

March 27, 1951

C. H. WEAVER

2,546,352

VENDING MACHINE FOR NEWSPAPERS AND THE LIKE

Filed Feb. 28, 1947

5 Sheets-Sheet 1

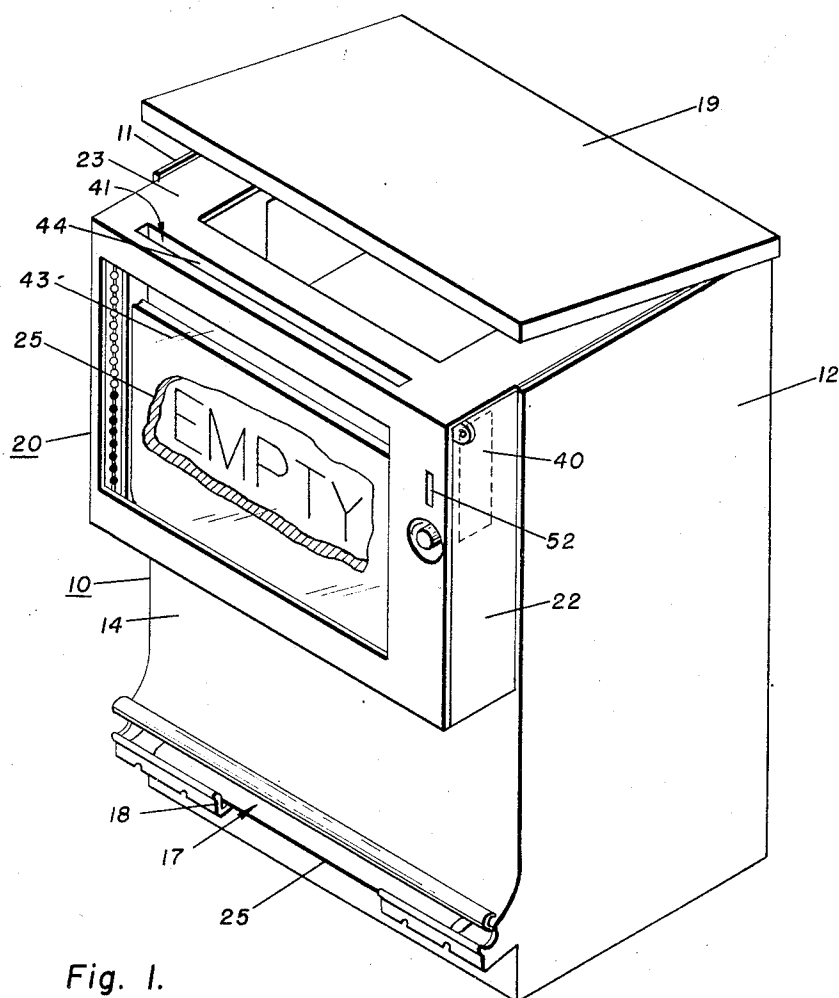


Fig. 1.

INVENTOR.
CLARK H. WEAVER
BY *W. C. L.*

BY

March 27, 1951

C. H. WEAVER

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5 Sheets-Sheet 2

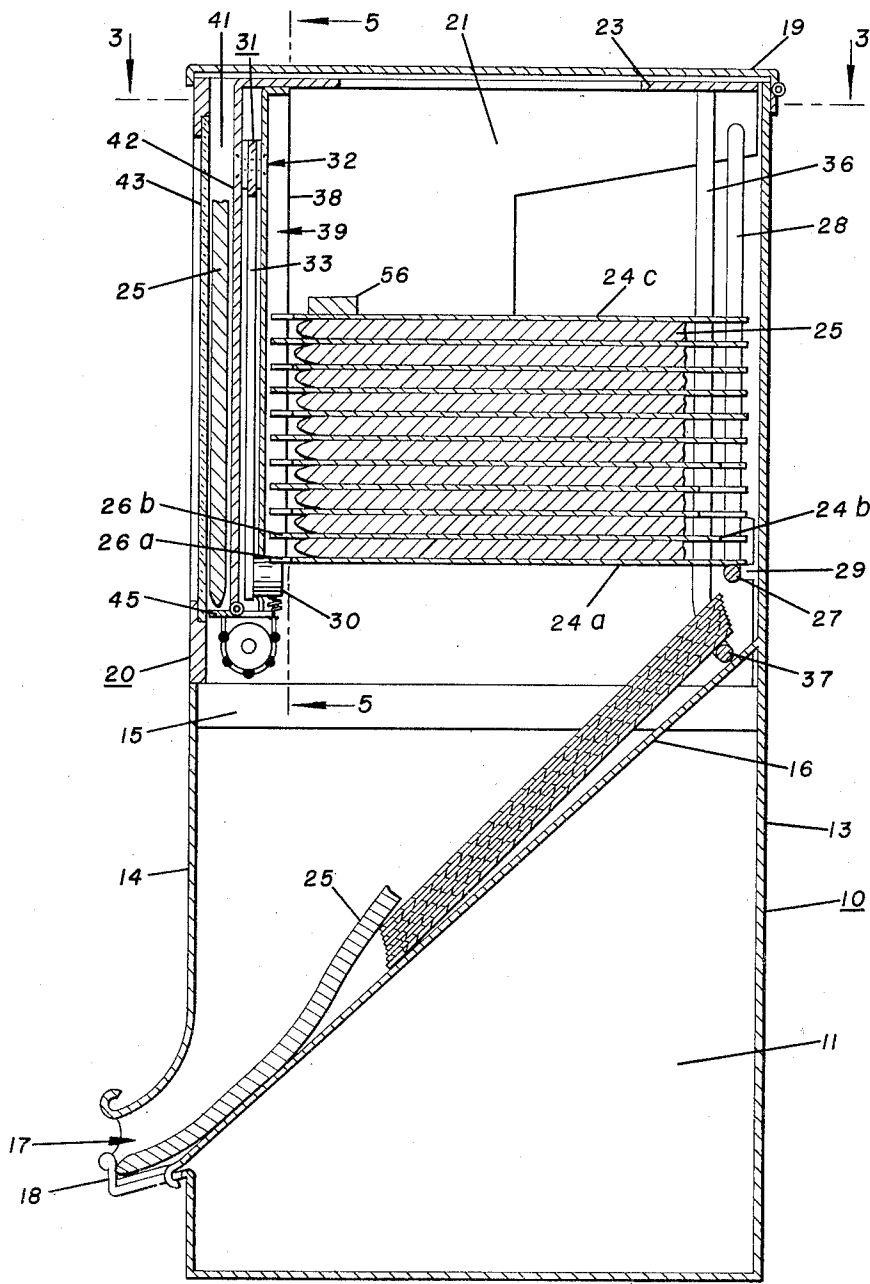


Fig. 2.

INVENTOR.
CLARK H. WEAVER
BY *K. A. Karcher*

March 27, 1951

C. H. WEAVER

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5 Sheets-Sheet 3

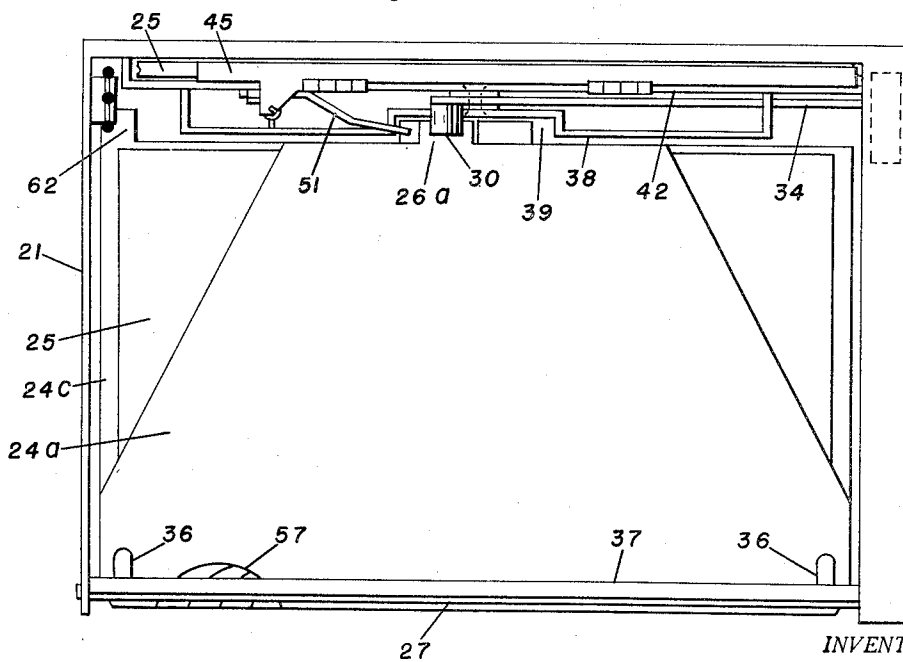
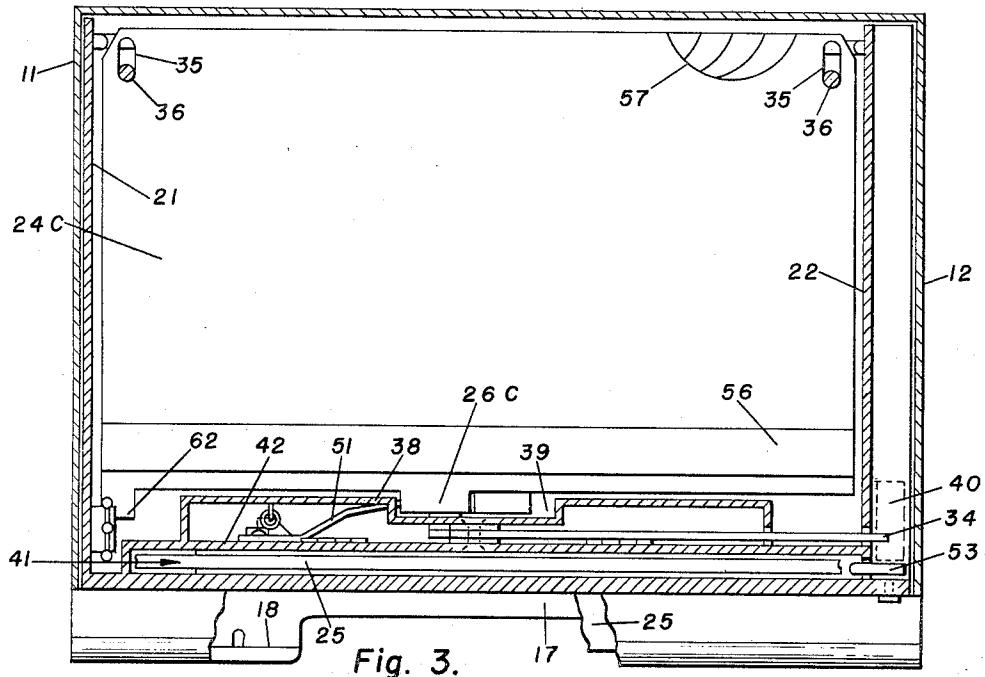


Fig. 4.

INVENTOR.
CLARK H. WEAVER
BY

K. H. Weaver

March 27, 1951

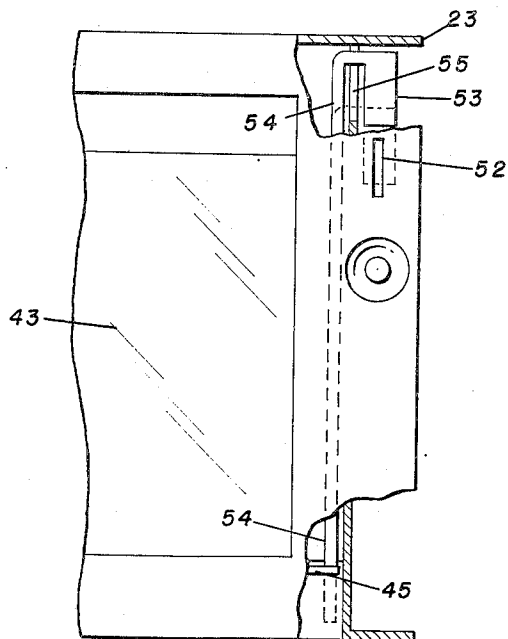
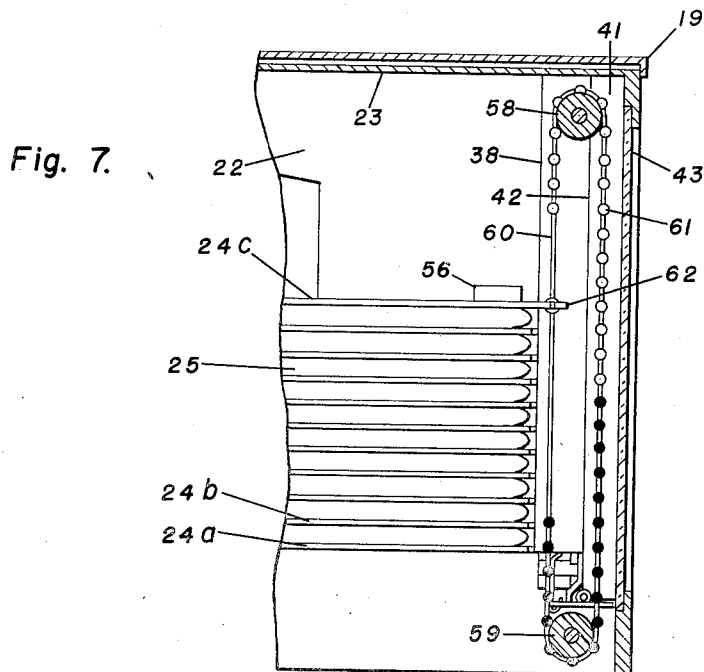
C. H. WEAVER

2,546,352

VENDING MACHINE FOR NEWSPAPERS AND THE LIKE

Filed Feb. 28, 1947

5 Sheets-Sheet 5



INVENTOR.
CLARK, H. WEAVER

BY

K.A. Auchman

UNITED STATES PATENT OFFICE

2,546,352

VENDING MACHINE FOR NEWSPAPERS
AND THE LIKE

Clark H. Weaver, Berkeley, Calif.

Application February 28, 1947, Serial No. 731,526

4 Claims. (Cl. 312—94)

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The present invention relates to dispensing or vending machines for articles of predominantly two-dimensional character; more particularly the invention relates to vending machines of the type adapted to sell flat paper goods such as newspapers, magazines, and the like.

While the need for machines of this type is obvious, the mechanisms so far devised have failed to furnish such standards in reliability of operation and simplicity of manipulation as will assure popular acceptance thereof, and particularly newspaper vending machines have, therefore, not found the widespread use of which they are potentially capable.

Most of the known machines are liable to fail, or operate defectively, under a variety of different circumstances, such as humid weather conditions which may cause the stack of papers to adhere to one another, resulting in the delivery of more than one paper and congestion of the supply chute. Also, the varying degrees of thickness of newspapers, such as the difference between Sunday and week day editions, have presented serious difficulties in this respect. Furthermore, many newspaper vending machines require that a purchaser use both his hands simultaneously, one for operating the release button and the other one for pulling the paper from its magazine, and lack of coordination of the required operations frequently causes the dispensed paper to be wedged in, leaving the machine disrupted and the customer unsatisfied and annoyed.

Furthermore, certain of the known vending machines are of such construction as to require high precision work in the manufacture of certain component parts thereof, which renders them costly and limits profitable use thereof to locations of large turnovers, whereas the greatest need for machines of this type exists in localities of medium or small turnovers that are unable to support a newspaper vendor.

Broadly, it is an object of the present invention to provide a vending machine for newspapers, magazines and the like, which is simple in construction, reliable in operation and convenient to manipulate.

More specifically, it is an object of the present invention to furnish a machine of the type referred to which may be depended upon to deliver the articles contained in its magazine individually, no matter what the individual thickness of any one or all of said articles.

It is another object of the present invention to furnish a vending machine of the type referred

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to which requires no adjustment to adapt it to varying degrees of thickness of the dispensed articles.

It is yet another object of the present invention to furnish a dependably operating newspaper vending machine which a purchaser may conveniently operate with one hand only.

Furthermore, it is an object of the present invention to furnish a machine of the type referred to which may be manufactured at such low cost as to lend itself to profitable use in places of small as well as large turnovers.

It is a further object of the present invention to provide a machine, of the type described, with exteriorly visual means adapted to indicate the amount of supply left in its magazine.

Additionally, it is an object of this invention to so construct a newspaper vending machine of the type under consideration, that upon delivery of the last copy it will automatically warn prospective purchasers of its inability to deliver any more papers.

These and other objects of my invention will be apparent from the following description of the accompanying drawing which illustrates a preferred embodiment thereof, and wherein—

Figure 1 is a perspective view of a newspaper vending machine embodying my invention with its magazine partly withdrawn;

Figure 2 is a sectional side elevation of the same machine taken slightly to the right of the center thereof;

Figure 3 is a sectional plan view of the machine taken along line 3—3 of Figure 2;

Figure 4 is a bottom plan view of the magazine removed from the machine;

Figure 5 is a sectional detail view of the release mechanism of my invention, taken along line 5—5 of Figure 2 with certain parts broken away to expose structure underneath;

Figure 6 is a fragmentary perspective of a portion of the magazine, as viewed from below, with certain parts broken away to expose all of the release mechanism for the last paper dispensed by the machine;

Figure 7 is a sectional side elevation of an arrangement for indicating the amount of supply left in the magazine; and

Figure 8 is a fragmentary front elevation showing mechanism adapted to close automatically the coin slot of my machine upon exhaustion of its supply.

As is apparent from the figures, the illustrated embodiment of my invention comprises a pedestal in the form of a housing 10 and a removable

magazine 20. The housing 10 is composed of two side walls 11 and 12 respectively, a rear wall 13 and a front wall 14, the latter being materially shorter than the side walls so as to form a large window adapted to slidably receive the magazine 20. The side walls 11 and 12 are therefore provided with horizontal fillets 15 for the magazine to rest upon, as shown in Figure 2.

An inclined chute or slide 16 is suitably supported in the housing 10 and descends obliquely from the rear wall 13 to the lower edge of a horizontal slot 17 provided in, and extending across, the lower part of front wall 14. Chute 16 projects a short distance beyond the front wall 14, as shown in Figure 2, and is provided with an upwardly directed stop edge 18 to form a delivery trough. The projecting end of chute 16 and the described stop edge 18 may be recessed at the center, as shown in Figure 1, to facilitate removal of the delivered articles. Suitable apertures are preferably arranged in the described delivery trough, at low points thereof, to prevent accumulation of moisture. At the top of slot 17 the front wall 14 is bent outwardly and backwardly, as shown in Figure 2, to form a protective roof over the delivery trough while avoiding sharp edges which might injure a customer's hand.

A lid 19 is hinged to the top of rear wall 13, as shown, and may be provided with a suitable lock (not shown) to prevent opening by unauthorized persons.

The magazine 20 has two side walls 21 and 22 rigidly held in spaced parallel relation in any suitable manner such as by means of a ceiling 23. Horizontally positioned within the magazine 20 are a plurality of superimposed sheets 24, preferably made of a light-weight metal, with a newspaper 25 placed between each two adjacent sheets. The front edges of every one of sheets 24 possess forwardly directed lips or lugs 26 with the lugs of each two successive sheets 24a and 24b being displaced relative to one another in horizontal direction, as may best be seen at 26a and 26b in Figure 5.

The rear edge of the lowermost sheet 24 rests upon a bar 27 extending longitudinally across the magazine and supported by two lateral arms 28 the upper ends of which are pivoted to the side walls 21 and 22 of the magazine, as may be seen from Figure 2. The ends of carrier bar 27 project somewhat beyond lateral arms 28 and engage arcuate slots 29 receding from the rear edges of side walls 21 and 22 respectively to points vertically below the pivots of arms 28. The forwardly protruding lug or lip 26a of the lowermost sheet 24a rests upon a stud or roller 30 pivoted to, and projecting rearwardly from, the lower end of a substantially vertical lever arm 33.

Near its rear edge each plate 24 has two elongated apertures 35 located at opposite corners, as shown in Figures 3 and 4, and each aperture is slidably engaged by a vertical guide rod 36 extending from the ceiling to the bottom of the magazine, somewhat in front of carrier bar 27. The lower ends of guide rods 36 are slightly curved in rearward direction, as shown in Figure 2, and are supported by another longitudinal bar 37 the ends of which are securely mounted in the side walls 21 and 22 some distance below the previously mentioned carrier bar 27.

A vertical partition 38 is located adjacent to the front edges of all the sheets 24 and forms a forwardly directed channel or recess 39 extending all the way from the top to near the bottom of the magazine 20 and adapted to accommodate

the previously mentioned lugs or lips 26 of the various sheets 24. The partition 38 and the front wall of its channel or recess 39 are arranged to maintain sheets 24 in a rearwardly shifted position in which the guide rods 36 engage the forward portions of the elongated apertures 35 and wherein the rearward edges of the sheets 24 are dependably maintained in vertical alignment above longitudinal carrier bar 27.

The forwardly projecting lips or lugs 26a and 26b of each two successive sheets 24a and 24b are laterally displaced from one another, as previously pointed out, and while the degree of relative displacement of said lugs need not necessarily be such that each two successive lugs will be completely clear of one another in vertical direction, as shown in Figure 5, at least part of the lugs of each two successive sheets should be disposed over distinctly separate areas vertically thereof. In the illustrated embodiment the arrangement is such that the lugs 26a of every odd number in the sequence of superimposed sheets and also the lugs 26b of every even number thereof are vertically aligned with one another.

As has likewise been previously pointed out, the roller 30 supporting the lug of the lowermost sheet is pivoted to the lower end of a substantially vertical lever arm 33 disposed exteriorly of the recessed portion of partition 38. Arm 33 forms part of a bell crank lever 31 the center 32 of which is pivoted to the exterior wall of recess 39 near the top of the magazine, as shown in Figures 2 and 5. Bell crank 31 has another arm 34 extending substantially in a horizontal direction to the right hand side of the magazine, as viewed from the front, and protruding through a suitable slot in side wall 22. When the free end of lever arm 34 is moved upwardly to turn bell crank 31 in clockwise direction, as viewed in Figure 5, roller 30 is withdrawn from underneath the lug 26a of the lowermost sheet 24a and moved into a position vertically below lug 26b of the next sheet 24b in the succession of superimposed sheets, as indicated in phantom lines in Figure 5.

As a result thereof the lowermost sheet 24a lacks support underneath its lug 26a so that its front portion will drop and disengage itself from the rear wall of partition 38 and its recess 39 which are arranged to terminate directly above roller 30, as shown in Figure 2. In consequence thereof the lowermost sheet 24a is now free to slide forwardly over a distance determined by the dimensions of guide slots 35 which are of sufficient length to permit the rear edge of the sheet to slip from carrier bar 27. Thus, sheet 24a has lost rear as well as front support and will slide down onto the arcuate portions of guide rods 36 as far as cross bar 37 will permit, and until its front portion rests against inclined chute 16, or whatever sheet or sheets may previously have been released, as likewise shown in Figure 2.

As plate 24a drops onto chute 16 in the manner described, it causes the paper 25 placed thereon to slide off in forward direction and drop onto chute 16 which will conduct it to the delivery trough at the end thereof.

Reverting to the magazine, the lowermost sheet supports all the superimposed sheets 24b and 24a respectively in the horizontal positions illustrated in Figure 2. As the roller 30 is withdrawn from underneath the front lug 26a of the lowermost plate and this plate drops onto the chute 16 in the manner above explained, all the remaining plates and papers contained in the magazine will slide downwardly to a limited ex-

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tent until the laterally displaced front lug 26b of the next-lowest sheet 24b comes to rest upon roller 30 in its new position of adjustment indicated in phantom lines in Figure 5. At the same time, the rearward edge of said next-lowest sheet 24b will seat itself securely upon longitudinal carrier bar 27 due to the restraining effect of partition 38 and its recess 39 upon the front edges of sheet 24b and its forwardly projecting lug 26b respectively. Thus, there is no possibility whatsoever of any faulty operation such as might release more than one sheet 24, and deliver several papers for the price of one.

With sheet 24b securely positioned on roller 30 and carrier bar 27, conditions are established which are in all respects equivalent to those existing prior to operation of arm 34 and the machine is ready to serve another customer. It will be understood that in order to deliver another paper, arm 34 will now have to be moved downwardly so as to turn bell crank lever 31 in counterclockwise direction, as viewed in Figure 5, and withdraw roller 30 from underneath lug 26b of what is now the lowermost sheet, instituting another cycle of operations like the one described above. It will also be understood that in practical use the described reciprocating movement of lever arm 34 will be effected by a suitable push-button mechanism of the coin-controlled type which may be appropriately arranged laterally within the magazine, as indicated at 40 in phantom lines. Since the present invention is independent of any particular mechanism of this kind, a description of such a device has been omitted.

Not all the papers dispensed by the machine of my invention are stored in a horizontal position interiorly of the magazine 20. One copy is placed in vertical position in a chamber 41 formed between the front wall 47 of the magazine and a glass window 43 disposed before wall 42 to reveal the name, the date and the headlines of the paper to prospective buyers. Chamber 41 has a supply slot 44 on top to permit insertion of the paper, and is open at the bottom to communicate directly with the delivery chute 16 (Figure 2), except for a shelf or trap door 45 disposed underneath for the exhibited paper to rest upon.

Means are provided in accordance with my invention to dispense the paper within the chamber 41 whenever the supply within the magazine 20 has been exhausted. For this purpose, shelf 45 is hinged to the lower edge of front wall 42 and a latch 46 pivoted at 47 to the rear of front wall 42 is arranged to engage a rearwardly projecting lug 48 of shelf 45 to maintain said shelf in a horizontal position against the force of a spring 49 disposed between lug 48 and a suitable stud 50 projecting from the rear of magazine wall 42. The latch 46 has a tail 51 disposed to protrude into the previously mentioned recess 39 of partition 38 at or below the level of control stud 30. The protruding end of tail 51 is positioned at the extreme right corner of said recess, as viewed in Figure 6, so that it will be missed by all the lugs 26a and 26b of sheets 24a and 24b respectively, as they are released by control stud 30 incident to operation of the bell crank lever 31. The last or uppermost sheet 24c, however, has a lug 26c of a greater lateral width than any of the rightwardly positioned lugs 26a, as viewed in Figures 5 and 6. Hence, as the last sheet 24c drops from control stud 30, its front lug 26c will strike tail 51 imparting counterclockwise movement to latch lever 46, as viewed in

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Figure 6. As a result thereof, the latch is kicked away from lug 48 of shelf 45 which will instantly follow the urgency of spring 49 and swing into vertical position. In consequence thereof the last paper contained in the machine will drop out of chamber 41 and onto delivery chute 16, exposing some suitable lettering such as the words "Empty" or "Sold out" painted on the front wall 42 of the magazine behind the glass window 43. Thus, any potential purchaser is warned that the supply of the machine is exhausted. As an added safeguard, the trap door 45 may be arranged to operate a mechanism adapted to bar the coin slot 52 of the machine. For this purpose a suitable plate 53 is held above, and directly behind, the coin slot 52 by means of a link 54 disposed to rest upon trap door 45, as shown in Figure 8. Plate 53 is provided with a suitable guide groove in the form of a vertical slot 55 arranged to engage a stationary guide surface, such as a recessed part of magazine wall 22, to constrain said plate 53 to vertical movement toward or away from coin slot 52. As trap door 45 swings into vertical position to dispense the last paper contained in the machine, plate 53, devoid of any support, slides downwardly an appropriate distance determined by the vertical length of guide groove 55 to effectively close the coin slot 52. Thus, absent-minded customers, who may overlook the warning in window 43, are unable to place a coin into the machine. Care should be taken to so dimension the vertical length of guide slot 55 as to prevent the lower extremity of link 53 from descending below the bottom level of magazine 20, for this might cause entanglement with the front wall 14 of pedestal 10 as the magazine is removed from the housing for replenishment.

It should also be noted that a heavy bar 56 is mounted on top of the uppermost sheet 24c to increase its weight and thus enable it to effectively initiate the various operations described above as it is released from control stud 30 and strikes against tail 51 of latch lever 46. As an alternative, top sheet 24c may be made of greater thickness or of an appropriately heavier material than sheets 24a and b.

To replenish the machine of my invention, lid 19 is opened and the magazine 20 is turned over so that its open rear end faces upwardly. As a first step the carrier bar 27 is swung out of arcuate slots 29 so that sheets 24 may be conveniently passed to positions above control stud 30, whereupon bar 27 is returned to its original position, care being taken that its ends are pushed fully into arcuate slots 29. Then, newspapers are inserted between each two adjacent sheets 24, as shown in Figure 2. To facilitate the necessary separation of the sheets, arcuate recesses 57 may be provided in the rear edges thereof, as shown in Figures 3 and 4, and the recesses of consecutive sheets are preferably arranged in steps displaced by about half their diametrical width. The recesses 57 are of particular advantage in removing obsolete papers that have not been sold. Now, link 54 is lifted to raise locking plate 53 above coin slot 52 and the trap door 45 at the bottom of chamber 41 is re-cocked by latching its lug 48 under lever 46. Finally, a last copy of the paper is inserted into chamber 41 through supply slot 44 and the magazine is placed, in its proper upright position, into the window formed in pedestal 10, whereupon lid 19 is lowered and locked down, and the machine is ready to serve the public.

The detachability of the magazine unit 20 is of particular convenience in servicing a large number of machines located in widely separated places. For instance, if the newspaper supply is furnished in a truck, as is frequently the case, an employee may fill magazines with papers while the truck is in motion travelling from machine to machine. Thus, whenever a machine needs replenishing, the service man merely removes the empty magazine from the machine and substitutes a filled one instead, which takes less than a minute, and by the time the truck reaches another machine he has provided the empty magazine with a fresh supply, so that it may be exchanged for the exhausted magazine of the new machine.

In many instances it will be advisable to replenish a machine, even if its supply has not been exhausted but has merely run low. Means are, therefore, provided in accordance with my invention, to exteriorly indicate the approximate number of papers left in the interior of the magazine, so that a service man may know at a glance whether a machine needs replenishing, even if the supply has not been exhausted to such an extent as to expose the warning word "Empty."

For this purpose rollers or pulleys 58 and 59 are rotatably mounted at the top and at the bottom of the side wall 21 of the magazine 20, as shown in Figure 7. Trained around pulleys 58 and 59 is an endless chain or cord 60 in which are knotted a plurality of equi-spaced beads or markers 61 arranged in two sequential series of distinctly different colors. As shown in Figure 7, cord 60 has a front run extending vertically through chamber 41 at a place to the left of the paper exposed through window 43, and also a rearward run extending at the back of magazine wall 42 and firmly anchored in a lug 62 projecting from the front edge of the last or uppermost sheet 24c, as shown in Figure 3. Thus, as the top sheet 24c slides to lower and lower levels within the magazine 20 as the machine dispenses one paper after another, it pulls the rearward run of the cord 60 in downward direction, imparting counterclockwise movement to the cord around its pulleys 58 and 59, as viewed in Figure 7. The number of beads or markers 61 knotted into cord 60 is preferably twice as large as the number of papers that may be stored in the magazine 20. One-half of these markers may be painted white, and is arranged to be visible through the window 39 when the magazine is loaded to full capacity and the top sheet 24c is at its highest level; the other half of the beads or markers 61 may be painted red, and is arranged to extend below and rearwardly from said first half.

Thus, as the supply of papers in the magazine diminishes, the counterclockwise movement imparted to endless cord 60 by top sheet 24c will cause white beads to disappear over pulley 59 and out of the vision of the window 43, while a corresponding number of red beads will rise into the vision of the window from below. Therefore, as a supply truck approaches a machine, the service man is able to tell at a glance to what extent the supply in the magazine is exhausted, and whether the magazine should be exchanged or not.

The described machine may be used for dispensing articles of varying thickness, such as the Sunday and week day issues of newspapers, without requiring any adjustment whatsoever and without the slightest effect upon its dependability of operation. The machine is of a very simple construction and its performance does not

depend upon high precision finish of any of its components nor are any of said components required to perform high precision operations. The machine may, therefore, easily be manufactured in large quantities and at such low cost as to permit profitable use thereof in locations of small turnovers, and in fact in all those places all over the country which depend for proper payment almost exclusively upon the honesty of the purchasers.

Furthermore, the manipulation of the machine is of the simplest nature and will, as a rule, require no more than the pressing of a push button, whereupon it will dependably dispense one paper at a time, with no possibility for the customer to foul up the machine by inappropriate manipulation, or for the machine to disorganize its mechanism by accidental release of more than one paper. In fact the construction of the described machine is such that it is absolutely impossible for the individual papers to adhere or to be released from the magazine other than individually.

While I have explained my invention with the aid of a preferred embodiment thereof, I do not wish to be limited to the constructional details shown and described, because other embodiments based on the same principles and combining the same dependability of performance with simplicity of construction may readily be devised by those skilled in the art without departing from the scope of my invention.

I claim:

1. An arrangement in a vending machine for newspapers, periodicals and the like, having a supply chute and a magazine disposed above said chute, said magazine including a plurality of super-imposed sheets arranged to drop individually from said magazine incident to operation of a release mechanism; said arrangement including a window disposed to form a chamber in front of said magazine and adapted to accommodate a paper in vertical position, said chamber having an open bottom disposed above and communicating with said chute, a bar adapted to keep said bottom closed, and means actuated by the descent of the uppermost one of said sheets to withdraw said bar from the bottom of said chamber.

2. An arrangement in a magazine for vending machines of the type employed for newspapers, periodicals and the like and having a plurality of superimposed sheets adapted to fall individually from said magazine incident to operation of a release mechanism; said arrangement including a window disposed in front of said magazine to form a chamber adapted to accommodate a paper in vertical position, a shelf hinged to the bottom of said chamber to swing from a position closing said chamber to a position in which said chamber is open, a spring arranged to urge said shelf into open position, a latch disposed to maintain said shelf in closing position against the urgency of said spring, and means actuated by the descent of the last one of said sheets to remove said latch from said shelf.

3. A magazine for newspaper vending machines and the like, including a plurality of superimposed sheets held above a predetermined level and adapted to drop individually below said level incident to operation of a release mechanism, the uppermost one of said sheets having an area vertically clear of any one of the sheets below; a window arranged in front of said magazine to form a chamber, a shelf hinged to the bottom of

said chamber to swing from horizontal to vertical positions and adapted to close the bottom of said chamber in horizontal position, a spring urging said shelf into vertical position, and a latch adapted to hold said shelf in a horizontal position against the urgency of said spring, said latch having a tail projecting under said area at an altitude below said predetermined level and adapted to remove said latch from said shelf when struck in downward direction.

4. Arrangement according to claim 3 wherein said magazine possesses a coin slot, and including a link rested upon said shelf in latched position, a plate supported by said link directly above said coin slot and adapted to slide behind said slot upon collapse of said shelf.

CLARK H. WEAVER.

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