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1,995,373

BOTTLING AND CAPPING DEVICE

Filed Nov. 16, 1931

2 Sheets-Sheet 1

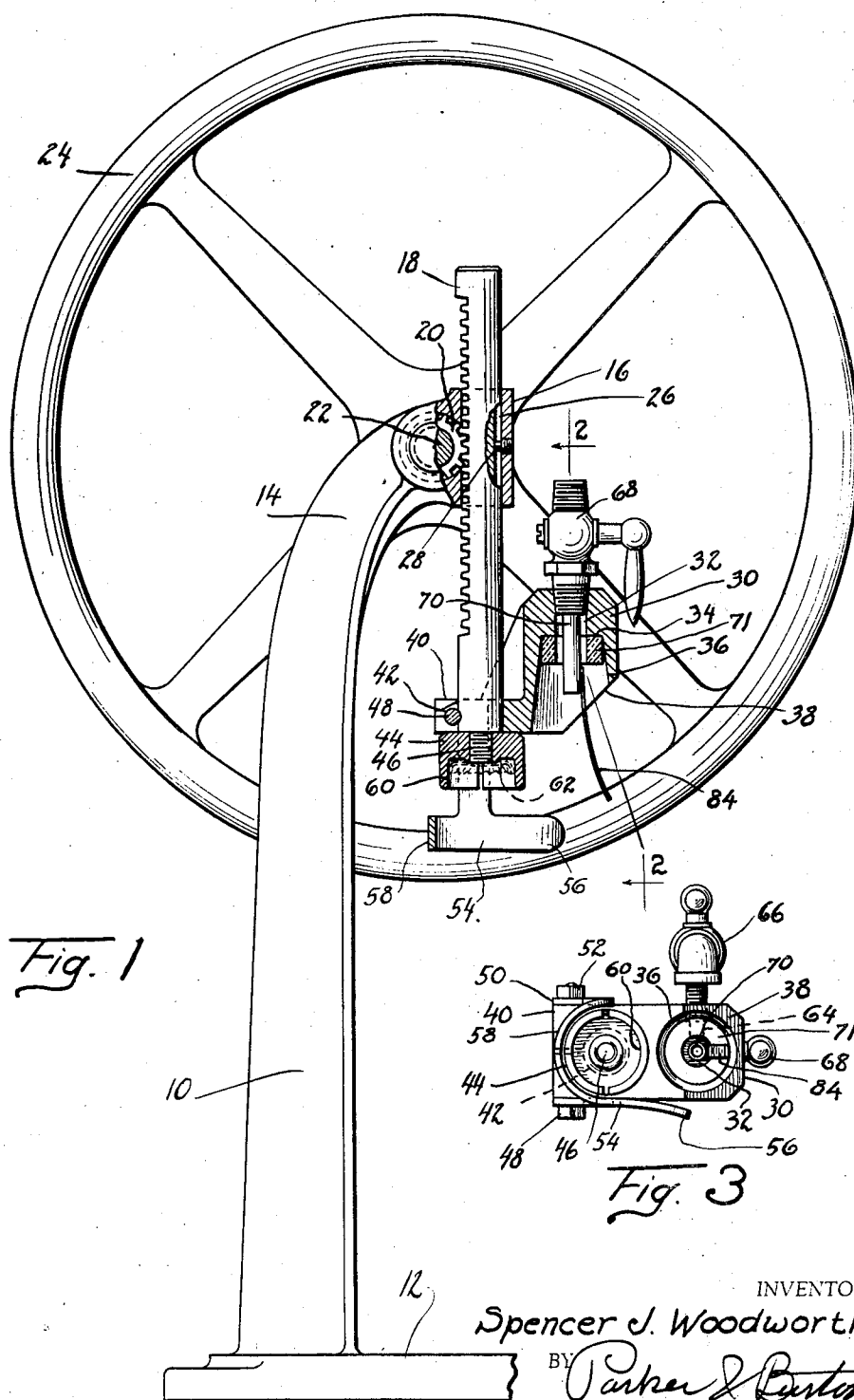


Fig. 1

Fig. 3

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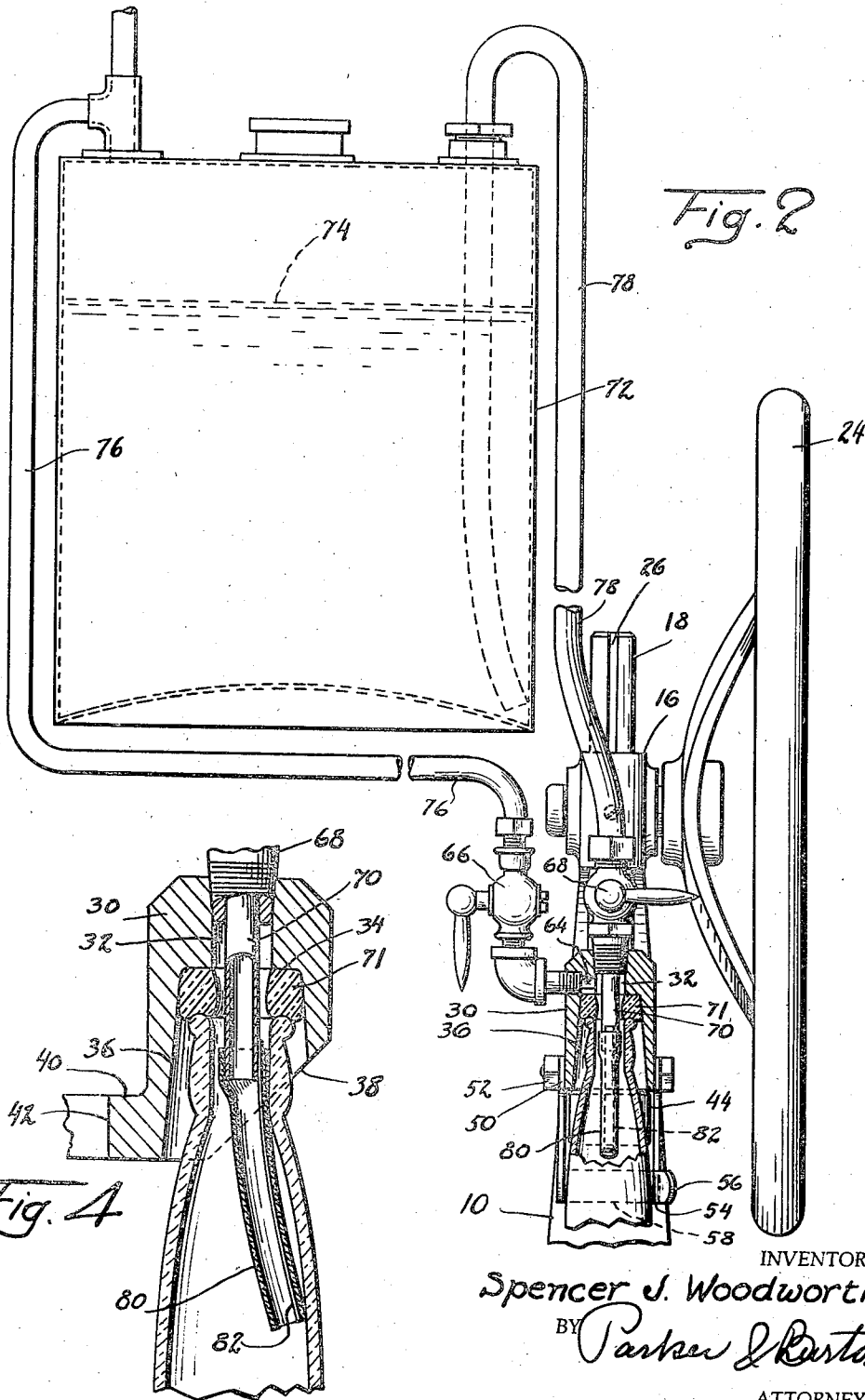
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BOTTLING AND CAPPING DEVICE

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8 Claims. (Cl. 226—75)

My invention relates to mechanism for bottling and capping liquid beverages and has particular reference to mechanism primarily adaptable for use in conjunction with beverages under pressure or so-called carbonated beverages.

An object of the invention is to provide simplified means for bottling the carbonated beverage without losing any of the liquid during the bottling operation and without diminishing the gaseous pressure within the liquid by virtue of the formation of gaseous bubbles which create a so-called "bead" during such operation.

Another object of the invention is to provide a readily manipulable device comprising a minimum number of simplified component parts, inexpensive to manufacture and assemble, which performs the desired functions with maximum efficiency.

Further specific objects of the invention consist in providing a portable structure which includes means whereby the interior of the bottle to be filled may be quickly and easily brought up to a pressure corresponding to the pressure of the carbonated beverage and whereby the beverage itself may be subsequently delivered into the bottle under pressure without creating an agitation within the liquid to stir up pressure bubbles to form an undesirable bead.

Still another object of the invention is to associate with the bottling means a capping device which may be manipulated by the same control member as the bottling head and which is so associated with the means for delivering liquid into the bottle that only a relatively slight movement of the bottle after the filling operation is necessary to bring the bottle into capping position.

An important feature of the invention resides in the particular guide means associated with the capping mechanism whereby the cap may be inserted therein without difficulty during the period when the liquid is being delivered into the bottle.

Various other meritorious features of the invention will be apparent from the following description taken in conjunction with the drawings wherein like numerals refer to like parts throughout the several figures and wherein:

Fig. 1 is a side elevation of the assembly, partly broken away and in section,

Fig. 2 is a front elevation, partly in section,

Fig. 3 is a bottom plan view of the bottling and capping head, and

Fig. 4 is an enlarged sectional elevation illustrating one of the improved features of the device.

Referring now to the drawings, the numeral 10

indicates a standard constructed integrally with, or secured in any suitable fashion to, a supporting foot 12 and having a goose neck shape at its upper extremity as indicated at 14. The extremity of the goose neck portion is provided with a sleeve 16 through which a rack member 18 may slide. A pinion 20 is secured to a shaft 22, which shaft is journaled in the goose neck adjacent the rack 18 and provided with a hand wheel 24 suitably secured thereto. It will be apparent that rotation of the hand wheel 24 actuates the rack 18 in a vertical direction, either upwardly or downwardly in accordance with the direction of rotation of the hand wheel.

The rack is provided with a groove 26 into which a guide lug 28 projects for the purpose of preventing rotation of the rack 18. The guide lug may be associated with the sleeve 16 in any suitable manner, a threaded screw inserted in the wall of the sleeve having been illustrated in the drawings.

The bottling and capping head is of extremely simple construction. The head per se 30 is provided with a vertical passage 32 which passage-way terminates at the ledge portion 34. Extending downwardly around the extremity of this ledge portion there is an outwardly flared skirt 36, the forward portion of this skirt being cut away on a bevel as indicated at 38 for ready insertion of a bottle neck. Extending rearwardly from the base of the skirt is a lateral flange 40 which is apertured as at 42 to receive the lower portion of the rack 18.

As illustrated clearly in Fig. 1, the bottling head 30 is positioned firmly on the lower extremity of the rack 18, being seated upon a recessed nut 44 which is threaded on to a threaded extremity 46 of the said rack 18. A bolt 48 extends transversely through the rear of the flange 40 and is adapted to seat in a slight depression provided in the lower extremity of rack 18 for the purpose of preventing any relative sliding movement between the head and the rack.

A guide member having depending apertured ears 50 is supported upon the outer extremities of the transverse bolt 48 and securely positioned by means of the threaded nuts 52. This guide member includes a forwardly extending rail 54 on the side adjacent the hand wheel 24, which rail is flared outwardly as indicated at 56 in Fig. 3. The said guide rail includes a rear arcuate portion 58 to limit the movement of the bottle when transferring it from bottling to capping position but, as stated, the forwardly extending flared portion 56 is on one side only, thereby per-

mitting ready access from the other side to the recessed portion 60 of the nut 44. This nut may be magnetized and is adapted to retain or position a bottle cap 62 as illustrated in Fig. 1.

5 A lateral passage 64 extending from the side of the bottling head 30 communicates with the vertical passage 32 and each of these passages is adapted to receive a threaded valve fitting broadly indicated at 66 and 68. The fitting 68 may include a delivery tube 70 which is of smaller diameter than the passage 32. A yieldable washer 71 is seated on the underside of the ledge portion 34 as a stop for the upper extremity of the bottle neck. The opening in this washer corresponds in diameter to that of the passage 32.

10 In Fig. 2 the operation of the mechanism is clearly illustrated. The numeral 72 represents a pressure tank filled with any type of beverage 74 under pressure. Such beverages are usually carbonated, and that term has been utilized throughout with reference to any type of beverage which has been placed under pressure during its formation. The conduit 76 communicates with the upper portion of the tank 72 and a second conduit 78 extends from the bottom of the tank and is connected with the valve 68. Conduit 76 is connected with valve 66.

The operation is as follows:

15 The bottle to be filled with the carbonated beverage is placed upon the foot 12 of the device in substantial alinement with the bottling head 30 and hand wheel 24 rotated to bring the head itself, and particularly the yieldable washer 71, in firm contact with the top of the bottle neck. Then valve 66 is opened, permitting pressure flow through the line 76 and passage 64 into the annular passageway surrounding the fluid delivery tube 70 and thence into the bottle. In this way the pressure in the bottle is brought up to the pressure existing in the pressure tank and the two pressures are in balanced relation. Then the liquid valve 68 is opened to permit flow of liquid through the conduit 78 and out the delivery tube 70 into the bottle.

20 By reason of the fact that a balanced pressure is maintained throughout the filling of the bottle there will be no tendency to lose the gaseous content of the liquid when it is delivered into the bottle by the formation of gaseous beads and bubbles when the liquid retained is subjected to a lower pressure.

25 An important feature of the invention resides in additional means for preventing the escape of gas from within the carbonated beverage, which means consists in a flexible guide tube 80 fitted over the extremity of the delivery tube 70 and resiliently constrained in a curved path to lie against the side wall of the bottle neck as clearly illustrated in Fig. 4. This flexible tube may comprise an outer rubber casing within which is secured a resilient member 82 possessing a substantial amount of inherent rigidity. A strip of spring metal bent to the desired curvature functions admirably for this purpose. The strip 82 may be permanently secured along one wall of the flexible tube 80 and the composite assembly positioned over the end of delivery tube 70 as illustrated. Another form is illustrated in Fig. 1 wherein the resilient strip 84 is secured permanently, as by soldering, to the extremity of delivery tube 70 and the flexible tube subsequently positioned thereover.

30 In this way the liquid discharged from the delivery tube 70 will be directed against the wall of the bottle and then flow downwardly along

the said wall. Agitation of the beverage during the filling operation is thereby in a large measure prevented and consequent escape of gas and reduction of pressure in the beverage is substantially eliminated.

35 The bottle once filled, valve 68 is first closed, then pressure valve 66 is closed, the hand wheel 24 spun to raise the head 30 to a position at which the tube just clears the top of the bottle, the bottle moved slightly rearwardly guided by the rail 54 until it abuts the arcuate rear 58 of the guide, whereupon the hand wheel may be spun in the reverse direction to position the cap 62 over the top of the bottle. It is important to note that the length of the tube is such that the delivery extremity thereof is substantially on a level with the bottom of the recessed capper unit. For this reason the capper will always be in accurate position to receive the top of the bottle when the head has been raised to the point where the end of the delivery tube just clears the top of the bottle. As hitherto stated, the cap 62 may be inserted in the recess 60 even during the filling operation by reason of the fact that no forwardly projecting flared rail portion 56 is included on the outer side of the guide unit. This is a substantial factor in successful use of the mechanism by inexperienced manipulators.

40 Various modified forms of the improved features of my apparatus will be apparent to those skilled in the art and for that reason I wish to limit myself only within the scope of the appended claims.

What I claim:

35 1. In combination with mechanism of the class described, an integral bottling head including a filler head adapted to communicate with the opening of a bottle, a cap retainer positioned rearwardly of said head in fixed relation thereto, and a guide rail depending outside said cap retainer and embracing one side only thereof.

40 2. In combination with mechanism of the class described, a vertically movable rack, said rack including a threaded portion at its lower extremity, a magnetized and recessed nut threaded over said lower extremity, and a filler head seated upon the upper side of said nut and extending laterally thereof.

45 3. In combination with mechanism of the class described, a vertically movable rack, said rack including a threaded portion at its lower extremity, a magnetized and recessed nut threaded over said lower extremity, a filler head seated upon the upper side of said nut and extending forwardly thereof, and a guide rail secured to said head in depending partially embracing relation to said recessed cap, the securing means therefor cooperating with means on said rack for fixedly positioning said head.

50 4. An integral bottling head comprising, in combination, a capper, a filler head including a nozzle terminating at approximately the level of said capper, and a guide rail depending below said capper and said nozzle along one side only thereof to accurately position a bottle with reference to the nozzle and capper.

55 5. Mechanism of the class described comprising a vertically movable rod terminating at its lower end in a capper, a filler head including a depending laterally extending apertured arm seated upon said capper, and means extending through said filler head arm in cooperative relation to said rod for retaining the two in fixed relation.

6. Mechanism of the class described comprising a vertically movable rod terminating at its lower end in a capper, a filler head including a depending laterally extending apertured arm
5 seated upon said capper, means extending through said filler head arm in cooperative relation to said rod for retaining the two in fixed relation, and a depending guide rail positioned by said means.

10 7. In combination with the mechanism of the class described, a vertically movable rack, said rack including a magnetized and recessed cap retainer secured to the lower extremity thereof, and

a filler head seated upon the upper side of said cap retainer and extending laterally thereof.

8. In combination with mechanism of the class described, a vertically movable rod and means for moving said rod, a cap retainer rigidly associated with the bottom of said rod and a filler
5 head having a depending laterally offset foot portion rigidly secured to said rod, said filler head including a nozzle depending below said foot portion and terminating at approximately
10 the level of the bottom of the cap retainer.

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