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BOTTLE BREAKING MACHINE

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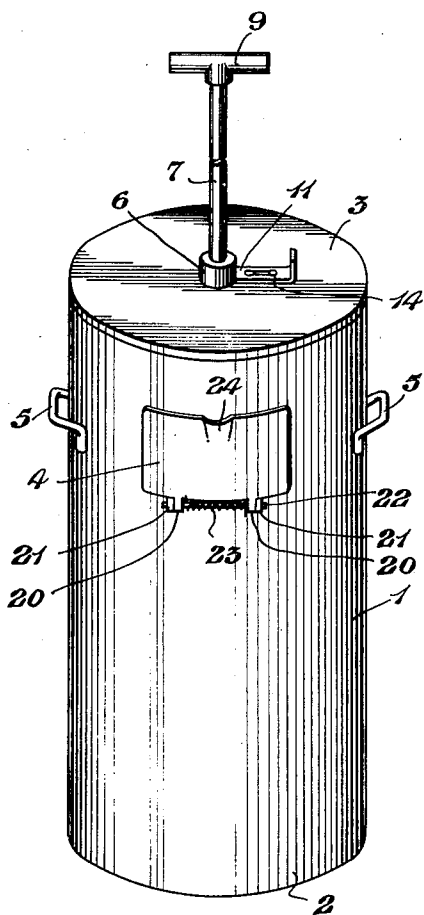


Fig. 1.

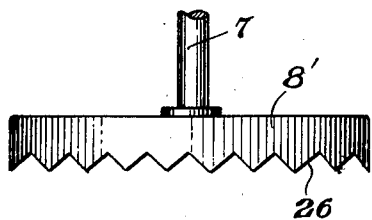


Fig. 3.

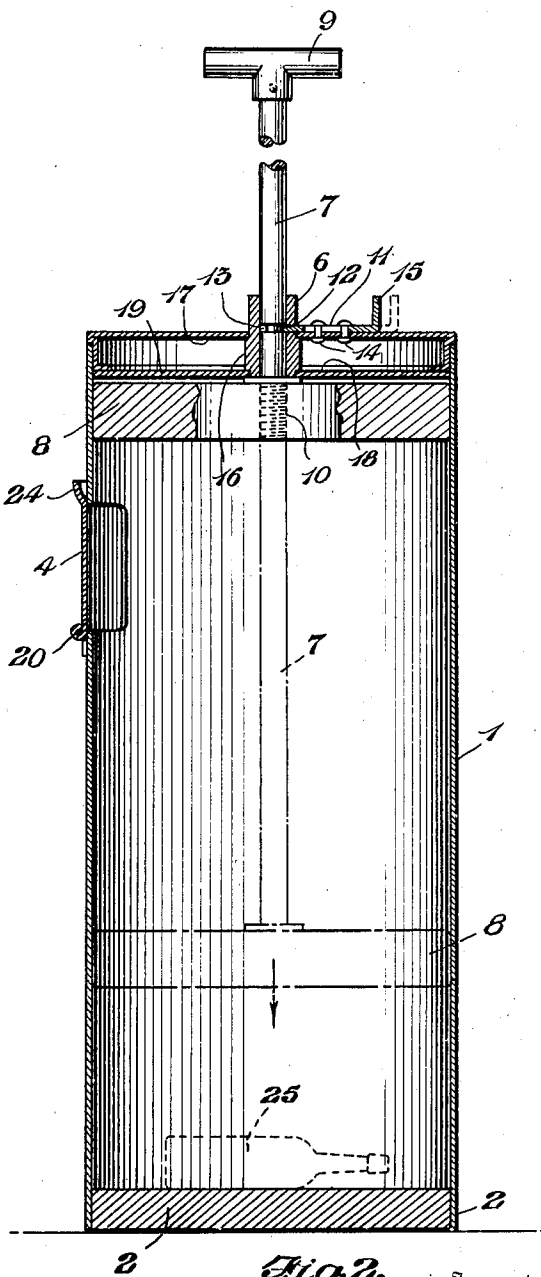


Fig. 2.

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BOTTLE BREAKING MACHINE

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2 Claims. (Cl. 83—93)

My invention relates to a device for breaking glass containers and more particularly to a machine for breaking bottles, jars and the like.

Since repeal of the Eighteenth Amendment to the Constitution, considerable difficulty has been encountered in connection with the fraudulent reuse of empty liquor bottles by unscrupulous persons who refill the bottles with an inferior product and sell the same under its original trade name. This practice, with its attendant loss of revenue and which is obviously unfair to the purchaser and to the manufacturer or distiller, has grown rapidly within the last few years, with the result that various state liquor control boards and other authorities have requested and suggested certain legislative enactments designed to eliminate nefarious practices of this character.

The initial regulations which the liquor control boards effected were directed to the exterior markings on the bottles, that is, in addition to cancellation of the revenue stamps, the user was also required to obliterate or remove the original labels, on which were printed the distiller's name, address and the brand or trade name of the liquor contained therein. This type of regulation was not effective for the reason that those engaged in the business of reusing empty liquor bottles circumvented the law by having duplicate labels printed and applied to the bottles in substantially the same position that they originally occupied.

After considerable experimental regulation, it was decided that the best chance of success resided in measures aimed at destruction of the bottle itself, after the contents had been consumed, rather than in obliteration of the markings thereon. In line with this policy, therefore, the legislatures of a number of states have enacted measures relating to the disposition of empty containers, and more particularly empty liquor bottles, wherein it is prescribed that the bottle shall be immediately broken as soon as it is empty.

In conformance with these regulations, it is the present practice of owners or proprietors of establishments wherein alcoholic liquors are dispensed to remove the empty bottles and deposit the same in a suitable collection receptacle. The empty containers are thereafter broken by an attendant who usually performs this operation by striking the individual bottles against a support or by hitting them with a hammer or other object. It will be appreciated that this procedure is extremely dangerous for the reason that particles of flying glass, deflected from the

object with which the bottle contacts, are liable to inflict severe cuts or bruises on the individual breaking the bottles, which may well result in permanent injury.

The purpose of the present invention is to provide an improved bottle breaking device, wherein the empty bottles are placed within a closed container, suitable means being provided in combination with the container whereby the bottles are effectively broken without any danger of injury to the attendant, due to particles of flying glass.

Heretofore it has been proposed to provide bottle breaking devices wherein the bottle is broken by means of mechanical pressure. For example, it has been suggested to remove a part of the neck portion only, by means of a tool adapted to fit over the neck of a bottle; it has also been proposed to clamp an individual bottle within a container and break the same by hitting it a sharp blow by means of a mechanically operated hammer.

While the prior art arrangements no doubt function for their intended purposes, they are open to several objections which are inherent in their construction. In devices of the type wherein only a portion of the neck of the bottle is removed the remainder of the container is difficult to handle by reason of the hazard of injury from contact with the broken or jagged pieces of glass and the necessity of providing a large storage space to accommodate the bottles which have been mutilated. In the arrangements which have been suggested for breaking a bottle by means of a mechanically operated hammer, the bottle is not entirely broken since the hammer is designed to strike the bottle at only one point on the side thereof, and these devices are open to the objection that a rather large container is required in order to accommodate the mechanism used for holding and for striking the bottle.

An object of my invention is to provide an improved bottle breaking device wherein the bottle is broken and crushed within a closed container.

Another object of my invention is to provide an improved bottle breaking device constructed and arranged whereby a bottle is substantially simultaneously broken and crushed within a closed container, by means of a gravity actuated weight member.

Yet another object of my invention is to provide a novel bottle breaking device wherein a weight, having a contact area greater than the area of the bottle, and acting under the force of gravity, is used to crush the bottle.

A further object of my invention is to provide a novel bottle breaking arrangement wherein the bottle may be broken without the necessity of clamping or holding it in fixed position with respect to the striking medium.

A still further object of my invention is to provide a novel bottle breaking device comprising manually operable means whereby pressure is adapted to be applied to the bottle to break the same while the bottle is within a closed container.

Still another object of my invention is to provide an improved bottle breaking machine which is strong and sturdy in construction, consisting of but few parts, and not liable to get out of order even after long and continued use.

In order to make my invention more clearly understood, I have shown in the accompanying drawing means for carrying the same into practical effect, without limiting the improvements in their useful applications to the particular constructions, which for the purpose of explanation, have been made the subject of illustration.

In the drawing:

Figure 1 is a perspective view of my improved bottle breaking machine.

Fig. 2 is a longitudinal sectional view along line 2-2 of Figure 1; and

Fig. 3 is a perspective view of a modification of the plunger shown in Fig. 2.

Referring to the drawing and more particularly to Figure 1, the improved bottle breaking device comprises a cylindrical shaped housing or container 1, having a bottom portion 2, and cover member 3, the body portion of the container being formed with an opening which is normally covered by means of closure member 4, attached to the container in the vicinity of the top portion thereof. Suitable handle members 5, attached to diametrically opposite points of the container are provided, whereby the device may be lifted or carried. The cover member 3 is formed with a central opening having a combined guide and bearing member 6 adapted to receive a shaft or rod 7, to which a suitably weighted head 8 is attached, as shown in Fig. 2. Rod 7 is of sufficient length to project above the cover when the weighted head portion 8 is at its lowermost position, and the end of the rod exteriorly of the container is provided with a handle or gripping member 9 whereby the head portion may be raised within the container.

Referring to Fig. 2, it will be noted that the bottom 2' of the container is formed from a relatively heavy thick piece of material, extending upwardly within the bottom and flush with the lower periphery of the container. The arrangement of the bottom portion is designed to provide a strong and sturdy contact area of sufficient strength and rigidity to withstand the forces exerted thereon, due to impact of weighted member 8, as will be described more fully hereinafter. The head portion 8 is similarly formed from a relatively heavy piece of material, which may be threaded as at 10, for attachment to rod 7 or otherwise suitably mounted upon the rod.

In order to support or maintain the weighted head in its normal position within the container, that is, in the position which it assumes at the top of the container prior to the time it is released and permitted to fall to the bottom, suitable latch means attached to the cover and adapted for engagement with rod 7 are provided. When the head portion 8 is raised to the top of the container, as shown in Fig. 2, it is held in this

position by means of latch 11, slidably mounted upon cover member 3, the end 12 of the latch being adapted to seat in a peripheral groove 13 formed in rod 7. The latch 11 is slidably mounted upon the cover 3 by means of bolts or rivets 14, and it is also formed with a handle or gripping member 15 whereby it may be moved with respect to the cover.

In connection with the cover construction, it will be noted that the combined guide and bearing member 6 is provided with an enlarged shoulder portion 16, adapted to abut against the lower surface 17 of the top of cover 3 and against the upper surface 18 of the bottom 19 of the cover. The purpose of this arrangement is to provide a substantial support for the guide, so that the rod or shaft 7, together with head 8 move in a vertical path and in substantially fixed alignment with the axis of the container, thus eliminating any tendency for the head 8 to bind with the inner surface of the container. It will be appreciated that cover member 3 may be formed with only a top portion of suitable thickness to support the guide, or it may be constructed with a downwardly extending peripheral flange adapted to fit over the top of the container, with the flange on the outside thereof.

The closure member 4, which covers the opening in the wall of the container through which the bottles or other containers to be broken are inserted, comprises a body portion formed with lugs or ears 20, having openings therein adapted for alignment with corresponding openings in the complementary ears 21 attached to the container. A suitable pin 22, extends through the openings formed through the ears and a spring 23, surrounding the pin is constructed and arranged to normally maintain member 4 in the closed position. The closure member is formed with a suitable finger hold 24 so that it can be initially conveniently moved away from its closed position, for the purpose of inserting the neck of a bottle between the edges of the closure and the opening in the wall of the container.

In the operation of my improved bottle breaking device, the bottle to be broken is introduced within the container by pulling closure 4 away from its close contact with the wall of the container housing a sufficient distance to permit insertion of the head or neck portion of the bottle, the weighted head 8, at this time is of course at the top of the container. The bottle 25 is then forced inwardly of the opening and permitted to fall to the bottom of the container, as shown in Fig. 2. The end 12 of latch 11 is thereafter released from its seated position in the peripheral groove 13 formed in rod 7 and the head 8 falls by gravity, crushing the bottle between the head and the heavy bottom 2' of the container. As the container gradually fills, due to the accumulation of glass, and more particularly when the level of the glass reaches a point at which the length of fall of the head is not sufficient to crush the bottle, the piston may be operated manually, that is, it can be forced downwardly by hand into contact with the bottles, to completely crush the same when the accumulation of glass extends beyond the height at which the bottles can be crushed by gravity action of the plunger.

It will be understood that the weight of head

portion 8 and height of fall are correlated with respect to each other and with the type of container which is to be broken, so that sufficient impact force is exerted upon the empty container to completely crush the same when the head is released and falls under the force of gravity. Similarly, the dimensions of the container, that is, diameter of base, height and thickness of material, may be varied depending upon the character and amount of material which is to be broken. It will also be understood that while the head is designed to provide a comparatively snug fit with inner surface of the container, sufficient space is provided between the surfaces in order that any air below the piston can escape so the piston is not retarded in its fall. In this connection, it will be appreciated that if necessary, positive venting means may be provided.

Referring to Fig. 3, there is shown a modified form of weighted head 8', the contact surface of which is provided with a plurality of corrugations 26. With this form of plunger, several distinct points of contact are provided between the head and the surface of the bottle to be broken. A head structure or arrangement of the character shown in Fig. 2, is the preferred form; however, under certain conditions it has been found that the corrugations, apparently by reason of the concentrated points of contact, completely crush the bottle and break the resulting parts into a number of small pieces.

While I have shown and described the preferred embodiment of my invention, I wish it to be understood that I do not confine myself to the precise details of construction herein set forth, by way of illustration, as it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention, or exceeding the scope of the appended claims.

What I claim is:

1. A device for breaking glass bottles and the like, comprising a cylindrical shaped housing having an opening in its side wall in the vicinity of the top thereof, whereby a bottle to be broken may be introduced within the housing, a closure for said opening pivotally mounted upon the body portion of the housing, said closure having spring

means associated therewith adapted to maintain the closure in its normally closed position, a bottom and a detachable cover for said housing, the bottom being substantially of the same diameter as the interior of the housing and of relatively greater thickness than the material of the body portion, a piston having a head portion slidably mounted within the housing, the diameter of said head portion being substantially the same as the inner diameter of the housing, means to reciprocate said piston comprising a rod attached to the head portion of the piston and extending through the housing cover, a combined guide and bearing member for the rod attached to said cover, a handle attached to the end of the rod exteriorly of the housing, and means attached to the housing cover to lock the rod in extended position outside of the housing with the head portion of the piston above the opening in the side wall of the housing.

2. A device for breaking glass bottles and the like, comprising a cylindrical shaped housing having an opening in its side wall in the vicinity of the top thereof, whereby a bottle to be broken may be introduced within the housing, a closure for said opening pivotally mounted upon the housing, spring means associated with said closure to maintain the closure under tension in its normally closed position, a bottom and a detachable cover for said housing, the bottom being substantially of the same diameter as the interior of the housing and of relatively greater thickness than the material of the body portion, a piston having a head portion slidably mounted within the housing, the diameter of said head portion being substantially the same as the inner diameter of the housing, the contact face of said piston being corrugated, means to reciprocate said piston comprising a rod attached to the head portion and extending through the housing cover, a combined guide and bearing member for the rod attached to the cover, a handle attached to the end of the rod exteriorly of the housing and means attached to the housing cover to lock the rod in extended position outside of the housing with the head portion of the piston above the opening formed in the side wall of the housing.

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