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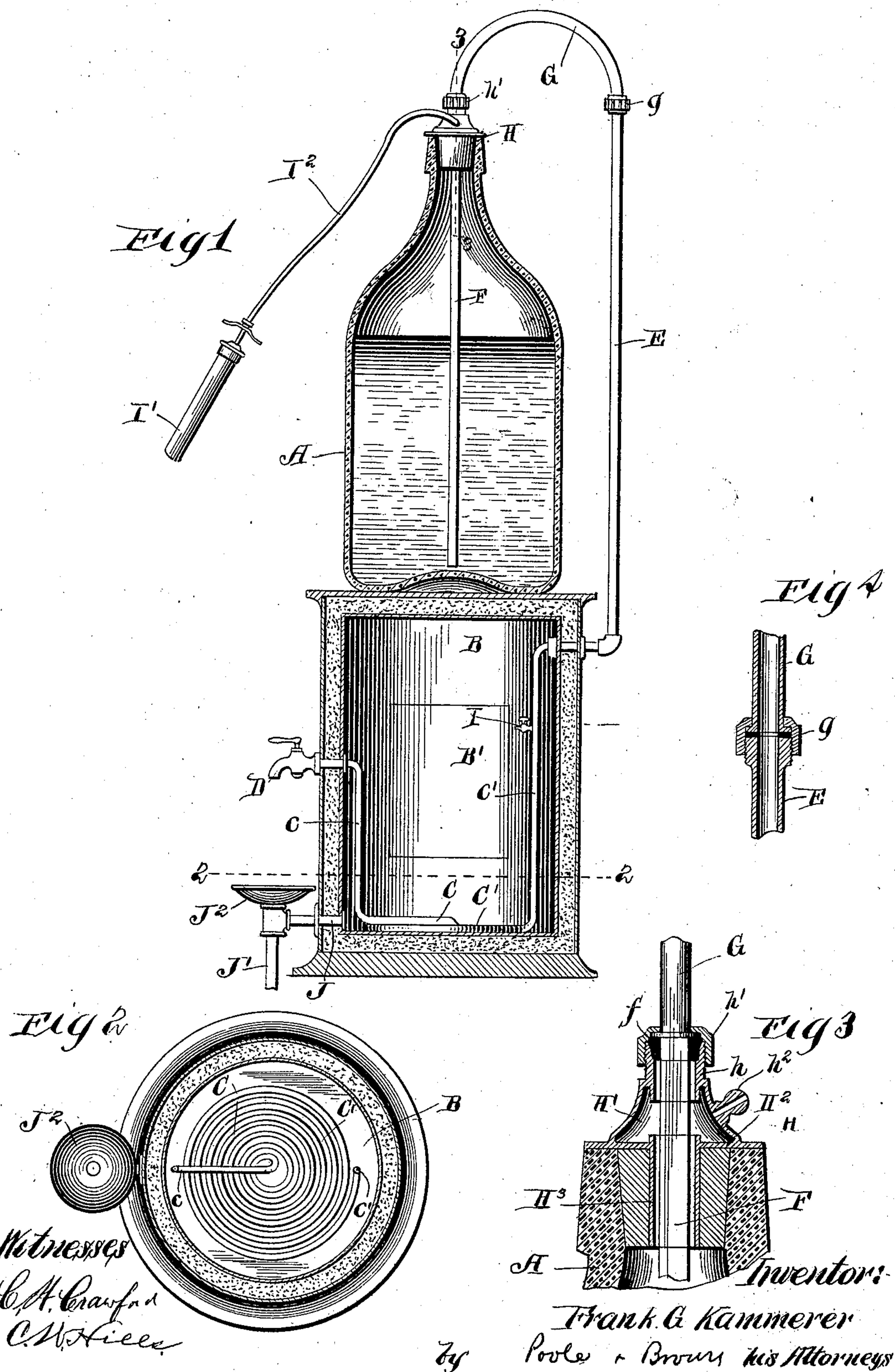
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F. G. KAMMERER.

WATER SUPPLY AND COOLING APPARATUS.

(Application filed Dec. 4, 1899. Renewed Aug. 26, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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WATER SUPPLY AND COOLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 692,523, dated February 4, 1902.

Application filed December 4, 1899. Renewed August 26, 1901. Serial No. 73,234. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. KAMMERER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water Supply and Cooling Apparatus; 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 improvements in apparatus for furnishing pure water for drinking purposes, and more especially to devices by which water from a supply vessel in which is pure water—such as spring-water, distilled water, or filtered water—may be cooled before being furnished to users.

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

In the accompanying drawings, illustrating my invention, Figure 1 is a sectional elevation of an apparatus embodying my invention. Fig. 2 is a plan section through the refrigerator of the apparatus, taken on line 2 2 of Fig. 1. Fig. 3 is a detail section of a part of the apparatus, taken on line 3 3 of Fig. 1. Fig. 4 is a detail of a joint in the discharge-pipe of the apparatus.

As shown in said drawings, A indicates a supply vessel, in which filtered or distilled water or water furnished from a spring may be transported to the consumer.

B indicates a refrigerator which contains a cooling-pipe C, through which the water is drawn before it is used and which terminates in a faucet D. The refrigerator may be of any usual or preferred construction, but is herein shown as made cylindric in form and provided with a door B', through which ice may be inserted therein for the purpose of keeping cool the cooling-pipe located within the refrigerator. The said cooling-pipe, as herein shown, is arranged in the form a flat coil C', which rests on the bottom of the refrigerator-chamber, and is provided with a rising part c, passing through the wall of the refrigerator, and terminates at the faucet D. The latter is herein illustrated as located about half-way between the bottom and top of the refrigerator. The opposite end of the

coil C' is extended upwardly, as indicated by c', and passes outwardly through the wall of the refrigerator, preferably near the top thereof. A pipe E leads from the supply vessel downwardly to the cooling-pipe C. Said pipe E, as herein shown, is connected at its lower end with the end portion c' of the cooling-pipe C', which projects outside of the refrigerator. At its upper end said pipe E is connected with the supply vessel by means of a siphon-tube F, which enters the top of the vessel and reaches to the bottom thereof, or nearly so, and the tube F is connected with the pipe E by a connecting-pipe G, said pipes E, F, and G constituting a siphon through which the water may be drawn from the supply vessel. Said pipes F, G, and E, together with the cooling-pipe D, constitute a discharge pipe or passage by which the water may be drawn from the supply vessel and at the same time cooled by the refrigerant in the refrigerator, so that it may be drawn from the faucet D in proper condition for drinking.

I indicates an air-valve located in the said passage connecting the supply vessel with the faucet D at a point below the level of the lower end of the short leg of the siphon and preferably above the level of said faucet. As herein shown, said air-valve I is located in the upright part c' of the cooling-pipe and within the refrigerator at a point slightly above the level of the faucet D.

The supply vessel is preferably made of glass and in the form of an ordinary bottle having a mouth or opening at its top, into which may be inserted a cork or stopper when the vessel is used for transporting water. Said supply vessel when used in connection with the other parts described is provided at its mouth or neck with a stopper H, through which passes the siphon-tube F. Said siphon-tube F is connected at its upper end with the connecting-pipe G, and the latter is connected with the pipe E by detachable joints or connections, so as to enable the siphon-tube to be easily inserted into and withdrawn from the supply vessel at times of refilling the same or when a new supply vessel is substituted for an empty one. As shown in Fig. 4, the joint between the pipes G and E is formed by means of a flanged sleeve or collar g, which engages a flange on the pipe G

and a screw-threaded part on the pipe E. The stopper H has a hollow upper part or body H', having at its upper end a tubular part or short tube *h*, made somewhat larger than the siphon-tube F and in which the siphon-tube is secured by means of a packing *f*, surrounding said tube F. Said tube *h* is externally screw-threaded at its upper end and is adapted for engagement therewith of a flanged ring *h'*, by which the said pipe G is secured to the cork or stopper and a water-tight joint made between the ends of said tube and the upper end of the tube F. Said ring *h'* engages a flange on the end of said pipe G, which flange is confined by and between a flange on the ring *h'* and the packing-ring *f*, which is located in a recess at the upper end of said tube *h*. At its lowest part the hollow head H' is provided with an external flange H² and a depending tube H³, which projects downwardly into the bottle-neck. The tube H³ is larger in diameter than the siphon-tube F, so that a free passage for air from the interior vessel into the hollow head H' is provided. Said hollow head is, moreover, provided with a tubular branch or nipple *h*², affording a passage or inlet for air into the hollow head H' and thence through the tube H³ to the interior of the vessel when the water is being drawn from the vessel through the siphon-tube and pipes described. The said nipple *h*² also affords means for attaching to the stopper an air-pump, by which air may be forced into the supply vessel for the purpose of starting the siphon into action at the time the bottle is first filled or in supplying a new bottle for an empty one. Such an air-pump may have the form of an ordinary bicycle-pump, as is indicated by I'. I² indicates a rubber pipe or tube, by which the said air-pump may be connected with the nipple *h*² on the stopper H. By operating the air-pump pressure may be easily placed upon the water in the supply vessel to force the same into the siphon-tube, and thereby start the siphon. The siphon-tubes may be removed from the vessel by disconnecting the pipe G from the stopper and lowering the ring *g* at the joint between the pipes G and E, said joint in such case constituting a flexible connection between the said pipes. If the pipe G is made of rubber or other flexible material, it may be permanently connected with the pipe E.

The air-valve I is of special importance in connection with the employment of an air-pump for the purpose described. Said air-valve is opened before the pressure is applied to the vessel for the purpose of starting the siphon and closed after water has been forced through the siphon sufficiently far to start the latter. The utility of said air-valve will be better understood from the consideration of the fact that the cooling-pipe G will remain filled with water up to the level of the faucet D, so that in order to start the siphon into operation in the absence of the air-valve it would be necessary to not only force water

from the vessel through the upper part of the siphon, but also to force the air which will be confined between the water in the siphon and that in the cooling-pipe outwardly through the said cooling-pipe, which would be found very troublesome and inconvenient by reason of the length of time and considerable pressure required for doing so. Moreover, the forcing of the air outwardly through the cooling-pipe would result in the greater part of the water in the cooling-pipe being forced out through the faucet, which would be objectionable, not only from the loss of the already-cooled water in such cooling-pipe, but also from the inconvenience of having to dispose of the water so discharged. Obviously when the air-valve is opened, as described, the air confined in the pipe E and the upper part of the cooling-pipe will as soon as the water begins to rise in the siphon-tube F escape from said air-valve until the said pipe E, as well as the cooling-pipe, is entirely filled with water. The water will of course flow from the air-valve as soon as the pipe is filled, and this will indicate to the operator when to close the air-valve. As soon as said air-valve is closed the siphon will operate in the usual manner, and water may at any time be drawn from the supply vessel through the cooling-pipe by opening the faucet. Said air-valve, as before stated, may be placed in the pipe at any place above the level of the faucet. It is preferred, however, to place the air-valve within the refrigerator, so that the slight amount of water which may escape at the time of filling the pipe will be caught in the bottom of the refrigerator and will escape therefrom with other waste water. Said refrigerator is shown as provided with a waste-pipe J, which projects horizontally from the lower part of the refrigerator and terminates in a downwardly-extending drain-pipe J' and supports a receptacle J², on which a glass or cup may rest beneath the faucet and which is provided with a drainage-opening connected with the drain-pipe J'.

Obviously a closed receptacle may be substituted in the refrigerator for the coil illustrated, the purpose in either case being to retain a quantity of water in the cooling-pipe or a receptacle forming a part thereof, so that cooled water may always be drawn from the faucet. The location of the faucet above the level of the coil or receptacle or main part of the cooling-pipe is important, because acting to retain a quantity of water in the cooling-pipe when the supply vessel is being changed, thereby insuring a constant supply of cooled water.

The air-pump described may be either permanently or detachably connected with the stopper. If permanently connected therewith, it will be necessary to have a valved air-port in said stopper to admit air in the usual operation of the siphon; but if made detachable, as shown, the nipple described affords the necessary air-inlet.

I claim as my invention—

1. A water supply and cooling apparatus comprising a supply vessel having an orifice at its top, a refrigerator, a discharge-pipe embracing a portion which is located within the refrigerator, which passes through the wall of the same and is provided with a rigid upward extension which rises to a point adjacent to the top of the supply vessel, a siphon-tube which passes through the opening of said supply vessel, and projects outside the same, and a short detachable connecting-pipe between the upper end of said extension and the siphon-tube, said discharge-pipe being provided with a faucet.

2. A water supply and cooling apparatus embracing a supply vessel having an orifice in its top, a refrigerator and a discharge-pipe, the upper part of which forms a siphon, and a part of which is located within the refrigerator, and constitutes a cooling-pipe, said pipe being provided below the level of the short leg of the siphon with an air-valve and at its discharge end with a faucet.

3. A water supply and cooling apparatus embracing a supply vessel having an orifice in its top, a refrigerator, and a discharge-pipe, the upper part of which forms a siphon and a portion of which is located within the refrigerator and constitutes a cooling-pipe, said discharge-pipe being provided at its discharge end with a faucet, located above the level of the main portion of the said cooling-pipe and

an air-valve located in said pipe between the lower end of the short leg of the siphon and the faucet.

4. A water supply and cooling apparatus comprising a supply vessel having an orifice at its top, a refrigerator, and a discharge-pipe, the upper end of which forms a siphon to draw water from the vessel, and a portion of which is located in the refrigerator and constitutes a cooling-pipe which is provided at its discharge end with a faucet, and a stopper within the orifice of said vessel, said stopper comprising a tube through which the short leg of the siphon passes, a packing surrounding said tube and fitting tightly within said orifice, said tube being constructed to provide between the same and the leg of the siphon an air-space communicating with the interior of the vessel, a casing surrounding the upper end of said tube between which and the short leg of the siphon is provided an air-tight joint and a nipple in the wall of said casing communicating with said air-space and adapted for attachment thereto of an air-pump.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 29th day of November, A. D. 1899.

FRANK G. KAMMERER.

Witnesses:

C. CLARENCE POOLE,
C. W. HILLS.