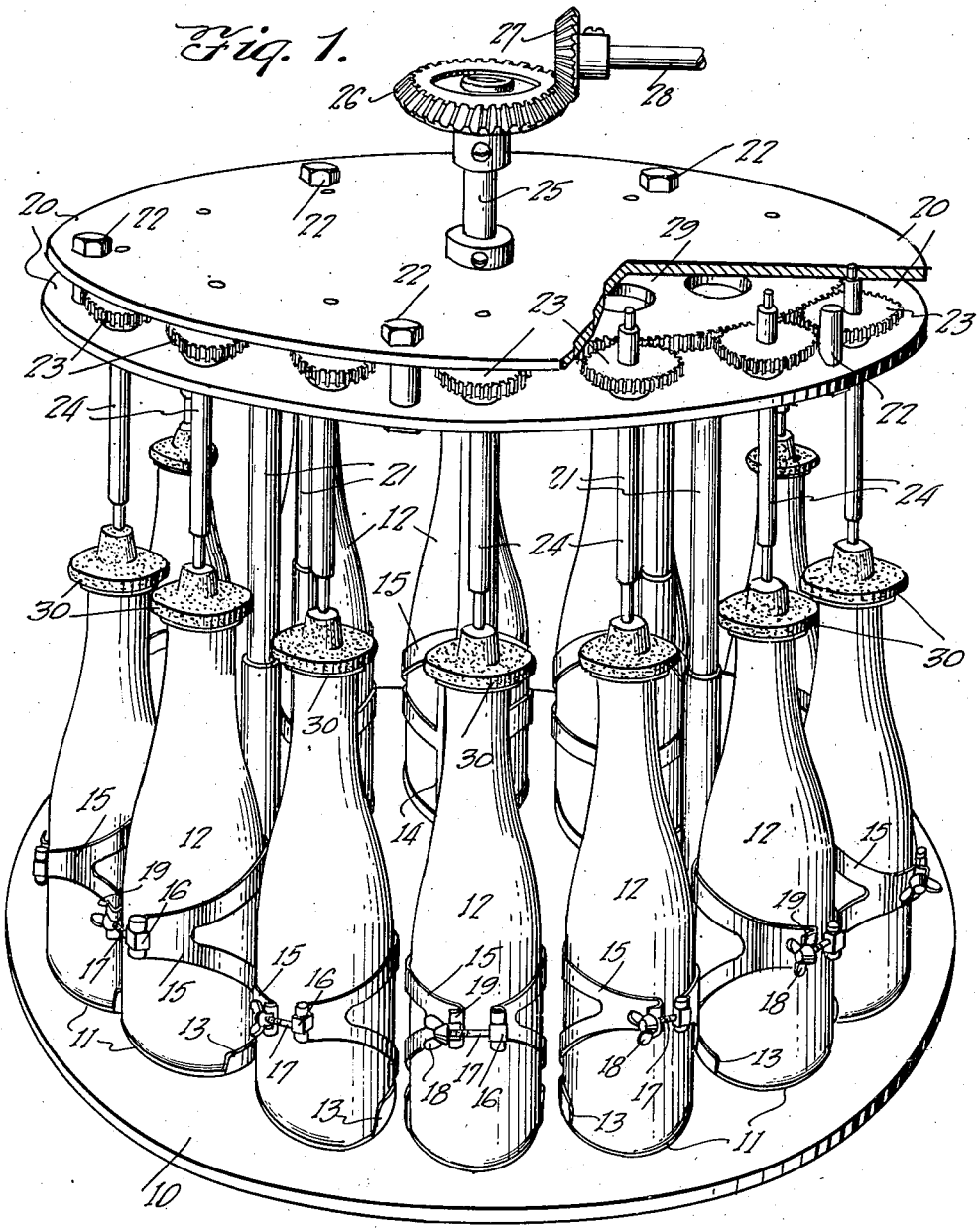
April 17, 1945. A. S. WATERS 2,373,932

BOTTLE RECLAIMING MACHINE

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Fig. 1.



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Fig. 2.

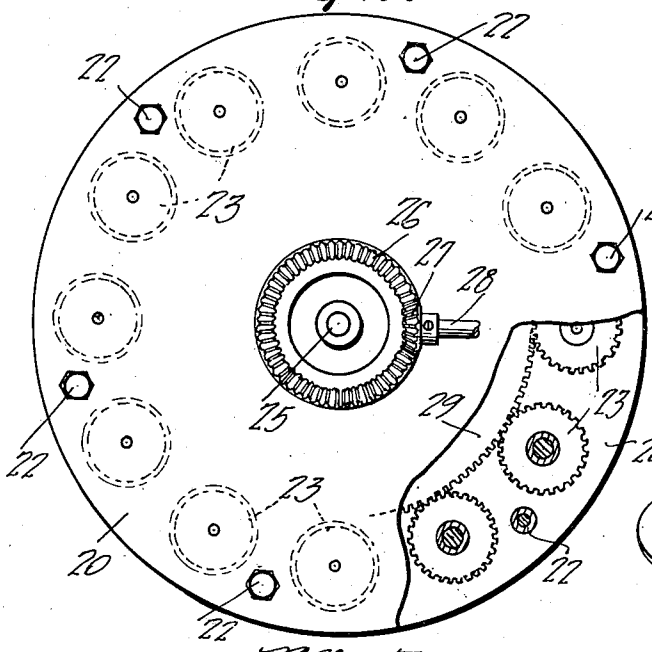


Fig. 4.

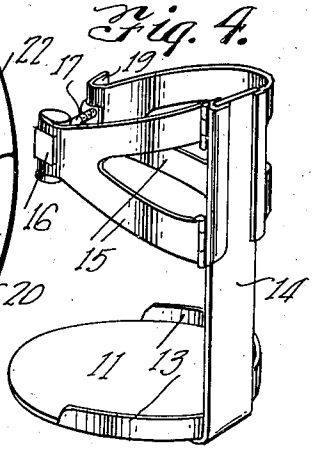


Fig. 3.

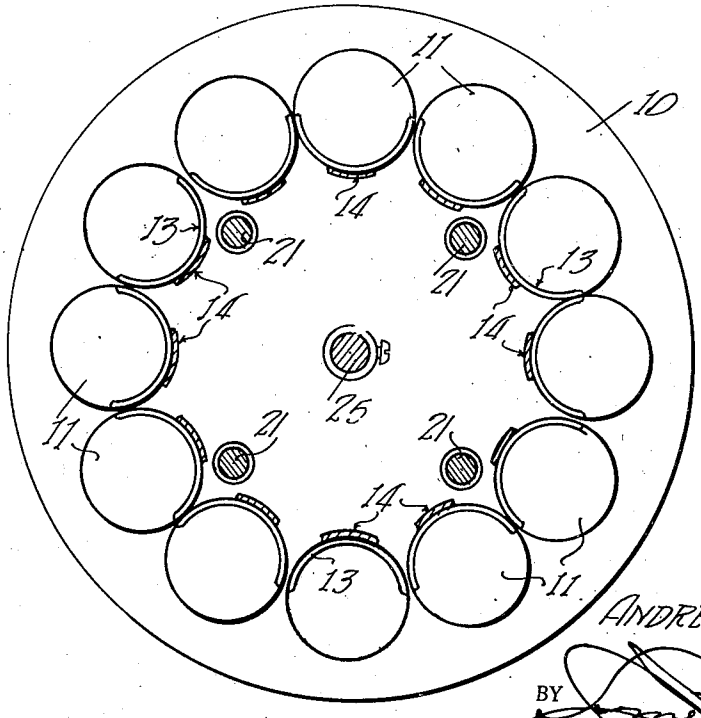
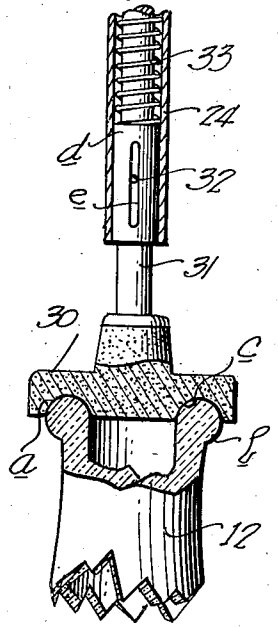


Fig. 5.



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UNITED STATES PATENT OFFICE

2,373,932

BOTTLE RECLAIMING MACHINE

Andrew S. Waters, Dallas, Tex., assignor of one-half to Josephine Shorter, Dallas, Tex.

Application June 19, 1943, Serial No. 491,457

1 Claim. (Cl. 51—125)

This invention relates to glass grinding apparatus and it has particular reference to a machine for resurfacing the lips of beverage bottles which have been chipped, for reclaiming.

The principal object of the invention is to provide a bottle reclaiming machine having a plurality of rotatably disposed, vertically displaceable grinding elements, each shaped to correspond to the lip of a bottle and under which the latter is mounted, to renew the impaired surfaces to permit the bottle to be again put to use as a new bottle and to insure adequate sealing thereof when a conventional cap is applied thereto.

Another object of the invention is to provide a novel form of clamp or holding means for each individual bottle in the machine while undergoing the resurfacing process, to insure against slippage or displacement with respect to the grinding element.

With the foregoing objects as paramount, the invention has particular reference to certain features of accomplishment, to become manifest as the description proceeds, taken in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of a machine constructed according to the present invention.

Figure 2 is a plan view thereof partly broken away.

Figure 3 is a fragmentary plan view of the base of the machine.

Figure 4 is a detail perspective view of one of the bottle retaining clamps, and

Figure 5 is a detail view of one of the grinding elements shown operatively on a bottle, the latter being fragmentarily shown.

Continuing with a more detailed description of the drawings, reference is primarily made to Figure 1 wherein 10 denotes a base on which is disposed a circular series of bottle retaining clamps. These clamps consist of a circular plate 11 conforming to the bottoms of the bottles 12 and are provided with upturned portions 13 about the edges nearest the center of the base 10, serving as a retaining flange to center the bottles on the plates. Each plate 11 has a riser 14 rearwardly thereof, to which is connected for vertical adjustment, a pair of forwardly extending and inwardly curved arms 15 which embrace the bottle 12.

A hinge clamp is provided for connecting the ends of each pair of arms 15 together. This clamp consists of a block 16, pivotally disposed in the bifurcated end of one arm, carrying a threaded pin 17 which latter receives a wing nut 18, the latter bearing against outwardly turned portion 19 of the bifurcated end of the companion arm 15. Thus, the bottle is securely clamped in position on its plate 11 and is thereby held against displacement as its lip is being ground in the manner to be presently explained.

Situated above the base is a pair of relatively spaced plates 20, serving as a housing for the driving gears of the machine, to be later described. This gear housing is supported upon a series of uprights 21, rising from the base 10, and which may be adjustable in height, if desired, by virtue of their telescopic construction as shown in Figure 1. Through this provision, combined with other adjustments to be later set forth, bottles of various heights may be accommodated in the machine.

The plates 20 are held in spaced relationship by spacing bolts 22 and between these plates there is mounted a plurality of small gears 23, depending from each of which is a hollow spindle 24, the latter extending through apertures in the lowermost of the plates 20. The upper ends of the spindle 24 are journaled in apertures in the uppermost plate 20, as shown in Figure 1; thus, the spindles are held strictly perpendicular to the plates and cannot wobble or deviate from this position.

Extending centrally through plates 20 and having its lower end journaled in the center of the base 10 is a driving shaft 25, carrying a gear 26 on its upper end and which is driven in any suitable manner, as by a small coordinating gear 27, mounted on a shaft 28, fragmentarily shown in Figure 1. This latter shaft may be driven by a motor, not shown, or by other means.

Mounted on the central drive shaft 25, intermediate the plates 20 is a large gear 29, the teeth of which enmesh those of the smaller gears 23, causing simultaneous rotation of the latter and consequently rotating the spindles 24.

Referring now to the spindles 24 and the grinding discs or heads 30, it will be observed in Figure 5 that the grinding discs or heads 30 are each produced from a suitable abrasive or polishing material having their undersurfaces annularly grooved as at *a* to conform to the lip *b* of a bottle 12. A pit or recess, such as indicated at *c* in Figure 5, caused by chipping the glass from the lip and rendering the bottle useless, will be obliterated by grinding off the surrounding glass to the depth of the recess to enable the bottle to be again put to its original use.

Each grinding disc 30 has a stem 31 which ex-

tends upward into the hollow spindle **24**. A boss *d* on the stem **31** is provided with a transverse slot *e*, through which extends a pin **32**, the latter extending also through the walls of the spindle **24**. A spring **33** surrounds the upper end of the stem **31**, within the spindle **24** and bears against the upper end of the boss *d*. Thus, it will be seen that the grinding disc **30** will yield to any irregularities in the lip of the bottle being ground, to prevent any injury thereto and further, the grinding elements may be raised against the resistance of the springs **33** to install and remove bottles. Also, this provision enables bottles of various heights to be reclaimed.

In Figure 4 it will be observed that one of the arms **15** of each of the bottle clamps is hinged to the riser **14**. This hinge enables the arm to be displaced far enough from the companion arm to admit a bottle; after which the arms are secured together in the manner explained.

In operation, a bottle **12** is placed on each of the plates **11** and clamped securely in place by arms **15**. While installing each bottle, the grinding element thereabove is held in raised position against the resistance of its spring. After all bottles have been properly positioned, the driving shaft **25** is set in motion to rotate gear **29** which, in turn rotates the smaller gears **23**, causing the spindles **24** and consequently the grinding discs **30** to revolve. Accordingly, the damaged lips of the bottles are renewed so that they may be again used.

Especially when used as beverage containers, bottles having nicks in their lips are unfit for further use and must be destroyed. This results in considerable waste and it is to overcome these losses that the invention has been designed. However, such other uses to which the machine can be put are also within the spirit and intent of the invention.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claim is also considered to be within the spirit and intent of the invention.

What is claimed is:

In a machine for renewing damaged lips of bottles, the combination comprising a base and a gear housing supported above said base on a central standard, a large central gear and a plurality of smaller gears grouped about said large gear in said gear housing, a hollow spindle individual to each of said smaller gears, abrasive grinding heads having annular lip receiving recesses in their operative faces and further having stems receivable in said spindle and constrained against other than vertical movement in said spindles, spring means resisting upward movement of said grinding heads, a series of bottle clamps spaced circumferentially below said grinding heads, each comprising a base and a riser having a vertical flange extending partially thereabout and further having circular arms at its top to embrace a bottle, one of which arms is hinged to said riser, means for securing the free ends of said arms together whereby the bottles held thereby will be in vertical alignment with said heads and means for driving said large gear to collectively drive said smaller gears.

ANDREW S. WATERS.