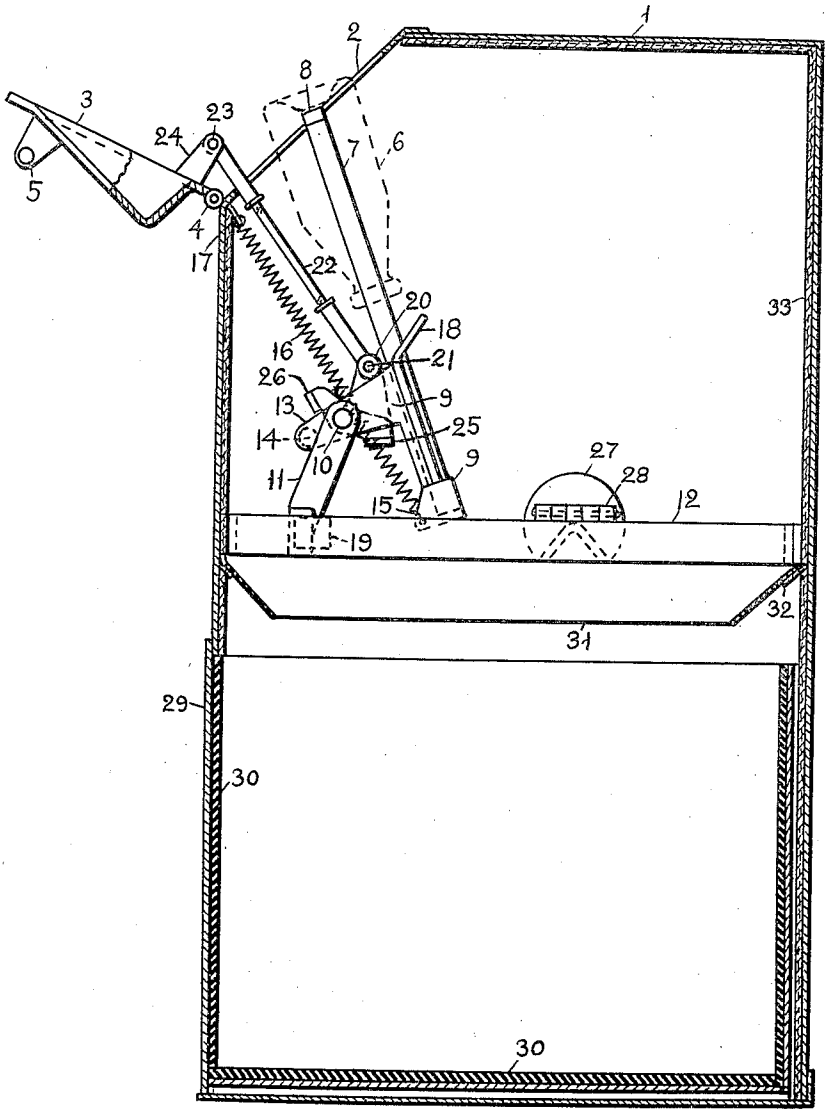
Dec. 24, 1940. R. STARK 2,225,934

BOTTLE BREAKING MACHINE

Filed Nov. 13, 1939 2 Sheets-Sheet 1

Fig. 1



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Fig. 2

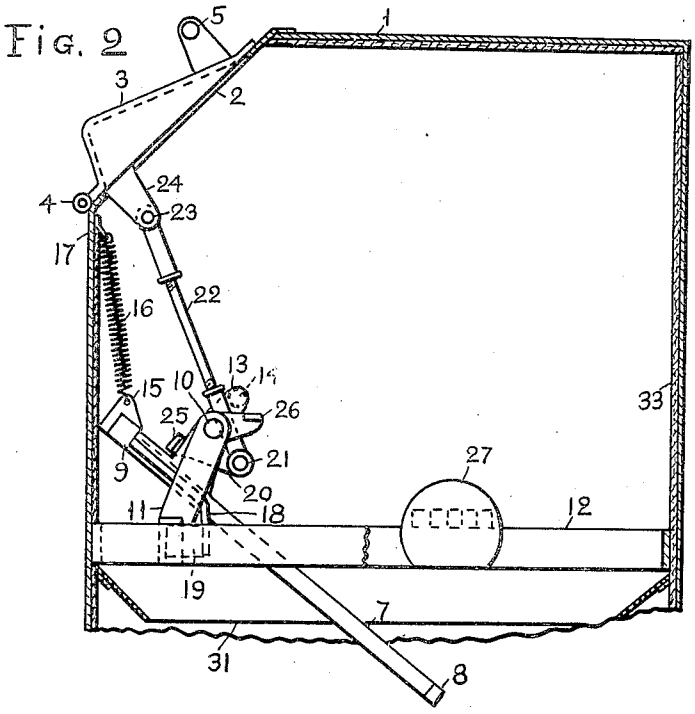


Fig. 3

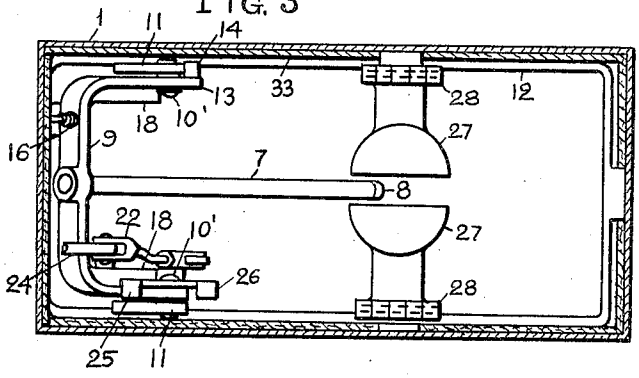
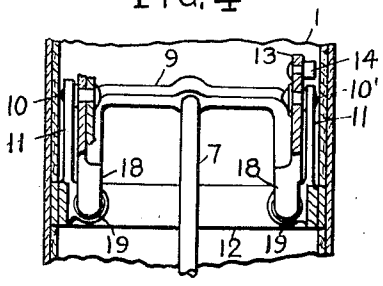


Fig. 4



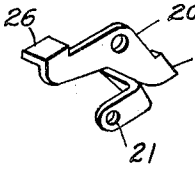


Fig. 5.

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Patented Dec. 24, 1940 2,225,934

UNITED STATES PATENT OFFICE

2,225,934

BOTTLE BREAKING MACHINE

Ralph Stark, Long Island City, N. Y., assignor to Ralson Manufacturing Corporation, Long Island City, N. Y.

Application November 13, 1939, Serial No. 304,026

13 Claims. (Cl. 83—93)

My invention relates to bottle breaking machines and has particular reference to machines for breaking and destroying empty bottles, particularly the type used for alcoholic beverages.

In the liquor trade it is necessary to destroy empty bottles, according to the laws of the United States, to prevent their being refilled with inferior beverages. My invention, therefore, has for its object to provide a convenient device for destroying such bottles.

It is important that such a device should be provided with safety features to prevent injury to the operators from pieces of glass and also to facilitate gathering and removal of the broken pieces. My machine, for this purpose, is made in the form of a cabinet with an opening in the upper front portion for inserting bottles. A movable supporting member is provided in the cabinet for a bottle, the member being operated by the movement of the door in such a manner that the bottle is broken when the door is closed. As a safety feature I provide means to prevent the movement of the bottle until the cover is fully closed when a spring-operated mechanism is released for striking the bottle against anvils suitably supported in the cabinet. The cabinet is fully closed and has sound-proof walls so that the noise of breaking the bottle is largely suppressed. As a further means for suppressing the noise, a receptacle for broken pieces at the bottom of the door is lined inside with rubber or similar sound-deadening material.

In order to facilitate the operation of the machine, the operating connections between the bottle-supporting member and the cover are so made that the member is brought into a substantially vertical position when the door is opened, so that the bottle can be easily placed upside down on the member, and when the door is closed the member is turned downward so that the broken pieces of the bottle readily fall off the member into the receptacle.

Other objects and advantages of my invention will be readily understood from the accompanying specification and drawings, in which:

Fig. 1 is a sectional elevational view of the machine with a cover shown in the open position and a bottle placed on the supporting member.

Fig. 2 is a similar view showing the cover in the closed position;

Fig. 3 is a sectional top plan view of the machine;

Fig. 4 is a fractional sectional side view of the machine.

Fig. 5 is an enlarged perspective view of a rotary lever.

My bottle breaking machine consists of a cabinet 1 fully enclosed with the exception of an opening 2 at its front upper portion, the opening being closed by a cover or lid 3 supported on hinges 4. A handle 5 is provided for operating the cover.

A bottle 6 to be broken (shown in dotted lines in Fig. 1) is mounted upside down on a rod 7, a rubber bumper 8 being provided at the end of the rod for softening the impact of the bottle against the rod. The other end of the rod is mounted in the middle portion of a U-shaped yoke 9. The ends of the yoke are pivoted on trunnions 10 and 10' in brackets 11 mounted on the sides of a frame 12 supported on the walls of the cabinet. A lug 13 is provided at one end of the yoke with a pin 14 which engages the side of the corresponding bracket 11, thereby limiting the movement of the rod when it is turned upward into the receiving position shown in Fig. 1. The yoke has a lug 15 at one side to which one end of a spring 16 is attached, the other end being attached to a plate or hook 17 extending from the front wall of the cabinet. The spring tends to turn the yoke for bringing the rod downward into the discharging position shown in Fig. 2. Extensions 18 on the yoke in the downward position of the rod engage rubber bumpers 19 mounted at the bases of the brackets 11, the bumpers absorbing shocks when the rod is rapidly brought down by the spring.

For operating the yoke a lever 20 is rotatively mounted on the trunnion 10 and is pivotally connected at 21 to one end of a link 22 whose other end is pivotally connected at 23 to a lug 24 extending from the inner side of the cover 3. The lever has a lug 25 engaging the side of the yoke 9 when the cover 3 is being raised, thereby turning the yoke and raising the rod against the tension of the spring 16. The rotation continues until the line of action of the spring passes from the left of pins 10 as shown in Fig. 2 to the right of pins 10 as shown in Fig. 1, and therefore the spring action in the latter position will turn the yoke and rod 7 in an anti-clockwise direction to the position of parts shown in Fig. 1. The rod in this position is stopped by the pin 14 engaging the side of the bracket 11.

A second lug 26 is provided on the lever 20 for turning the yoke downward when the cover 3 is closed. The lug 26 is so positioned that it does not come in contact with the yoke until the cover is almost closed. The final movement of

the cover brings the lug 26 against the side of the yoke 9, turning the latter until the spring passes to the left of the axis of the pins 10 and 10'. The spring then becomes free to turn the yoke in the direction for bringing the rod downward into the discharging position shown in Fig. 2, until the extensions 18 come to rest against the bumpers 19.

Anvils 27 are provided for breaking the bottle when it is moved downward with the rod 7. The anvils are supported on hinges 28 at the sides of the frame 12. The ends of the anvils are spaced apart, forming a clearance for the rod 7 but preventing passage of the bottle. The latter accordingly becomes broken into pieces at the contact with the anvil when the rod 7 is brought down by the spring 16. The hinges 28 are so made that the anvils remain in the horizontal operative position, the hinges preventing their rotation downward but admitting of a rotation upward.

The anvils are therefore raised if a piece of the bottle remains on the rod 7 when the latter is being raised, thereby preventing a damage to the parts. This may happen, for instance, if the cabinet is full of broken bottles so that the neck of a broken bottle cannot slide off the rod in its downward position and is raised together with the rod when the cover 3 is raised.

The front wall of the cabinet has an opening for a sliding drawer 29 for the broken bottles. It is preferably lined with a soft and elastic material 30 such as rubber for deadening the noise of falling glass. Rubber aprons 31 are attached to metal angle pieces 32 at the walls, extending inward at an angle of about forty-five degrees. These aprons direct the pieces into the central part of the drawer away from the walls of the cabinet, thereby preventing the broken pieces from striking the walls of the cabinet and of the drawer.

It is understood that my bottle breaking machine may be modified without departing from the spirit of my invention, as set forth in the appended claims.

I claim as my invention:

1. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle in the inverted position, operative connections between the rod and the cover for moving the rod upward for receiving a bottle when the cover is opened and for moving the rod downward when the cover is closed, anvil members supported in the cabinet at the sides of the rod with a clearance therebetween for free passage of the rod without the bottle, the anvil members being thereby adapted to break the bottle when the rod is moved into the cabinet by the closing of the cover, and a receptacle in the cabinet for broken pieces of the bottle.

2. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a hinged cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle in the inverted position, operative connections between the rod and the cover for moving the rod upward for receiving a bottle when the cover is opened and for moving the rod downward when the cover is closed, a resilient bumper at the upper end of the rod, and anvils in the cabinet adapted to contact and to break the bottle when the rod is moved downward by the closing of the cover.

3. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a hinged cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle in the inverted position, operative connections between the rod and the cover for moving the rod upward for receiving a bottle when the cover is opened and for moving the rod downward when the cover is closed, and anvil members supported in the cabinet at the sides of the rod with a clearance therebetween for free passage of the rod without the bottle, the anvil members being thereby adapted to break the bottle when the rod is moved into the cabinet by the closing of the cover, the anvil members being hingedly supported for rotation in direction of the upward movement of the rod and being prevented by their supports from moving downward.

4. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a hinged cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle in the inverted position, operative connections between the rod and the cover for moving the rod upward for receiving a bottle when the cover is opened and for moving the rod downward when the cover is closed, a resilient bumper at the upper end of the rod, anvils in the cabinet adapted to contact and to break the bottle when the rod is moved downward by the closing of the cover, and means in the cabinet to muffle the noise of breaking the bottles.

5. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle in the inverted position, operative connections between the rod and the cover for moving the rod upward for receiving a bottle when the cover is opened and for moving the rod downward when the cover is closed, anvil members supported in the cabinet at the sides of the rod with a clearance therebetween for free passage of the rod without the bottle, the anvil members being thereby adapted to break the bottle when the rod is moved into the cabinet by the closing of the cover, a receptacle in the cabinet for broken pieces of the bottle, and a sound-proofing lining in the cabinet for muffling the noise of breaking the bottles.

6. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a hinged cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle, yieldable means to move the rod downward, means to move the rod upward by the cover when the latter is opened, means to lock the rod in its upward position, and means to release the rod when the cover is closed, thereby permitting the yieldable means to move the rod with the bottle downward, and anvils adapted to contact and to break the bottle by its downward movement.

7. A bottle breaking machine comprising a cabinet having an opening in the upper portion, a cover for the opening hingedly supported on the cabinet, a rod rotatively supported at the lower end in the cabinet adapted to receive a bottle, an extension at the lower end of the rod, a spring attached at one end to the extension and attached at the other end to a wall of the

cabinet, the spring being adapted to move the rod downward, a link pivotally connected at the upper end to the cover, operative connections between the lower end of the link and the rod for moving the rod upward when the cover is being raised, the spring being adapted to pass beyond the axis of rotation of the rod when the latter is fully raised, whereupon the spring begins to urge the rod further upward, means to limit the upward movement of the rod, the operative connections being adapted to move the rod downward at the end of the closing movement of the cover, thereby allowing the spring to bring the rod downward, and means to break the bottle on the rod during its downward movement.

8. A bottle breaking machine comprising a cabinet having an opening in the upper portion, a cover for the opening hingedly supported on the cabinet, a rod rotatively supported at the lower end in the cabinet adapted to receive a bottle, an extension at the lower end of the rod, a spring attached at one end to the extension and attached at the other end to a wall of the cabinet, the spring being adapted to move the rod downward, a link pivotally connected at the upper end to the cover, operative connections between the lower end of the link and the rod for moving the rod upward when the cover is being raised, the spring being adapted to pass beyond the axis of rotation of the rod when the latter is fully raised, whereupon the spring begins to urge the rod further upward, means to limit the upward movement of the rod, the operative connections being adapted to move the rod downward at the end of the closing movement of the cover, thereby allowing the spring to bring the rod downward, means to break the bottle on the rod during its downward movement, means to limit the downward movement of the rod, and resilient bumpers for the rod at the limiting points of its movement.

9. A bottle breaking machine comprising a cabinet having an opening in the front upper portion, a hinged cover for the opening, a rod rotatively supported at its lower end in the cabinet and adapted to support a bottle at its free end in the inverted position, operative connections between the rod and the cover for moving the rod upward for receiving a bottle when the cover is opened and for moving the rod downward when the cover is closed, a resilient bumper at the free end of the rod, means in the cabinet located along the path of movement of the rod and arranged to engage the bottle when the rod is moved downward by the closing of the cover to effect the crushing operation, and yieldable elastic aprons at the walls of the cabinet extending inward at an angle to the walls for receiving the impact of flying pieces of the bottle.

10. A bottle breaking machine comprising a cabinet having an opening in the upper portion, a cover for the opening hingedly supported on the cabinet, a rod rotatively supported at its lower end in the cabinet adapted to support a bottle, an extension at the lower end of the rod, a spring attached at one end to the extension and supported at the other end in the cabinet, the spring being adapted to move the rod downward, a link pivotally connected at the upper end to the cover, a lever rotatively supported in the cabinet and pivotally connected to the lower end of the link, means to rotate the rod by the lever when the cover is being raised, means to stop the rotation when the spring passes beyond the axis of rotation of the rod when the spring will be in position to urge the rod further upward, the lever being inoperative for rotating the rod when the cover is being closed until the cover is closed, the lever being then adapted to move the rod until the spring passes back of the axis of rotation of the rod, thereby releasing the spring for moving the rod downward, and means to break the bottle on the rod during its downward movement.

11. A bottle breaking machine comprising a cabinet having an opening in the upper portion, a cover for the opening hingedly supported on the cabinet, a yoke rotatively supported at its ends in the cabinet, a rod supported at one end on the yoke, the other end of the rod being free, a lever rotatively supported in the cabinet at one end of the yoke, a link pivotally connecting the lever with the cover, a spring adapted to rotate the yoke for turning the rod downward, a lug on the lever adapted to engage the yoke for moving the rod upward when the cover is being raised, the rod in its upward position being adapted to receive a bottle through the opening, means to retain the rod in the upward position independently of the lever, the lever being disengaged from the yoke during the first portion of the closing movement of the cover, a second lug on the lever adapted to engage the yoke at the end of the cover closing movement, thereby moving the yoke and releasing the same to be moved downward by the spring, and means to break the bottle during the downward movement of the rod.

12. A bottle breaking machine comprising a cabinet having an opening in the upper portion, a cover for the opening hingedly supported on the cabinet, a yoke rotatively supported at its ends in the cabinet, a rod supported at one end on the yoke, the other end of the rod being free, a lever rotatively supported in the cabinet at one end of the yoke, a link pivotally connecting the lever with the cover, a spring adapted to rotate the yoke for turning the rod downward, a lug on the lever adapted to engage the yoke for moving the rod upward when the cover is being raised, the rod in its upward position being adapted to receive a bottle through the opening, means to retain the rod in the upward position independently of the lever, the lever being disengaged from the yoke during the first portion of the closing movement of the cover, a second lug on the lever adapted to engage the yoke at the end of the cover closing movement, thereby moving the yoke and releasing the same to be moved downward by the spring, means to limit the rotation of the yoke when the rod is raised to its upward position, and means to break the bottle during the downward movement of the rod.

13. A bottle breaking machine comprising a cabinet having an opening in the upper portion, a cover for the opening hingedly supported on the cabinet, a yoke rotatively supported at its ends in the cabinet, a rod supported at one end on the yoke, the other end of the rod being free, a lever rotatively supported in the cabinet at one end of the yoke, a link pivotally connecting the lever with the cover, a spring adapted to rotate the yoke for turning the rod downward, a lug on the lever adapted to engage the yoke for moving the rod upward when the cover is being raised, the rod in its upward position being adapted to receive a bottle through the opening, means to retain the rod in the upward position independently of the lever, the lever being disengaged from the yoke during the first portion of the

closing movement of the cover, a second lug on the lever adapted to engage the yoke at the end of the cover closing movement, thereby moving the yoke and releasing the same to be moved downward by the spring, means to break the bottle during the downward movement of the rod, means to limit the rotation of the yoke in the downward position of the rod, and resilient bumpers between the yoke and stationary yoke supporting parts in the cabinet for absorbing the shock when the rod is fully lowered.

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