W. H. WALTER.

APPARATUS FOR COOLING AND DISPENSING LIQUIDS.

APPLICATION FILED DEC. 18, 1908.

991,568.

Patented May 9, 1911.

2 SHEETS—SHEET 1.

FIG. 1

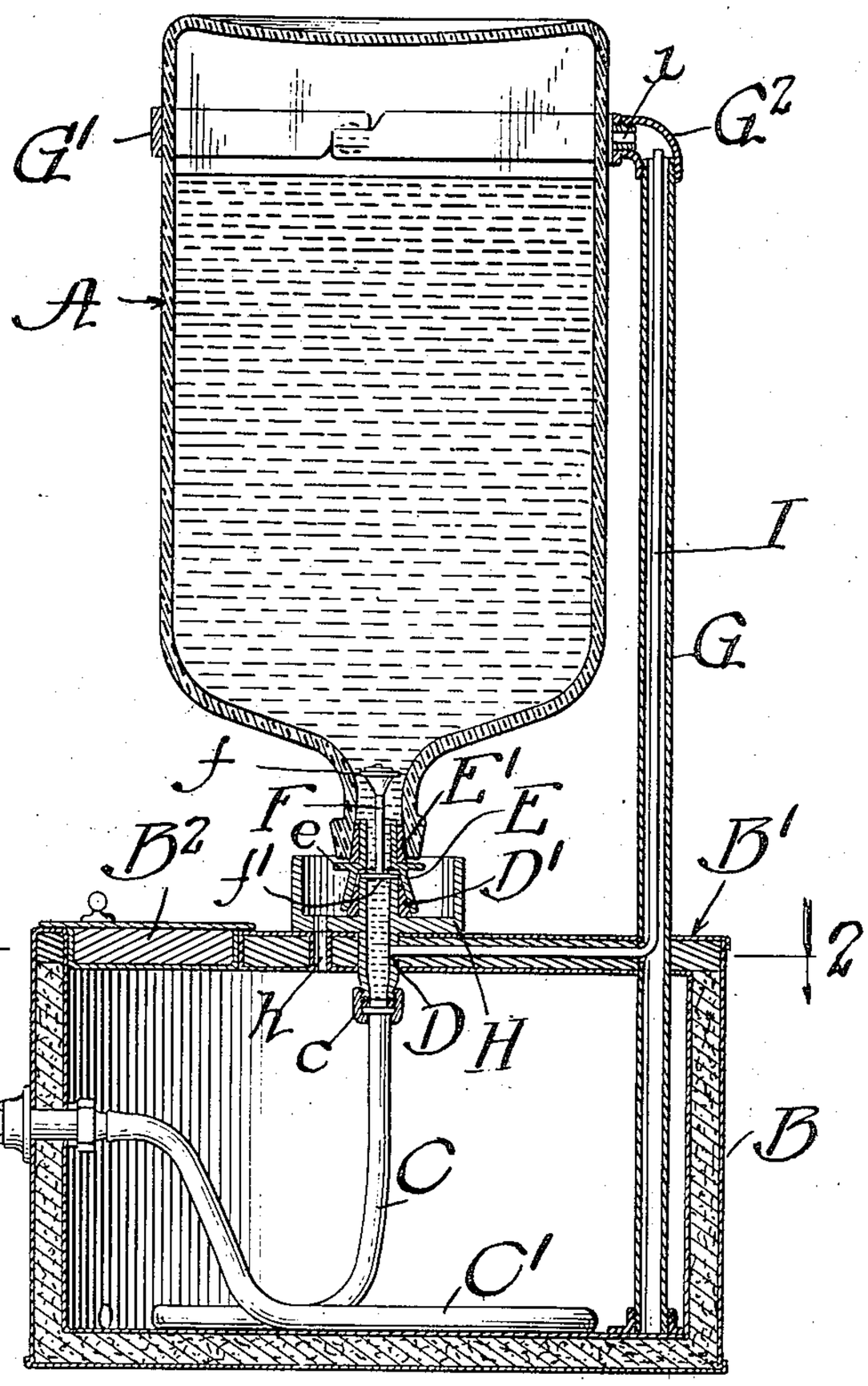

FIG. 2.

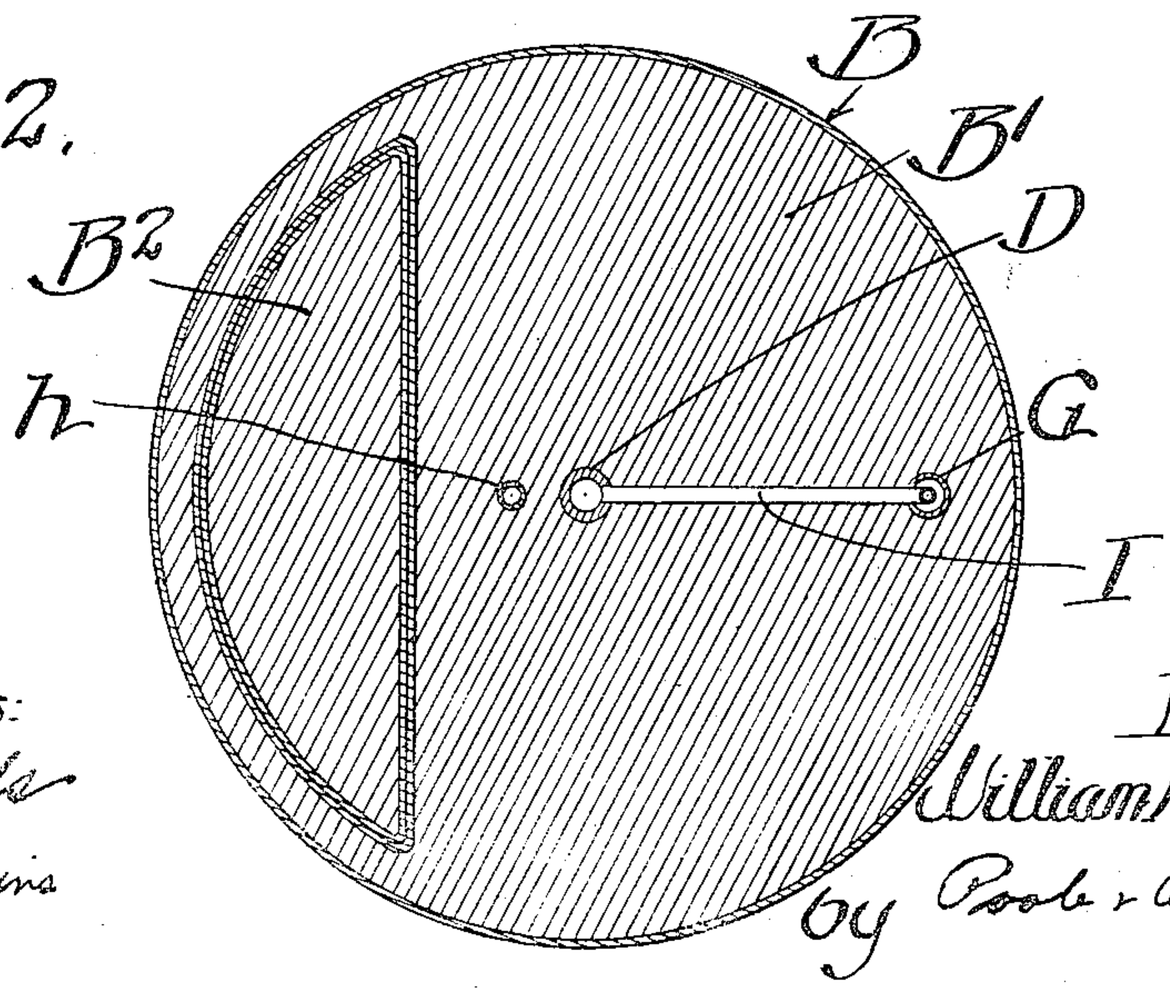

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Fig. 3.

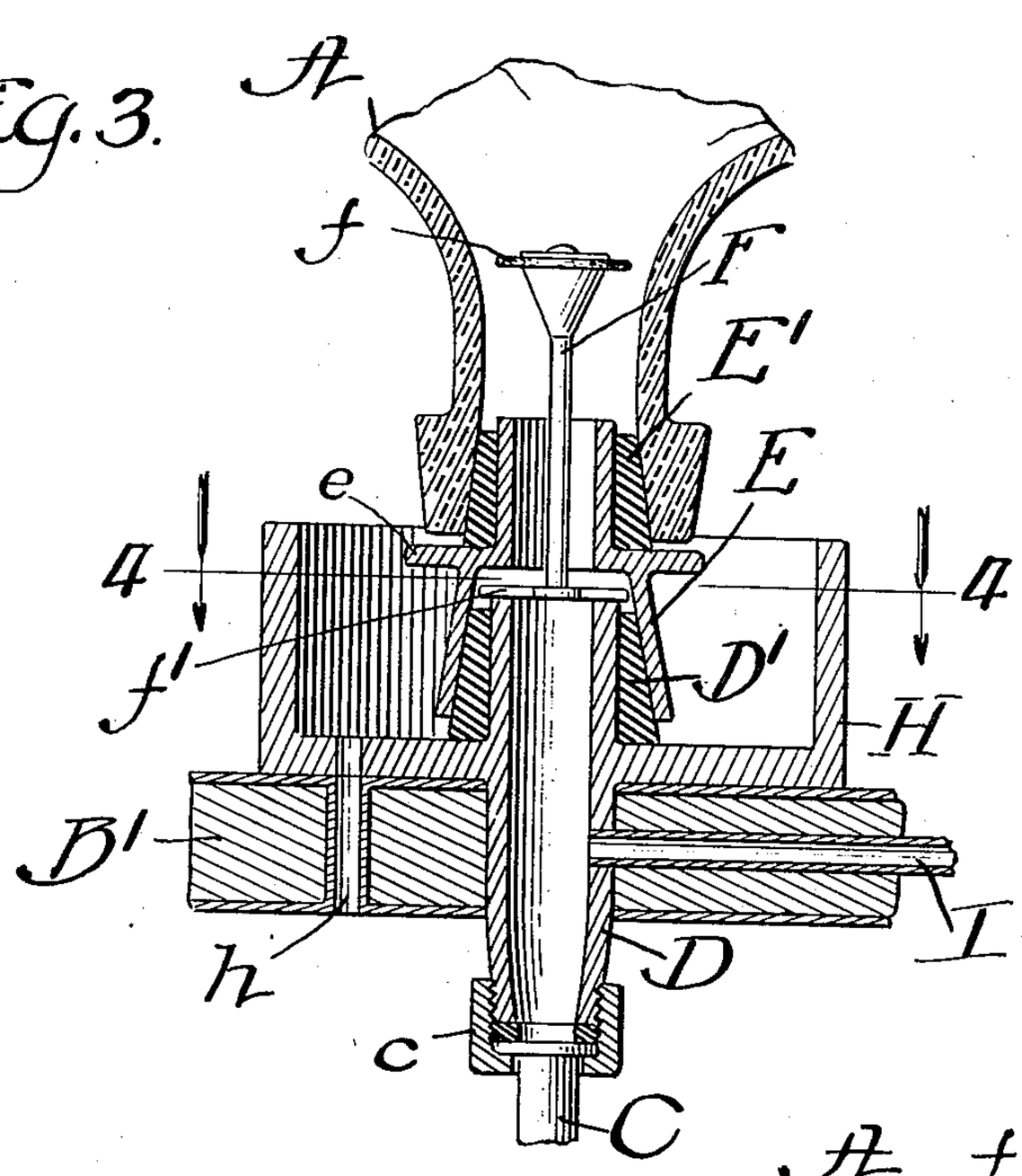


Fig. 4.

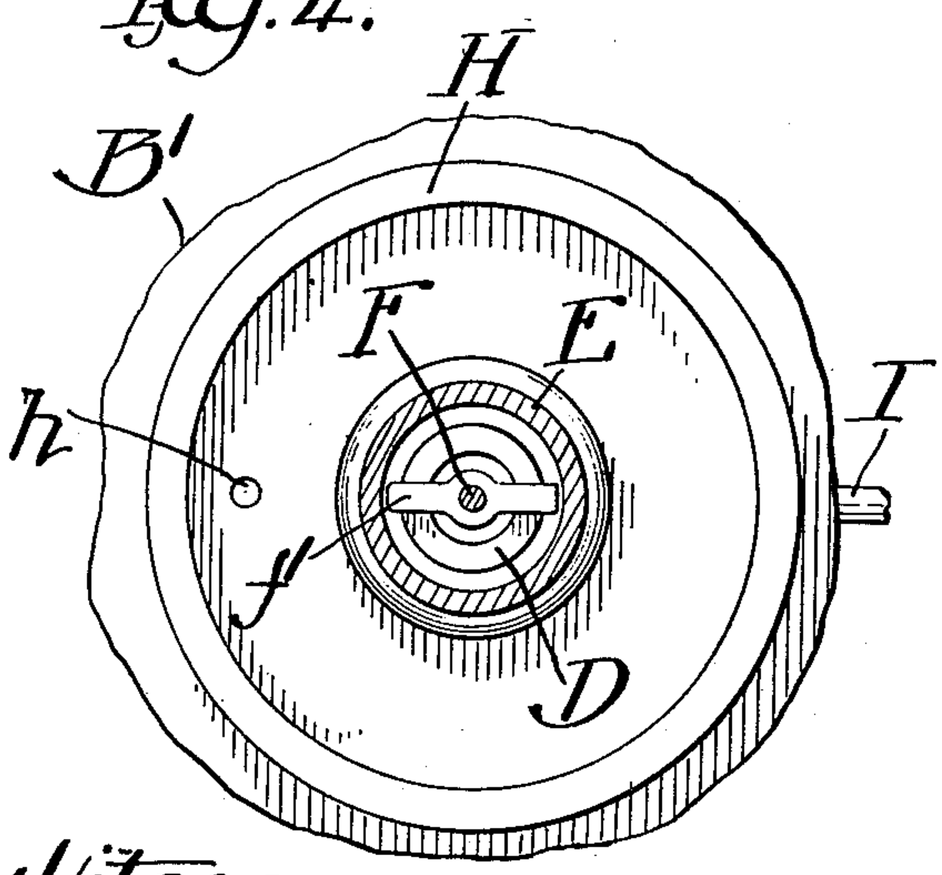
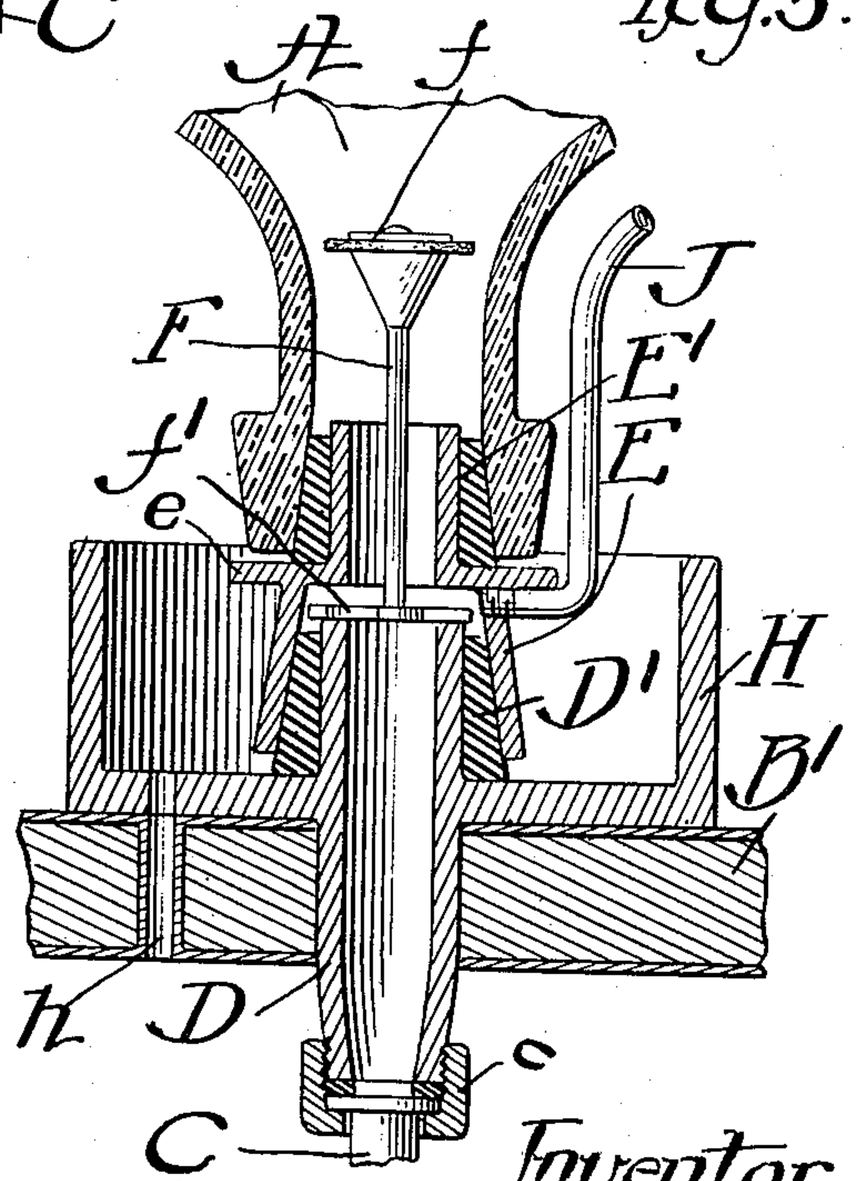


Fig. 5.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR COOLING AND DISPENSING LIQUIDS.

991,568. Specification of Letters Patent. Patented May 9, 1911.

Application filed December 18, 1908. Serial No. 468,127.

To all whom it may concern:

Be it known that I, WILLIAM H. WALTER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Cooling and Dispensing Liquids; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to apparatus for dispensing beverages, and more especially to that class of such apparatus embracing a supply vessel or bottle in which the water or other liquid is contained and from which it is drawn, and means for cooling the liquid before delivery from the apparatus.

The invention consists in the matters hereinafter set forth and pointed out in the appended claims.

In the accompanying drawings which illustrate one practical embodiment of my invention—Figure 1 is a view in central vertical section of a liquid dispensing apparatus made in accordance with my invention. Fig. 2 is a horizontal section taken upon line 2—2 of Fig. 1. Fig. 3 is a detail section on an enlarged scale of the connections between the bottle and the cooling pipe of the apparatus. Fig. 4 is a detail section taken upon line 4—4 of Fig. 3. Fig. 5 is a detail section corresponding with Fig. 3 but showing a modified form of the apparatus.

As shown in said drawings, A indicates a supply vessel or bottle which is made of glass or like material and is arranged in an inverted position at the top of the apparatus.

B indicates the casing of a refrigerating chamber, at the top of which the vessel A is supported, and which contains a cooling pipe C through which the liquid is drawn before it is used. The refrigerator casing B may be made of any usual or preferred construction but is, as shown in the accompanying drawings, made of cylindric form and provided in its flat top wall B^1 with a door B^2 through which to insert the ice for the purpose of keeping cool the cooling pipe C. The main part of said cooling pipe C is arranged in the form of a flat horizontal coil C^1 which rests on the bottom of the casing B and on which the ice directly rests. The discharge end of the said cooling pipe rises above the level of the coil C^1 and extends through the side wall of the casing, terminating in a faucet C^2. The bottle A is removable or detachable from the refrigerator casing and cooling pipe so that the renewal of the supply of liquid to the apparatus may be effected by the substitution of a filled bottle for an empty one. The receiving end of the cooling pipe C rises centrally within the refrigerating chamber and is connected by an air tight joint with a short, fixed, upright tube D, which passes through and is secured in the top wall B^1 of the casing B. As illustrated, a detachable connection is provided between the lower end of said tube D and the receiving end of the cooling pipe C, the same consisting of a flanged and screw-threaded sleeve *c*, which engages an annular flange on the upper end of the cooling pipe and has screw-threaded connection with the lower end of the said tube. The upper end of the tube D rises above the top wall B^1 of the casing and is provided with an annular gasket or packing ring D^1 of rubber or like material. Said packing ring or gasket is preferably made of upwardly tapering form on its outer surface.

E indicates a tubular connecting member which serves to afford an air tight connection between the mouth of the inverted bottle and the upper end of the said tube D. The lower portion of said tubular connecting member E is adapted to fit closely, or with an air tight fit, over the upper end of said tube D and for that purpose is provided with an interior conical surface fitting upon the gasket D^1. The upper end of said connecting member E is provided with an annular packing member or gasket E^1, preferably made of rubber or like yielding material, and which is adapted to fit within the mouth of the bottle so as to form an air tight joint between the connecting member and the bottle. Said packing ring or gasket E^1 is preferably made of upwardly tapering form on its exterior surface, so that a tight joint will be formed with the mouth of the bottle notwithstanding slight variations in the sizes of the necks of different bottles. Preferably the connecting member E is provided with an annular flange *e* located below the gasket E^1, but said flange merely forms a shoulder against which the lower

edge of the gasket rests and is not essential to the operation of the device.

For the purpose of preventing the escape of liquid from the bottle when the latter is inverted to place it upon the apparatus, the tubular connecting member E is provided with an automatically acting valve which consists of a valve stem F provided at its upper end with a valve disk *f*, adapted to close against the upper end of the tubular member, and having at its lower end a cross bar f^1 adapted for contact with the upper end of the fixed tube D. Said valve stem F is made of such length that when the connecting member is applied to said tube D the valve disk *f* will be lifted above the upper end of the connecting member, thereby permitting free passage of liquid from the bottle through the connecting member and the tube D to the cooling pipe C. In applying the bottle to the apparatus, the connecting member E will be first inserted in the mouth of the bottle, and the bottle will then be inverted and the connecting member then placed or fitted upon the top of the tube D.

As shown and preferably constructed, the weight of the bottle rests upon the connecting member E and provision is made for holding the bottle in its upright position, consisting of a tubular standard G secured to the casing B and having at its upper end a split band or ring G^1 which extends around the upper part of the bottle. Said standard G is shown as extending downwardly through the top wall B^1 of the refrigerator casing and as secured at its lower end to the bottom wall of the casing, this construction being employed to give rigid support to said standard.

H indicates an open topped cup or receptacle which rests on the top wall B^1 of the casing and surrounds the tube D. Said cup H is provided with a drainage passage *h* which leads through said top wall B^1 and opens into the interior of the refrigerator chamber. Said cup or receptacle H is for the purpose of receiving any liquid which may escape from the bottle in the act of placing it upon the apparatus, any such escaping water passing downwardly into the interior of the refrigerating chamber.

For the purpose of supplying air to the interior of the bottle and thus permitting the liquid to flow freely therefrom, an air supply pipe I is connected with and leads laterally from the tube D and is extended upwardly at one side of the bottle. In the particular construction shown, said air tube I passes horizontally outward through the top wall B^1 of the casing to the standard G and its upwardly extending part is contained within said standard. To permit free access of air to the upper end of the said air pipe an air inlet opening or passage *i* is formed in the hollow elbow or fitting G^2 which is connected with the top of the tubular standard G and to which the supporting ring G^1 is attached.

In the operation of the apparatus made as described, when the faucet C^2 is opened to withdraw water from the apparatus the water passes or flows from the bottle through the connecting member E and tube D to the cooling pipe C and water contained in the coil C^1, previously cooled by contact of the ice with said coil, is delivered from said faucet. As the water is drawn from said cooling pipe air is supplied to the bottle through the air pipe I, such air passing from the inner or lower end of said air pipe and rising through the tube D and connecting member E into the bottle.

In the modified form of the apparatus shown in Fig. 5, an air supply pipe J is provided which, instead of being connected with the fixed tube D, is attached to and communicates with the interior of the connecting member E, so that it is removable from the apparatus with said connecting member. Said tube J will be extended upwardly from the extending member at the side of the bottle to a distance required to prevent the outward passage of water therefrom when the bottle is inverted and placed upon the apparatus.

It should be noted, that the fixed tube D, the connecting member E and the cooling pipe C, form a continuous, closed or tight passage or conduit from the mouth of the inverted bottle to the discharge outlet for the liquid, so that the water cannot be contaminated in its passage from the bottle to the discharge outlet, and so that no water seal is necessary for closing the mouth of the bottle. Air is admitted to the inverted bottle as the water is withdrawn therefrom through an air supply pipe, so that the water will flow readily and quietly from the conduit when the valve or faucet is opened. This supply pipe is arranged outside of the bottle and obviates the necessity of employing an internal air supply pipe, which might readily be soiled when withdrawn from the bottle and thus contaminate the water when it is inserted in a bottle containing a fresh supply.

When the improved apparatus is in operation, a partial vacuum is maintained in the upper part of the inverted bottle, and, in the preferred arrangement shown, the water rises in the upwardly extending air supply pipe until the column in the pipe plus the atmospheric pressure balances the column of water in the bottle plus the reduced air pressure therein. When the valve or faucet is opened, the pressure in the bottle is reduced and air enters the bottle through the supply pipe to take the place of the liquid that is withdrawn. Of course this air must first displace the water standing in

the air pipe, forcing it down into the outlet conduit, before such air can gain access to the bottle mouth; and after the faucet is closed the water again rises in said pipe to the level determined by the difference between the then existing air pressures in the pipe and bottle.

While the preferred arrangement of the continuous closed conduit extending from the mouth of the inverted bottle to the discharge outlet of the liquid, and of the upwardly extending air supply pipe connected to the conduit and arranged outside of the bottle, are shown, and set forth in certain of the claims, these parts may be widely varied without departure from the broad scope of the invention. It should also be understood that the details of construction set forth may be varied without departure from the essentials of the invention as defined in the appended claims.

I claim as my invention:—

1. An apparatus for cooling and dispensing liquid, comprising a casing containing a refrigerating chamber, a water bottle, a cooling pipe located within the refrigerating chamber, a fixed tube extending through the top wall of the casing and having closed connection with the receiving end of said cooling pipe, means affording a detachable, air-tight joint between the upper end of said fixed tube and the mouth of the bottle, and an air supply pipe on the casing which is connected with said fixed tube below the upper end thereof.

2. An apparatus for cooling and dispensing liquid, comprising a casing containing a refrigerating chamber, a water bottle, a cooling pipe located within the refrigerating chamber, a fixed tube extending through the top wall of the casing and having closed connection with the receiving end of said cooling pipe, means affording an air-tight connection between the upper end of said fixed tube and the mouth of the bottle, and an air supply pipe on the casing which is attached to said fixed tube below the upper end of the latter and rises at its inlet end above the mouth of the bottle.

3. An apparatus for cooling and dispensing liquid, comprising a casing containing a refrigerating chamber, a water bottle, a cooling pipe located in the said refrigerating chamber, a fixed tube extending through the top wall of the casing and having closed connection with the receiving end of the cooling pipe, a tubular connecting member interposed between and having detachable air-tight connection with the upper end of said fixed tube and the mouth of the bottle, and an air supply pipe connected with said fixed tube below the upper end thereof.

4. An apparatus for cooling and dispensing liquid, comprising a casing containing a refrigerating chamber, a water bottle, a cooling pipe located in the said refrigerating chamber, a fixed tube extending through the top wall of the casing and having closed connection with the receiving end of said cooling pipe, a tubular connecting member, a tapered annular gasket between the upper end of said fixed pipe and the connecting member, a tubular gasket between said connecting member and the mouth of the bottle, and an air supply pipe connected with the said fixed tube below the upper end thereof.

5. An apparatus for cooling and dispensing liquid, comprising a casing containing a refrigerating chamber, a water bottle, a cooling pipe located in the said refrigerating chamber, a fixed tube in the top wall of the casing having closed connection with the receiving end of the cooling pipe, means affording a detachable air-tight connection between the upper end of said fixed tube and the mouth of the bottle adapted to sustain the weight of the bottle, a tubular standard secured to and rising from the casing and provided at its upper end with means for laterally supporting the upper end of the bottle, and an air supply pipe on the casing connected with said fixed tube below the upper end thereof, said air pipe having an upwardly extending inlet branch located in said tubular standard.

6. An apparatus for cooling and dispensing liquid, comprising a casing containing a refrigerating chamber, a water bottle, a cooling pipe located in the said refrigerating chamber, a fixed tube in the top wall of the casing having closed connection with the receiving end of the cooling pipe, means affording a detachable air-tight connection between the upper end of said fixed tube and the mouth of the bottle adapted to sustain the weight of the bottle, a tubular standard which passes downwardly through the top wall of the said casing and is secured at its lower end to the bottom wall of the same and is provided at its upper end with means for laterally supporting the upper end of the bottle, and an air supply pipe on the casing connected with said fixed tube below the upper end thereof, said air pipe having an upwardly extending inlet branch located in said tubular standard.

7. An apparatus for cooling and dispensing liquid comprising a refrigerating chamber, a bottle, means for supporting the same rigidly but removably in an inverted upright position, a closed conduit arranged within said refrigerating chamber and having a detachable tight connection with the mouth of the bottle, and an upwardly directed pipe arranged exteriorly of the bottle and connected to said conduit for supplying air to the inverted bottle as the liquid is withdrawn therefrom.

8. The combination with a refrigerating chamber, of a bottle rigidly but removably

supported in substantially vertical, upright position, a closed conduit extending through said chamber and having a stationary inlet end in direct tight connection with the mouth of the inverted bottle, and a vent pipe arranged outside of the bottle, connected to said conduit and extending upwardly therefrom.

9. An apparatus for cooling and dispensing liquid comprising a refrigerating chamber, a bottle removably supported in inverted position thereon, a closed conduit in said chamber having a discharge outlet at one end outside of said chamber, and having a detachable tight connection at its inlet end with the mouth of the inverted bottle, and a pipe arranged exteriorly of the bottle and opening into said conduit for supplying air to said inverted bottle as the liquid is withdrawn therefrom, the outer inlet end of said air supply pipe rising above the mouth of the bottle sufficiently to counterbalance the column of liquid therein.

10. An apparatus for cooling and dispensing liquids comprising a refrigerating chamber, a bottle removably supported in inverted position thereon, a closed conduit within said chamber having a faucet at its discharge end and a detachable tight connection with the mouth of the bottle at its inlet end, and a pipe for supplying air to the bottle as the liquid is withdrawn, said air supply pipe opening into said conduit adjacent the inlet end thereof and extending upwardly outside of said bottle to a point above its mouth.

11. A liquid cooling and dispensing apparatus comprising a refrigerating chamber having means for removably supporting a bottle in inverted position thereon, a closed conduit within said chamber having an inlet end at the upper portion of the chamber adapted to form a tight connection with the mouth of the inverted bottle, the discharge end of said conduit extending through the side wall of said chamber and having an external faucet, and a pipe for supplying air to the inverted bottle as the liquid is withdrawn therefrom, said pipe opening into said conduit adjacent the inlet end thereof, extending laterally therefrom and thence upwardly, the inlet end of said air supply pipe being above the inlet end of said conduit.

12. A liquid cooling and dispensing apparatus comprising a refrigerating chamber having means for supporting a bottle in inverted position thereon, a conduit within said chamber having an inlet end extending through the top of said chamber, and means for forming a tight connection between the end of said conduit and the mouth of the inverted bottle, the top of said chamber having a cup surrounding the inlet end of said conduit with an opening leading from said cup to the interior of said chamber.

13. An apparatus for cooling and dispensing liquid comprising a refrigerating chamber, a tubular standard rising from said chamber for supporting a bottle in inverted position thereon, a closed conduit within said chamber having its inlet end opening through the top of the chamber and adapted to form a detachable tight connection with the mouth of the inverted bottle, and a pipe for supplying air to the inverted bottle as the liquid is withdrawn therefrom, said pipe opening into said conduit adjacent its inlet end, extending laterally therefrom and thence upwardly into said tubular standard.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 11th day of December, A. D. 1908.

WILLIAM H. WALTER.

Witnesses:
GEORGE R. WILKINS,
G. J. BRYCE.