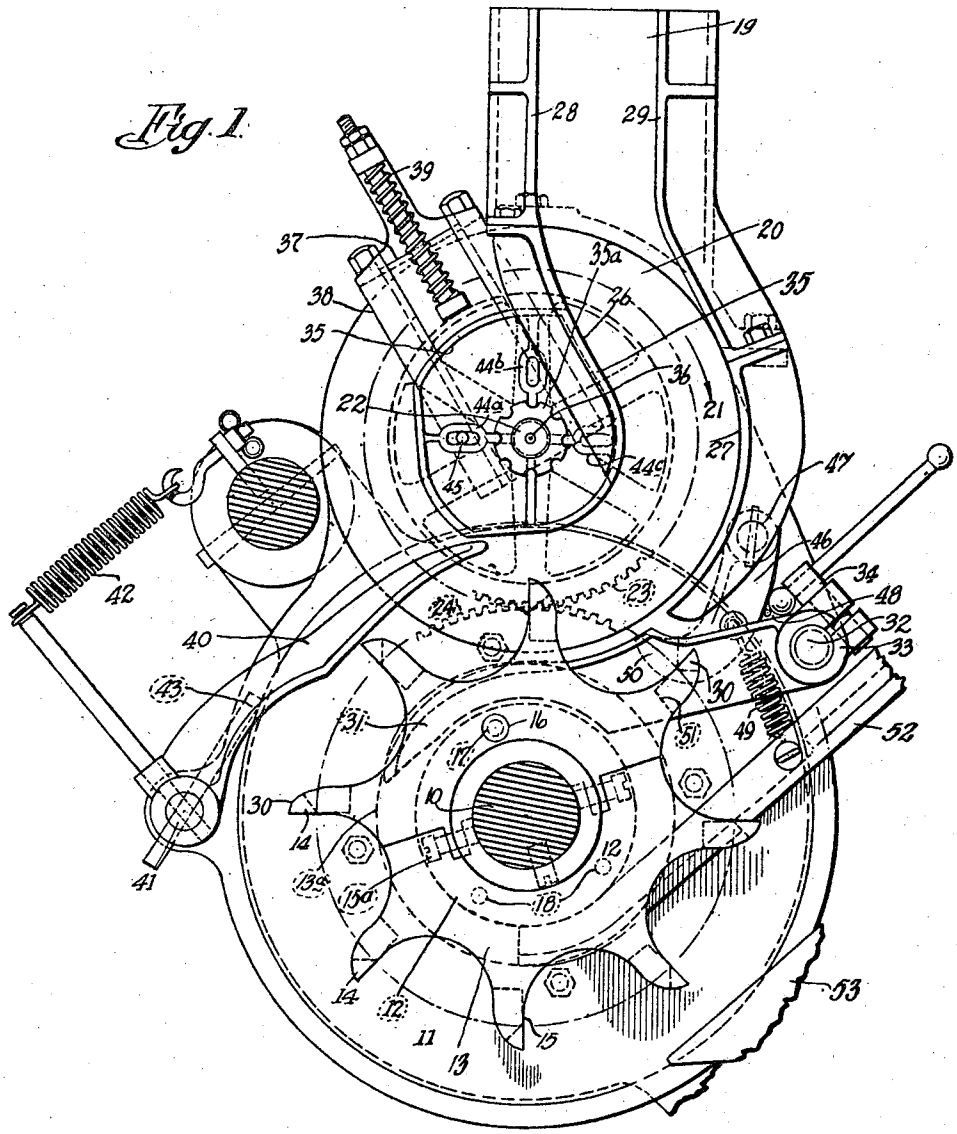
May 15, 1923. 1,454,931

J. H. KONEFES

BOTTLE FEEDING AND GUIDING DEVICE

Filed June 27, 1921 3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

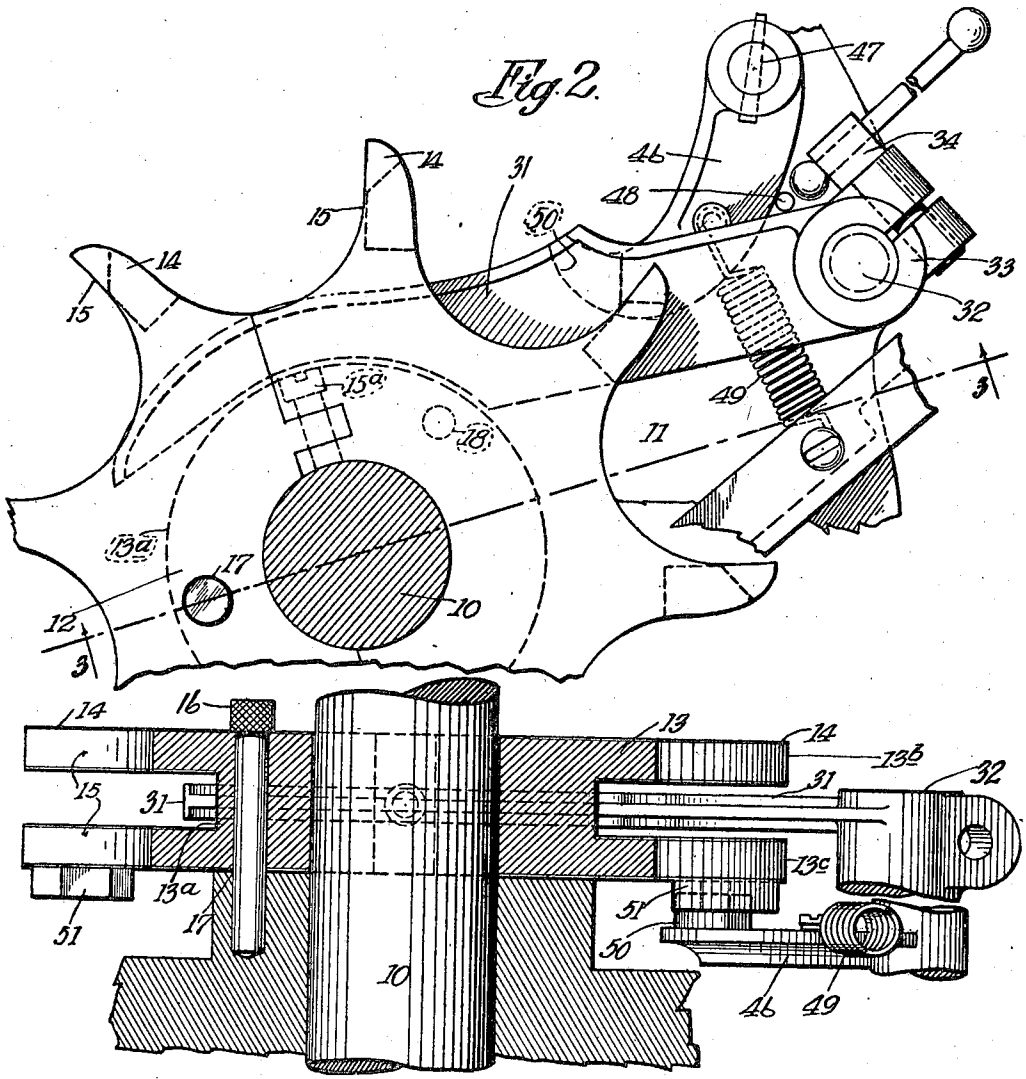


Fig. 3.

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Filed June 27, 1921 3 Sheets-Sheet 3

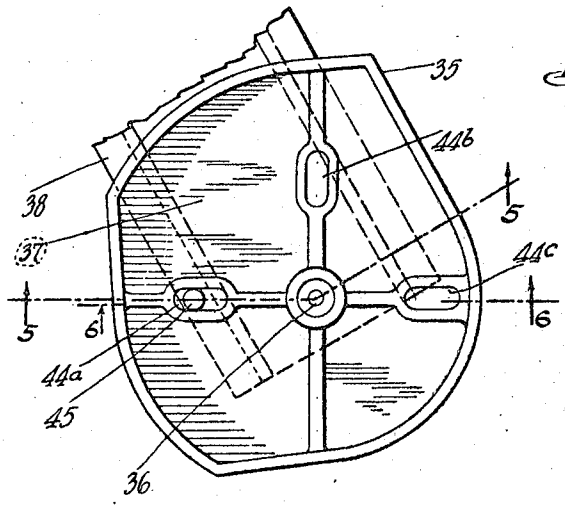


Fig. 4.

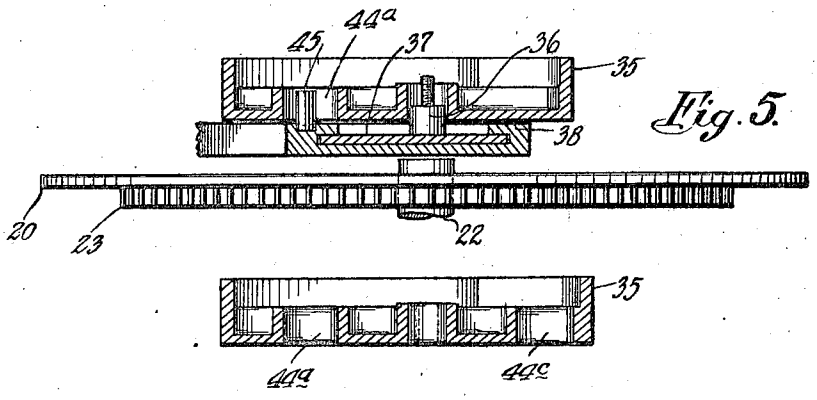


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

JOSEPH H. KONEFES, OF CHICAGO, ILLINOIS.

BOTTLE FEEDING AND GUIDING DEVICE.

Application filed June 27, 1921. Serial No. 480,839.

To all whom it may concern:

Be it known that I, JOSEPH H. KONEFES, a citizen of the United States, residing in the city of Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Bottle Feeding and Guiding Devices, of which the following is a specification.

The object of my invention is to produce an efficient and durable bottle-feeding and guiding device of comparatively simple construction by which bottles of varying diameter may automatically be placed and maintained on a rotating table in such a way that their openings may be readily and accurately engaged by the centering bells or throats of filling or capping devices located above the rotating table. My device is designed for, and is illustrated in the drawings as applied to, a bottle-capping machine, but may readily be adapted to bottle-filling machines.

In the drawings, Fig. 1 is a top plan view of my device shown in connection with the rotating table and vertical shaft of a rotary bottle-capping machine; Fig. 2 is an enlarged top plan view of certain parts shown in Fig. 1; Fig. 3 is a sectional elevation on line 3—3 of Fig. 2; Fig. 4 is an enlarged top plan view of certain other parts shown in Fig. 1; and Figs. 5 and 6 are sectional elevations on lines 5—5 and 6—6, respectively, of Fig. 4, together with, (in the case of Fig. 5) an elevation of certain parts located below.

Referring to the drawings:—To the rotary, vertical shaft 10 of a rotary bottle-capping machine, there is firmly attached a table 11 designed to receive and support the bottles to be capped while they are passing through the machine. From table 11 there projects upward, for a distance of about 1½ inches, a suitable boss 12 which is preferably made integral with table 11. On top of this boss there is mounted, with a sliding fit on shaft 10, a star wheel 13, consisting of hub 13^a, and horizontal, parallel disks 13^b and 13^c, both having fingers 14, which are provided with forward shoulders 15. Star wheel 13 is preferably made in two sections, held together by screws 15^a, in order that it may be easily removed and replaced in case of any breakage, etc. A vertical pin 16 is provided in a suitable opening 17 in hub 13^a adapted to have its lower end inserted into any one of several holes 18 in boss 12. Holes 18 are placed equidistant from shaft 10 with opening 17, and are arranged so that the insertion of pin 16 into opening 17 and any of said holes 18 will fix star wheel 13 in such a position with reference to the capping devices (not shown) above table 11, that bottles of a certain diameter resting against shoulders 15 will be in proper position to be engaged by such capping devices, provided such bottles are also placed at a proper distance from shaft 10:—the intention being to feed at any time only bottles of a substantially equal diameter into the machine, and to shift star wheel 13 to a different position whenever bottles of a certain larger or smaller diameter are to be capped, by inserting pin 16, while projecting through opening 17, into that hole 18 which will secure for star wheel 13 a proper position for the capping of bottles of that particular diameter. The bottles to be capped are placed by hand, or in some other suitable manner, into a feed-chute 19, and thence pushed by hand or by some mechanical contrivance onto rotary disk 20, preferably consisting of a smooth metal plate which is rotated, in the direction indicated by arrow 21, by a shaft 22, which in turn is rotated by a pinion 23 which is engaged by gear 24 of table 11. In order to secure ample speed for disk 20, pinion 23 is made of considerably smaller diameter than disk 20. The bottles, while resting on disk 20 are confined by vertical flanges 26 and 27 which constitute a continuation of sidewalls 28 and 29, respectively, of chute 19. The inner vertical surface of flange 27 is situated directly above the outside edge of disk 20, extending from wall 29 almost to the edge of the circular path travelled by the outer ends 30 of fingers 14. From this point on what might be termed a continuation of flange 27, is furnished by a guide 31 which projects between disks 13^b and 13^c from a vertical stud 32, on which guide 31 is adjustably held by a clamp-collar 33, operated by a vise-screw 34. This guide occupies substantially the position shown in Figs. 1 and 2 when bottles of large diameter are to be crowned, but is swung further out, away from shaft 10, when bottles of smaller diameter are to be crowned.

A virtual continuation of flange 26 is furnished by one side of a cam 35 which is oscillatably held, by a screw cap 35ª, on a vertical pin 36, projecting upward from a slide 37 which is mounted in a frame 38 so as to be movable, in a direction away from the point at which ends 30 begin to pass over disk 20, against the pressure of a spring 39 which is adjusted so as to always push slide 37 back into the normal position indicated in Fig. 1, wherein pin 36 rests directly above shaft 22. A further virtual continuation of flange 26 is furnished by a guide 40 which is oscillatably mounted on vertical pin 41 and is pulled towards star wheel 13 by a spring 42 while its movement in that direction is limited by an adjustable stop-pin 43. This guide 40 is so adjusted that it will push bottles of all sizes yieldingly against guide 31, thus securing their proper distance from shaft 10, provided guide 31 is set in the proper position for the diameter of the bottles to be crowned;—the crowning apparatus (not shown) above table 11 being arranged so that the capping heads descend upon, and crown the bottles to be crowned while such bottles are pushed along singly between guides 31 and 40 by shoulders 15 of star wheel 13. The face of guide 40 is preferably lined with leather so as to furnish friction for the purpose of retarding the advance of the bottles and making sure that each of them rests against a shoulder 15 when it passes the capping station. Cam 35 is provided with three slots 44ª, 44ᵇ and 44ᶜ, each adapted to receive, when set accordingly, vertical pin 45 which projects upward from frame 38. Cam 35 is of such shape that accordingly as slots 44ª, slot 44ᵇ or slot 44ᶜ is engaged by pin 45, the outer surface of cam 35 projects towards or into the path to be travelled by the bottles delivered from chute 19 so as to make such path of proper width for bottles of large, medium or small diameter, respectively. Pin 45 is so located with reference to pin 36 that when a bottle is caught diametrically and pushed against cam 35, by a finger 14 of star wheel 13, hard enough for cam 35 to move slide 37 against the pressure of spring 39, a sort of backward rotation is imparted to the circumference of cam 35, which serves to push the bottle caught between star wheel 13 and cam 35 back toward chute 19, thereby obviating its being crushed. In order to prevent, when bottles of small diameter are being crowned, the crowning of too many of them into the space between cam 35 and star wheel 13 and to secure the admission of only one such bottle at a time to such space, I provide a hook 46, oscillatably mounted on a vertical pin 47, located near stud 32, and ordinarily pulled back against a stop 48 by a spring 49 which is located underneath guide 31. This hook has an upward projection 50 which is adapted to be engaged by each of downward projections 51 on upper fingers 14 so as to be carried forward, by each such finger passing it, into the path of the bottles advancing from chute 19 in such a manner as to prevent more than one bottle at a time being carried within the range of star wheel 13; but projections 50 and 51 are so related to each other that when a pair of fingers 14 has passed far enough forward to make it impossible for it to engage more than one of the bottles being carried forward by disk 20, projection 51 of its upper finger 14 releases projection 50, and thus permits hook 46 to be jerked back by spring 49 in time to be engaged by projection 51 of the next following upper finger 14.

Any undue discrepancies between the width of chute 19 and the channel between cam 35 and flange 27, on the one hand, and the diameter of the bottles passing through this chute and channel, on the other hand, which remain after cam 35 has been properly adjusted, may be compensated for by liners which are hung over one side of the chute and the channel, in a manner well understood by those familiar with machines of this kind. Guides 52 and 53 are provided to direct bottles which have been capped into a take-off chute (not shown) or similar device.

It is evident that the construction of my device might be changed in many particulars without departing from its essentials. All such changes I intend to cover.

I claim:—

1. In a bottle-feeding and guiding device, the combination of a horizontal rotary bottle-supporting table; guides above the table, not movable with the table, forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table; and means for pushing such bottles into and through said channel.

2. In a bottle-feeding and guiding device, the combination of a horizontal rotary bottle-supporting table; guides above the table, not movable with the table, forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table, at least one of said guides being provided with a friction-surface; and means for pushing such bottles into and through said channel.

3. In a bottle-feeding and guiding device, the combination of a horizontal rotary bottle-supporting table; guides above the table, not movable with the table, forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table; and means for locating such bottles on pre-

determined radii of such table, and pushing them through said channel while thus located.

4. In a bottle-feeding and guiding device, the combination of a horizontal rotary bottle-supporting table; guides above the table, not movable with the table, forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table; and means rotating with the table, for pushing such bottles into and through said channel.

5. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table; and a star wheel mounted in the center of the table, adapted to locate such bottles on predetermined radii of such table, and to push them through said channel while thus located.

6. In a bottle-feeding and guiding device, the combination of a horizontal bottle-supporting table; guides above the table forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table; a star wheel adjustably mounted in the center of the table, adapted to locate such bottles on predetermined radii of such table, and to push them through said channel while thus located; and means for adjusting said star wheel for location of said bottles on variable radii of said table.

7. In a bottle-feeding and guiding device, the combination of a horizontal bottle-supporting table; guides above the table forming a channel adapted to maintain and conduct bottles in upright position at a predetermined distance from the center of the table; a star wheel adjustably mounted in the center of the table, adapted to locate such bottles on predetermined radii of such table, and to push them through said channel while thus located; and a vertical pin in the star wheel, adapted to enter various holes underneath the star wheel, for adjusting said star wheel for location of said bottles on variable radii of said table.

8. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; two guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; both of said guides being oscillatably mounted on vertical pivots; and means for adjustably fixing said guides in position.

9. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; two guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table, both of said guides being oscillatably mounted on vertical pivots near the edge of the table; the guide nearest to the center of the table extending from its pivot in the direction in which the table turns; and the other guide extending from its pivot in the opposite direction.

10. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; two guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table, both of said guides being adjustably mounted on vertical pivots; means for adjustably fixing said guides in position; and a stop and spring for one of said guides to enable it to yield under pressure.

11. In a bottle-feeding and guiding device, the combination of a horizontal rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; means, adjoining said channel, for pushing bottles singly into and through said channel; and yielding means, at the entrance of said channel, opposite such pushing means, adapted to impart a backward movement to bottles prematurely coming within range of the pushing means; substantially as and for the purpose described.

12. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; means, adjoining said channel, for pushing bottles singly into and through said channel; and yielding means, adjustable to bottles of several sizes, at the entrance to said channel, opposite such pushing means, adapted to impart a backward movement to bottles prematurely coming within range of the pushing means; substantially as and for the purpose described.

13. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; means for pushing bottles into and through such channel; and a retaining means mounted near the entrance to said channel, arranged to prevent more than one bottle at a time being pushed into said channel.

14. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; means for pushing bot-

tles into and through such channel; and a hook, oscillatably mounted on a vertical pin near the entrance to said channel, arranged to prevent more than one bottle at a time being pushed into the channel.

15. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; means for pushing bottles into and through said channel; and a hook mounted near the entrance to said channel, operated by said pushing means and a spring, for the purpose of preventing more than one bottle at a time being pushed into the channel.

16. In a bottle-feeding and guiding device, the combination of a horizontal, rotary bottle-supporting table; guides above the table, forming a channel adapted to maintain and conduct bottles in upright position on the table; and a rotating feeding disk, extending some distance over the table and forming the bottom of a chute leading into said channel, said disk travelling considerably faster under said chute than the speed of the table under said channel.

JOS. H. KONEFES.