April 5, 1949. W. CARMEL 2,466,151

BOTTLE CRUSHING DEVICE

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Fig. 1

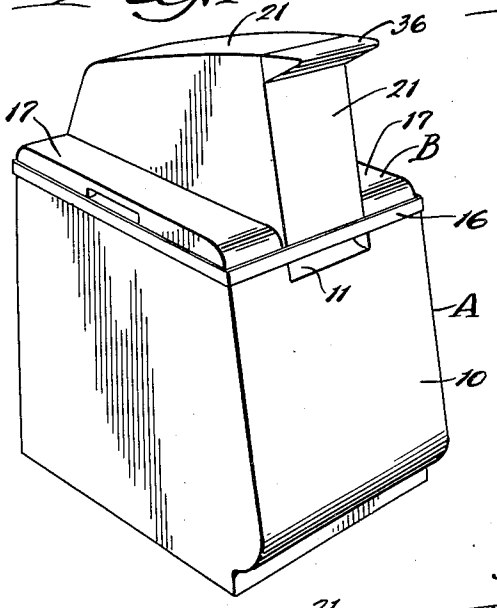


Fig. 2

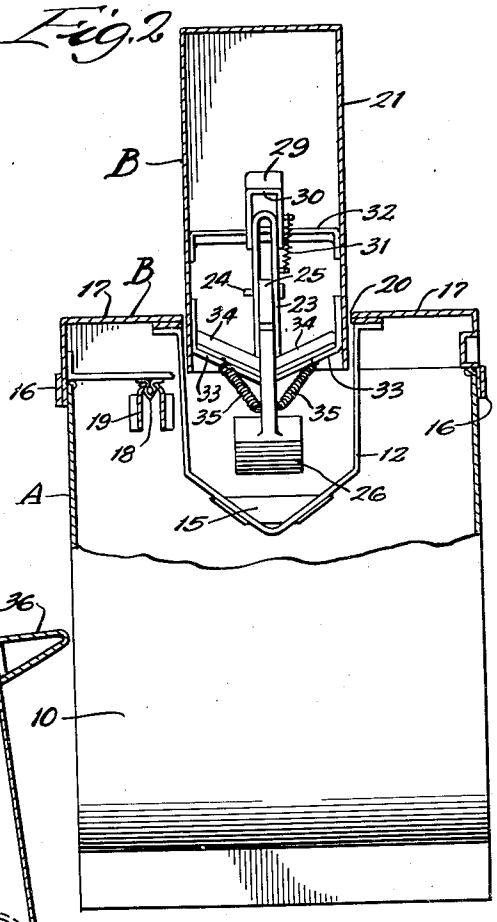
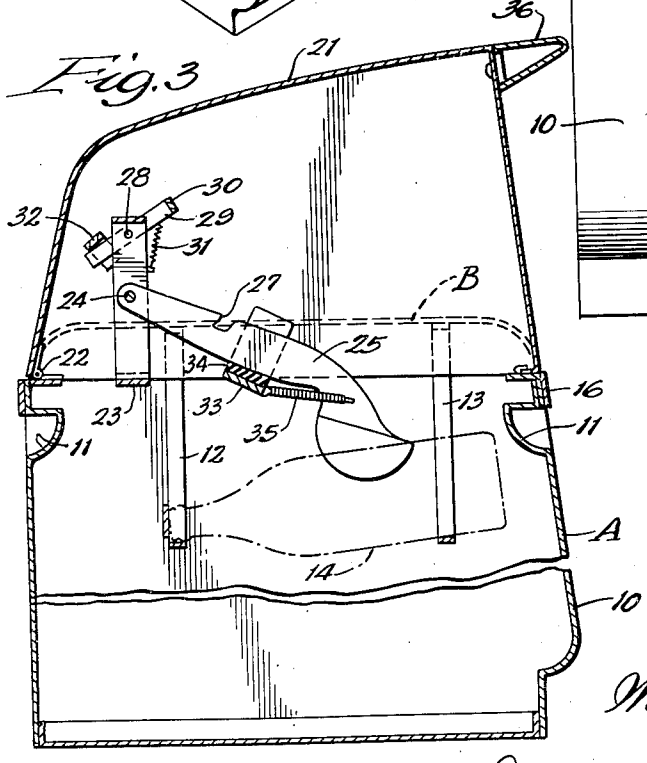


Fig. 3



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Fig. 4

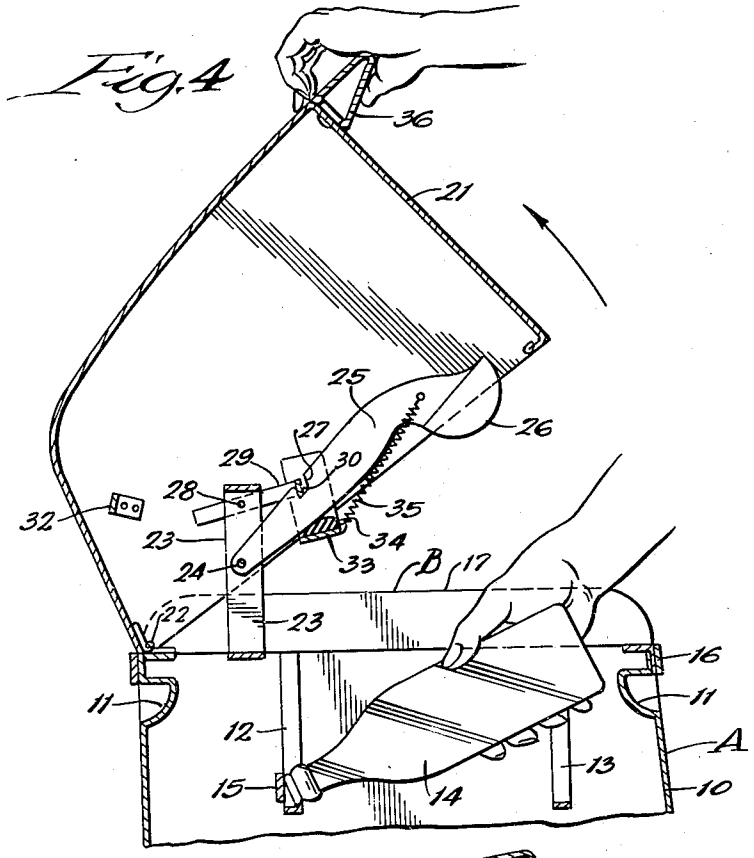
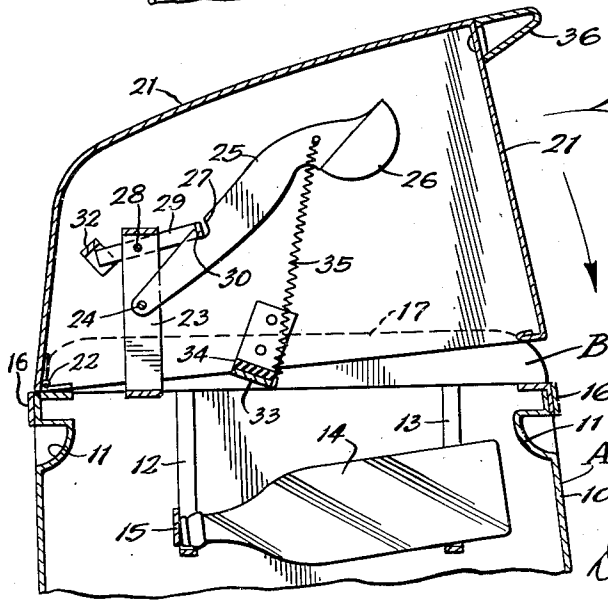


Fig. 5



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BOTTLE CRUSHING DEVICE

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2 Claims. (Cl. 241—99)

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This invention relates to bottle crusher apparatus and is particularly useful in the crushing of bottles so that the fragments thereof are disposed within a separable hopper.

An object of the invention is to provide bottle crusher apparatus of simple structure wherein the crushing operation is accomplished within a closed housing through mechanism actuated in the raising and lowering of a cover or top. Yet another object is to provide a structure in which a separable hopper is employed as a bottle receiving means and a detachable crusher mechanism is supported upon the hopper for use in demolishing bottles, glass containers, and other containers of a fragile character. Yet another object is to provide container crushing mechanism which is adapted to be supported in cocked position through the raising of the top of the casing and the crushing device placed under tension and released during the downward movement of the top structure. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a preferred embodiment, by the accompanying drawings, in which—

Fig. 1 is a perspective view of apparatus embodying my invention; Fig. 2, a broken and partly vertical sectional view; Fig. 3, a broken longitudinal sectional view, the crusher being shown in lowermost position; Fig. 4, a broken view similar to Fig. 3 but showing the top and crusher member in raised position; and Fig. 5, a view similar to Fig. 4 but showing the top in partially lowered position.

In the illustration given, A designates a hopper structure; and B designates a detachable crusher mechanism.

The hopper structure A may be of any suitable form or construction.

In the illustration given, it comprises a casing 10 of the general contour illustrated and preferably provided at its front and rear side with inwardly formed recesses 11 providing handles for the hopper. The hopper is provided with a pair of metal straps 12 and 13 which are secured to the upper ends of the hopper and extend downwardly and across the hopper to provide a cradle adapted to receive the bottle 14 which is to be crushed. If desired, the metal strap 12 may be provided with a transverse strip 15 engaging the forward end of the bottle so as to locate it in position. It will be understood that any suitable supporting means within the hopper for holding the bottle or other container which is to be crushed may be employed.

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The bottle crusher structure B may be of any suitable form or construction. In the illustration given, the structure B is provided with a perimetric frame 16 adapted to extend around the top portion of the hopper A and to rest upon the top of the hopper. The member B is provided with a top casing wall 17 which is fixed to and forms a continuation of the perimetric frame 16. In order to releasably lock the top wall 17 upon the hopper structure A, the top frame may be provided with a spring latch member 18 adapted to releasably engage the spaced flange members 19 carried by the hopper A, as shown more clearly in Fig. 2. It will be understood that any suitable means for releasably securing the hopper A and structure B may be employed.

The top casing wall 17 is apertured longitudinally of the structure to provide a cover or top receiving recess 20, as shown more clearly in Fig. 2. Within the recess 20 is mounted a top or hood member 21 pivotally connected at 22 to the perimetric frame 16, as shown best in Fig. 3.

Mounted upon the perimetric frame 16 is a looped metal support member 23 to which is pivotally secured at 24 a bottle crusher or hammer 25. The crusher 25 is provided at its forward end with a weighted portion 26 adapted to be brought into contact with the bottle or other container to crush it, and at its upper side with a latch notch 27. Pivotally supported at 28 upon the member 23 is a latch bar 29 having a transverse flange 30 adapted to engage the notch 27 when the hood or top 21 is raised to position as shown in Fig. 4. A spring 31 normally urges the latch 29 toward the position shown in Fig. 4.

Fixed to the hood or top 21 is a latch release bracket 32 adapted to engage the rear portion of the latch bar 29 and to release the latch from engagement with notch 27 when the top 21 is lowered toward its extreme lower position.

Fixed to the side walls of the top 21 and extending there across is a metal strap 33 and the strap 33 carries a resilient cushion 34 adapted to receive the central portion of the striker 25 as indicated best in Fig. 3. Fixed to the cross strap 33 are the tension springs 35, the upper ends of the springs being secured to the striker or crusher 25.

The hood member 21 may be provided at its forward end with a projecting handle piece 36 to facilitate the raising and lowering of the member 21.

Operation

In the operation of the device, the top 21 is

raised, as indicated in Fig. 4, this movement resulting in the raising also of the crusher member 25 as illustrated best in Fig. 4. As the strap 33 elevates the member 25 to the position shown, spring 31 draws the pivoted latch member 29 downwardly so that its central flange 30 enters the recess 27 and locks the member 25 in elevated position. At this time, the bottle 14 may be inserted in position as illustrated best in Figs. 4 and 5. The top 21 may then be pressed downwardly, as shown in Fig. 5, and during this operation the springs 35 are placed under tension. At the same time, the cross strap or bracket 32 carried by the member 21 finally moves into the released position illustrated in Fig. 5. At this point it depresses the rear end of latch 29 so that the forward flange 30 thereof leaves the notch 27 of the striker member 25. Upon the release of the member 25, the striker is drawn downwardly to the position illustrated in Fig. 3, in which it strikes and shatters the bottle 14 or other container carried by the straps 12 and 13. Further downward movement of the member 25 is prevented by the strap 33 and the noise of the impact is cushioned by the pad 34. The shattered bottle or container falls into the bottom of the hopper A.

After the desired number of containers or bottles have been shattered, the top portion B of the structure may be separated from the hopper A by simply raising structure B. The catch 18 is thus frictionally released from the spaced members 19 and the entire top portion B is removed. The hopper A may then be carried conveniently to a point for disposal of the fractured containers. Reassembly is the reverse of the operation described, the latch 18 being forced by the spring members 19 into the locking position shown in Fig. 2.

In the operations described, it will be noted that the breaking of the bottle occurs only after the closure of the top is effected so that glass splinters cannot escape in any way outside of the casing. Further, while the top is in the raised position shown in Fig. 4, there is no danger of breaking of the container because the striker 25 is not only engaged by the latch member 29 but also is free of tension. The placing of the member 25 under tension by reason of the stretching of springs 35 occurs only when the bottle is in position for breaking and when the member 21 is in the lower range of its movement.

With the structure described, the member 21 may be operated easily and slowly, the force for propelling the member 25 being generated within the spring members 35 as the top 21 is lowered. The structure 21 does not have to be swung violently in order to produce the crushing action but rather may be operated slowly or at any desired

speed, the crushing operation being independent of the speed of the movement of member 21.

The apparatus is extremely simple, positive in action and permits the ready disassembly of the parts after the desired amount of crushing has been completed.

While in the specific illustration given, I have set out certain structure in great detail to show one mode of use of the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In crusher apparatus, a hopper, means carried by said hopper for suspending a bottle therein for breaking, a perimetric frame releasably mounted upon said hopper, a casing carried by said frame, a hood movably mounted within said casing, a standard mounted upon said perimetric frame, a striker member pivotally mounted upon said standard, a latch member pivotally mounted for engagement with said striker to maintain the same in raised position, and spring means connected to said striker and to said hood for placing tension upon said spring when said hood is lowered, and means carried by said hood for releasing said latch when said hood moves toward its lowermost position.

2. In crusher apparatus, a hopper, means carried by said hopper for suspending a bottle within the hopper for breaking, a perimetric frame mounted upon said hopper, a casing carried by said frame, a hood movably mounted within said casing, a standard mounted upon said perimetric frame, a striker member pivotally mounted upon said standard, a latch member pivotally mounted for engagement with said striker to maintain the same in raised position, a strap extending across the lower portion of said hood for lifting said striker, spring means connected to said striker and to said strap for increasing the tension upon said spring as the hood is lowered, and means carried by said hood for releasing said latch when said hood moves toward its lowermost position.

WILLIAM CARMEL.

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