Apr. 20, 1970**

[21] Appl. No.: **29,840**

[52] U.S. Cl. **221/133, 221/244, 221/258, 221/268, 271/36**

[51] Int. Cl. **B65h 1/04**

[58] Field of Search. **221/241, 244, 258, 268, 275, 221/130, 133; 271/36**

[56] **References Cited**

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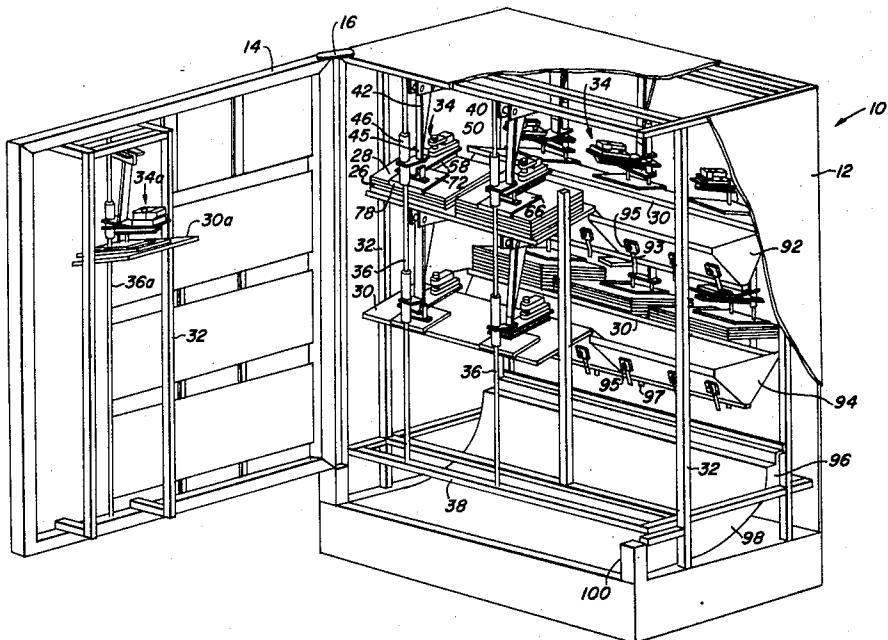
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[57] **ABSTRACT**

A periodical-vending apparatus for vending periodicals successively from the top of a stack of periodicals. It has a housing, a support within said housing upon which a stack of periodicals rests, dispensing means for successively removing individual periodicals from the top of the stack and receiving means opening to the housing exterior for receiving each periodical upon removal from the stack and making it available to the purchaser. The dispensing means or means for removing the periodical from the stack includes a substantially flat plate which rests on top of the stack and has along an edge thereof a flange that extends along and over a side surface of the top periodical. The plate is maintained at a constant, selected pressure against the periodical. A motor is provided for moving the plate in a direction toward the side of said article along which said flange extends to correspondingly move the periodical a distance sufficient to remove it from the stack. A series of vertical troughs are provided for guiding the periodical so removed to the receiving means. To permit vending of a variety of periodicals, the apparatus may comprise a plurality of like vending units disposed vertically and/or in side-by-side relation within the housing.

21 Claims, 4 Drawing Figures

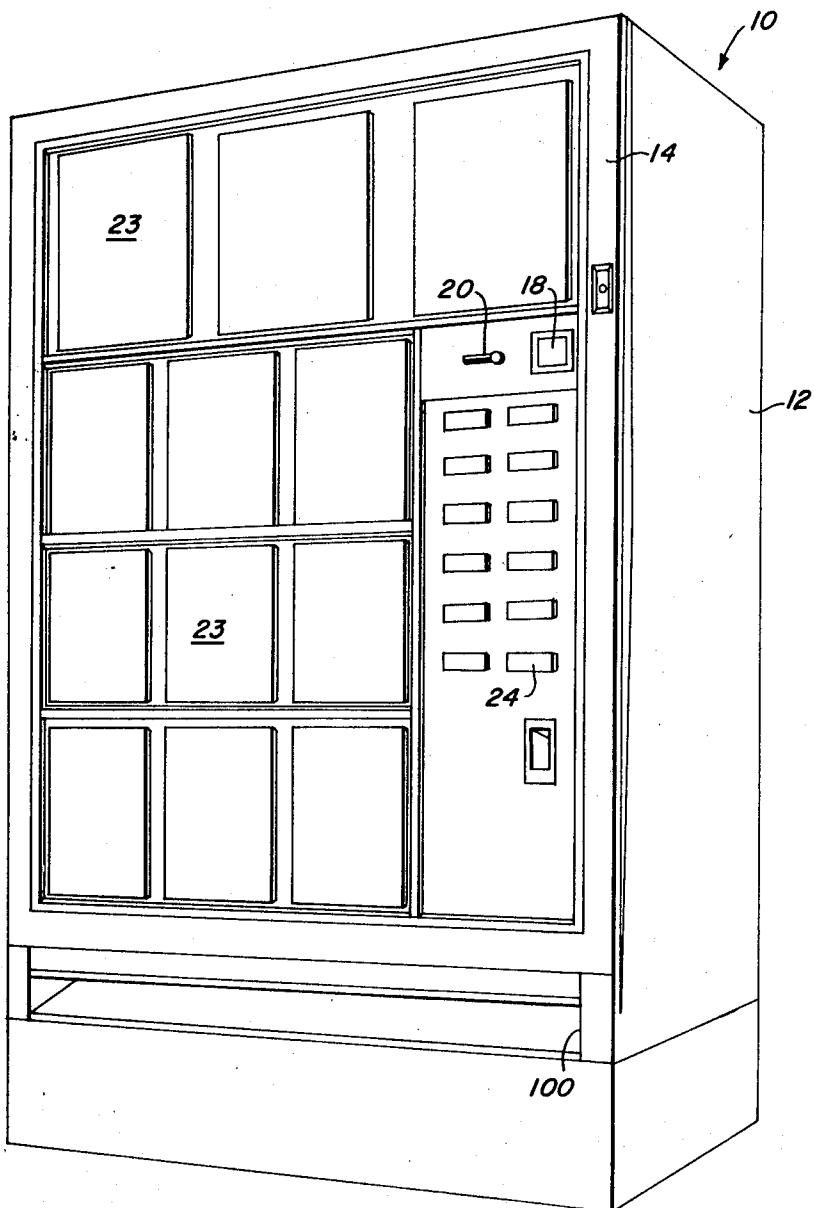


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FIG. 1



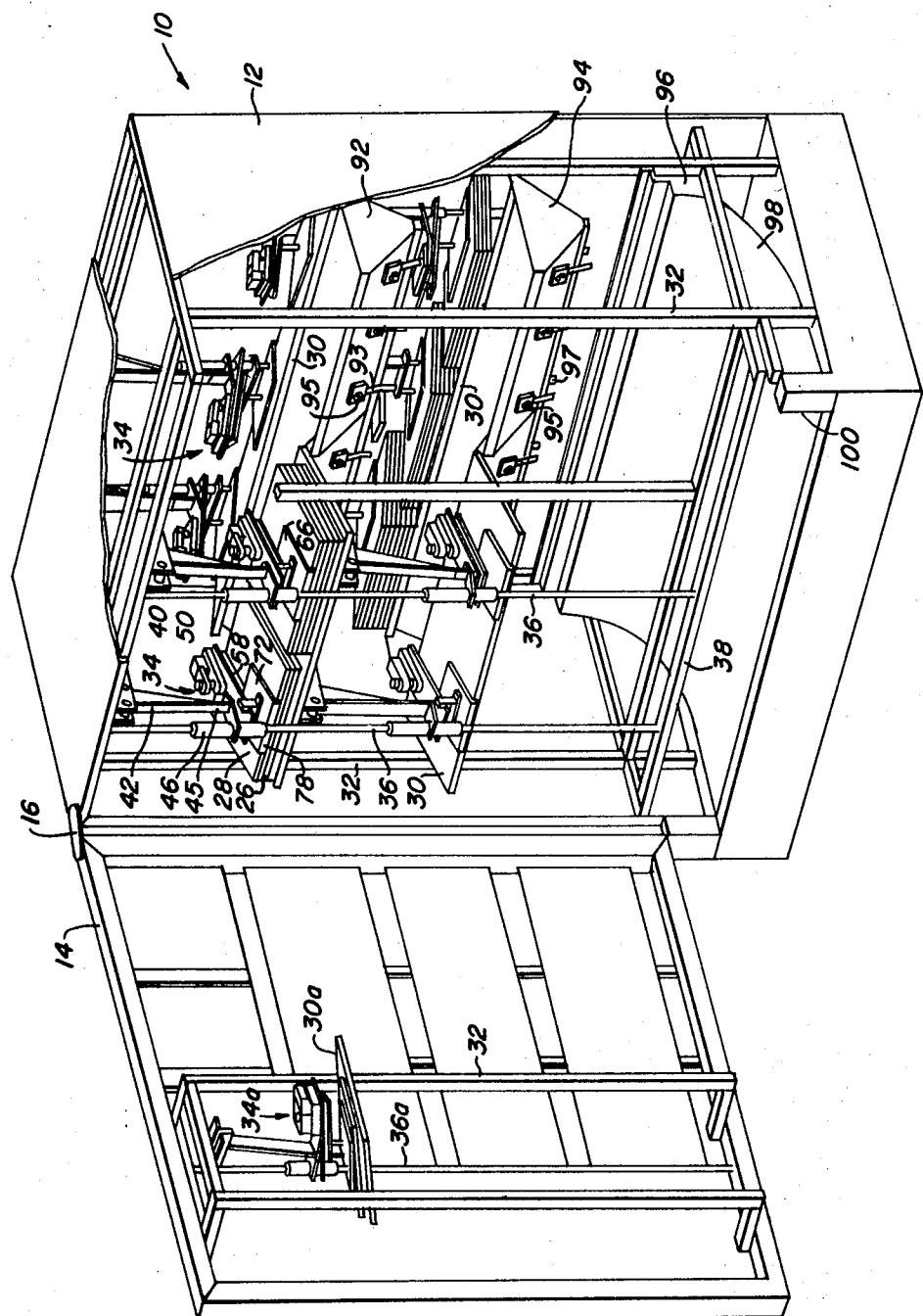
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PATENTED APR 11 1972

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FIG. 2



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PATENTED APR 11 1972

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FIG. 3

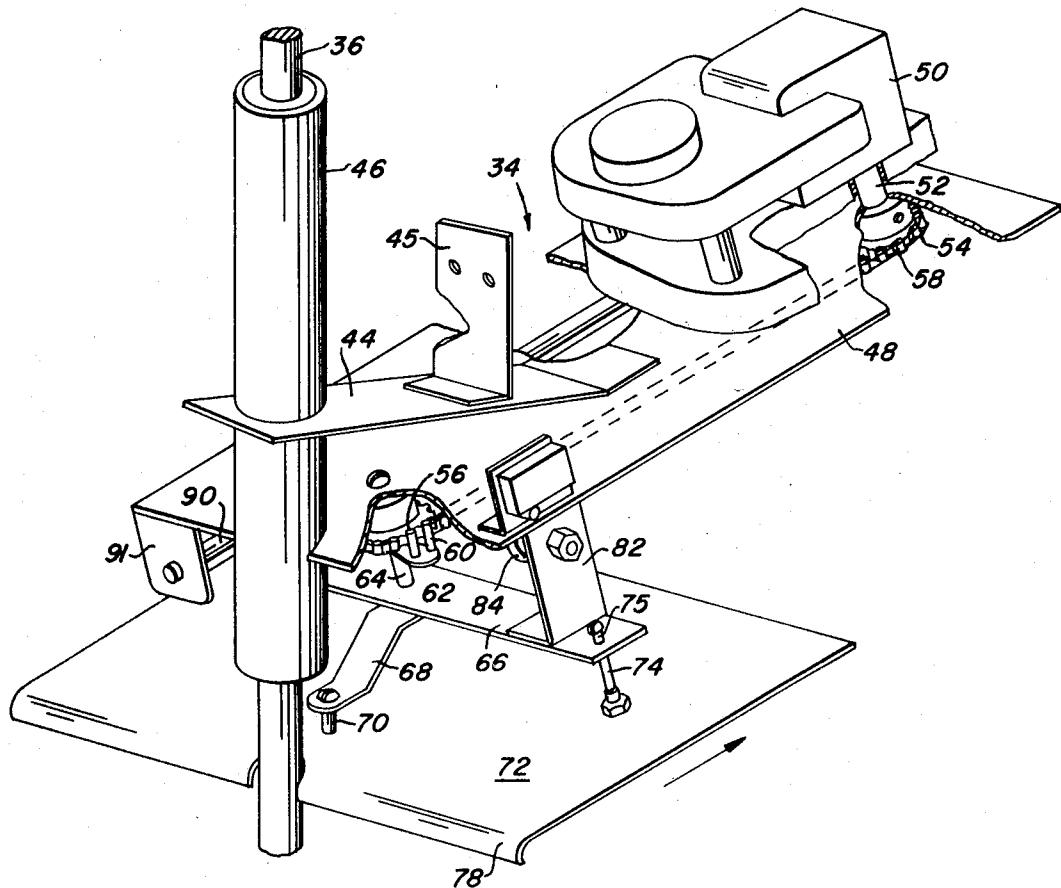
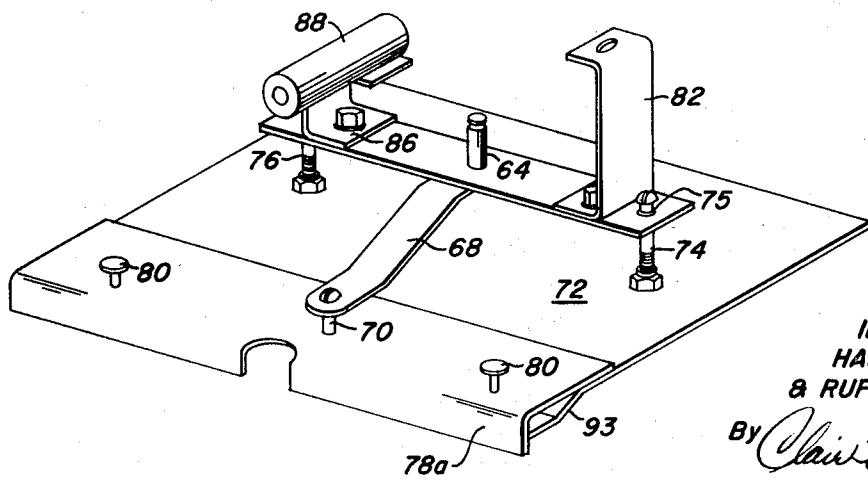


FIG. 4



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**APPARATUS FOR VENDING PERIODICALS HAVING
SELF-COMPENSATING DISPENSER FOR DECREASING
SUPPLY**

It is the customary practice in the vending of periodicals to have an open stand where the periodicals may be displayed for inspection by purchasers. An attendant is stationed at the display to vend the periodicals and also to protect the open display and maintain the same in good order. This is in most instances difficult because the attendant must be available to collect money and make change, and also devote time to the safe-guarding of the display from pilfering, as well as maintaining the display in good order so that all periodicals available may be open to the view of prospective purchasers. This task of the attendant is rendered even more difficult because of the great number of periodicals of even the more popular varieties that are customarily made available for purchase. Additional problems characterizing the vending of periodicals or magazines by this customary practice is that the periodicals are handled by customers as they peruse the display to make a selection, and thus periodicals are many times returned by prospective purchasers to an improper location on the display where they then obscure another periodical from the view of purchasers. Also, this handling of the periodicals on display by prospective purchasers tends to quickly wrinkle and otherwise damage the periodicals and thus make them unattractive from the sales standpoint as well as causing disarray in the display generally by the misplacing of periodicals returned to the display by purchasers after examination. Also, the open-type displays which are typical in the vending of periodicals are highly susceptible to pilferage. This is due to the fact that the displays are open and customarily there are numbers of people gathered about the display who are continually removing magazines from the display, inspecting them and returning them to the display. Also, since periodicals constitute a low-priced article, they do not warrant the use of the number of attendants necessary to completely guard against pilferage and insure that each periodical is returned to the proper place on the display after inspection by a prospective customer. Another significant disadvantage in vending periodicals in the conventional manner by the use of an attendant is that to make the periodicals available for sale on a continuous 24-hour basis requires employment of attendants for the entire period. In periods of low sales, such as early morning hours, this is not usually economically feasible, and thus sales that might otherwise be made during this period are lost. This situation typically exists at sites, such as passenger waiting areas in bus and train depots, airports and motel lobbies.

While this method of vending periodicals has over the years proven expensive and unreliable, it has nevertheless been the method preferred. Although the use of vending machines of the coin-operated type have been suggested for the purpose, heretofore the various types of vending machines available have not been satisfactory for a number of reasons. Consequently, the prior art vending machines have not come into general use. One of the basic difficulties with the prior art machines has been their unreliability with respect to the vending operation. More specifically in this regard, the prior art machines are characterized by inherent vending difficulties such as the failure to remove a periodical from a stack within the machine and vend the same or the removal of more than one periodical from the stack, which can result in either the vending of two periodicals or worse the jamming of the machine. Another difficulty characterizing the prior-art machines is that they are unable to vend a variety of periodicals; in view of the large variety of even the more popular periodicals that must be made available even to provide a reasonable selection for the general public, machines that can vend only one or two varieties are considered unsuitable for the purpose. Another difficulty in the prior-art machines is that they are not adaptable to magazines or periodicals of varying widths, thicknesses and bindings. As is well known, magazines will vary in width, thickness and binding not only from publication to publication but also the same publication will vary, particularly with respect to thickness, from issue to

issue. Depending upon both the thickness of the periodical and the type binding used, when disposed horizontally in a vertical stack, the periodicals will take on either a concave or convex curvature. The magnitude of this curvature in either

5 direction will vary directly with the height or number of magazines in the stack and will also be influenced by the thickness of the magazines. It may be readily appreciated that this phenomenon presents particular problems for a vending apparatus in vending successively the topmost magazine from a vertical stack of horizontally disposed magazines. Because of this phenomenon, prior-art machines designed to vend periodicals successively from a vertical stack have failed to provide vending that is sufficiently consistent for commercial use. Another problem in this regard is that periodicals so 10 stacked for vending tend to become "cocked" on the stack; this is particularly true of the uppermost magazine on the stack which is the next to be vended. With prior-art vending apparatus, when this occurred the periodical intended for the next vend was usually not removed from the stack.

15 It is accordingly a primary object of this invention to provide a vending apparatus that will provide for the reliable vending of a single periodical from the top of a stack of periodicals.

20 Another object of the invention is to provide for the vending of a plurality of types of periodicals by a single apparatus in an effective and efficient manner.

25 Still another object of the invention is to provide a periodical-vending apparatus wherein the periodical to be vended is 30 removed from the top of a vertical, inclined stack by a dispensing means that substantially conforms to the contour of the magazine to be vended, thereby insuring a reliable, single vend during each operation of the apparatus.

35 Another object of the invention is to provide a periodical-vending apparatus wherein a plurality of various periodicals may be available within the apparatus in individual vertical stacks and upon selection and operation of the apparatus are delivered to the purchaser from a single dispensing chute.

40 Yet another more specific object of the invention is to provide a periodical-vending apparatus wherein the vending means for removing a periodical to be vended from the top of a vertical, inclined stack has a substantially rectangular plate that is maintained at a constant, selected pressure against the uppermost periodical on the stack.

45 Yet another more specific object of the invention is to provide a periodical-vending apparatus wherein the dispensing means, which includes a rectangular metal plate, is self-adjusting to the contour of the uppermost magazine on a vertical stack thereof, whereby efficient, trouble-free vending is promoted.

50 Yet another more specific object of the invention is to provide a periodical-vending apparatus wherein a plurality of types of periodicals to be vended are provided in individual, inclined stacks in which the periodicals are horizontally disposed with each stack having a stationary support and individual means at each stack for vending the uppermost magazine from the stack with the stacks being positioned with respect to one another vertically and/or in side-by-side relation.

55 These and other objects of the invention, as well as a complete understanding thereof, may be obtained from the following description and drawings, in which:

60 FIG. 1 is a perspective view of one embodiment of an apparatus in accordance with the invention;

65 FIG. 2 is a perspective view, with parts broken away, of the interior of the housing of the apparatus of FIG. 1;

70 FIG. 3 is an enlarged, detailed view of the dispensing means of the apparatus; and

75 FIG. 4 is an enlarged, detailed view of a portion of the dispensing means of FIG. 3.

The apparatus of the invention comprises a housing, a support within said housing upon which a stack of individual, flat articles, which preferably are periodicals, are supported.

Dispensing means are provided for successively removing the

individual articles from the top of the stack one at a time. Receiving means, which open to the exterior of the housing, are provided for receiving each article upon removal from the stack by the dispensing means and make the same available to a purchaser. The dispensing means includes a substantially flat plate, preferably of rectangular configuration, that rests on top of the uppermost article of the stack prior to removal of the article for vending. The plate has along an edge thereof a flange that extends along and engages a side surface of the article. Means are provided for maintaining a constant, selected pressure between the plate and the article. Means are also provided for moving the plate, during a vend, in a direction toward the side of said article along which said flange extends to correspondingly move the article a distance sufficient to remove the article from the top of the stack. Means, such as a series of vertically disposed, V-shaped troughs, are provided for directing an article so removed to the receiving means.

Preferably the support for the stack is stationary and inclined upwardly in the direction which the article is moved during removal from the top of the stack. The dispensing means is slideable axially toward and away from the support a distance governed by the height of the stack. It is also preferred that the plate have self-adjusting means for maintaining it substantially parallel, and in substantially full contact, with the uppermost article to be vended from the stack. More specifically with respect to the plate of the dispensing means, it is preferably provided with means for permitting it to tilt alternately toward and away from the direction of plate movement during vending, with the magnitude and direction of the tilt corresponding to that of the uppermost article on the stack and with the magnitude of the tilt decreasing as the height of the stack decreases during successive removal of articles therefrom. In a preferred embodiment of the invention the self-adjusting means includes means for permitting the plate to rotate about an axis parallel to the direction of plate movement during vending and also means for permitting limited rotation of the plate about an axis perpendicular to its surface. Axial rotation of the plate permits it to effectively vend periodicals that become cocked in the stack prior to vending. Since the thickness of magazines vary, even in the case of a particular publication on an issue-to-issue basis, the flange of the plate is provided with means for adjusting its height to correspond to changes in thickness. The constant, selected pressure between the plate and the article to be vended is preferably within the range of 2.5 ounces to 2 pounds. It has been found that effective, trouble-free vending is provided by maintaining the pressure within this range. The arrangement for moving the plate during vending includes an electric motor which is mounted on said plate and has a drive shaft connected to a continuous chain with the plate connected to the chain for corresponding movement during vending. The means for receiving the periodicals upon removal from the stack for vending preferably comprises a chute that is positioned beneath the stack and has a lower, article-discharge end that opens to the exterior of the housing to permit ready access by the customer to the vended periodical. In a preferred embodiment of the invention there are a plurality of stacks of periodicals of different types within the housing each resting on a support and having an individual dispensing means. The individual stacks may be in vertical and/or side-by-side relation.

The apparatus of the invention is in typical applications to be operated by the deposit of coins by the purchaser. Any of the well known vending-machine, coin-operating mechanisms may be used for this purpose, including those which automatically make change. Since devices of this nature are well known and do not constitute a part of the present invention such will not be shown or described herein. Although coin operation is the preferred mode of operation, it is obvious that any other means may also be used which fit the particular commercial application with which the invention is to be used.

With reference to the drawings, and for the present to FIG. 1 thereof, there is shown an embodiment of a vending ap-

paratus in accordance with the present invention, which is designated generally as 10. The vending apparatus 10 has a housing or cabinet 12, which preferably may be of sheet metal coated with an enamel. The cabinet 12 has a door 14 hinged to the body of the cabinet at 16 and adapted to swing horizontally outwardly to the position shown in FIG. 2 of the drawings. In this position, which is the position shown in FIG. 2, access to the interior of the housing is permitted for purposes such as stocking of articles, which preferably are periodicals, to be dispensed and the making of repairs. As is conventional, the door 14 of the apparatus is provided with a coin slot 18, a coin return 20, a bent coin release 22 and a plurality of customer-selector buttons 24, which are identified with the periodicals available for sale and which are depressed by a customer upon his selection of a periodical and cause vending or dispensing means, which are described and shown in detail hereinafter, to be actuated to vend the desired periodical. Frames 23 faced with transparent material, such as glass, are provided on the exterior of door 14 to display the periodicals available for sale. The coin-operating means, as pointed out hereinabove, is conventional and does not constitute a part of the present invention.

With reference to FIGS. 2 through 4 of the drawings, and particularly FIG. 2, which shows the interior of housing 12, there is shown a plurality of stacks of periodicals to be vended, typically with each stack containing like periodicals. Since each stack and associated individual apparatus to be described hereinafter are identical only one will be described and like reference numerals will be used for the identical components of each. A stack 26 of individual periodicals 28 rests on a stationary support 30, which may be in the form of a flat sheet-metal plate. The stacks are vertical with the periodicals being horizontally disposed. In the specific embodiment shown in the drawings the cabinet or housing 12 contains three stacks 26 in side-by-side relation, which stacks are supported on a single support 30 which spans the entire width of the housing 12. Preferably, as shown in FIG. 2, each support 30 is inclined toward the center of the housing, which causes the periodicals stacked thereon to be correspondingly inclined. This feature has been found to significantly improve the vending reliability of the apparatus. It is to be understood of course that any number of side-by-side stacks may be provided and the support 30 may be common to all or individual supports 30 for each stack may be employed. In the apparatus as shown in FIG. 2 there is a second series of two stacks 26 vertically disposed. This arrangement is duplicated on opposite sides of the housing with the supports 30 for the stacks being on the same horizontal plane for each side of the housing. In addition, as shown in FIG. 2, the door 14 also has a support 30A for supporting a stack of periodicals to be dispensed. Although only one such arrangement is shown on the door it is obvious that as with the housing interior a plurality of such arrangements may be used if so desired if adequate area is provided on the door.

The support 30 is connected to vertical members 32, as by welding. Associated with support 30 is an article-dispensing assembly, indicated generally as 34. A dispensing assembly 34 is provided for each stack of periodicals to be vended. There may be a plurality of stacks on each support 30. The dispensing assembly is mounted slidably to a vertical guide rod 36 which is connected at its bottom end to horizontal member 38 and at its top to horizontal member 40. The assembly 34 is suspended from a constant-force spring 42 that may be selected so as to maintain the pressure exerted by dispensing means 34 on the uppermost periodical 28 in the stack 26 at any constant selected level. Although a conventional constant-force spring 42 is shown for this purpose, any suitable means may be substituted, such as the use of a counterweight. The dispensing assembly 34 is slidably mounted to guide rod 36 by a brace 44 connected to housing 46 of ball bushings (not shown) in rolling contact with the guide rod. The brace 44 has a hanger tab 45 for connection to spring 42. The brace is connected to an upper surface of a motor-mounting plate 48 onto

which an electric motor 50 is mounted. The motor 50 has a drive shaft 52 extending through plate 48 and is connected to a sprocket gear 54 positioned on the opposite surface of the plate 48 from that onto which the motor is mounted. Opposite sprocket 54 on plate 48 is an idler sprocket 56. A continuous chain 58 is connected to the sprockets 54 and 56. Two pins 60 connect chain 58 through tab 62, which is adapted for rotation about stationary shaft 64, to a self-adjusting hanger 66. The shaft 64 is fixed at its bottom end to the hanger 66. Bracket 68, which constitutes a portion of self-adjusting component 66, contains a guide rod 70 that is adjustable toward and away from plate 72. Self-adjusting hanger 66 also contains two opposed stationary vertical guide rods 74 and 76, which are also adjustable toward and away from plate 72. This permits the plate to tilt from side to side. The plate 72 has a rearward, downwardly extending flange 78. The flange 78 may be integral with the remainder of plate 72, as shown in FIG. 3, or preferably, as shown in FIG. 4, it may constitute a separate component 78a which may be adjusted vertically by the repositioning of set screws 80. The flange 78a is of a somewhat resilient material, such as sheet metal, so that it is compressed upon tightening of the set screws 80 to decrease the height of the flange. Upon loosening of the set screws, the material is released from compression and the flange height increases. In this manner, the height of the flange may be adjusted to correspond to the thickness of the particular periodicals 28 that it is dispensing. Upstanding from hanger 66 is a channel-shaped support 82 on which a roller 84 is journaled. The roller 84 is in rolling contact with the underside of the plate 48. Also upstanding from hanger 66 on the opposite end thereof from support 82 is a channel-shaped guide support 86 onto which a cylindrical guide 88 is connected. A guide rod 90 connected parallel to and extending beneath plate 48 extends through guide 88 which to facilitate sliding movement contains ball bushings (not shown). Connection of this guide rod to the plate 48 is provided by opposed tabs 91 of plate 48. Preferably, as shown in FIG. 4, the plate 72 has a shoulder or offset portion 93 adjacent the flange 78a. It is customary that periodicals contain detachable inserts in the form of postcards and the like, which are intended for removal and mailing by the reader. These inserts generally are fastened at the bound edge of the periodical and terminate short of the opposite open edge of the periodical. This results in distortion or unevenness of the otherwise substantially flat surface of the periodical, which condition increases in severity when a number of such periodicals are stacked. Specifically, the condition causes an area of the periodical adjacent its open edge to be thinner than the remaining area over which the insert is located. In this instance the shoulder 93 compensates for this thickness variation and thereby promotes the continuous, full contact between plate 72 and the periodical which is desirable for effective, reliable vending.

As shown in FIG. 2 through the center of the housing 12 and extending along the entire width thereof are two pairs of vertically disposed, V-shaped, open-bottom troughs 92 and 94. These troughs serve to guide magazines 28 removed from a stack vertically through the housing and onto a dispensing chute 96 having a smooth, curved surface 98 curving downwardly and opening at its bottom end to the exterior of housing 12 through a rectangular opening 100 in said housing.

With respect to the operation of the apparatus shown in the drawings and described hereinabove, a purchaser upon insertion of coins and depressing of the proper selector button actuates the corresponding dispensing means 34 associated with the stack 26 of the particular periodical type 28 so selected. Actuation in this manner operates electric motor 50 which operates for a period to turn drive shaft 52 a number of rotations sufficient to cause chain 58 to make one complete rotation. During this movement or rotation of chain 58 plate 72 is correspondingly moved forward, which is the direction of the arrow in FIG. 3, a distance equal to the distance between the axis of sprockets 54 and 56 during the first half of the operating cycle. This movement is facilitated by roller 84, which

travels along the underside of plate 48, and by guide rod 90, which slides through guide 88. During this movement the flange 78, which covers or is hooked over a portion of the side of the uppermost periodical 28 in stack 26, correspondingly moves the periodical with which it is so engaged and pushes it upwardly and along an inclined plane a distance to push it over the edge of the stack and into either trough 92 or 94 depending upon the vertical location of the stack within the housing. The periodical so removed from the stack drops through the trough and onto the curved surface 98 along which it slides to the opening 100, at which time it may be removed by the purchaser. The troughs 92 and 94 serve to guide the periodical 28 upon its removal from the stack in a substantially vertical direction, thus preventing any significant lateral deflection from vertical travel which might otherwise cause the periodical to come to rest upon one of the lower stacks 26 or not to be deposited properly on the curved surface 98 of the dispensing chute. Either of these conditions serve to prevent vending. Preferably, each trough is provided with a plurality of opposed pairs of flexible guides 97 which are adjustably connected by means of wing nuts 95 to opposite sides of the troughs adjacent the bottom thereof. These guides are thin strips of resilient metal which extend a short distance beyond the lower, discharge edge of the troughs. They serve to deflect periodicals leaving the troughs from a direction of travel in a plane corresponding substantially to that of the sides of the troughs to a substantially vertical plane, so that the periodicals pass downwardly from trough to trough within the housing to the dispensing chute 96 without bending to a degree sufficient to prevent the periodical from discharging from a particular trough. The fact that the guides are resilient permits the troughs to accommodate periodicals of varying thicknesses.

Guides 74 and 76 permit the plate 72 to tilt from side to side to a maximum amount governed by the position of the guides but otherwise to a degree conforming to any corresponding tilt of the periodical 28 on which the plate 72 is resting. Also, the plate 72 corresponds to any tilt or otherwise to the contour of the periodical 28 on which it is resting by tilting forward or backward. The magnitude of this movement is governed by the position of guide rod 70. Axial rotation of the plate 72 is permitted to a limited degree depending upon the difference in diameter of set screw 74 and opening 75 in hanger 66 through which the set screw extends. This permits the flange 78 of plate 72 to engage by overlapping a side surface of the top periodical. It may be seen, therefore, that by this arrangement during the initial one-half cycle of operation of motor 50 the effective vending of the uppermost periodical 28 on the stack 26 is substantially assured. During the second half of the operating cycle of motor 50 the plate 72 is returned to its original starting position, which is the position shown in FIG. 3. It then rests atop and substantially conforms to the contour of the next uppermost periodical 28 on the stack 26 and in being so positioned is ready for the next vend of the top periodical from this stack.

The tilting and rotational movement described above with respect to plate 72 permits the plate to effectively engage the periodical to be vended so as to insure reliable vending despite changes in the contour of the periodicals upon successive vending from the stack and misalignment of the top periodical with respect to the remainder of the stack. Changes in the contour or alignment of the periodicals as the stack is decreased during vending will result in the above-described self-adjustment by the vending assembly 34 and specifically the plate 72 thereof.

As each periodical is removed from the stack 26 the plate 72 moves vertically downwardly by sliding along guide rod 36. In this manner after each vend it comes to rest on the uppermost periodical 28 in the stack. The constant-force spring 42 is selected so as to maintain the pressure constant between the plate 72 and the periodical 28. This is necessary, in view of the fact that the motor 50 and other components of the dispensing means generally are mounted atop the plate. It has been found

that for most effective vending the pressure between the plate and the periodical should be within the range of 2.5 ounces to 2 pounds. It is probable that the weight of the motor will provide more weight than is necessary to achieve optimum vending reliability within the above-stated pressure range.

The fact that the stack of periodicals is supported on an inclined support 30 and thus each periodical is removed from the stack by the dispensing means upwardly along an inclined plane produces a more reliable vend than obtained if the periodical were supported on a horizontal surface and removed from the stack by travel along a horizontal plane. The upwardly inclined path of travel during removal promotes reliable vending of a single periodical in that gravity prevents vending of the second periodical simultaneously with the uppermost periodical.

Although a constant-force spring 42 has been shown as the means for achieving the desired pressure by the plate 72, any other suitable means, such as by the use of a counterweight, may also be employed for the purpose. If in a particular operation the weight of the motor and associated components resting upon plate 72 is not outside the above-stated pressure range necessary for optimum vending reliability, then this component of the apparatus need not be used.

We claim:

1. Apparatus for vending an individual periodical or the like from the top of a stack of like periodicals which rest upon a stationary support, said vending apparatus including dispensing means for successively removing individual periodicals from the top of said stack, said dispensing means being slidably connected to a vertical guide rod permitting movement of said dispensing means toward and away from said support and said dispensing means including pressure means resting on top of said periodical prior to removal of said periodical from the top of said stack and including downwardly depending flange means, said flange means extending along a side surface of said periodical, means for maintaining a constant, selected pressure between said pressure means and said periodical, and means for moving said pressure means and flange means toward the side of said periodical along which said flange means extends whereby said flange means engages said periodical and moves it a distance sufficient to remove said periodical from said stack, self-adjusting means for maintaining said pressure means in substantially full contact with said periodical, said self-adjusting means including means for permitting said pressure means to tilt alternately toward and away from the direction of movement of said pressure means with the magnitude and direction of tilt corresponding to that of said periodical with the magnitude decreasing as the height of said stack decreases during successive removal of periodicals therefrom.

2. The apparatus of claim 1 wherein said pressure means is a substantially flat plate having said flange along an edge thereof.

3. The apparatus of claim 1 having an enclosure for enclosing said support and associated stack, receiving means opening to the exterior of said enclosure for receiving said periodical upon removal from said stack.

4. The apparatus of claim 3 having means for directing a periodical upon removal from said stack to said receiving means.

5. The apparatus of claim 3 wherein said receiving means comprises a chute positioned beneath said stack and having a lower, periodical-discharge end opening to said enclosure exterior.

6. The apparatus of claim 1 wherein said support is inclined in the direction of movement of said periodicals upon removal thereof from said stack.

7. The apparatus of claim 1 wherein said self-adjusting means includes means for permitting said pressure means to rotate about an axis parallel to the direction of pressure means movement.

8. The apparatus of claim 7 wherein said self-adjusting means includes means for permitting limited rotation of said pressure means about an axis perpendicular to its surface.

9. The apparatus of claim 8 wherein means are provided for adjusting the height of said flange to correspond to changes in the thickness of said periodicals.

5 10. The apparatus of claim 8 wherein said pressure is selected within the range of 2.5 ounces to 2 pounds.

11. The apparatus of claim 10 wherein said means for moving said pressure means includes a motor mounted on said pressure means, said motor having a drive shaft drivingly connected to a continuous chain and connecting means connecting said pressure means to said chain, whereby said plate is moved during operation of said motor.

12. Apparatus for vending a single periodical or the like from the top of a substantially vertical stack of like periodicals substantially horizontally disposed, comprising a housing, a

15 stationary support within said housing upon which said stack rests, said support being inclined upwardly in the direction of removal of periodicals from said stack, dispensing means for successively removing said periodicals from the top of said stack, said dispensing means including a substantially flat plate resting on top of said periodical prior to removal of said periodical from the top of said stack and having along an edge thereof a generally downwardly extending flange with a height not exceeding the thickness of said periodical, said flange extending along a side surface of said periodical, means for maintaining a pressure within the range of 2.5 ounces to 2 pounds between said plate and said periodical, a motor mounted on said plate and drivingly connected to said plate to move the same in a direction toward the side of said article along which said flange extends a distance sufficient to remove said periodical from said stack, said plate being slidably connected to a vertical guide rod permitting axial sliding of said plate toward and away from said stationary support a distance dependent upon the height of said stack, an adjustable bracket from which said plate is tiltably suspended, said bracket having adjusting means for permitting tilting of said plate to maintain the same substantially parallel, and in substantially full contact, with said periodical, and a chute positioned within said housing and beneath said stack for receiving said removed periodicals and having a lower periodical-discharge end opening to said housing exterior.

25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995 1000 1005 1010 1015 1020 1025 1030 1035 1040 1045 1050 1055 1060 1065 1070 1075 1080 1085 1090 1095 1100 1105 1110 1115 1120 1125 1130 1135 1140 1145 1150 1155 1160 1165 1170 1175 1180 1185 1190 1195 1200 1205 1210 1215 1220 1225 1230 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19. The apparatus of claim 12 including vertical guide means for guiding said periodical upon removal from said stack along a substantially vertical plane of travel to said chute.

20. The apparatus of claim 19 wherein said vertical guide means includes at least one substantially V-shaped trough having an upper relatively wide opening therein for entry of said periodical upon removal from said stack and a relatively nar-

row, centrally disposed, lower opening for vertical discharge of said periodical from said trough, said lower opening having a plurality of flexible, opposed tines extending therefrom in the direction of periodical discharge.

21. The apparatus of claim 12 wherein said flat plate has a raised, shoulder or offset portion adjacent said flange and adapted to contact said periodical.

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