Nov. 21, 1967 D. J. MORGENSON 3,353,756

BOTTLE BREAKER

Filed Oct. 23, 1965

FIG. 2

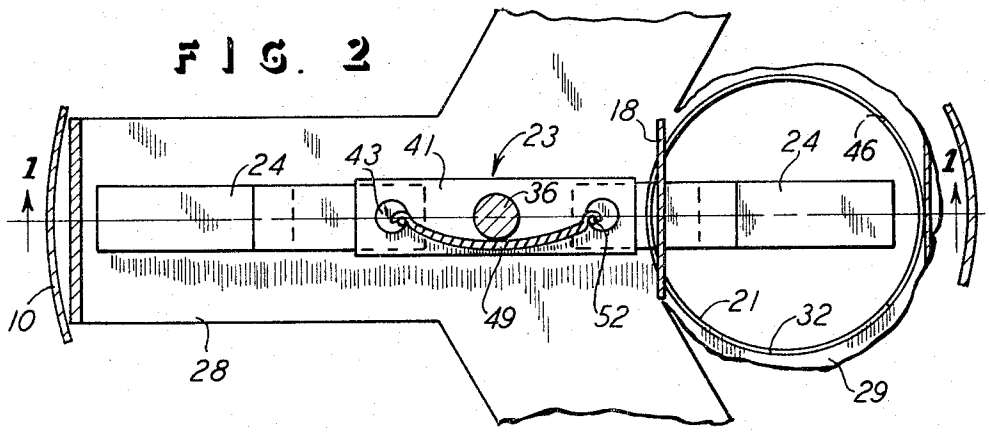
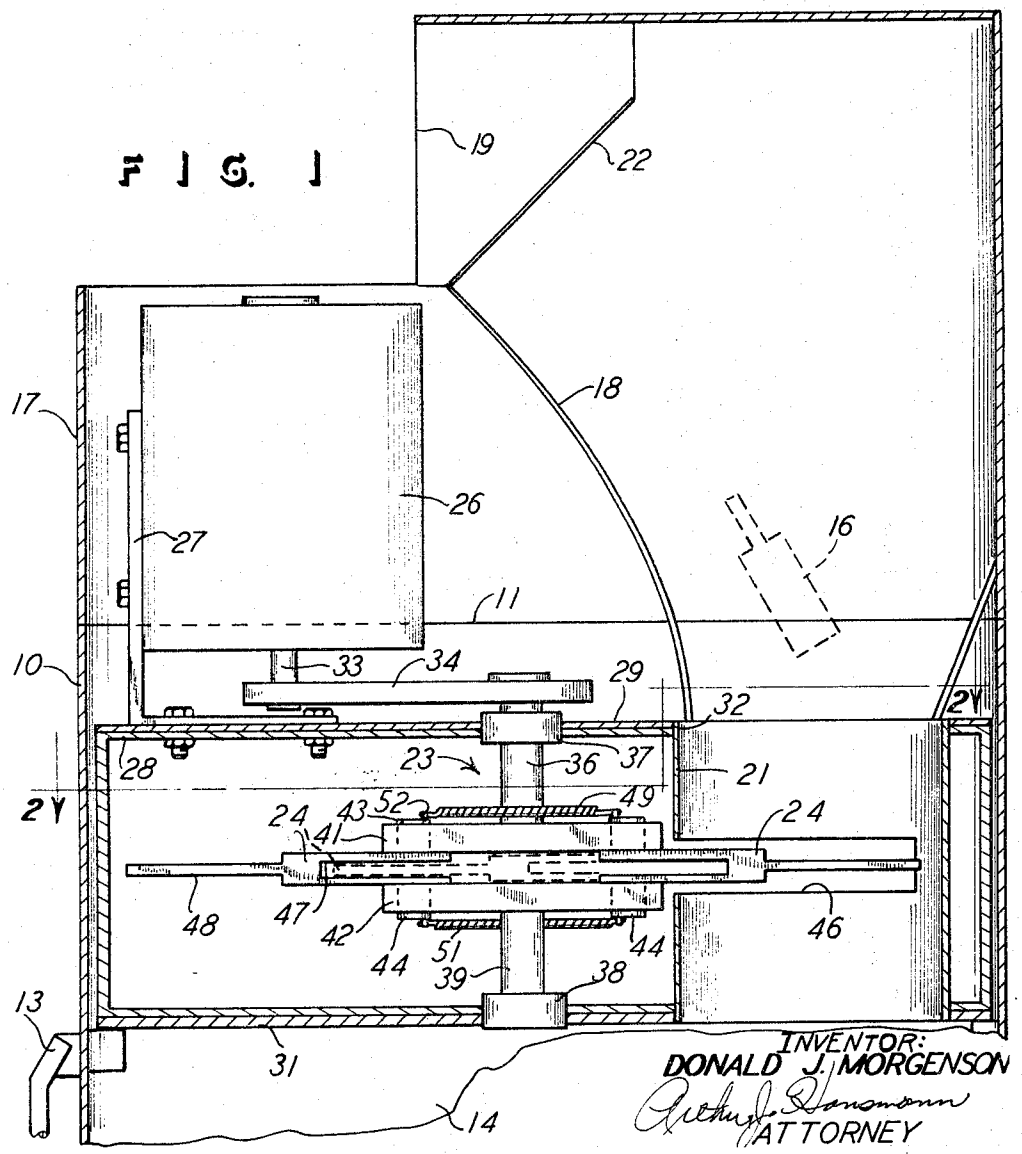


FIG. 1



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BOTTLE BREAKER

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This invention relates to a bottle breaker.

It is a general object of this invention to provide a bottle breaker which is simple and sturdy in its construction, is reliable in its function, is safe in its use in that the operator and the mechanism are not likely to be injured, is readily and easily manufactured and maintained, and which is compact in its construction and suitable for use in conjunction with a trash container for the broken glass.

A more specific object of this invention is to provide a bottle breaker which has provision for protecting itself against damage in the event that an unbreakable item, such as one which is not made of glass, is fed into the unit.

Still another object of this invention is to provide a bottle breaker which thoroughly breaks and shatters a bottle or other glass item in a matter of only a very short time such as only a fraction of a second.

Still a further object of this invention is to provide a bottle breaker which is designed to be readily and easily adapted to any desired capacity of accommodating the broken glass as well as handling the glass item in various sizes prior to being broken.

Other objects and advantages become apparent upon reading the following description in light of the accompanying drawings, wherein:

FIG. 1 is an elevational sectional view showing a fragment of a preferred embodiment of this bottle breaker, and with the view taken along the line 1—1 of FIG. 2.

FIG. 2 is a sectional view taken along the line 2—2 of FIG. 1 showing a fragment of the latter.

The bottle breaker is shown to include a lower housing **10** which is preferably circular and extending below a line **11** designating the top of the lower housing **10**. The housing **10** is shown broken away at its lower end, and it may of course be supported on a pedestal, legs, or the like, and legs **13** are shown in FIG. 1 only and a fragment of the leg **13** is shown. It would of course be obvious to one skilled in the art that the leg **13**, along with similar legs, support the housing **10** in any desired position about a floor or the like.

The housing **10** is a complete enclosure with respect to its upright walls, but of course the top **11** and the bottom (not fully shown but indicated at **14**) are both open so that a bottle or other glass item designated **16** and shown in dotted lines may be inserted through the top **11** and will be ejected out the bottom **14**. The housing is also shown to include the top section **17** which is suitably assembled with the bottom section **10** and is also enclosed around its sides. The section **17** also suitably carries a shelf or chute **18** which forms a passageway from an opening **19** down to a cylinder **21** secured in the lower section **10**. There may also be swinging doors **22** which are suitably mounted and hinged in any common manner on the upper section **17** so that one can insert the bottle **16** into the upper section **17** and the chute **18**.

The actual breaker mechanism itself is shown to include a rotatable member generally designated **23** and two arms **24** which are pivotally connected to the member **23**. An electric motor **26** is shown mounted by means of a bracket **27** and the frame or support **28** which is disposed within the housing lower portion **10**. A circular top wall **29** is also attached to the frame **28**, as is a circular bottom wall **31**. The walls **29** and **31** have suitable openings for respectively accommodating the top opening and bottom

opening of the tube **21**, and such wall openings are designated **32** in FIG. 2. Of course most of the walls **29** and **31** are removed in FIG. 2 except for the fragment of the top wall **29** shown encompassing the tube **21**. Also, the frame or support member **28** is shown to be Y-shaped to extend in the three branches shown and to provide adequate support for the breaker mechanism.

Thus the motor **26** has its drive shaft **33** extending therebelow to be in driving relation with a belt **34** which rotates a shaft **36** on the rotatable member **23**. Bearings **37** and **38** support the shaft **36** and a shaft **39** which is coaxial with the shaft **36** and is actually in the nature of an extension or a part of the shaft **36** in that it is coaxial. Connecting members **41** and **42** are affixed to the shafts **36** and **39** respectively and thus the members **41** and **42** rotate with the shafts **36** and **39** through the drive of the motor **26**.

The members **41** and **42** in turn carry rotatable shafts or trunnions **43** and **44**, there being two of each on the opposite ends of the member **41** and likewise on the member **42**. The arms **24** are then secured on the trunnions **43** and **44** to be pivotally secured with respect to the rotatable member **23** and particularly with respect to these members **41** and **42**.

Thus the arms **24** can pivot radially outwardly, to the positions which they are shown, and they can pivot radially inwardly, both positions being with respect to their mounting pins or shafts **43**, **44**.

It will of course also be noted that the breaker tube **21** has an opening **46** through which the arms **24** can move as the member **23** rotates and brings the arms **24** across the tube **21** in shattering a bottle against the inner walls of the tube **21** or simply under the impact of the arms **24**. It will be further noted that the arms **24** are provided with openings **47**, at the inner ends thereof, and these openings receive the thinner outer ends **48** of the arms **24** when and if the arms **24** pivot radially inwardly, as shown in the dotted lines representing the arm **24** as viewed on the right in FIG. 1. This pivotal position would occur when an unbreakable item might be dropped into the tube **21** and the high speed rotation of the arms **24** would cause them to bounce back or actually pivot inwardly with respect to their support members **41** and **42**. In this manner, the mechanism would not in any way be damaged as it automatically provides for the retraction or inward pivot of the arms **24** when they meet an unbreakable object as mentioned.

Under high speed rotation, the arms **24** will normally be extended radially outwardly in the solid line position shown. Also, the arms **24** are held radially outwardly by means of two tension springs **49** and **51** which are connected between the pins **52** affixed to the shafts **43** and **44**. Thus the springs pull the pins **52** radially inwardly, since the springs **49** and **51** are located eccentrically with respect to the shafts **43** and **44**, and this in turn causes the arms **24** to be extended radially outwardly to the positions shown in solid lines.

It will therefore be understood that with the motor **26** operating at a customary speed of say 1725 r.p.m., and with the provision of two arms **24**, each bottle would be hit as much as sixty times for each second that the bottle is in the tube **21**. Thus the unit is required to be run only a very short time, possibly less than one second actual time, for complete shattering of a bottle, such as a normal size quart or fifth liquor bottle. Of course there would also be a trash container (not shown) placed below the bottom opening **14** for catching the shattered glass so that the glass can be disposed of. The entire idea of course is to reduce the volume required for storing the bottle **16** when it is to be disposed of.

The tube **21** is thus a breaker tube and an abutment and its interior provides an abutment surface against which

the bottles can be thrown by the arms **24**. The tube confines the bottle and, subsequently, the broken glass, as desired. The tube opening **46** is only slightly larger than the height of the arms **24** so the latter fit closely with the tube **21**. The height of the opening **46** is shown to be less than twice the height of the arm **24**, in FIG. 1.

While a specific embodiment of this invention has been shown and described, it should be obvious that certain changes could be made therein, and the scope of this invention should be determined only by the appended claims.

What is claimed is:

1. A bottle breaker comprising a rotatably mounted member, an arm pivotally carried by said member and with said arm extending to a radially outward position beyond the extent of said member and being fully retractable to a radially inward position in response to striking an unbreakable object, an enclosure disposed adjacent said arm and having an opening for receiving said arm when the latter is in the radially outward position and with said arm being clear of said enclosure and rotatable therepast with the rotation of said member when said arm is in the radially inward position, rotation mechanism connected to said member for rotating the latter, and a chute in registry with said enclosure for guiding into said enclosure bottles dropped into said chute.

2. A bottle breaker comprising a rotatably mounted member, a pair of arms pivotally carried by said member on diametrically opposite sides thereof and with said arms extending to a radially outward position beyond the extent of said member and being fully retractable to a radially inward position in response to striking an unbreakable object, rotation mechanism connected to said member for rotating the latter, said arms being arranged with the extending ends thereof disposed clear of the other of said arms and said member when one of said arms is retracted to said radially inward position, an abutment disposed adjacent the circular path of the radially extended position of said arms and providing a passage for said arms when the latter is in the radially outward position and providing an abutment surface against which bottles are thrown upon being struck by the rotation of said arms.

3. A bottle breaker comprising a rotatably mounted member, an arm pivotally carried by said member and with said arm extending to a radially outward position beyond the extent of said member and being fully retractable to a radially inward position in response to striking an unbreakable object, yieldable means connected to said

arm to releasably retain the latter in the radially outward position and freeing said arm for pivoting to said radially inward position when said arm strikes an unbreakable object, rotation mechanism connected to said member for rotating the latter, an enclosure disposed adjacent the circular path of rotation of said arm and having an opening for receiving said arm when the latter is in the radially outward position and with said arm being clear of said enclosure and rotatable therepast with the rotation of said member when said arm is in the radially inward position, and a chute in registry with said enclosure for guiding into said enclosure bottles dropped into said chute.

4. A bottle breaker comprising a rotatably mounted member including an arm extending to a radially outward position on said member, rotation mechanism connected to said member for rotating the latter, an enclosure disposed adjacent the circular path of rotation of said arm and having an opening for receiving said arm when the latter is rotated therepast with the rotation of said member, and a chute in registry with said enclosure for guiding into said enclosure bottles dropped into said chute.

5. A bottle breaker comprising a rotatably mounted member, an arm pivotally carried by said member and with said arm extending to a radially outward position beyond the extent of said member and being fully retractable to a radially inward position in response to striking an unbreakable object, a tension spring connected to said arm to releasably retain the latter in the radially outward position and permit said arm to pivot radially to said inward position when said arm strikes an unbreakable object, rotation mechanism connected to said member for rotating the latter, an abutment disposed adjacent the circular path of rotation of said arm in a position to have said arm throw a bottle thereagainst and providing a passage for said arm when the latter is in the radially outward position and with said arm being clear of said abutment and rotatable therepast with the rotation of said member when said arm is in the radially inward position.

References Cited

UNITED STATES PATENTS

2,509,242	5/1950	Miller et al.	241—194 X
2,558,255	6/1951	Johnson et al.	241—99
2,828,086	3/1958	Macemon	241—194 X

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