Dec. 11, 1951 J. KANTOR 2,577,726

SPINNER BRAKE FOR BEVERAGE MIXING MACHINES

Filed April 28, 1947 2 SHEETS—SHEET 1

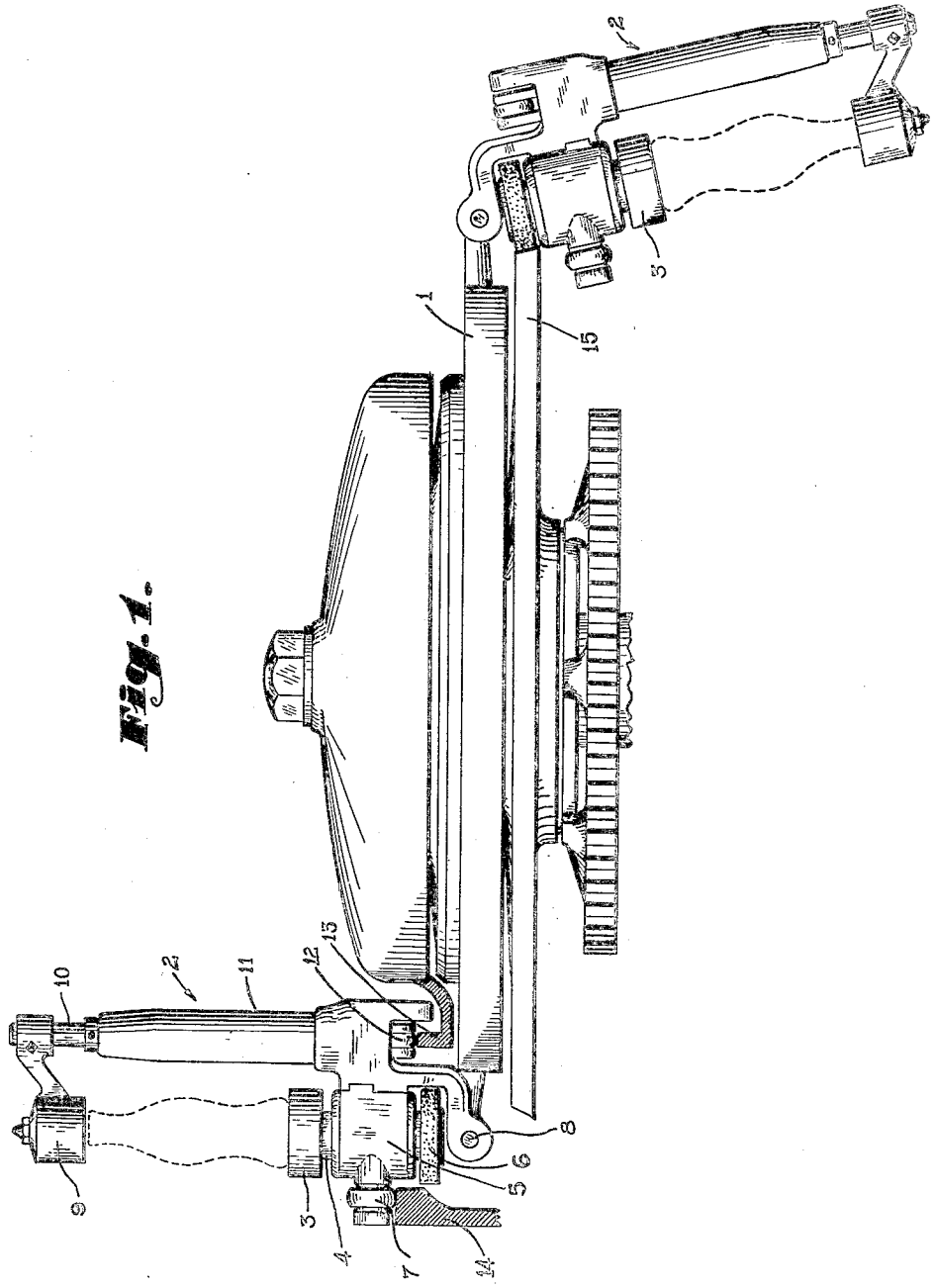


Fig. 1.

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Fig. 2.

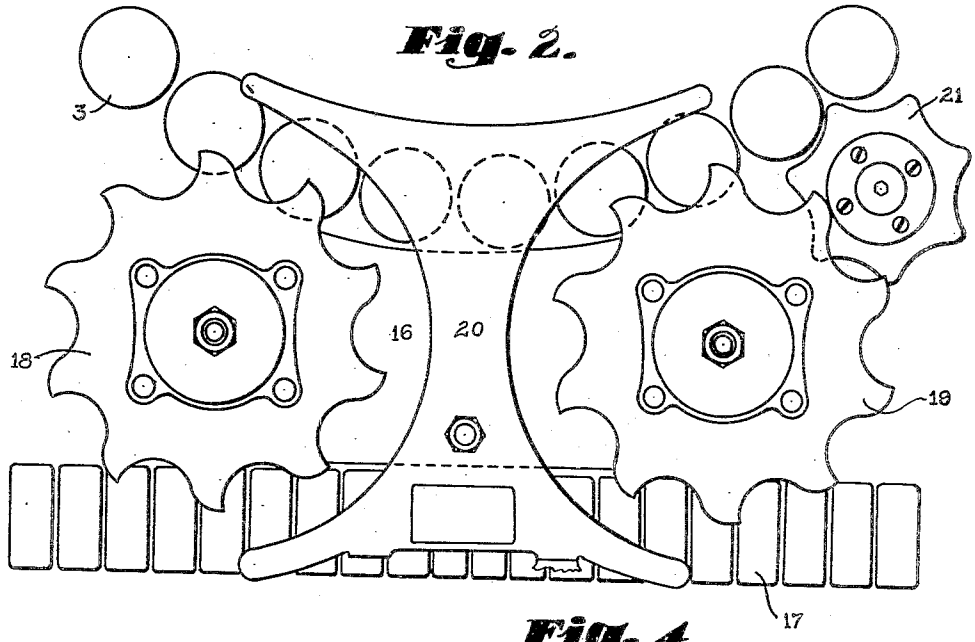


Fig. 4.

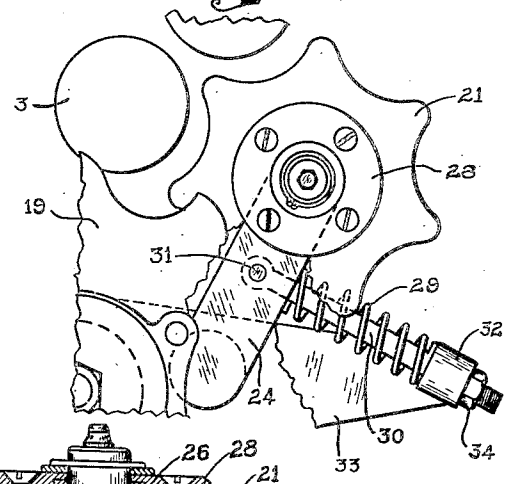
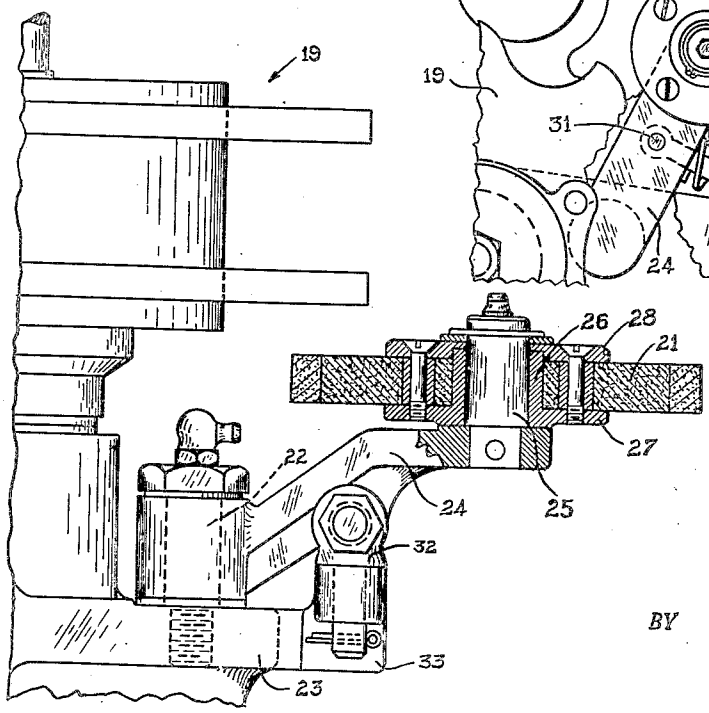


Fig. 3.



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UNITED STATES PATENT OFFICE

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SPINNER BRAKE FOR BEVERAGE MIXING MACHINES

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2 Claims. (Cl. 259—54)

1

The present invention relates to mixing apparatus and more particularly to apparatus for mixing beverages, such as soft drinks, in the individual containers in which they are sold. Heretofore in the art, there have been developed various types of apparatus for mixing soft drink beverages and particularly carbonated soft drink beverages, while in their individual containers in which they are sold, and such apparatus generally comprise what is acceptably known as bottle holders which are adapted to receive and grip the individual container. These bottle holders are generally so mounted that they move in a circular path and at the same time, are adapted to swing from an upright to an inverted position, the bottle holder being provided with means for rapidly rotating the holder and the bottle held thereby on the vertical axis of the bottle, so that the contents of the bottle will be caused to spin with the bottle.

In such machines, the bottles or containers, and hereinafter the containers will be referred to as bottles for the purpose of clarity, are fed into the machine from a traveling conveyor by means of an infeed mechanism and after the contents of the bottle has been suitably agitated, the bottle in its upright position is picked off the holder and again delivered to the traveling conveyor through the medium of an outfeed mechanism.

During the agitation operation, the bottle and its contents are rapidly rotated on the longitudinal axis of the bottle so that as the bottle approaches the outfeed mechanism, it continues to spin. As a result, as the bottle is engaged by the outfeed mechanism, it is rapidly rotating on its longitudinal axis and as a result scoring and scratching of the bottle, as it comes in contact during its spinning movement with the outfeed mechanism, is occasioned.

Furthermore, it is extremely desirable to suddenly stop the spinning of the bottle so that while the bottle has come to rest, the contents will continue to spin under its own momentum, which spinning movement of the contents effects a wiping action between the inner walls of the bottle and the contents, so that any heavy syrup which may be clinging to the walls of the bottle is wiped or washed off.

It is one of the objects of the present invention to provide an improved form of braking mechanism for stopping the rotation of the bottle on its longitudinal axis, before it is picked up by the outfeed mechanism so that as the bottle is picked up by the outfeed mechanism, its axial movement has stopped and the rubbing action of the bottle against the outfeed mechanism will be prevented.

For the purpose of disclosing the present invention, an embodiment thereof is illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation of the rotating head supporting the bottle holders and of the spinning mechanism for the bottle;

2

Fig. 2 is a plan view, primarily illustrating the infeed and outfeed dials and associated braking apparatus;

Fig. 3 is a detail elevation, showing the braking mechanism in sectional view and its association with the outfeed dial; and

Fig. 4 is a detail plan view of the braking star.

In general, the spinning and inverting mechanism is substantially the same as is illustrated in the patent granted to me on July 21, 1942, No. 2,290,562 and reference may be had to said patent for the details of construction of said spinning and inverting mechanism, not specifically illustrated and described in the present application.

In general, the spinning and inverting mechanism comprises a rotating turret or platform 1 on which are mounted a series of bottle holders 2. Each of the bottle holders comprises a rotating cylindrical support 3, which is mounted on a suitable shaft 4 journalled in a bracket 5. This shaft, at its lower end, is provided with a driving wheel 6. The bracket is also provided with a roller 7 extending from one side thereof, the purpose of which will be more fully hereinafter described. This bracket is pivotally mounted on a pivotal support 8 carried on the turret 1 and for maintaining the bottle in position upon the base 3, I provide a clamp 9 which is adapted to engage the top of the bottle and is supported on a vertically movable rod 10 supported in a sleeve 11. This rod is biased in a clamping position by a suitable spring (not shown) and the lower end of the rod carries a roller 12 adapted, during a predetermined portion of the path of movement, to engage a cam 13 stationarily mounted with respect to the path of movement of the bottle holder.

For maintaining the bottle holder in its upright position, in which position the bottle holder is adapted to receive and discharge the bottle, I provide a cam 14 on which the roller 7 is adapted to ride during a portion of the movement of the bottle holder through its rotating path. After the bottle holder has received the bottle and moved past the infeed position, this cam is so disposed that the bottle holder will swing on its pivot to an inverted position, as illustrated. When the bottle holder swings to its inverted position, the driving wheel 6 engages a rapidly rotating driving disk 15 located beneath the head or turret 1 and as a result of this engagement between the disk 15 and the wheel 6, the bottle holder and its supported bottle are rotated, on the longitudinal axis of the bottle, at a relatively high rate of speed.

As the bottle holder moves to the outfeed position, the cam 14 again picks up the roller 7 causing the bottle holder to move back to an

upright position and at the same time, as the bottle holder moves to its outfeed or discharge position, the cam 13 again engages the roller 12, raising the clamp 9 to permit the bottle to be removed from the support 3.

It is to be noted that, as a result of the high speed spinning movement imparted to the bottle and bottle holder, while in its inverted position, the bottle and its holder will, under their own momentum, continue to spin as the bottle holder and bottle move into an upright position to the outfeed mechanism.

A suitable worktable 16 is disposed adjacent to the mixing structure heretofore described, and arranged tangentially to the line of movement of the bottle holders. A straight line endless conveyor 17 moves across the worktable, this conveyor bringing the bottles or other containers to the machine from a suitable filling machine. A continuously rotating infeed dial 18 is mounted upon the worktable to remove the bottles from the conveyor 17 and position them upon the bottle support or base 3 of the bottle holders 2. An outfeed dial 19 is also provided upon the worktable to remove the successive bottles from the bottle holders and position them upon the opposite end of the conveyor 17 for removal from the machine. A guide plate 20 cooperates with the dials 18 and 19 to direct the movement of the bottles during their infeed and outfeed.

Due to the fact that the bottle holders and the bottles are still spinning at a relatively high rate at the time they approach the outfeed dial and as a result of this spinning action, when the bottles are engaged by the outfeed dial 19 for removing the same from the bottle holders and delivering them to the conveyor 17, considerable scoring of the bottles takes place and in order to avoid this, I provide a star wheel brake 21 which is adapted to engage the bottle support 3 immediately in advance of its movement to place the bottle in the path of the outfeed dial 19.

For supporting this star wheel 21 and maintaining the same in proper engaging position, a spindle 22 is mounted on the base 23 of the support for the table 16. The bracket comprising an upwardly extending arm 24, is pivotally supported on the spindle 22. The outer or free end of this bracket is provided with a vertically extending spindle 25, which receives a hub 26 for the brake wheel 21. Preferably, this brake wheel 21 is formed of a plastic and cork composition, the plastic being slightly resilient and I have found that extremely advantageous results have been obtained by forming the brake wheel 21 of a plastic such as "neoprene" combined with cork. Such a composition provides an extremely satisfactory braking surface having long wearing qualities and operating satisfactorily, even though oil or moisture collects on the surface thereof. This brake wheel is mounted on the hub 26 and is clamped in position between a stationary flange 27 on the hub and a removable flange 28, suitable clamping screws being adapted to extend through the star wheel. The free end of the arm is resiliently biased in a braking direction through the medium of a coiled spring 29, which spring surrounds a limit rod 30. One end of this rod is pivotally connected at 31 to the bracket arm 24 and the other end extends through a lug 32 extending upwardly from a bracket extension 33 on the base 23. The free end of the rod 30 is provided with an adjustable nut 34, which provides an adjustable limit

stop to prevent the brake wheel from swinging too far towards the path of the bottle holders. This brake wheel 21 is arranged in the same horizontal plane as the bottle supporting base 3 of the holder, so that as the bottle holder moves to deliver the bottle to the outfeed dial 19, the periphery of the brake wheel will engage the periphery of the bottle supporting base 3 and brake the spinning action of the bottle holder and with it, the spinning of the bottle, immediately prior to the release of the bottle clamp 9. Therefore, by the time the bottle is engaged by the outfeed dial 19, its axial spinning movement has been stopped, although the momentum of the contents of the bottle will continue to spin. It is to be noted that the braking star wheel 21 is arranged tangentially to the path of movement of the bottle holder and in advance of the outfeed dial 19 of the apparatus and while the star wheel rotates on the spindle 25 and therefore moves with the bottle and bottle holder, as it advances towards the outfeed dial, the periphery of the star wheel is stationary relative to the axial rotative movement of the bottle and bottle holder.

I claim as my invention:

1. In a mixing apparatus, a rotary table, a container supporting element carried by said rotary table and including container gripping means, said container gripping means being rotatable on an axis coincident with the vertical axis of a container supported in said gripping means and including a cylindrical member, means for rotating the gripping means on its axis to spin the container on its vertical axis, a brake wheel rotatable tangentially to said table and having peripheral pockets approximating the diameter to the diameter of said cylindrical member on said gripping means, the tangential relationship between said brake wheel and said rotating table being such that the cylindrical member on the gripping means will move into a pocket on said brake wheel.

2. In a mixing machine, a rotary table, a container supporting element movable in a fixed path of travel and including a container gripping means rotatable on an axis coincident with the axis of a container gripped thereby, said container gripping means including a cylindrical member, means for rotating said gripping means on its axis, a brake wheel disposed adjacent said rotary table and rotating tangentially to said rotating table, said brake wheel having peripheral concave pockets of a diameter substantially coincident with the diameter of the cylindrical member on the gripping means and so disposed relative to the path of movement of said gripping means that the cylindrical member on the gripping means will be embraced by the walls of a pocket on said brake wheel and will rotate said brake wheel on its axis as the gripping means moves with the rotating table.

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