

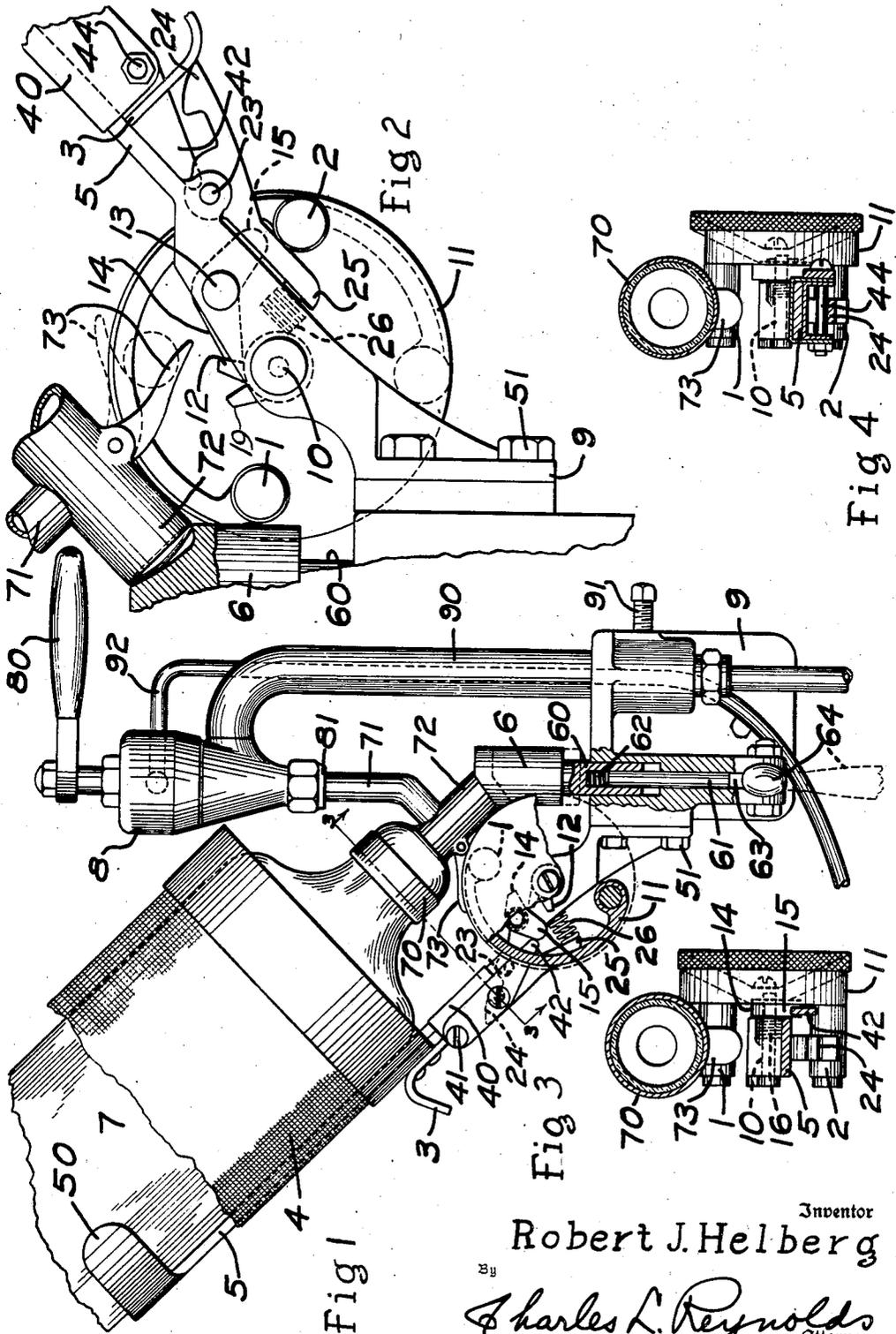
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CARBONATED WATER BOTTLE FILLER

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CARBONATED WATER BOTTLE FILLER

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The present invention is an improvement upon the invention disclosed in the patent to R. J. Dowling and C. D. Davidson No. 2,115,013, issued April 26, 1938.

As it was in connection with that invention, it is an object of the present invention to devise a simple, convenient and relatively inexpensive device whereby the normal type of carbonated water bottle may be refilled and recharged with fluid under pressure, to the end that there may be made available to hotels, clubs, restaurants, bars, and in general to users of such water in quantity, a machine whereby they may recharge such bottles from time to time with convenience and dispatch, and at minimum cost.

The invention in its previous form was subject to the drawback that while the bottle, during charging, was covered by a cage, the purpose of which was to prevent injury to those near by in case the bottle should burst, there was no means to lock the cage in position, and more especially to insure that it was locked before the bottle could be charged, and hence there were occasions when a bottle would burst and the force of its explosion would blow the cage away from the bottle which it was supposed to protect, with the result that particles of glass would be projected outwardly from the bottle, to the possible injury of persons near by. It is, therefore, one of the objects of the present invention to provide a cage for such a bottle which is securely locked in protective position about the bottle, and must be so locked before the bottle can be charged, and which cannot be dislodged by the force of an explosion.

To emphasize, it is an object to provide such a cage and lock therefor, and also to provide means which will insure that the bottle cannot be charged until the cage is properly locked in position. More particularly, it is necessary to open the bottle's discharge valve in order to permit charging of the bottle, and it is an object to couple the bottle valve opening mechanism with the locking mechanism for the cage in such a way that the bottle valve can only be opened for charging of the bottle when the cage is properly locked in position, and to interdict release or opening of the bottle's valve until the cage is in such position.

More specifically it is intended to support the bottle upon a bracket arm inclined upwardly and outwardly from a base, and to move lengthwise of the bracket arm a slide to which the cage is pivotally mounted, so that it may be slid downward toward the base to cover the bottle, or out-

wardly and upwardly to uncover the bottle. Similarly the cage may be slid lengthwise when hanging down below the arm, and it is a further object to provide means which will automatically interdict the operation of the means to release or open the bottle's valve when the cage is thus hung down, so that the bottle's valve may only be opened, and the bottle recharged, when the cage is locked in proper protective position about the bottle.

It is a further object to simplify and improve the construction and arrangement of the parts of the mechanism, to improve its appearance, and the ease of its manufacture and operation.

The invention, therefore, the principles of which are disclosed in the accompanying drawing, and as will be hereinafter more particularly disclosed in this specification, is more particularly defined, and the limits thereof pointed out, in the accompanying claims.

The invention is disclosed herein in a form which at present is the preferred form, it being understood, however, that various changes may be made in the form, character, proportioning and arrangement of parts relative to each other without departing from the spirit of the invention as defined by the claims.

Figure 1 is a side elevation of the device, parts being broken away and shown in section for clearer illustration, and illustrating a bottle, partly broken away, in charging position, covered by the cage, also partly broken away. This view shows parts in the positions they would assume as the cage reaches its final operative position, with the cage locked in such position.

Figure 2 is an enlarged elevation from the opposite side, illustrating the means interdicting operation of the bottle's valve, due to the fact that the cage (not shown) is not in operative position.

Figure 3 is a section, substantially on the line 3-3 of Figure 1, illustrating parts in the position shown in Figure 1, and Figure 4 is a similar view, showing parts in the positions they would occupy in Figure 2.

This invention resides primarily in the locking and releasing devices and in the mechanism for opening and closing the bottle's valve. It is not necessary to describe the bottle-supporting and charging mechanism in great detail. The device is supported from a base 9 which is arranged to be secured to any suitable support, as a table or bench, and which in turn supports an upright water supply pipe 90, vertically adjustable through a bore in the base 9 by means of the

set screw 91. At its upper end the pipe 90 supports a charging valve 8, controllable by a handle 80, and terminating in a nozzle 81. A supply pipe 92 for gas under pressure, as carbon dioxide, admits to the valve 8, preferably passing up through the base 9.

The bottle 7 is intended to be of the type now commonly used for the dispensing of such carbonated water, and upon its neck is received a closure 70 having a discharge spout 71 and an upwardly projecting stem 72 which, in part at least, receives the bottle valve operable by the lever handle 73.

Such a bottle is supported with its discharge spout 71 in registry with the discharge nozzle 81 of the charging valve 8, and with its stem resting within a suitable recess (see Figure 2) in the end of an anvil 6, carried upon a stem 60, guided for vertical movement in the base 9. This anvil 6 is movable vertically to press the bottle spout 71 against the nozzle 81 to form a tight seal, and this may be accomplished by a vertically movable pin 61 received within an axial recess in the stem 60, where it engages a spring 62, the lower end of the pin 61 being engageable by a cam 63 formed upon a lever 64. The weight of the bottle is largely supported by a bracket arm 5, having lateral arms 50 near its outer end, and which at its inner end is supported by bolts 51 or other suitable means from the base 9.

The bottle is enclosed within a suitable cage 4, which cage is conveniently supported upon a slide 40 movable lengthwise of the bracket arm 5, to which slide the cage is pivoted at 41. The cage fits about the bottle and the bracket arm 5 whereon the bottle rests, and the pivot 41 is provided because it is not desirable to have the cage in bottle-covering position at all times, but rather it is preferable that the cage swing down below the bracket arm at such times as the bottles are being put in place or removed.

The operation of the device will now be understood in general. With the cage swung out of the way but with the slide 40 in its lowermost position, due to gravity, a bottle in inverted position is placed upon the bracket 5, cradled between the lateral arms 50, and with the end of its stem 72 resting upon the anvil 6, and with its spout 71 in registry with the nozzle 81. The lever 64 is now swung from its dash line position of Figure 1 to its full line position, that is, into a position where the cam 63 presses upwardly on the pin 61 and thence through the spring 62 upon the anvil 6, and this forces and holds the spout 71 in close connection with the nozzle 81. However, it is not yet possible, by manipulation of the valve 8 through the handle 80, to charge either water or the gas under pressure into the bottle 7, for the valve of the bottle itself, controlled by the valve lever 73, must be opened, and to open it the valve lever 73 must be swung towards the neck of the bottle. The lever 73, then, must be swung from the full line position of Figure 2 to the dash line position thereof.

To effect such movement of the valve lever 73 there is provided a pin 1, carried upon a wheel 11 pivoted adjacent the base of the bracket arm 5 at 10. The pin 1 is so located that as the wheel 11 is rotated the pin will engage the lever arm 73 and move it, as indicated in Figure 2.

However, it must be borne in mind that it is not desirable to permit the bottle valve to be opened except when the cage 4 is in operative position enclosing the bottle 7, and hence means

are provided to lock the pin 1, or the wheel 11 which carries it, in the full line position of Figure 2, where the pin cannot engage the valve lever 73. Such a lock may be accomplished by means of a dog or lug 12, carried by the wheel 11, and a pawl pivoted upon the bracket 5 at 13 and having one end 14 which is spring-urged by spring 13 to engage the lug 12, and a second arm 15 which may be engaged and depressed to disengage the pawl 14 from the lug 12. So long as the pawl is in engagement with the lug 12 the wheel may not rotate in such a direction as to permit engagement between the pin 1 and the lever arm 73. An additional lug 19 may be provided behind the lug 12, as illustrated in Figure 2, as a further safety precaution. Should the pawl 14 fail to engage the lug 12, it can scarcely fail to engage the lug 19; and should the pawl slip from the lug 12 it will still engage the lug 19.

Since it is only desirable to permit opening of the bottle valve at such time as the cage is in its final operative position, means are provided, the position of which is controlled by the position of the cage, which act to release the wheel 11 to permit operation of the valve lever 73. Thus a finger 42 is fixed to the slide 40, projecting downwardly, and the arm 15 of the pawl 14 lies in the path of this finger 42; as the slide reaches its lowermost position, corresponding to the final operative position of the cage, the finger 42 depresses the pawl arm 15 and releases the pawl, in opposition to its spring 16, permitting rotation of the wheel 11.

It is necessary to lock the cage 4 in its final operative position, and to that end a locking dog 24 is pivoted at 23 upon the bracket arm 5, its opposite end 25 being spring-urged away from the bracket by a spring indicated at 26, and the locking dog 24 is positioned to engage a pin 44 carried by the slide 40. The dog and pin are shown thus engaged in Figure 1. The engagement of the pin 44 with the locking dog 24 is automatic so long as there is no obstacle interposed between them, or something holding the locking dog out of locking position. The release of the locking dog is effected by a pin 2 carried upon the wheel 11, and so positioned with relation to the pin 1 that the locking dog 24 may only be released to permit withdrawal of the cage from about the bottle, after the pin 1 has been moved away from the bottle valve lever 73, and the bottle's valve is therefore closed. When the valve lever 73 is in the dash line position of Figure 2, with the bottle's valve open, the pin 2 is withdrawn from the locking dog 24, and the latter must be engaged with the pin 44 to lock the slide and hence the cage in operative position.

It may be thought that the slide 40 and the cage which is pivoted to it can be locked and held when the slide is in its lowermost position but with the cage hinged and swung downwardly beneath the bracket arm 5. Such, however, is not the case, and in order to prevent this there is provided a plate 3, which is fast to the cage 4, and which when the cage is swung downwardly on its hinge 41 by gravity, is in the position shown in Figure 2, wherein it is interposed between the locking dog 24 and the pin 44. The result is that it prevents locking engagement of the dog 24 with its pin 44 on the slide, except when the cage has been swung over the bracket arm 5 and any bottle resting upon the latter. This serves a further purpose in that the slide is

thereby prevented from moving to its lowermost position, and in turn the finger 42 is prevented from engaging the pawl arm 15, and the pawl is thereby prevented from unlocking the wheel 11. Thus, when the cage is in its downwardly swung or inoperative position it is not even possible to engage the pin 1 with the valve lever arm 73 and to open the bottle valve.

Now it will be seen that the only possible sequence of events, after a bottle has been placed on the bracket arm 5 and the anvil 6 has been moved upwardly, as previously described, is to raise the slide 40 to the upper end of the bracket arm, to swing the cage 4 on its pivot 41, until the cage is in position to cover the bottle (whereupon the plate 3 has been swung into inoperative position), then to slide the slide 40 and cage 4 lengthwise over the bottle 7, whereupon the finger 42 releases the pawl 14, and coincidentally the locking dog 24 engages the pin 44 (unless the pin 2 is manually held against the arm 25), and the cage is now locked in its operative or bottle-covering position. Now the wheel 11 may be rotated so that the pin 1 may engage the lever arm 73 and the bottle valve may be opened (which necessarily first releases the arm 25, if the pin 2 had been held thereagainst), after which, by manipulation of the charging valve lever 30, water and then carbon dioxide under pressure is charged into the bottle. The bottle having been filled and charged, it is necessary to release the locking dog 24 before the bottle can be withdrawn, and before the cage can be withdrawn from about it. In consequence it is necessary to rotate the wheel 11 in the reverse direction, so that the pin 2 may engage the arm 25, and this first effects release of the valve lever 73 by the pin 1 and closing of the bottle valve, and at about the same time it involves re-engagement of the dog 12 by the pawl 14. When these events have taken place the locking dog 24 is released from its pin 44, and the slide may be moved outwardly and upwardly along the bracket arm 5. At the outer end of its movement the cage can be swung aside and downwardly, and now the bottle can be released by moving the anvil 6 downwardly, and the bottle is removed.

The sequence of events thus compelled makes the device foolproof. It is impossible to charge the bottle without having the cage locked in operative position about the bottle. Should the bottle burst during the charging operation the cage cannot be blown outwardly by the force of the explosion, but all the glass is contained by the cage, which may be made sufficiently long and strong to accomplish the desired end. No difficulty arises from letting the slide move towards its lower limit with the cage swung aside, for the reason that the plate 3 prevents locking engagement and thereby prevents opening of the bottle valve. The device is simple yet automatically operable only in the proper way.

What I claim as my invention is:

1. A carbonated bottle filler, comprising means to support a bottle in charging position and to charge water and gas under pressure thereinto, means to swing the valve lever of the bottle, when in charging position, to open the bottle's valve, a cage guided for movement through a fixed path to cover and to uncover a bottle supported in charging position, means to lock the cage in bottle-covering position, and means releasable by movement of the locking means into cage-locked position, to interdict opening movement of the

valve-opening means except when the cage is thus locked.

2. A carbonated bottle filler, comprising means to support a bottle in charging position and to charge water and gas under pressure thereinto, means to swing the valve lever of the bottle, when in charging position, to open the bottle's valve, a cage guided for movement through a fixed path to cover and to uncover a bottle supported in charging position, means to lock the cage in bottle-covering position, means releasable by movement of the locking means into cage-locked position, to interdict opening movement of the valve-opening means except when the cage is thus locked, and means operable only after closure of the valve to release said locking means.

3. A carbonated bottle filler, comprising means to support a bottle in charging position, and to charge water and gas under pressure thereinto, means to swing the valve lever of the bottle, when in charging position, to open the bottle's valve, a cage and a slide whereon the cage is pivotally mounted, the slide being guided for movement through a fixed path, whereby the cage may cover and uncover a bottle supported in charging position, or may be swung on its pivot into an inoperative position, means to lock the cage in bottle-covering position, and means to interdict opening movement of the valve-opening means, regardless of movement of the slide, except when the cage is swung upon its pivot into bottle-covering position.

4. A carbonated bottle filler, comprising means to support a bottle in charging position, and to charge water and gas under pressure thereinto, a cage movable between an inoperative position and an operative position, wherein it covers the bottle so supported, means to lock the cage in bottle-covering position, and means controlled in accordance with the position of said locking means, to prevent charging into the bottle prior to locking the cage in bottle-covering position.

5. A carbonated bottle filler, comprising means to support a bottle in charging position, and to charge water and gas under pressure thereinto, a cage movable between an inoperative position and an operative position, wherein it covers the bottle so supported, means to lock the cage in bottle-covering position, means controlled by the position of the cage relative to the bottle to interdict engagement of the lock until the cage is in bottle-covering position, and means controlled in accordance with the position of the locking means, to prevent charging into the bottle until the cage is locked in bottle-covering position.

6. A carbonated bottle filler, comprising means to support a bottle in charging position, and to charge fluid under pressure thereinto while so supported, a cage movable between an inoperative position and an operative position, wherein it encloses the bottle so supported, means to interdict charging of the bottle until the cage reaches its final operative position, and means movable to positively lock the cage against movement from bottle-enclosing position by the force of explosion of a bottle, and further operable by such movement to automatically release the interdicting means.

7. A carbonated bottle filler, comprising means to support a bottle in charging position, and to charge water and gas under pressure thereinto, a cage movable between an inoperative position and an operative position, wherein it covers the bottle so supported, means to interdict charg-

ing of the bottle when the cage is not in bottle-covering position, and means separate from but actuated by the movement of the cage into bottle-covering position, to release the said interdiction means, whereby the bottle may be charged.

8. A carbonated bottle filler, comprising means to support a bottle in charging position, and to charge fluid under pressure thereinto while so supported, an unitary cage movable lengthwise of the bottle from an inoperative position to an operative position, and so formed and shaped that, in its operative position, it encloses the entire bottle, and means to interdict charging of the bottle until the cage reaches its final operative position.

9. A carbonated bottle filler, comprising a base, means supported therefrom to support a bottle in charging position, and to charge water and gas under pressure thereinto, a wheel rotatable upon the base, and carrying two angularly spaced pins rotatable with the wheel, the first such pin when so rotated in one direction engaging and moving the bottle's valve lever to open position, a cage and a cage-supporting element whereon the cage is movable between a position in readiness to cover a bottle and an inoperative position, means carried by the base and guiding said element, and the cage when the latter is in position of readiness, into and from bottle-covering position, a lug carried by the wheel and a dog carried by the base, and normally engaging the lug to interdict rotation of the wheel in a direction to open the bottle's valve, means movable with the cage-supporting element and positioned to release said dog when the cage reaches bottle-covering position, a locking dog spring-urged to engage and lock the cage-supporting element, when the cage reaches bottle-covering position, to retain the cage in such position, the second pin, however, being positioned and organized to engage and hold the locking dog in unlocked position when the first dog is engaged with the lug, and being released by movement of the wheel in a direction to open the bottle's valve, and means carried by and movable with the cage, in position to prevent engagement of the dog-releasing means with the dog except when the cage is in bottle-covering position.

10. A carbonated bottle filler, comprising means to support a bottle in charging position, means

to place the bottle, so supported, in readiness to receive a charge, means to charge fluid under pressure thereinto while so supported and in readiness, an unitary cage movable lengthwise of the bottle from an inoperative position to a position enclosing a bottle so supported, and means operable by the action of placing the bottle in readiness for charging to lock the cage against movement from bottle-enclosing position.

11. A carbonated bottle filler, comprising means to support a bottle in charging position, means to place a bottle, so supported, in readiness to receive a charge, means to charge fluid under pressure thereinto while so supported in readiness, a cage movable from an inoperative position to a position enclosing a bottle so supported, and means operable automatically by the action of placing of the bottle in readiness for charging to lock the cage against movement from bottle-enclosing position.

12. A carbonated bottle filler, comprising means to support a bottle in charging position, a cage movable from an inoperative position to a position enclosing a bottle so supported, a common means to lock the cage against movement from bottle-enclosing position and to place the bottle in readiness for charging, and means to charge fluid under pressure into such bottle.

13. A carbonated bottle filler, comprising means to support a bottle in charging position, a cage movable from an inoperative position to a position enclosing a bottle so supported, means to lock the cage against movement from bottle-enclosing position, means to place the bottle in readiness for charging, means operatively connecting the two last-named means for simultaneous operation, whereby the bottle may not be placed in readiness for charging without thus locking the cage, and means to charge fluid under pressure into such bottle.

14. A carbonated bottle filler, comprising means to support a bottle in charging position, a cage movable from an inoperative position to a position enclosing a bottle so supported, means to charge fluid under pressure into such bottle, means to lock the cage against movement from bottle-enclosing position, and means, releasable by the locking of the cage, to interdict charging into the bottle prior to such locking.