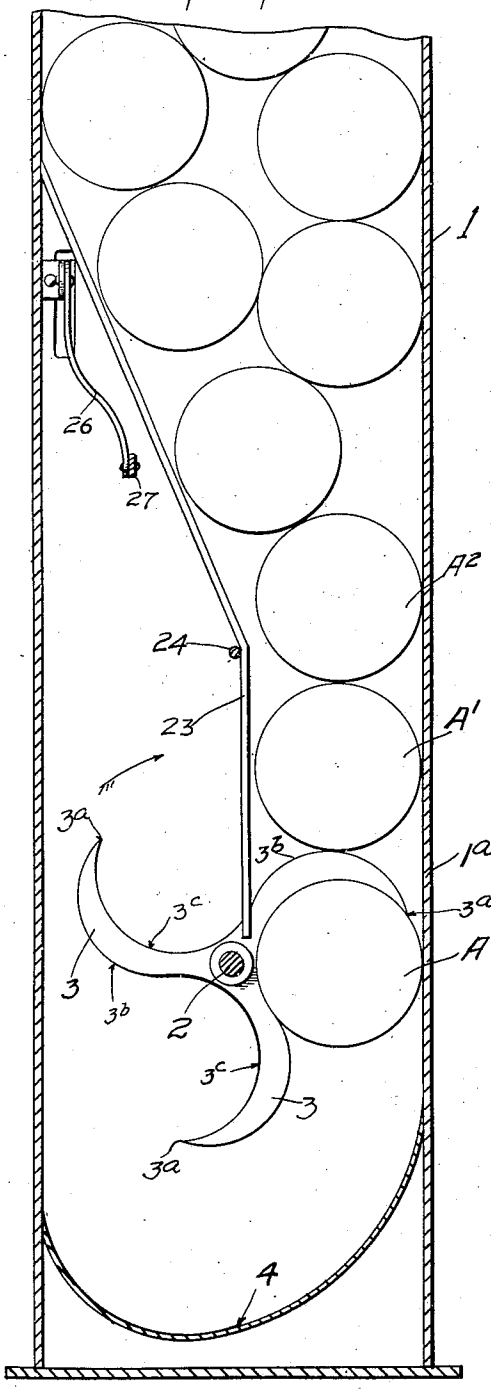
June 15, 1948. L. C. CASE 2,443,376

DISPENSING MECHANISM

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Fig. 1.



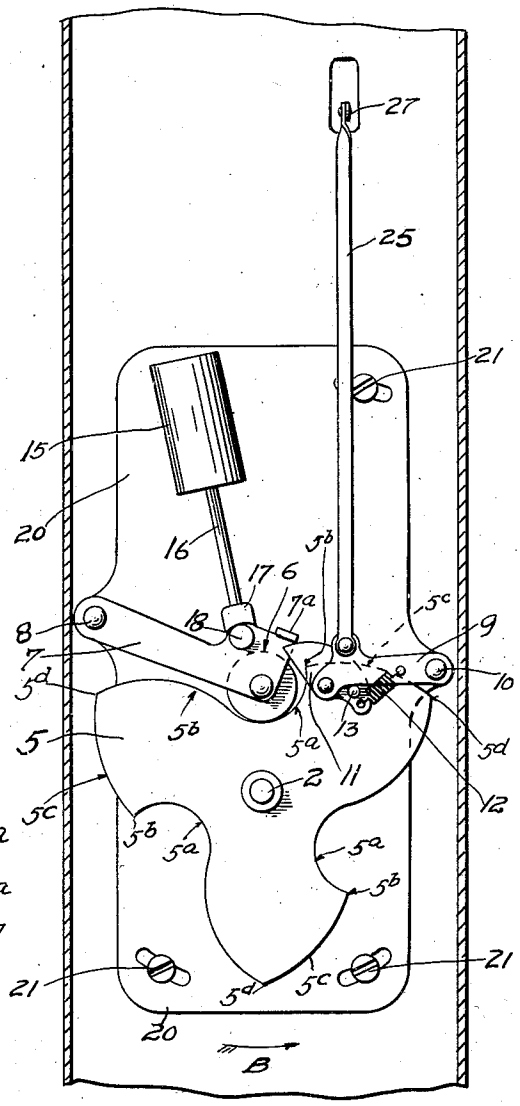


Fig. 2.

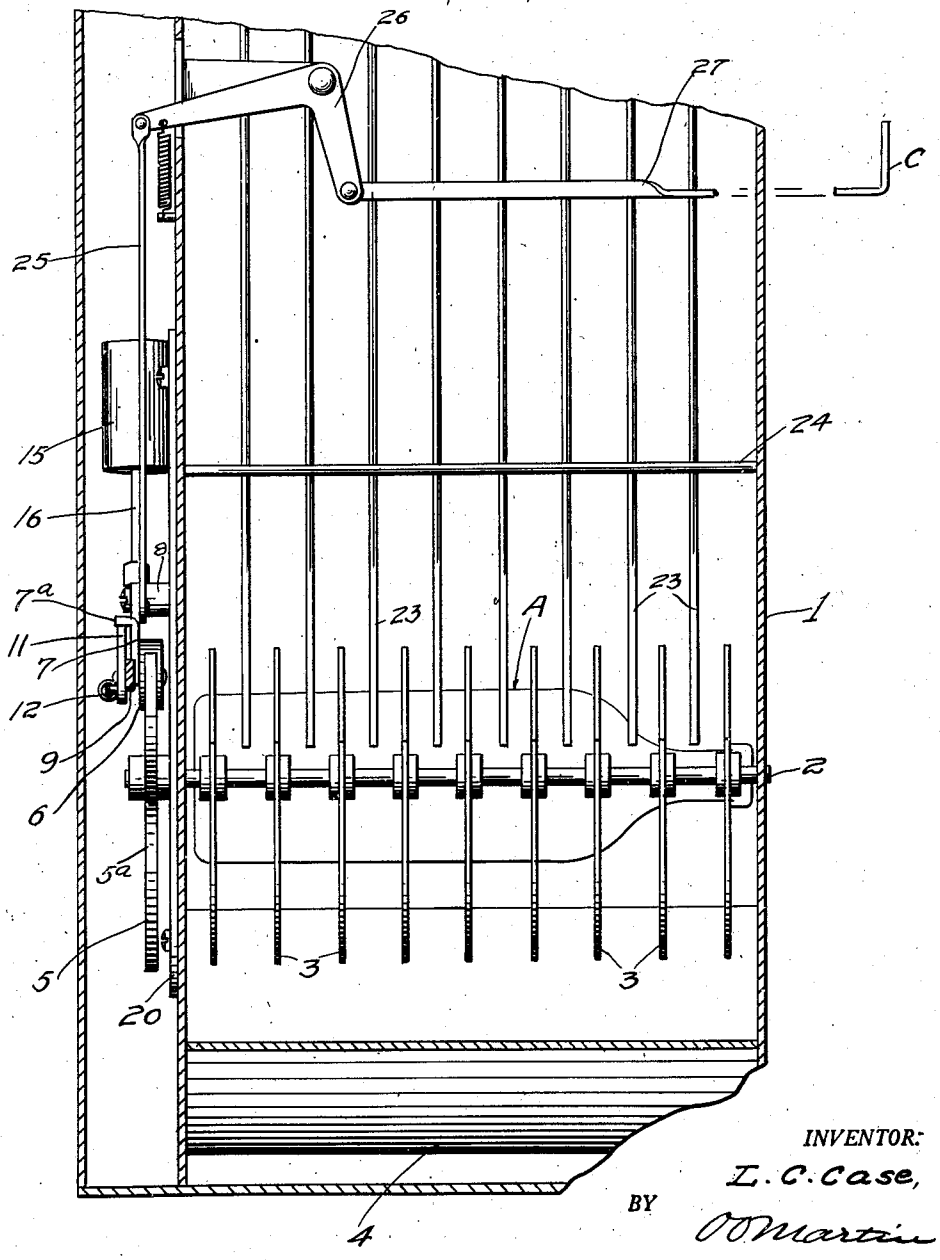
INVENTOR:
L. C. Case,
BY
O. O. Mattie,
ATTORNEY.

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Fig. 3.



INVENTOR:
L. C. Case,
BY
O. O. Martin,
ATTORNEY.

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2,443,376

DISPENSING MECHANISM

Leslie C. Case, Los Angeles, Calif., assignor to Case Company, a corporation of Nevada

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8 Claims. (Cl. 312—48)

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This invention relates to dispensing mechanism for vending machines and has particular reference to means of this character adapted to deliver heavy, cylindrical objects from such vending machines.

Various types of vending machines are widely used commercially and, in cases where light articles are to be dispensed, have been found very satisfactory. Machines have also been introduced for dispensing heavy objects, such as liquid filled cans and bottles, but such machines as have come to my notice are complicated, expensive and troublesome, in that they frequently get out of order and so defeat their very purpose.

In view of the foregoing, it is the object of my invention to provide a simple, inexpensive and sturdy device which is capable of serving over long periods of time without attention, except for refilling, and which is not liable to get out of order.

To this end, the invention resides in the combinations hereinafter fully described, and drawings are hereto annexed in which a preferred form of the invention is illustrated.

In the drawings:

Fig. 1 is a front elevational sectional view of the device;

Fig. 2 is a fractional rear sectional view of the device; and

Fig. 3 is a side elevational sectional view.

The device of my invention, in the form illustrated in the drawings, comprises a casing 1, in which is hung a shaft 2, and a series of spider-like members 3 are rigidly secured to this shaft. The three legs of these members, which for convenience hereinafter generally are referred to as the spiders, are shown shaped to support the merchandise to be dispensed, in this case bottles A, and to guide these bottles into a delivery tray at the bottom of the casing, in the manner which will now be described in detail.

The rear end of the shaft 2 is fitted with a rigidly affixed, star-shaped cam 5, the three grooves 5^a of which are shaped to receive a roller 6 which, in turn, is mounted for rotation on the end of an arm 7. The weight of the stored bottles urges the cam to rotate in the direction of the arrow B, of Fig. 2, but it is held against such rotation by the roller 6. The arm 7 is shown pivotally supported at 8, and it is made at its outer end with a bent lip 7^a. A second arm 9 is shown hung at 10, and it is at its outer end provided with a pawl 11, the tip of which rides under the lip 7^a of the arm. A spring 12 main-

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tains this pawl projected into the position shown, against a stop 13.

As indicated in Fig. 1, the bottle A is held by the legs of the spiders pressed against the wall 1^a of the casing, ready to drop into the delivery tray 4 the moment the spider is released for rotation. The bottle may then be withdrawn through an aperture 1^b in the front wall of the casing, substantially as indicated in Fig. 3. Such release is effected by an upward pull on the arm 9 to cause the pawl 11 to swing the arm 7 upward until the roller 6 reaches and passes the corner 5^b of the cam, thereby to release the cam for rotation and to free the bottle held by the legs of the spiders for delivery into the tray 4.

It is not, however, safe to permit the piece of merchandise to drop suddenly, particularly where glass bottles are to be dispensed, and it is for this reason advisable to introduce means for controlling the speed of rotation of the released cam and spiders. Such means is here shown to take the form of a pneumatic check comprising a dashpot 15, such as commonly used in door checks, and a plunger 16, terminating in a head 17, which rides on a stud 18 of the arm 7. The portion of the cam, 5^c, which extends from the corner 5^b thereof, rises on an easy curve until the point 5^d is reached, to impart further rising movement to the roller 6, but as such movement is checked by the plunger 16, it is seen that the bottle is slowly released so that no danger of breakage thereof is present.

At this point, attention is directed to the shape of the spider leg, the point 3^a of which enters between the bottles A^1 and A^2 as the spider slowly turns to release the bottle A, and it is important to note that the bottle A^1 at the same time rolls along the convex edge of the spider leg into the circular groove 3^c, whereupon the bottle A^2 rolls along the next following convex edge 3^b. The rotation continues until the bottle A^1 reaches the position previously occupied by the bottle A. The roller 6 now drops into the next following groove 5^a, and rotation stops.

The casing may be high enough to maintain stored therein so large a number of bottles or cans that the weight thereof would, if the bottles were free to drop suddenly, be likely to cause breakage. But because the speed of rotation is slowed down, and due to the curvature of the spider legs, it is seen that the dispensing movement of the merchandise is continuously under control so complete that no jarring or clashing of the bottles can take place.

It is, in devices of the character described, nec-

essary to arrange the cam and spiders in correct relation to the casing wall 1a in order for the spiders firmly to grip the bottle A and properly to release this bottle upon rotation of the cam and spiders, and it may for this reason be found advantageous to mount the above described control mechanism for adjustment relative to the casing. To this end, I have shown all of this mechanism mounted on a plate 20, which may be rotated on the shaft 2 until the desired, correct position of the parts is attained. A plurality of screws 21 are seated in slots of the plate 20, to clamp the latter in adjusted position on the casing.

The height and shape of the storage space is immaterial, at least so far as the above described dispensing mechanism is concerned, and it is merely required to make certain that the bottles are guided into correct position on the spiders. This may conveniently be done by placing a partition, consisting of a series of rods 23, intermediate the spiders and so shaped that the stored merchandise is properly guided. If necessary, one or more cross bars or rods 24 may be placed between the walls of the casing to maintain these guide rods in position.

Dispensing devices are generally coin operated, but as many types of coin controlled operating mechanisms are in commercial use, and as such mechanisms may readily be adapted to operate the present dispensing mechanism, it is thought sufficient here to show a link 25 rising from the arm 9 and pivotally connected at the top to a bellcrank 26. The latter may, by means of a rod 27, be connected to the usual coin slide C. When a coin is placed in this slide, in the conventional manner, it is merely required to push the slide ahead and thereby to raise the roller 6 out of the groove 5a.

While I have in the foregoing described a preferred form of the invention, it is not thereby intended to limit the invention to the exact combinations of parts and arrangements of features thereof, but I reserve the right to embody such modifications as will fall within the scope of the appended claims.

Nor does the casing necessarily have to be shaped as shown, but may be widened so as to afford storage space for additional vertical rows of bottles, if desired.

I claim:

1. In a coin controlled dispensing device for cylindrical objects, a casing having such objects stored therein, a shaft extending through the casing, dispensing means on said shaft supporting the weight of the stored objects, a cam disc on the end of the shaft having grooves sunk into its edge and cam surfaces rising from said grooves, lock means engaging one of said grooves, means yieldingly holding said lock means in the groove to maintain the shaft and the said dispensing means unturned, coin controlled means for withdrawing said lock means from its groove to release the cam and dispensing means for rotation by the weight of the stored objects thereby to cause the lock means to ride on the adjacent rising cam surface, the pressure of said yielding means against the lock means operating to hold the latter pressed against one of the cam surfaces thereby to retard the speed of rotation of the dispensing means.

2. In a dispensing device for cylindrical objects, a casing for storage of such objects, a shaft extending through said casing, mechanism on said shaft supporting the weight of said stored objects and designed to dispense the objects one by one, a disc on the end of the shaft having equidistantly spaced grooves in the edge thereof, control means comprising an arm hung on the said means and having a wheel on the free end thereof riding in one of said grooves to maintain the disc and dispensing mechanism unturned, means on said control means for moving said arm to raise the wheel out of its groove, the weight of the objects causing the said mechanism and the disc to turn thereby to discharge one of said objects, and means for adjusting said control means relative to said disk.

3. In a dispensing device for cylindrical objects, a casing for storage of such objects, a shaft extending through said casing, mechanism on said shaft supporting the weight of the stored objects and designed to dispense said objects one by one, a disc on the end of the shaft having equidistantly spaced grooves in the edge thereof and cam surfaces rising from said grooves, an arm on the casing, a wheel on the free end of said arm riding in one of said grooves, yielding means holding said wheel in its groove to maintain the disc and dispensing mechanism unturned, and means for moving said arm to raise the wheel out of its groove, the weight of the stored objects causing the mechanism and the disc to turn thereby to discharge one of said objects, the pressure of said yielding means holding the wheel of said arm against a cam surface of the disc thereby to retard the speed of rotation.

4. A dispensing device for cylindrical objects comprising, a vertically disposed casing, a shaft horizontally extending through said casing, a series of tricornute spiders rigidly mounted on the shaft to support objects stored in vertical succession within the casing, said spiders having axially aligned arcuate legs on the convex edges of one row of which the lowermost object is supported, means successively guiding the stored objects to said convex spider legs edges, a tricornute grooved cam on the shaft having a cam surface rising from each groove, a groove engaging device pivotally hung within the casing, means for raising said device out of its groove on to the adjacent rising cam surface thereby to release the shaft and spiders for rotation, gravity causing the object on the spiders to roll off said convex edges and the next following spider and the object resting thereon to move into the position previously occupied by said one row of legs and object supported thereon, means resisting further rising movement of said device on the gradually rising cam surfaces to control the speed of rotation of the shaft and spiders, and means for adjusting the position of said device relative to the said cam.

5. In a coin-controlled dispensing device for cylindrical objects, a casing, dispensing means within the casing comprising, a shaft horizontally extending through the casing, a series of tricornute spiders rigidly mounted on said shaft in axial alignment and in position to support one of said objects on the convex edges of one row of the spider legs, means vertically guiding said stored objects to said convex edges one by one, a plate hung in the casing for circular adjustment about said shaft, a cam on the shaft having rising cam lobes corresponding in number to the legs of the spiders and grooves intermediate said lobes, a lever pivotally hung on said plate, a roller on said lever engaging one of said grooves to maintain the shaft unturned, means for raising said lever and roller from its groove on to the

adjacent rising cam lobe thereby to release the shaft and spiders, the weight of the objects stored above the spiders causing the shaft and spiders to rotate and the object on the spiders to roll off said convex edges and the next following object to move into the position previously occupied by said dislodged object, means engaging said lever yieldingly to resist rising movement of the roller as it rides over the cam surface of each lobe thereby to retard the speed of shaft and spider rotation, and means for clamping said plate in adjusted position in the casing.

6. A dispensing device for cylindrical objects comprising, a vertically disposed casing, a shaft horizontally extending through said casing, a series of tricornute spiders rigidly secured to said shaft and having arcuate radiating arms shaped to support objects perpendicularly stored within the casing, a tricornute grooved disc on said shaft having cam surfaces rising from the grooves of the disc on the outer periphery thereof, a lever pivotally hung within the casing, a roller on said lever engaging a groove of the disc to maintain the disc and shaft unturned, means for moving said lever and roller out of the groove to release the shaft for rotation, the pressure of the stored objects against the spiders causing the released shaft to rotate thereby to discharge the object resting on the spiders, and means engaging the lever yieldingly to check further outward movement of the roller as it rises along said cam surface thereby to control the speed of shaft and spider rotation.

7. A dispensing device for cylindrical objects comprising, a vertically disposed casing, a shaft horizontally extending through said casing, a series of tricornute spiders rigidly mounted on said shaft to support objects perpendicularly stored within the casing, means guiding the objects to the spiders one by one, a tricornute grooved disc on the shaft having a cam surface rising from each groove, a groove engaging device hung on the casing, means for moving said groove engaging device out of the groove and on to the adjacent rising cam surface thereby to release the shaft for rotation, the pressure of the stored objects against the spiders causing the released shaft to rotate thereby to discharge the

object resting on the spiders, and means resisting outward movement of the device as it rises along said cam surface thereby to control the speed of shaft and spider rotation.

8. A dispensing device for cylindrical objects comprising, a casing, a shaft horizontally extending through said casing, a series of spiders rigidly mounted on said shaft to support objects stored within the casing, said spiders having axially aligned arcuate legs on the convex edges of one row of which the lowermost object is supported, means guiding said stored objects to said convex edges one by one, a disc on the shaft having rising cam lobes corresponding in number to the legs of the spiders and grooves intermediate said lobes, a lever pivotally hung within the casing, a roller on said lever engaging a groove of the disc to maintain the disc unturned, means engaging said lever to raise said roller out of its groove on to the adjacent rising cam lobe, thereby to release the shaft and spiders for rotation, the weight of the objects stored above the spiders causing the shaft to rotate and releasing the object on the spiders to roll off the convex edges and the next following object to move into the position previously occupied by said dislodged object, and means engaging the lever yieldingly to check further outward movement of the roller as it rises along said cam surface thereby to control the speed of shaft and spider rotation.

LESLIE C. CASE.

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