Aug. 2, 1966 R. W. SEARLE 3,263,859

NEWSPAPER VENDING MACHINE WITH A FOLLOWER PRESSURE RELIEVING ASSEMBLY

Filed May 18, 1964 2 Sheets-Sheet 1

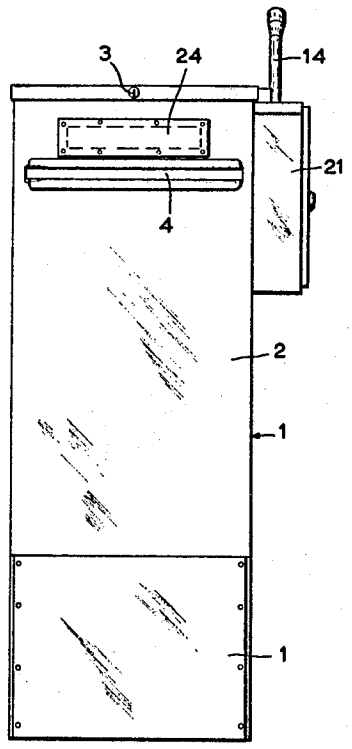


FIG. 1.

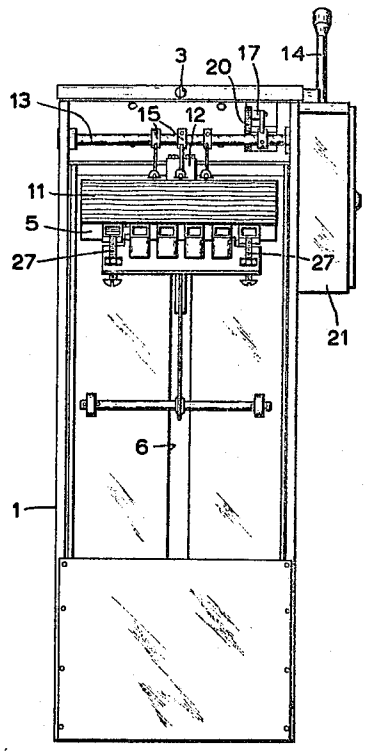


FIG. 2.

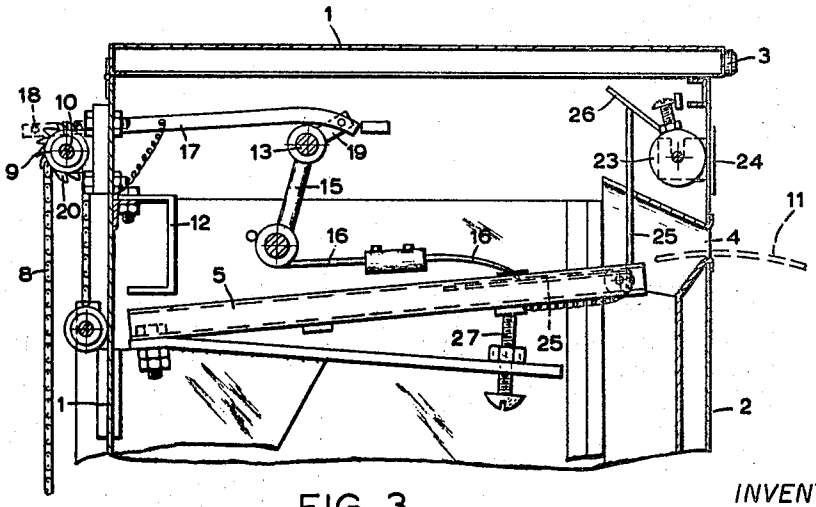


FIG. 3.

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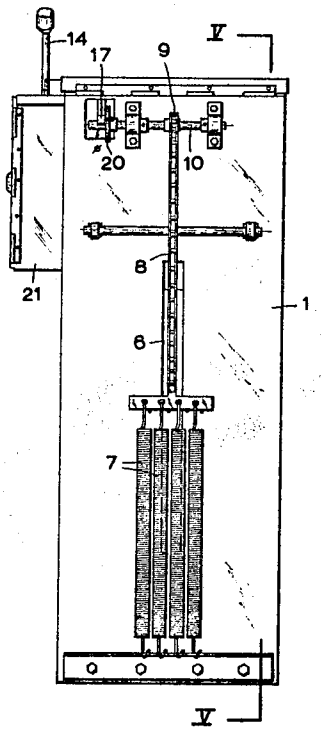


FIG. 4.

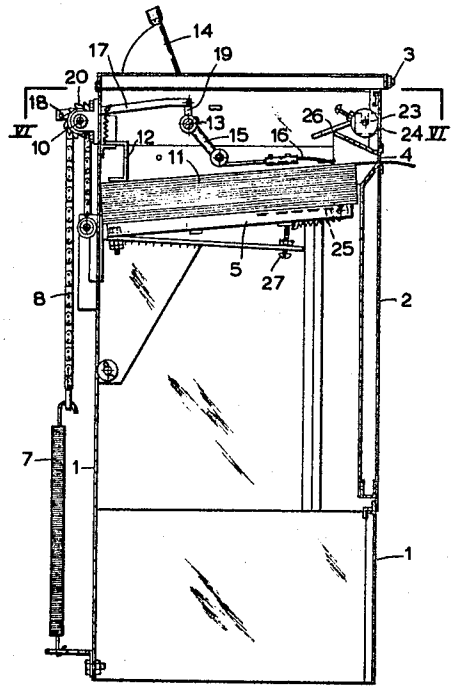


FIG. 5.

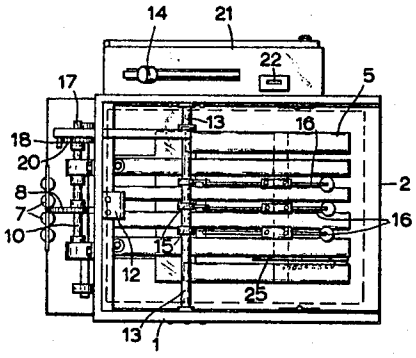


FIG. 6.

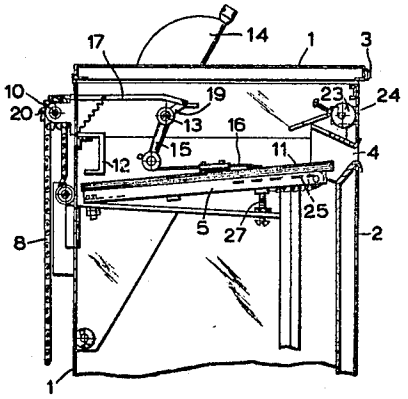


FIG. 7.

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NEWSPAPER VENDING MACHINE WITH A FOLLOWER PRESSURE RELIEVING ASSEMBLY

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3 Claims. (Cl. 221—227)

The invention relates to machines (herein called newspaper vending machines) for vending and dispensing newspapers and other similar articles, such as magazines, comics, and the like. Accordingly, the term "newspaper" used herein is to be understood, wherever the context so admits, as including such other articles, as well as newspapers properly so called.

The general object of the invention is to provide a newspaper vending machine which is of relatively simple construction, and wherein newspapers from a supply with which the machine has previously been loaded can be dispensed one by one by a simple operation of the machine.

A further object of the invention is to provide a coin-freed newspaper vending machine which can be easily and rapidly loaded with a supply of newspapers, and in which the dispensing of the newspapers from the machine is controlled by a coin-freed locking mechanism.

Yet another object of the invention is to provide a newspaper vending machine in which the possibility of undesirable damage to the newspapers during the dispensing operation, and the possibility of dispensing more than one newspaper at a time, are minimised.

Other objects and advantages of the invention will be apparent from the following description.

The newspaper vending machine provided by the invention consists of a magazine into which newspapers may be loaded and arranged in a stack and which is provided with an aperture through which newspapers may be dispensed; elevating means whereby the stack is progressively raised as newspapers are dispensed therefrom so that the top of the stack is maintained under pressure at the same height within the magazine after each dispensing operation of the machine; dispensing means adapted and arranged to bear on and engage the uppermost newspaper of a stack of newspapers placed within the magazine; and operating means connected to the dispensing means and to the magazine, the arrangement being such that operation of the operating means lowers the stack of newspapers in the magazine so as to relieve the pressure applied through the elevating means, and at the same time actuates the dispensing means so that the dispensing means engage the uppermost newspaper of the stack and cause it to be dispensed through the aperture provided in the magazine.

The magazine may be constructed of sheet metal or other suitable material and may be of any size or shape appropriate to the type, size and number of newspapers to be held in the said magazine.

The newspapers may be placed on a sliding shelf, or tray, which may be influenced by a spring or counterweight, constituting the elevating means, so as to apply an upward pressure to the stack of newspapers, and thereby hold the top of the stack under pressure against a stop member provided within the upper part of the

magazine. Guiding means may be provided in association with the aperture in the magazine, for the purpose of guiding the newspapers through the aperture during each dispensing operation.

The dispensing means, may be in the form of one or more fingers provided with points adapted to pierce and engage the uppermost newspaper of the stack. Alternatively, the fingers may have pads of rubber or other suitable material, which frictionally engage the surface of the uppermost newspaper and move it towards and through the dispensing slot in the course of each dispensing operation. The said fingers may be actuated by a hand lever which is connected to a shaft from which the fingers extend, the action being such that when the hand lever is moved in one direction the fingers engage with the uppermost newspaper in the magazine and move it through the dispensing aperture. On the return stroke of the hand lever, the fingers are returned to their original position, in which they are ready to engage the next newspaper, which has in turn become the uppermost newspaper of the stack. The tray within the magazine may be mechanically linked with the hand lever, preferably by means of a ratchet and pawl, so that the tray and the stack of newspapers thereon are lowered at the commencement of each dispensing operation, and thereby relieved of the pressure under which the stack is normally held against the stop member provided in the magazine.

The dispensing fingers may be pivotally mounted on the shaft, and arranged so that the pressure exerted by the fingers is sufficient to engage and move only the uppermost newspaper towards the aperture, but is insufficient to similarly move the underlying newspaper as well, at the same time.

The arrangement of the fingers acting with the rotating shaft is such that, on a forward and return movement of the hand lever, the fingers are moved forward and back, and this may be achieved by attachment of the fingers to the outer edges of collars, shafts, cams or the like. In order to sufficiently engage the surface of the newspaper the fingers may be lightly weighted or spring-loaded.

The connection between the hand lever and the shaft may be in the form of a slip clutch so as to prevent damage to the mechanism should excess force be applied to the hand lever, and the operation of the dispensing means may be controlled by an associated coin-freed locking mechanism mounted on or in the machine.

A newspaper vending machine constituting one embodiment of the invention will now be described in more detail by way of example of how the invention may be carried into effect, and with reference to the accompanying drawings, in which:

FIGURE 1 is a front elevation of the machine;

FIGURE 2 is a front elevation of the machine, with a front panel of the machine removed to show the interior of the machine;

FIGURE 3 is a side elevation of the upper part of the machine in vertical section and on a larger scale than FIGURES 1 and 2, showing the machine empty;

FIGURE 4 is a rear elevation of the machine, with a rear cover removed;

FIGURE 5 is a sectional side elevation of the machine at the conclusion of a dispensing operation, the section

being taken in the vertical plane indicated by the line V—V in FIGURE 4;

FIGURE 6 is a sectional plan of the machine in an empty condition, the section being taken in the horizontal plane indicated by the line VI—VI in FIGURE 5; and

FIGURE 7 is a sectional side elevation similar to FIGURE 5, but showing the upper part only of the machine, at the commencement of a dispensing operation.

The machine shown in the drawings has a cabinet **1** which forms a magazine and which also houses dispensing means within its upper part, the cabinet consisting of a metal framework and covered with metal sheets. A front panel **2** of the cabinet is provided with a lock **3** and is removable so as to give access to the interior of the magazine, and is also provided with an elongated rectangular dispensing aperture **4**. The newspapers are stacked on a substantially horizontal shelf **5** which is inclined slightly from the rear edge thereof. The shelf **5** is attached to a vertically movable support **5***a* which is guided for vertical movement in a slot **6** in the rear of the cabinet **1**. The vertically movable support **5***a* is attached to a set of tension coil springs **7** at the back of the magazine by means of a chain **8** extending from the shelf **5** and passing over a toothed sprocket **9** attached to a rotatable shaft **10** mounted at the upper rear part of the cabinet **1**. By means of the springs **7**, the shelf **5** and a stack of newspapers **11** resting thereon are raised to the maximum height allowed by a fixed stop member **12** provided on the inner face of the rear wall of the magazine.

The dispensing means include a dispensing shaft **13** which is mounted to extend transversely of the top of the magazine, and which extends through one side of the cabinet **1** and is provided at a point on the outside of the cabinet with a conventional slip clutch arrangement (not shown in the drawings) to which is secured a hand lever **14**.

Three spaced link members **15** are fixed on the dispensing shaft **13** and have pivotally attached to their lower ends three metal fingers **16** which are pointed at their free ends and are arranged so that their points bear on the surface of the uppermost of the newspapers **11**, and engage it when the hand lever **14** is moved in a dispensing operation.

An arm **17** which is provided at one end with a pawl **18**, is connected at the other end to the dispensing shaft **13** by a short fixed crank **19**. The pawl **18** is adapted to engage with a ratchet wheel **20** engaged on the shaft **10** carrying the chain **8** extending from the magazine shelf **5**. The arrangement is such that when the hand lever **14** is moved forward, the pawl **18** engages the ratchet wheel **20** and turns the shaft **10** so as to lower the magazine shelf **5**, and relieve the upward pressure exerted by the springs **7** through the shelf **5** on the stack of newspapers **11** against the stop member **12**.

The dispensing means has associated with it, and is normally locked by, a coin-free mechanism **21** (not shown in detail) which frees the said dispensing means when a coin of the correct denomination is inserted into it through a coin slot **22**.

The magazine may be readily loaded by depressing the magazine shelf **5** and loading the newspapers thereon, after removal of the panel **2** to provide access to the interior of the magazine. The newspapers **11** are held against the stop member **12** until the hand lever **14** is freed by insertion of a coin in the slot **22** and moved from its position shown in FIGURE 5 to its position shown in FIGURE 7, when the shelf **5** is lowered slightly to relieve the pressure on the uppermost newspaper of the stack **11**. By then returning the lever **14** to its position shown in FIGURE 5 the fingers **16** are caused to dig into and engage the uppermost newspaper, pushing it out through the dispensing aperture **4**, as shown in FIGURE 5, until it can be grasped and removed by the person operating the machine. During this latter movement of the lever **14**, the shelf **5** agains rises so that the stack of remaining newspapers is again held under pressure against the stop member **12**.

To indicate when the magazine is empty, a roller **23** visible through a window **24** is provided at the upper front part of the cabinet **1**. The roller normally rests in its position shown in FIGURE 7, but when the last newspaper has been dispensed a spring-loaded finger **25** is freed to rise, and bears on a radially projecting lug or plate **26** fixed to the roller **23**, so that the roller is turned to its position shown in FIGURE 3, in which the word "EMPTY" or other appropriate indication appears in the window **24**.

Minor adjustment of the angle of inclination of the upper surface of the shelf **5** may be effected by means of a screw **27**, and connexions **28** provide for minor adjustment of the position of the points of the fingers **16**.

By means of the machine described above, a quantity of newspapers can be easily and rapidly dispensed by the purchasers without the need for supervision of the machine, the magazine being easily replenishable with newspapers when exhausted.

I claim:

1. A vending machine comprising a housing for a stack of articles and having a discharge opening through which the articles may be dispensed from the top of the stack, a vertically movable support for the articles stacked in the housing, the said vertically movable support including an article supporting platform inclined toward the discharge end thereof, means for transmitting an upward force to the vertically movable support, a stop engageable with the top article in the stack for limiting the upward movement of the support by said force-transmitting means actuatable article discharging means engageable with the top article in the stack and moving the said article toward the discharge opening, pressure relieving means operatively connecting said article discharging means and said force-transmitting means so as to lower the platform slightly to disengage the top article in the stack from the stop before actuation of the article discharging means and thereby free the upper article in the stack for movement toward said discharge opening, and means for adjusting the angle of inclination of said supporting platform.

2. A vending machine comprising a housing for a stack of articles and having a discharge opening through which the articles may be dispensed from the top of the stack, a vertically movable support for the articles stacked in the housing, means for transmitting an upward force to the vertically movable support, a stop engageable with the top article in the stack for limiting the upward movement of the support by said force-transmitting means, actuatable article discharging means engageable with the top article in the stack and moving the said article toward the discharge opening, and pressure relieving means operatively connecting said article discharging means and said force-transmitting means so as to lower the platform slightly to disengage the top article in the stack from the stop before actuation of the article discharging means and thereby free the upper article in the stack for movement toward said discharge opening, in which said force-transmitting means includes a drive transmission which operates in one direction to raise the vertically movable support and in which the pressure relieving means includes means for incrementally reversing the direction of said drive transmission.

3. A vending machine comprising a housing for a stack of articles and having a discharge opening through which the articles may be dispensed, a vertically movable support for the articles stacked in the housing, force-applying means, a chain connecting said force-applying means and said vertically movable support and normally urging the support upwardly, a rotatable sprocket engageable with

and driven by said chain, a stop engageable with the top article in the stack for limiting the upward movement of the support, actuatable article discharging means engageable with the top article in the stack to move said article toward the discharge opening, a rotatable ratchet wheel operatively connected with the sprocket, and a pawl operatively connected with the actuatable article discharging means so as to rotate the ratchet an increment and lower the platform slightly to disengage the top article in the stack from the stop before actuation of the article discharging means and thereby free the upper article in the stack for movement toward said discharge opening.

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