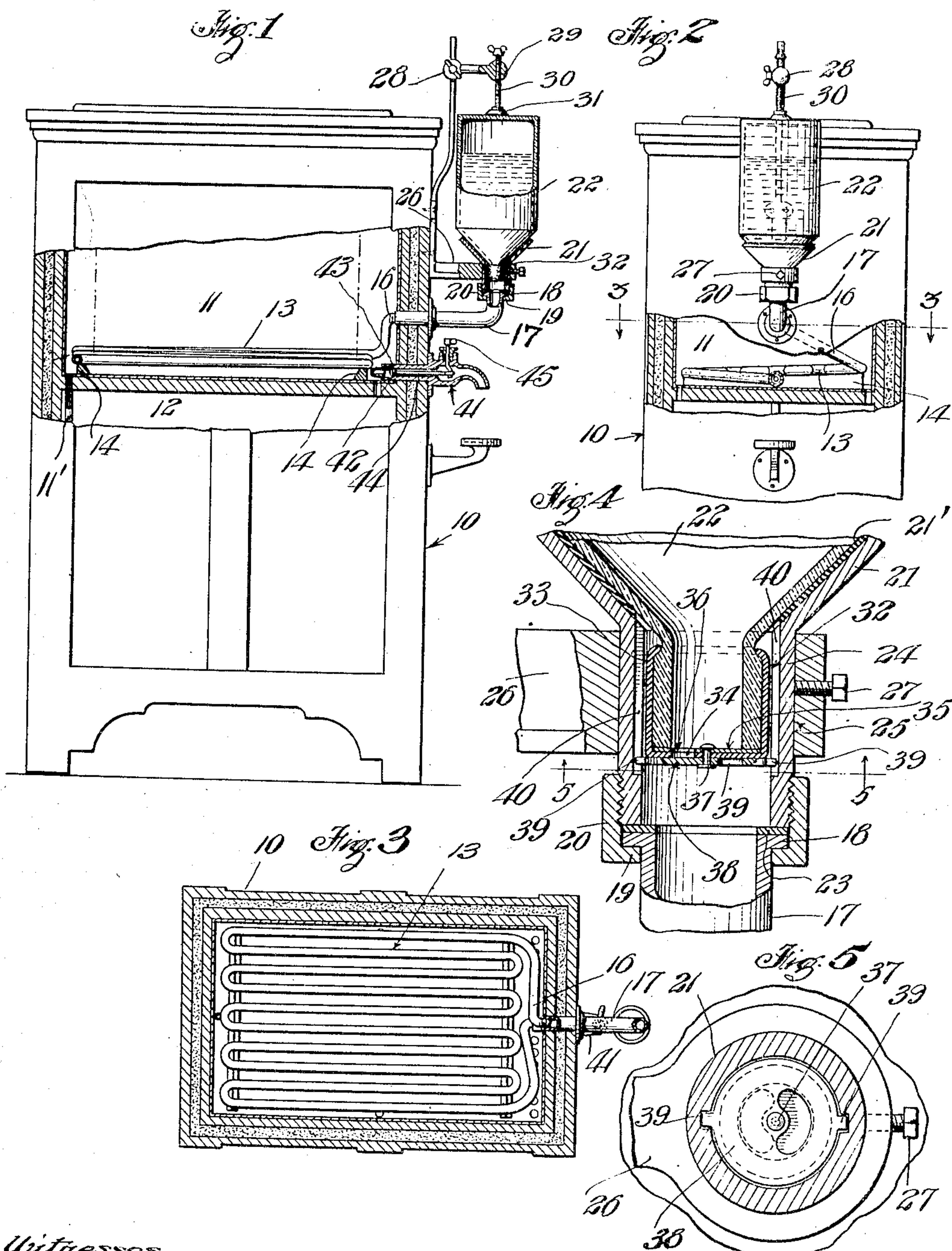


No. 871,940.

PATENTED NOV. 26, 1907.

A. KOCH.  
LIQUID COOLING DEVICE.  
APPLICATION FILED JAN. 7, 1907.



Witnesses

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# UNITED STATES PATENT OFFICE.

ADOLPH KOCH, OF PASADENA, CALIFORNIA.

## LIQUID-COOLING DEVICE.

No. 871,940.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed January 7, 1907. Serial No. 351,104.

*To all whom it may concern:*

Be it known that I, ADOLPH KOCH, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Liquid-Cooling Devices, of which the following is a specification.

My invention relates more particularly to portable liquid cooling devices and an object thereof is to provide means whereby liquid may be cooled as drawn off from a liquid receptacle secured to the outside of the cooling device.

Another object of my invention is to provide a device whereby it is possible to replace the liquid receptacle with another holding a different liquid with little trouble or inconvenience.

Another object is to provide a device, the lower chamber of which may be utilized as a refrigerator while the upper chamber may be used exclusively for the refrigerant, the liquid receptacle being removably secured to the outside of the cooling device, thus greatly increasing the capacity of the refrigerant chamber.

A further object is to provide a device that is economical in construction and efficient in operation.

I accomplish these objects by means of the device described herein and illustrated in the accompanying drawings, in which:—

Figure 1.— is a side elevation of my improved device partly broken away. Fig. 2.— is a front elevation of my improved device partly broken away. Fig. 3.— is a transverse section taken on line 3—3 of Fig. 2. Fig. 4.— is a longitudinal section through the outlet end of the liquid receptacle, showing the construction of the outlet valve. Fig. 5.— is a transverse section taken on line 5—5 of Fig. 4.

Referring to the drawings, 10 designates a cooling receptacle composed of an upper chamber 11 provided with a drain pipe 11', which is designed to hold the refrigerant, preferably ice, and a lower chamber 12 designed for the accommodation of perishable articles. In the upper chamber 11 and preferably resting on the bottom thereof is a coil of metallic piping 13, preferably lined on the inside walls with tin. This coil of pipe preferably rests on end pieces 14 secured to the bottom of the chamber and which are inclined transversely from one side to the other, so as to provide for a sufficient fall from the

inlet of the coil to its outlet. The inlet end 16 of the coil is in screw threaded engagement with an inlet pipe 17 which projects through the front wall of the receptacle. The outer end of this inlet pipe 17 projects upwardly and is provided on its outer end with an annular flange 18, which is adapted to engage the inwardly turned flange 19 of a coupling 20 which is in screw threaded engagement with the receptacle holder 21, which in this instance is shown as cone shaped so as to correspond with the configuration of the open end of the liquid holding receptacle 22, which may be formed of any desired material. The inner face of the cone-shaped portion of the holder 21 is provided with a flexible pad 21', to guard the lower end of the liquid receptacle against possible injury.

Interposed between the outer end of inlet pipe 17 and the lower end of the receptacle holder is a rubber gasket 23 so as to form a liquid tight joint. The neck 24 of the receptacle holder 21 passes through an aperture 25 in a bracket 26 which is rigidly secured to the outer face of the cooling receptacle, a set screw 27 preventing it from turning. The upper end of bracket 26 is provided with an adjustable slide arm 28 which projects outwardly therefrom and is provided with a screw threaded aperture 29, through which passes an adjusting screw 30, which has on its lower end a clamp 31 adapted to engage the upper end of the liquid holding receptacle, and to hold it firmly in place in the receptacle holder 21.

The liquid holding receptacle may be of any desired form, such as large demijohns of water that are supplied to offices and families.

When it is desired to place the liquid holding receptacle in its operative relation to the cooling device, the usual cork stopper is first removed and a valve 32 is secured to the mouth of the receptacle. This valve consists preferably of a cylindrical elastic body 33 adapted to fit over the neck of the receptacle, one of its ends being closed and provided with an outlet port 34. On the inner face of the closed end is a metallic plate 35 which is provided with a similar port 36 which registers with port 34. Movably secured to the outer face of valve 32 by means of a rivet 37 is a metallic plate 38 which is provided with a port 39 similar in shape to the ports in the cylindrical elastic body of the valve and the metallic plate 35.



5 Metallic plate 38 is provided on its periphery with a plurality of lugs 39 which are adapted to engage a plurality of vertically disposed grooves 40 on the inner surface of the neck of the receptacle holder 21.

10 The outlet end of the coil 13 is in screw threaded engagement with a faucet 41 which projects through the front of the cooling receptacle 10 below the inlet to the pipe coil 13. This faucet is provided with a valve stopper 42 which is adapted to engage a seat 43 near the inner end of the faucet and inside of the upper chamber 11, and is controlled by valve stem 44 which is connected on its outer end to the handle 45 by means of which the stopper is operated. The reason for providing the faucet with a stopper near the inner end is to insure the withdrawal from the faucet of liquid that has been cooled or that is in close proximity to the refrigerant.

20 If desired, the liquid holding receptacle could be permanently secured to the cooling device and to the coil, having an inlet in its top so that liquid could be introduced to the receptacle as required.

30 The operation is as follows:—When it is desired to cool the liquid contained in a receptacle the stopper is first removed and the valve 32 is secured to the mouth of the receptacle with the ports 34 and 39 out of register, as shown in Figs. 4 and 5. The bracket 29 is then turned to one side and the liquid receptacle is placed in the holder, the lugs 39 engaging the grooves in the neck of the receptacle holder. The receptacle 22 is then turned slightly so as to bring the ports 34, 36, and 39 into register with each other, the liquid flowing through the coil 13 to the faucet 41, from which it is drawn when desired.

45 It will be seen from the foregoing description that I have produced an economical and an efficient cooling device whereby large quantities of liquid may be cooled as needed without encroaching upon any of the space of the cooling receptacle.

Having described my invention, what I claim is:—

50 1. In a device of the class described, a refrigerant holder, a pipe coil therein having an inlet and an outlet, an apertured liquid receptacle support attached to said refrigerant holder and forming the inlet end of said coil, a liquid receptacle adapted to be supported in said support, and having a valve adapted to be operated by movement of the liquid receptacle on its support to permit discharge of the contents of the liquid receptacle into the coil as desired; and a valve at the outlet end of said coil.

2. In a device of the class described, a refrigerant holder, a pipe coil therein having an inlet and an outlet, an apertured liquid

receptacle support attached to said refrigerant holder and forming the inlet end of said coil; a liquid receptacle adapted to be supported in said support, and having a valve adapted to be operated by rotation of the liquid receptacle in its support to permit discharge of the contents of the liquid receptacle into the coil as desired; and a valve at the outlet end of said coil.

3. In a device of the class described, a refrigerant holder, a pipe coil therein having an inlet and an outlet, an apertured liquid receptacle support attached to said refrigerant holder and forming the inlet end of said coil, a liquid receptacle adapted to be supported in said support and carrying a detachable valve for controlling the discharge of the contents of the liquid receptacle into the coil, said valve comprising a plurality of plates, having apertures adapted to register, fitted over the open end of said receptacle, and one of said plates being rotative; and a valve at the outlet end of said coil.

4. In a device of the class described, a refrigerant holder, a pipe coil therein having an inlet and an outlet, an apertured liquid receptacle support attached to said refrigerant holder and forming the inlet end of said coil, a liquid receptacle adapted to be supported in said support and carrying a detachable valve for controlling the discharge of the contents of the liquid receptacle into the coil, said valve comprising a plurality of plates, having apertures adapted to register, fitting over the open end of said receptacle, and one of said plates being rotative; means whereby said last-named plate may be rotated upon rotation of the liquid receptacle in its support; and a valve at the outlet end of said coil.

5. A device of the class described, comprising a refrigerant holder; a pipe coil in the bottom of said holder, having an inlet and an outlet communicating with the outer face of said holder; a receptacle holder having a plurality of vertical grooves on its inner face rigidly secured to the outer face of said refrigerant holder; a liquid holding receptacle detachably secured to said holder, said receptacle being in communication with the inlet to said coil; a valve secured to the open end of said liquid holding receptacle, said valve having oppositely disposed lugs adapted to engage the vertical grooves in the receptacle holder; and means to control the flow of liquid from said coil.

In witness that I claim the foregoing I have hereunto subscribed my name this 24th day of December, 1906.

ADOLPH KOCH.

Witnesses:

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