

June 29, 1926.

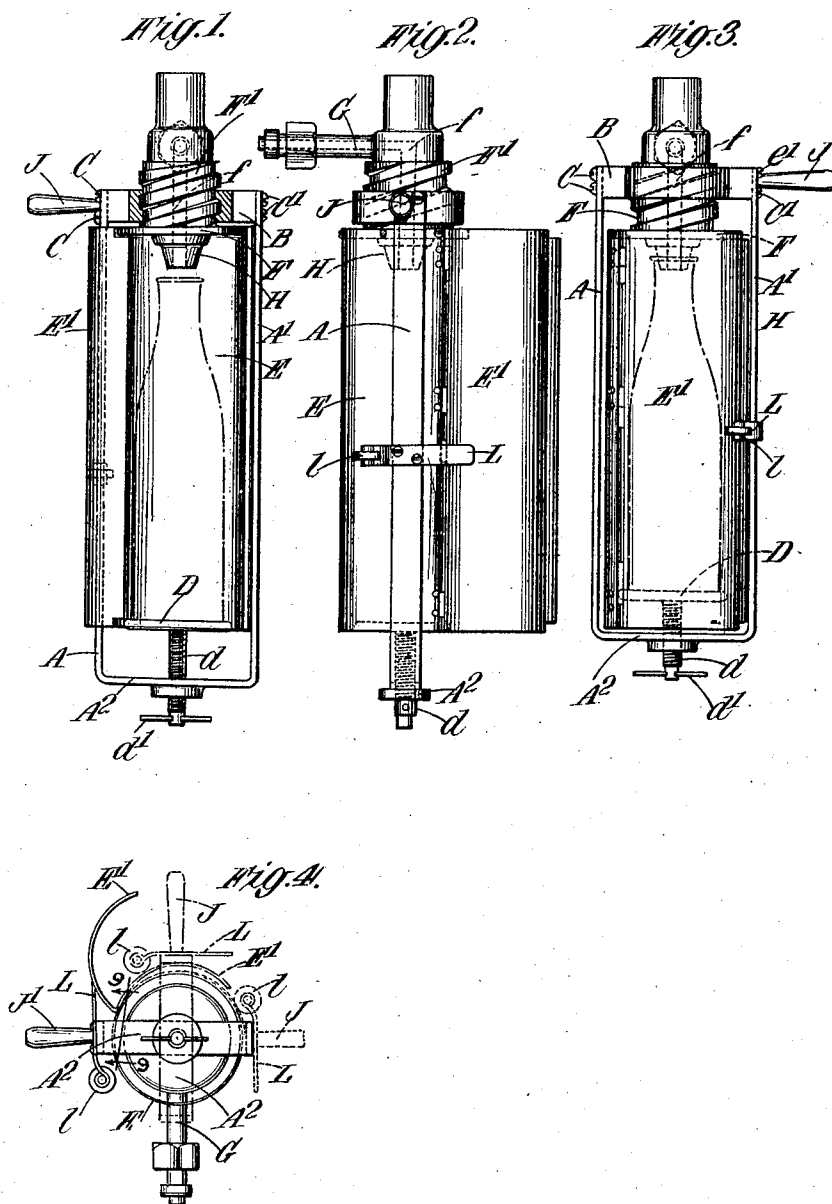
1,590,299

C. B. LIDDELL

APPARATUS FOR AERATING LIQUIDS

Filed Dec. 21, 1925

2 Sheets-Sheet 1



Inventor
Charles Burton Liddell
By
Perris, Davis & Mann, Attorneys

June 29 , 1926.

1,590,299

C. B. LIDDELL

APPARATUS FOR AERATING LIQUIDS

Filed Dec. 21, 1925

2 Sheets-Sheet 2

Inventor
Charles Burton Liddell
By
Fennie, Dana Mann & Elwood
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES BERTRAM LIDDELL, OF DORNEY REACH, NEAR TAPLOW, ENGLAND.

APPARATUS FOR AERATING LIQUIDS.

Application filed December 21, 1925, Serial No. 76,880, and in Great Britain December 20, 1924.

This invention relates to apparatus for aerating liquids and is more particularly intended for use in making soda water, the apparatus being of the kind that is supported in its working position by the delivery pipe of the aerating gas container or cylinder to which it is adapted to be attached and in which a bottle guard or shield is provided to cover the bottle containing the liquid to be aerated so as to prevent injury to the operator in the event of the bottle bursting during the aerating operation.

According to this invention the apparatus is provided with means whereby the movement which effects the engagement of the bottle containing the liquid to be aerated with the aerating gas inlet orifice of the apparatus also causes the bottle guard or shield to assume the protecting or closed position around the bottle the movement of the bottle guard or shield into this position being timed to take place preferably before the bottle is fully engaged with the said aerating gas inlet orifice and the disengagement of the bottle therefrom being timed to take place preferably before the bottle guard or shield assumes the open position.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings, in which:—

Figure 1 is an elevation of the apparatus shewing the bottle guard or shield in the open position.

Figure 2 is an end view of Figure 1.

Figure 3 is an elevation similar to Figure 1, but shewing the bottle guard or shield in the protecting or closed position.

Figure 4 is a plan view shewing the bottle guard or shield in the open position in full lines, in the partially closed position in dot and dash lines, and in the fully closed position in dotted lines.

Figures 5, 6 and 7 are similar views to Figures 1, 2 and 3 of a modification.

Figure 8 is a plan view shewing the bottle guard or shield in the open position in full lines and in the protecting or closed position in dot and dash lines, and

Fig. 9 is an enlarged sectional view taken on line 9—9 of Fig. 4 showing the hinged connection between the stationary part and the movable part of the bottle guard.

Like letters of reference are used throughout the drawings to denote similar parts.

The apparatus comprises a frame consisting of two upright portions A, A' and a horizontal portion A², the frame being conveniently made by bending a bar or strip of metal to the shape shewn. The frame is attached at its upper end to a cross piece B by means of screws C, C, C', C', this mode of attachment enabling frames of varying lengths to be used to suit different sizes of bottles. The horizontal portion A² of the frame carries a platform or support D on which the bottle containing the liquid to be aerated stands. In Figures 1 to 4 the said platform is adjustably mounted in the portion A² by means of the screw threaded stem *d* so that by rotating the handle *d'* thereon the platform can be raised or lowered in the frame. The bottle guard or shield consists of a stationary part E and a movable part E' both of semi-circular shape. In Figures 1 to 4 the fixed part E is attached to a disc F having a screw-threaded portion F' which engages with a correspondingly screw-threaded portion in the cross piece B through which it extends and the movable part E' is hinged vertically to the fixed part E. The said disc F and the screw-threaded portion F' have a passage *f* through them which passage communicates with a lateral pipe G provided with a joint by which it can be connected to the outlet pipe of the aerating gas container or cylinder, said pipe serving to support the apparatus in its working position on the aerating gas container or cylinder and to conduct the aerating gas therefrom. The passage *f* terminates at its inner end in a conically shaped nozzle H which constitutes the aerating gas inlet orifice of the apparatus and against which the bottle containing the liquid to be aerated is engaged during the aerating operation. The frame is provided with a handle J by which it can be turned on the aforesaid screw-threaded portion F'. In use the frame is turned or angularly displaced by means of the said handle on the screw-threaded portion F' which is held stationary by reason of its being connected to the aerating gas container or cylinder by the pipe G as aforesaid, the direction of the movement of the handle being such as to lower the frame on the said screw-threaded portion. During this turning movement the upright A moves round to one side of the movable part E' of the bottle guard or shield and the latter is moved by the action of springs M, contained

within the hinges, situated between the fixed and movable parts of the bottle guard or shield into the open position as shewn in Figures 1 and 2 and a bottle containing the liquid to be aerated is then stood on the platform D. The frame is then turned in the opposite direction which causes it to rise on the screw-threaded portion F' and the bottle to approach the nozzle H. During this turning movement a projection or arm L on the upright A comes into contact with the movable part E' of the bottle guard or shield and turns it into the protecting or closed position (see Figure 4). The distance through which the frame moves upwards compared with the angular movement thereof is such that engagement between the bottle and the nozzle H cannot take place until the movable part E' of the bottle guard or shield has assumed its nearly closed position, the actual engagement between the bottle and the nozzle H occurring during the last part of the angular movement of the frame during which the rear end of the projection or arm L comes against the movable part E' of the bottle guard or shield and retains it in its protecting or closed position while the frame is completing its upward movement to bring the bottle into contact with the nozzle H whereupon the aerating gas is admitted to the bottle in the usual manner. After the aerating operation has been completed the frame is turned in the opposite direction so as to lower the bottle from the nozzle H, but the bottle guard or shield is still kept in its protecting or closed position by the rear end of the projection or arm L, until the frame has been turned sufficiently to move it and the upright A out of the path of the movable part E' of the bottle guard or shield, whereupon the latter is able to assume its open position under the influence of the aforesaid springs M and the bottle then can be removed from the apparatus. The rear end of the projection or arm L is provided with a roller 7 to reduce friction when contacting with the movable part E' of the bottle guard or shield.

Instead of imparting upward and downward movement to the frame to effect the engagement and disengagement of the bottle with the nozzle H, the bottle platform D may be moved upward and downward in the frame. An example of this is given in Figures 5 to 8 wherein the bottle platform D is loosely mounted in the lower part of the frame and has a downwardly projecting portion or neck d² having a cam-shaped surface d³ which co-operates with a corresponding cam-shaped surface d⁴ on a fixed member d⁵ carried by the horizontal part A² of the frame. The neck d² is provided with a handle J' by which it can be rotated, thereby raising or lowering the bottle platform D on the fixed member d⁵ to bring the bottle

into or out of engagement with the nozzle H. The bottle platform has a spindle d⁶ which passes through the fixed member d⁵ and is surrounded by a spring d⁶ situated between the lower surface of the horizontal part A² of the frame and a nut on the end of said spindle, the object of the spindle being to guide the bottle platform during its movements and of the spring to assist the bottle platform to return to its lowest position. In this case the bottle guard or shield is moved into its protecting or closed position by a pin L' attached to the handle J' and extending vertically upwards therefrom, said pin coming into contact with the movable part E' of the bottle guard of the shield when the handle J' is operated as shewn in the two positions of the parts in Figure 8. Instead of moving the bottle platform upwards and downwards by a cam device a screw-thread device might be used to give the necessary movements.

In Figures 5 to 8 the frame of the apparatus is shewn with an extension piece M shaped at its outer end to fit round the wall of the aerating gas container or cylinder, the object of which is to hold the apparatus steady during use.

What I claim and desire to secure by Letters Patent of the United States is:—

1. Liquid aerating apparatus consisting in the combination of a frame, a tube adapted to connect said frame to an aerating gas cylinder, a bottle-carrying platform at one end of said frame, a bottle-engaging nozzle at the opposite end of said frame communicating with said tube, a hinged bottle guard, means for effecting the engagement of the bottle with said nozzle by a combined rotary and rectilinear movement imparted to the bottle-carrying platform, and means whereby said guard is moved into its protecting position during the aforesaid movement.

2. Liquid aerating apparatus consisting in the combination of a frame, a tube adapted to connect said frame to an aerating gas cylinder, a bottle-carrying platform at one end of said frame, a bottle-engaging nozzle at the opposite end of said frame communicating with said tube, a hinged bottle guard, a cam for imparting combined rotary and rectilinear movement to said platform for effecting the engagement of the bottle with the nozzle, and a member movable with said cam for turning said guard into the protecting position during the aforesaid movement.

3. Liquid aerating apparatus consisting in the combination of a frame, a tube adapted to connect said frame to an aerating gas cylinder, a bottle-carrying platform at one end of said frame, a bottle-engaging nozzle at the opposite end of said frame communicating with said tube, a hinged bottle guard, a cam on said bottle-carrying platform in

co-operative relationship with a cam in said frame, a handle for rotating the cam on said platform and a member on said handle adapted to turn said guard into the protective position during the movement of said handle.

4. Liquid aerating apparatus consisting in the combination of a frame, a tube adapted to connect said frame to an aerating gas cylinder, a bottle-carrying platform at one end of said frame, a bottle-engaging nozzle

at the opposite end of said frame communicating with said tube, a hinged bottle guard, a cam on said platform in co-operative relationship with a cam in said frame, a handle for rotating the cam on said platform and a member on said handle adapted to come into contact with said guard and turn it into the protecting position during the movement of said handle.

CHARLES BERTRAM LIDDELL.