

F. H. PEPPER.
REFRIGERATING APPARATUS.
APPLICATION FILED FEB. 5, 1920.

1,372,367.

Patented Mar. 22, 1921.

2 SHEETS—SHEET 1.

FIG. 1.

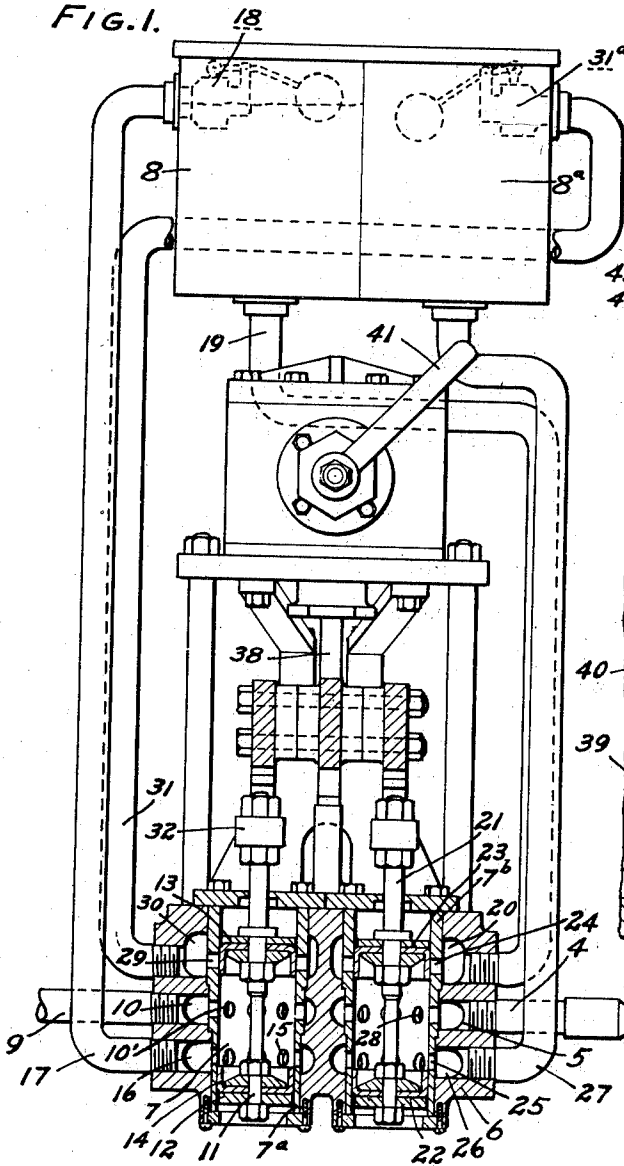


FIG. 4.

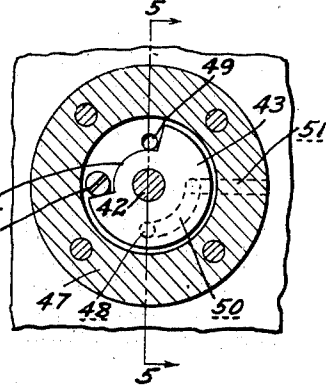
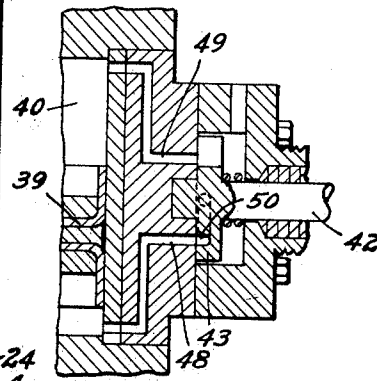
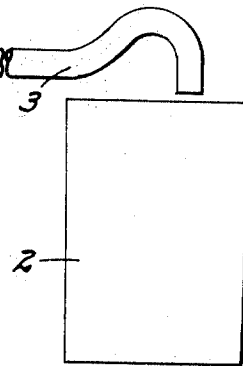


FIG. 5.



INVENTOR
FRANK H. PEPPER
BY *Hazard & Miller*
ATT'YS.

F. H. PEPPER.
REFRIGERATING APPARATUS.
APPLICATION FILED FEB. 5, 1920.

1,372,367.

Patented Mar. 22, 1921.

2 SHEETS—SHEET 2.

FIG. 2.

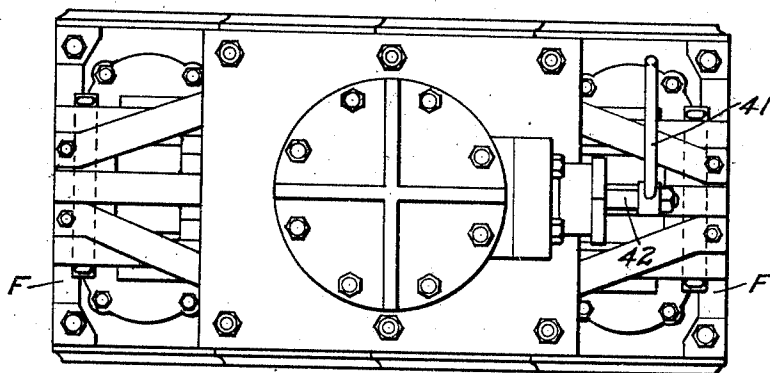
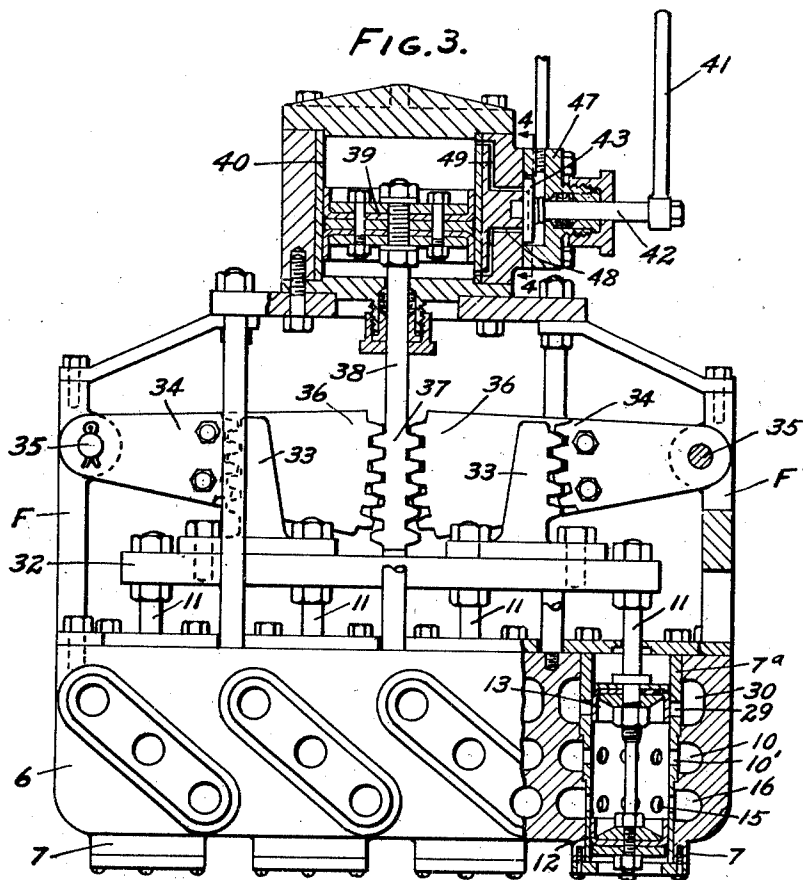


FIG. 3.



INVENTOR
FRANK H. PEPPER
BY *Hazard & Miller*
ATT'YS.

UNITED STATES PATENT OFFICE.

FRANK H. PEPPER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
JAMES R. ERSKINE, OF FRESNO, CALIFORNIA.

REFRIGERATING APPARATUS.

1,372,367.

Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed February 5, 1920. Serial No. 356,433.

To all whom it may concern:

Be it known that I, FRANK H. PEPPER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Refrigerating Apparatus, of which the following is a specification.

This invention relates to refrigerating apparatus and particularly to an apparatus for the manufacture of ice, and the invention has for its object to provide means for the correct measurement of quantities of water delivered into tanks and for the discharge of the water in measured quantities from the tanks to the usual ice cans that are arranged in the brine. A further object of the invention is to provide an apparatus that will eliminate the overflowing of the ice cans and prevent the waste of time, labor, and wastage of water caused by the overflowing of the cans and which results in the cans being frozen over and embedded and having to be dug out; it is a further object of the invention to provide an apparatus that will serve to increase the length of service of the cans by the elimination of the necessity of using tools on the same to extract them from an ice crust; and a further object is to prevent the loss or weakening of the brine solution as occurs when the cans are overflowed. With these and other objects in view the invention consists of the construction, the combination and in details and arrangements of the parts an embodiment of which invention is illustrated in the accompanying drawings and described and claimed.

Figure 1 is a diagrammatic elevation and sectional view of the apparatus, the section being taken through a pair of coördinate valve devices.

Fig. 2 is a plan view of the machine, the discharge and return pipes being omitted.

Fig. 3 is a side elevation of a machine showing an organization of four sets of control valves and means for operating the same.

Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is a section on line 5—5 of Fig. 4.

The machine is designed for the supply of measured quantities of water to the usual refrigerating cans one of which is indicated

at 2, Fig. 1, and the water is supplied to each can by means of a flexible pipe or hose 3 which is connected at 4 to the outlet port 5 of a valve casing 6. The valve casing may be of any suitable proportion and size and desired construction according to the required capacity, and in Fig. 3 it will be seen that the valve casing 6 is arranged with four sets of chambers 7 each set comprising two chambers arranged side by side in a transverse sectional position, as clearly shown in Fig. 1, each set of chambers 7 being coördinate to a pair of measuring tanks as 8 and 8^a.

Water is supplied by a feed pipe 9 to an annular port 10 opening into the adjacent valve chamber which is designated at 7^a and in which chamber there is arranged a piston rod 11 having on it spaced piston forming parts 12 and 13, these parts including cup members 14 the flanges of which are spaced a sufficient distance apart so that when in the position of the piston rod 11, Fig. 1, water may flow off the annular passageway 10 through a series of ports 10' formed in a cylindrical wall of the chamber 7^a, the wall in this construction being removable for purposes of renewal and simplicity and economy of construction.

Below the annular series of ports 10' is another annular series of ports 15 opening through the cylindrical wall into a lower annular passageway 16 having an outlet at 85 one side to which is connected the outlet pipe 17 which is extended, in this case, upwardly and discharges through an automatic valve 18 into the compartment or tank 8. This has an outlet pipe 19 connected at its opposite end to an annular passageway 20 formed in the casing and which surrounds the removable cylinder 7^b.

In the cylinder 7^b operates a piston rod 21 having on its lower end a piston device 22 and on its upper portion a piston device 23, these being so spaced that when the piston rod 21 is in its lowermost position the upper piston 23 will cover a series of inlet openings 24 leading in from the annular passageway 20 and thus preventing flow from the tank 8. But when in this position the lower piston 22 uncovers a lower annular series of outlet ports 25 leading to an annular outlet

passage 26 to the inlet of which is connected a pipe 27 which extends upwardly and is connected to the outlet in the bottom of the tank 8^a.

It will be seen therefore that in the position of the valve pistons in Fig. 1 water is being supplied through the pipe 9 and the uncovered ports 10' and 15 to the pipe 17 and thence to the tank 8, and when the latter is filled to a predetermined level by a quantity desired in a can 2 then a float 18^a connected to the stem of the valve 18 will rise and close the supply valve 18 and thus cut off further inflow at the supply pipe 9 even though the controlling piston valve may remain in the open position with respect to the pipe 17. At this time water will be flowing from the tank 8^a through the pipe 27 and through the uncovered ports 24 and out of intermediate uncovered ports 28 in the cylinder 7^b, thence flowing through the pipe 4 to the distributing hose 3 which may be positioned by the operative over any desired tank until the measured quantity of water in the tank 8^a has been transferred to the can being filled.

The operator then by means, to be hereinafter described, causes the change of position of the piston rods 11 and 21 so that they are moved upwardly and therefore will cover the lower series of ports 15 and 25 but will uncover the upper series of ports 24 in the cylinder 7^b and in the chamber 7^a, the upper ports in the latter chamber being shown at 29 and communicating with an annular chamber 30 from which leads a transfer pipe 31 attached to the tank 8^a and having an automatic valve 31^a.

From the above it will be seen that I have provided a pair of valves controlling the filling and discharging of a pair of coördinate tanks, the valves when in their lower position uncovering ports for filling one of the tanks and emptying the other and, conversely, when the valves are shifted to the other position they supply water to the tank just emptied and empty water from the tank just filled. Obviously any number of these pairs of valves may be utilized in a given installation or ice making plant and the mechanism will constantly supply a predetermined quantity of water and no more than is discharged through a filling hose 3 that is common to a released pair of valves and tanks.

Any suitable means may be utilized to secure the concurrent action of a pair of valves and, in the present case, a row of piston rods on one side of the machine, as seen in Fig. 3, is connected to a crosshead or carrier 32 in the form of a longitudinal rail on the upper part of which are provided fixed racks 33 and the racks on each bar 32, of which there is a pair, engage a respective sector of a gear 34 secured on a respective

rock shaft 35 of which there is one mounted on each end of the machine frame which is shown at F. These rock shafts are parallel and each is provided with an inwardly extending gear sector 36 these meshing with a double-faced rack 37 formed on the adjacent portion of a piston rod 38 which in the present case is secured to a piston structure 39 operative in a cylinder 40 mounted on the superstructure of the frame 36.

Any other suitable source of power may be utilized, but in the present case a fluid pressure motor is shown and the flow of pressure is controlled by a lever 41 on a valve stem 42 having at its inner end a valve tank 43 shown in Fig. 4 as having a peripheral notch or cut away portion 45, a radial shoulder of which is designed to engage a stop 46 provided therefor in the valve chest 47. This valve chest is provided with diametrically opposite ports 48 and 49 one of which is exposed when the valve tank 43 is set as shown in Fig. 4 at which time pressure escapes through the other port designated 48 in Fig. 4 by register therewith of a quadrant groove 50 formed in the face of the valve tank 43.

Obviously rotating the valve substantially a quarter turn will cover the port 49, Fig. 4, and uncover the port 48 so that pressure will be admitted to the latter and thereupon exhaust will occur through the port 49 into the quadrant exhaust port 50 which leads to an exhaust passageway 57 in the valve casing.

The operator always has control of the operation of the device by the simple throwing of the lever 41 from one position to the other.

Various changes may be made without departing from the spirit of the invention as claimed.

What is claimed is:

1. In a water measuring apparatus for ice making plants, a pair of tanks for measuring the water and each having an independent valve operative to cut off the water supply, a manually controlled valve for controlling alternately the supply of water to the said tanks, and a manually controlled valve for controlling alternately the discharge of the measured water from said tanks.

2. In a water measuring apparatus for ice making plants, a plurality of tanks for measuring the water and each having an independent valve operative to cut off the water supply, a manually controlled valve means for controlling individually the supply of water to the said tanks, and a manually controlled valve means for controlling individually the discharge of the measured water from said tanks.

3. A liquid measuring and dispensing ap-

paratus adapted for use in ice making plants comprising, in combination, means for supplying a volume of water, a discharge tube, an intermediate measuring tank having automatic valvular means, twin valves one
5 controlling the supply of water from the supply means to the intermediate tank and

the other controlling the discharge from the tank, and a motor for concurrently operating the supply and discharge valves. 10

In testimony whereof I have signed my name to this specification.

F. H. PEPPER.