May 25, 1943. R. N. LEONARD 2,319,872

RECEPTACLE FOR EMPTY BOTTLES

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Fig. 2

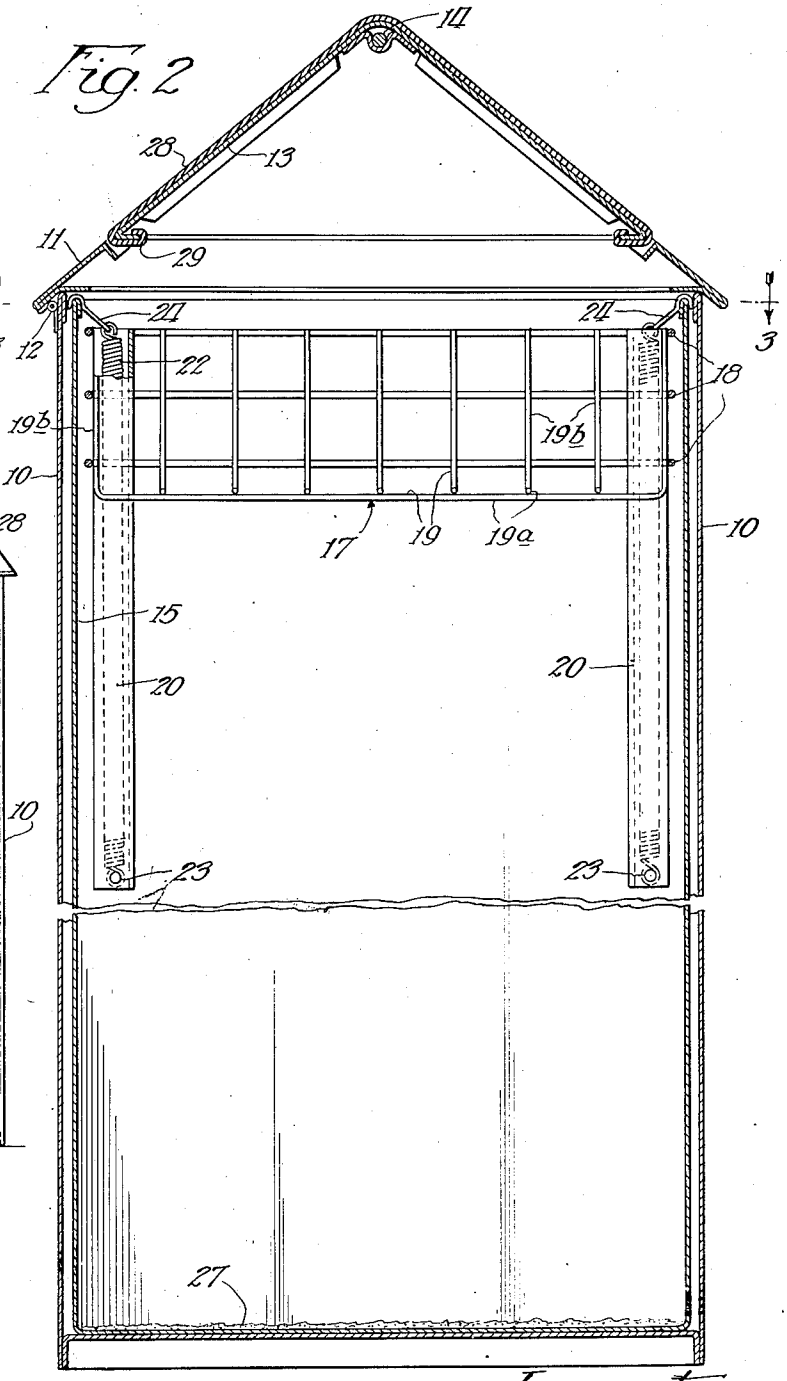
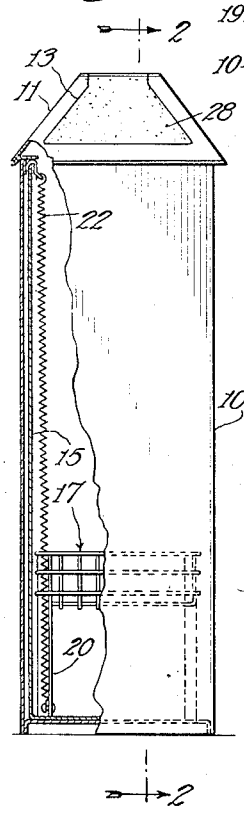


Fig. 1



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Fig. 3

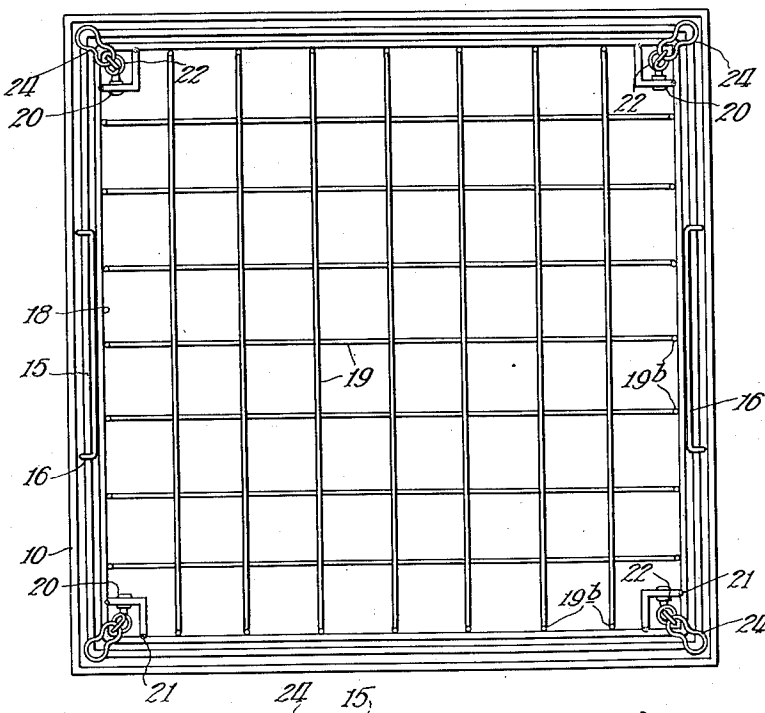


Fig. 6

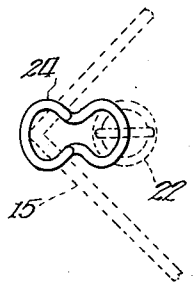


Fig. 4

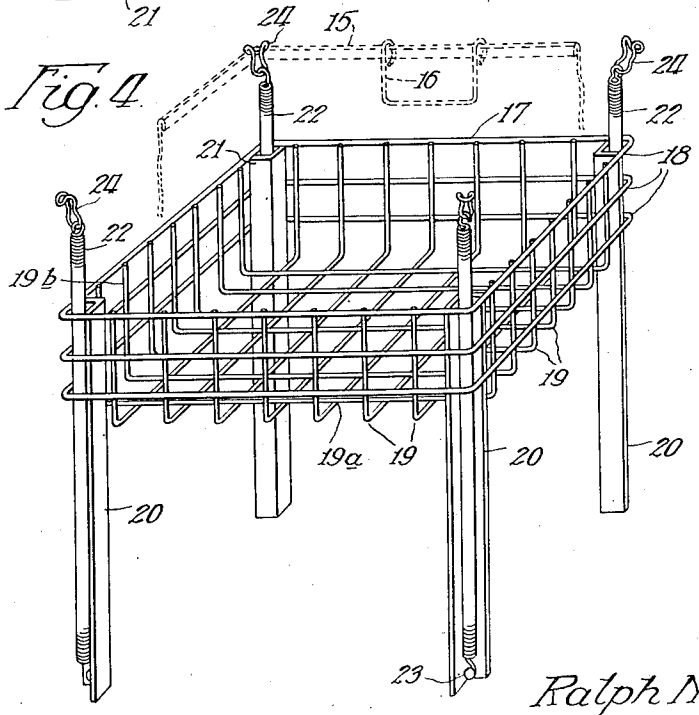
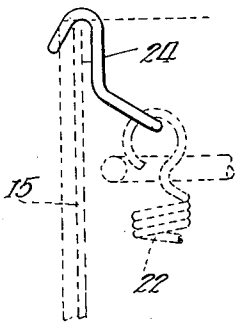


Fig. 5



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UNITED STATES PATENT OFFICE

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RECEPTACLE FOR EMPTY BOTTLES

Ralph N. Leonard, Crystal Lake, Ill., assignor to Dispenser Corporation of America, Chicago, Ill., a corporation of Illinois

Application August 19, 1940, Serial No. 353,235

7 Claims. (Cl. 220—93)

My invention relates to receptacles for empty bottles or the like. Its principal contemplated use is in connection with the dispensing—as by coin control vending machines—of bottled milk or bottled carbonated beverages which are to be drunk on the premises. In such a situation it is desirable to provide, near the dispenser, a receptacle in which the empty bottles may be deposited. Such a receptacle is a convenience even when there is an attendant, but it is still more necessary where the bottles are dispensed by a vending machine without an attendant.

Such an empty bottle receptacle should have a capacity sufficient to receive as many bottles as the vending machine contains, so that all of the empty bottles can be accommodated until a serviceman calls to supply fresh stock for the vending machines and take away the empty bottles. In practical working conditions, this may require a sixty to one hundred bottle capacity for the receptacle.

If the receptacle is made relatively deep so that floor space is minimized, patrons of the vending machine cannot be relied upon to reach down into the receptacle carefully to deposit empty bottles without dropping them when the receptacle has but few bottles in it. If the patron does not exercise that care, however, but merely drops the empty bottle into the receptacle from the height of its top, the fall is so great that the bottle will be broken and probably some of the bottles which it hits at the bottom of the receptacle.

This danger of breakage can be largely eliminated by providing shallow trays, but this involves a two-fold objection of having to provide a very much larger area, which would occupy very much more floor space, and the provision of a table-like legged structure to support the large area shallow trays at a sufficient height so that the empty bottles will not be dropped.

The primary object of my invention is a solution to the above outlined problem of providing a receptacle for used bottles which has adequate capacity, occupies but little floor space, and eliminates danger of breakage from dropping bottles.

Other objects of my invention are concerned with ease of removing empty bottles from the receptacle; ease of cleaning the receptacle of beverages spilled from the empty bottles, bottle caps, used straws, and other incidental waste matter likely to be put into the receptacle; discouragement of tossing bottles into the receptacle whereby they might be broken; a convenient elimination of the objectionable odor of decomposition of spilled milk within the receptacle; and protection for the door of the receptacle from abuse by contact with bottles being deposited in it.

One of the outstanding virtues of the solution which I have provided for these problems is that it may take the form of a relatively inexpensive accessory adapting a conventional general utility waste receptacle to the peculiar problem of empty bottles.

The foregoing, together with further objects, features and advantages of my invention are set forth in the following description of the specific embodiments thereof as illustrated in the accompanying drawings wherein:

Fig. 1 is a small scale side elevation, with parts of the casing and can broken away, of the receptacle of my invention, showing the tray in its lowermost position;

Fig. 2 is a medial vertical section of the receptacle taken on the line 2—2 of Fig. 1;

Fig. 3 is a plan view with the cover removed, which can be considered as taken on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the tray and associated suspending springs; and

Figs. 5 and 6 are side and plan views of one of the hooks whereby the upper ends of the springs are detachably anchored to the upper corners of the can or liner of the receptacle.

The outer casing 10 is square in cross-section and comprises four equal side walls and a bottom. A pyramidal cover 11 is hinged at 12 along one of its bottom edges to the top of a side of the casing. A large panel opening is formed in two opposite sides of the cover 11. This is closed by a butterfly door 13 hinged at 14 along the short ridge of the pyramidal cover. The wings of the butterfly door are drooping at the same angle as the sides of the cover. Because the door is hinged at its upper edge, it normally swings into the planes of the sides of the cover. When something is to be inserted into the receptacle, one wing or the other of the door is pushed inwardly, causing both wings to swing together.

The can or liner 15 sets within the casing 10. The can 15 is of square cross-section, just enough smaller than the casing to be easily removed by use of the wire handles 16. The can is approximately the same height as the inside height of the outer casing and the can 15 comprises four equal side walls and a bottom. The can is made of galvanized iron or other corrosion-resisting material and is water-tight, whereas the outer casing may be enameled, not coming in contact with any liquid contents, and need not be particularly corrosion proof nor water-tight.

The receptacle as thus far described will be recognized as a standard receptacle of a well-known type in extensive use. Utilization of my invention, therefore, does not require the manufacture of a new and peculiar type of receptacle, but merely the addition, in the nature of an accessory, of what I shall now describe. From the description which follows, it will be observed that the accessory which I supply is detachably mounted in the can and without the necessity of making any physical alteration in the can or any other part of the standard receptacle in order to employ my accessory.

For use with the above described receptacle, I provide a shallow basket-like tray 17, which might be formed from sheet metal or perforated sheet metal but is preferably made after the fashion of a wire basket. This tray 17 is formed by a set of three vertically spaced horizontal peripheral wires 18 forming superposed but spaced squares as viewed in plan. The tray is completed by a number of U-shaped wires 19, half of which are disposed transversely to the other half. Each U-shaped wire 19 comprises a webbed portion 19a contributing to the bottom of the tray and vertical legs 19b forming side risers. The wires 19 are welded where they intersect each other and where they intersect the horizontal wires 18. The several wires could be interwoven but with adequate welding it is not necessary .

In practice, in a receptacle to accommodate seventy-two empty milk bottles, each of one-third quart capacity, a standard receptacle, as described, may be selected of a size where the transverse dimensions of the can are about eleven inches and the height of the can is about thirty-two inches. In such case, the tray might have a height of about three inches and, as shown in Fig. 3, the tray would have an easy clearance on all four sides of, say, one-fourth of an inch between the sides of the tray and sides of the can. The wires 19 are preferably spaced to provide an inch and a half mesh so that any bottle caps deposited in the receptacle will drop through the tray and fall to the bottom of the can.

An angle upright 20 is placed in each corner of the tray. The angle upright is positioned so that it opens toward the corner with the edges of its two flanges in welded contact 21 to the three wires 14. The corners of the wires, together with the angle uprights, form a vertical passage at each corner. The upper ends of the angle uprights terminate about flush with the top of the tray but the uprights extend for some distance below the tray—about seven inches with the exemplary dimensions stated, making the uprights about ten inches high.

A coil tension spring 22 is mounted in the angle of each upright. The normal length of each spring is about the same as the length of the upright. As shown in Figs. 3 and 4, the spring passes through the previously mentioned vertical passageway formed by the corners of the wires 18 and the angle uprights. The lower end of each spring is anchored to the lower end of its associated upright by a rivet 23. The upper end of each spring carries a hook 24. Each hook 24 is formed from a wire ring deformed into a hook shape as viewed in side elevation (Fig. 5). The lower loop of the hook engages the upper loop or ring of the spring. The upper loop of the hook is hooked over the upper corner of the can 15. As indicated in Fig. 4, the lower loop of the hook is bent inwardly to a point over the vertical axis of the spring, thereby avoiding any curving of the spring. The tray 17 is thus supported within the can solely by the tension of the springs 22.

The springs 22 which I employ are carefully designed or selected, as regards their ratio of expansion to tension—and this is very important—so that the initial weight of the tray will not tension the springs so much but that the tray when empty will lie in the position shown near the top of the can, and so that as empty bottles are succesively set on to the tray, their accumulating weight will cause the springs to expand and lower the tray at such a rate as to keep the top layer of accumulated bottles about at a constant level. That of course involves an assumption of some more or less constant weight per unit volume for a pile of empty bottles. I find that for empty milk bottles of the size indicated set hit or miss into a square space of the dimensions indicated, the ratio of weight per inch of height of the pile remains fairly constant. Of course, if the milk bottles were carefully packed by hand—or in vertical position—the weight per inch of height of the pile would be definitely in excess of this constant; but in practice, patrons of a bottle dispensing machine, in putting bottles into the receptacle through the butterfly door, can be relied upon not to do any packing but let the bottles fall as they will.

Somewhat surprisingly, I find that this constant remains substantially the same for pint or half-pint milk bottles as it does for one-third quart milk bottles. For pop bottles the constant may be sufficiently different to require springs of different characteristics.

As empty milk bottles are successively pushed through the butterfly door and permitted to drop, they fall, in the first instance, on the bottom of the tray, which represents a fall of not over three inches to five inches, which will not harm the bottles. As more bottles are accumulated, they tend to even themselves out fairly well across the area of the can and the tray, as previously explained, descends such distances in proportion to accumulated weight that the top of the pile of accumulated empty bottles remains at a fairly fixed level, which in general is only two or three inches below the top of the can. Thus, regardless of the number of bottles accumulated in the receptacle, another bottle being pushed in through the butterfly door and dropped will not drop more than three or four inches, which is not enough of a fall to injure the bottles. In fact, the normal tendency of patrons in pushing a bottle through the butterfly door is to hold the neck of the bottle until the neck of the bottle is down to about the level of the bottom of the opening for the butterfly door, which means that the bottom of the bottle will rest, or almost rest, on top of the pile before the bottle is released, and thus as a matter of fact, there is practically no dropping of the bottles.

The projection of the angle uprights 20 several inches below the bottom of the tray serves four functions: first, it provides a substantial initial length for the spring which is expanded from a normal untensioned length of ten inches to a length of some thirty inches; second, it provides limiting stops and rests for the tray and its weight of accumulated bottles, when the receptacle is filled; third, it keeps the bottles from descending into contact with debris in the bottom of the can, so that when the bottles are later removed, spilled milk, bottle caps, straws, etc.,

do not adhere to the exterior of the bottles; and, fourth, it provides some ten inches of length for the corners of the tray riding in the corners of the can and preventing such cocking of the tray that it might bind in the can. (The downward extensions of the angle uprights are, however, at the expense of a few inches of otherwise available capacity of the receptacle.)

The placement of the springs close to the corners of the can keeps them out of interference with the bottles.

While the milk bottles cannot pass below the tray, milk bottle caps and used straws can drop through the tray down to the bottom of the can and likewise any milk which may spill out of the more or less empty bottles. After a serviceman has cleaned out any such accumulated waste from the bottom of the can, he can sprinkle a little lime 27 in the bottom of the can so that any split milk or milk adhering to bottle caps will be prevented by the lime from souring and giving off disagreeable odors. For that purpose it may be advisable to add some water to the lime in the bottom of the can. In the instance of empty pop bottles, the lime would neutralize the acidity of any spilt carbonated beverage which might otherwise hasten the corrosion of the can.

When a serviceman comes to remove the empty bottles, he will throw the cover 11 back on its hinge 12 to uncover the top of the receptacle and then remove the bottles one or two at a time, setting them into a bottle case. As bottles are removed, and the load on the springs lightened, the springs will pull the tray and the remaining pile of bottles upwardly to keep the level of the top of the pile of remaining bottles at approximately a constant level. This reverse action feature of my invention greatly facilitates the work of the serviceman in removing bottles because he does not have to reach down into a deep receptacle. It is not necessary for the serviceman to clean out the can every time he refills the dispensing machine and removes the empty bottles from the receptacle; he may do so only once a day or once every two or three days, especially where the lime is used to counteract the spilt milk. When the serviceman does clean out the can, he can lift the can, with the tray mounted therein, out of the can by using the handle 16 and take it to a convenient sink. There he can quickly remove the tray and springs by simply unhooking the four spring hooks 24, rinse off the tray if necessary, and dump the contents of the can and wash it out.

If the can 15 should prove leaky in a few months' service due to corrosion, a new can can be substituted but the same tray, which is not subject to much wear or corrosion, can continue to be used.

For protecting the butterfly door 13 from having its enamel worn off and becoming unsightly by the abrasion of bottles pushing against the door, I prefer to include, as a part of my accessories adapting the standard receptacle to the peculiar problems of empty bottles, a rubber sheet 28 of the same area and profile as the butterfly door which overlies the door and has clips, or inturned lower edges 29 molded therein, to embrace the lower edges of the door to protect the latter and to hold the rubber sheet upon the butterfly door. Such a protective rubber jacket would preferably be of the same color as the receptacle cover and hence inconspicuous.

While I have illustrated and described this specific embodiment of my invention, I contemplate that many changes and substitutions may be made without departing from the scope or spirit of my invention.

I claim:

1. An accessory for the purpose described comprising a square tray having shallow sides and a perforate bottom, posts carried by the tray at the respective corners and extending downwardly from near the top of the tray for a considerable distance below the bottom of the tray, tension springs disposed in the corners along the respective posts with the lower ends of the springs anchored to the lower ends of the posts, and hooks on the upper ends of the springs for anchoring over the respective top corners of a vertically elongated square can, whereby to support the tray horizontally within the can for downward and upward movement therein, the springs, under the weight of the empty tray, being of a length in the order of the length of the posts and the springs being of such characteristic that as empty bottles are accumulated in a pile resting upon the tray, the tray will descend distances corresponding to the height of the pile, whereby the height of the pile remains at a fairly constant level near the top of the can during the lowering of the tray.

2. A receptacle accessory according to claim 1, wherein the posts are angle strips with their flanges directed outwardly and wherein the springs lie within the angles of the respective strips.

3. A receptacle accessory according to claim 1, wherein the posts are angle strips with their flanges directed outwardly and wherein the springs lie within the angles of the respective strips and within the corners of the sides of the tray.

4. As a receptacle for empty bottles, the combination of a vertically elongated container having a bottle receiving opening at its upper end, a tray disposed across the container and mounted for vertical reciprocation within the container, spring means considerably vertically longer than the vertical dimension of the tray for supporting the tray within the container and anchored to the container near its upper end, and spring anchoring structure depending a considerable distance below the tray and having the lower ends of the spring means secured thereto, the spring means being so constructed and arranged that as like empty bottles, placed within the receptacle and resting upon the tray, are accumulated, the spring means will yield under the weight of the bottles to lower the tray appropriately to maintain the top of the pile of accumulated bottles at a fairly constant level near the upper end of the receptacle.

5. In combination in a receptacle for empty bottles, a bottle-receiving tray, a vertically elongated open-top container a number of times as deep as the tray within which the tray is vertically movable from a position near the top of the container to a position near the bottom of the container, spring means substantially longer than the depth of the tray but substantially shorter than the depth of the container anchored at the top of the container and extending down below the bottom of the tray, and means carried by and extending below the bottom of the tray to which the lower ends of the spring means are anchored, the spring means being extensible within elastic limits to permit the tray to be lowered from the position near the top of the container to the position near the bottom of the container as empty

bottles are set into the tray so as to accumulate a pile of bottles supported by the tray within the container.

6. A combination as set forth in claim 5 wherein the tray is of a perforated construction permitting debris material to fall from the bottles down into the container, and the depending means carried by the tray constitute stops engageable with the bottom of the container for supporting the tray in spaced relation thereto, at the limit of descent of the tray and keeping tray and the bottles supported thereby from descending into contact with debris material that may have accumulated on the bottom of the container.

7. In a receptacle for empty bottles, a relatively shallow tray adapted to be disposed across a vertically elongated container of only slightly greater horizontal inside dimensions than the outside horizontal dimensions of the tray so that the tray may reciprocate in vertically slidable relation within the container, spring means for supporting the tray within the container so constructed and arranged that as like empty bottles placed within the tray are accumulated, the spring means will yield under the weight of the bottles to lower the tray appropriately to maintain the top of the pile of accumulated bottles at a fairly constant level near the upper end of the container, and means extending down substantially at spaced points adjacent the periphery of the tray adapted to cooperate with the wall of the container to prevent cocking of the tray which might cause it to bind in the container when the tray is unevenly loaded, the spring means comprise tension spring units substantially longer than the depth of the tray and having their lower ends secured substantially below the bottom of the tray to said depending means while their upper ends extend at least to the top of the tray so that in the unloaded condition of the tray the top of the tray is close to the top of the container.

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