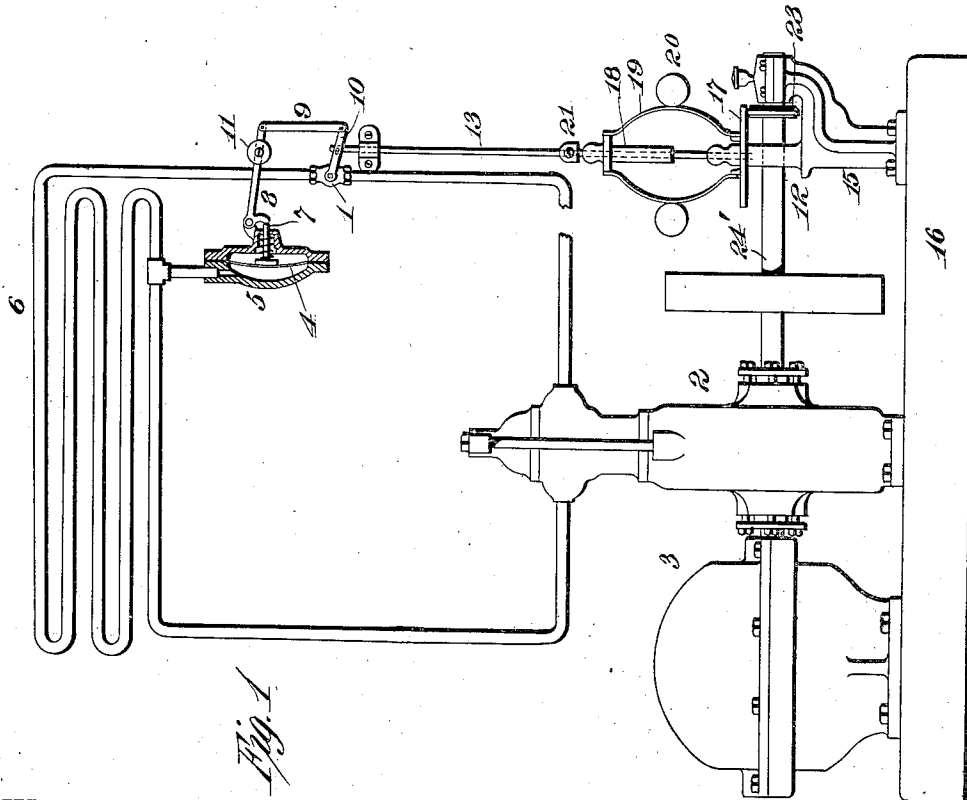
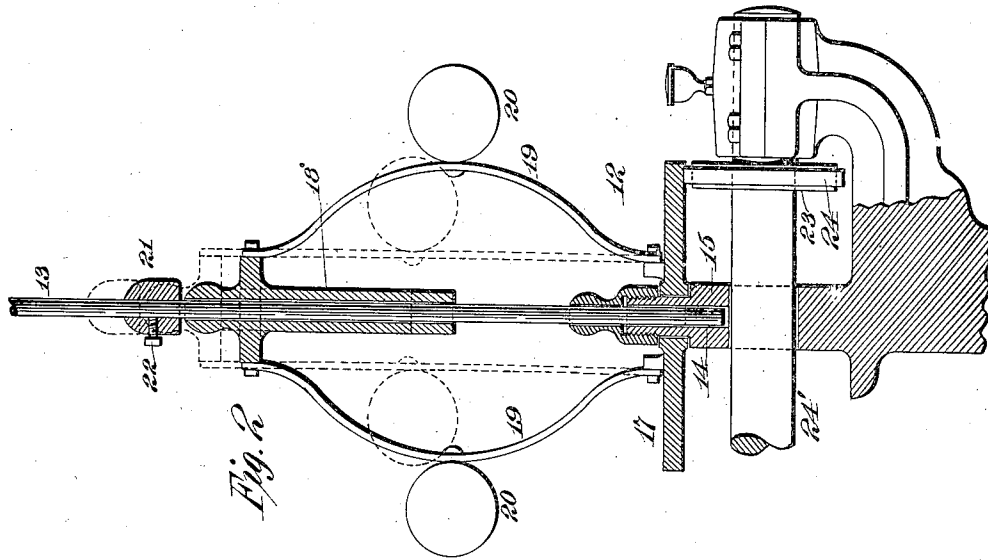


R. WHITAKER.
CUT-OFF DEVICE FOR ICE MACHINES.
APPLICATION FILED SEPT. 16, 1904.

936,065.

Patented Oct. 5, 1909.



Witnesses:

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UNITED STATES PATENT OFFICE.

RICHARD WHITAKER, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO BRUNSWICK REFRIGERATING COMPANY, A CORPORATION OF NEW JERSEY.

CUT-OFF DEVICE FOR ICE-MACHINES.

936,065.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed September 16, 1904. Serial No. 224,693.

To all whom it may concern:

Be it known that I, RICHARD WHITAKER, a citizen of the United States, residing in the city of New Brunswick, county of Middlesex, and State of New Jersey, have invented a certain new and useful improvement in Cut-Off Devices for Ice-Machines, of which the following is a specification.

The object I have in view is to provide means for insuring the closure of the expansion valve in an ammonia ice machine of the compression type when the pump is stopped.

My invention comprises a connection between the expansion valve and a moving element connected to the pump, such connection being so arranged as to permit the valve to be opened and closed and otherwise regulated by the usual regulating mechanism, but which will positively close the valve as soon as the pump is no longer in operation.

The accompanying drawings illustrate one form of my invention.

Figure 1 is a view partly diagrammatical and partly in section showing the complete device. Fig. 2 is an enlarged sectional view of the centrifugal device and its connections.

In carrying out my invention, I provide an expansion valve 1. With this are a pump 2, and a motor 3, which constitute a moving device. The expansion valve in the embodiment of the invention illustrated is controlled by the back pressure within the system. The details of the controlling mechanism comprise a diaphragm 4 mounted within a chamber 5 communicating with the expansion coil 6. This coil together with the pump 2 constitutes the usual circulating system. The diaphragm 4 actuates a rod 7 which connects with a bell crank lever 8. To this lever is pivoted a link 9 which connects with the arm 10 on the expansion valve 1. A sliding weight 11 is used for regulating the sensitiveness of the device.

In connection with the mechanism thus described, is used a centrifugal device 12. This centrifugal device is arranged to be rotated by the moving device and will connect with the valve controlling mechanism so that the valve may be opened and closed only when the moving device is in motion, but will be positively closed irrespective of its controlling mechanism when the moving de-

vice is at rest. The connections comprise a rod 13 which is pivoted to the arm 10 and is arranged to move up and down with such arm. As shown in Fig. 2 the rod slides within an opening 14 formed in the standard 15 secured to the base 16. Resting upon the standard 15 is a disk 17. Freely sliding upon the rod 13 is a sleeve 18. This sleeve and the disk 17 are connected by springs 19 carrying weights 20. The parts are so arranged that the springs have a normal tendency to carry the weights inward as shown in dotted lines in Fig. 2, elevating the sleeve 18.

On the rod 13 and above the sleeve 18 is a stop 21 which is so arranged that it will be engaged by the sleeve 18 when the latter is elevated, by the flexing inward of the springs 19, but will not engage with the sleeve when the springs are flexed outwardly, thus constituting a lost motion device, and permitting the valve to be opened and closed, when the springs are flexed outward. The stop 21 is so located upon the rod 13 that when the balls 20 are in the position that they assume when the device is at rest, the sleeve 18 will engage with the stop 21 and elevate it a sufficient distance to entirely close the valve 1. In order to adjust the position of the stop 21, it may be provided with a set screw 22.

The centrifugal device 12 is rotated by any suitable mechanism, that illustrated comprising a gear 23 having a raw hide face 24 and frictionally engaging with the disk 17, this gear 23 being mounted upon the shaft 24' which connects to the moving device.

In operation, the parts being at rest, the balls 20 will be drawn inward by the springs 19, the sleeve 18 elevated and with it the stop 21 and rod 13, which will elevate the arm 10 and close the valve 1. As soon as the motor and pump are started in operation, the balls 20 will be rotated and by centrifugal force will be driven outward lowering the sleeve 18 from engagement with the stop 21. This will permit the rod 13 to be freely raised or lowered independently of the centrifugal device by means of the controlling mechanism, consisting of the diaphragm 4, bell crank lever 8 and link 9.

Before claiming my invention, I desire it understood that any form of controlling

mechanism or moving device may be used, those described being shown merely for the purpose of illustration.

Having now described my invention what I claim and desire to secure by Letters Patent, is:—

1. A compression refrigerating machine comprising a moving device, an expansion coil, an expansion valve therefor and controlling means for said valve, combined with independent means for closing said valve when the machine is not in operation and means operable from said moving device for rendering inoperative said valve closing means when the machine is in operation; substantially as set forth.

2. A compression refrigerating machine comprising a moving device, an expansion coil, an expansion valve therefor, and controlling means for said valve comprising a chamber communicating with the expansion coil, a diaphragm in said chamber and link connections leading from said diaphragm to said valve, combined with independent means joining said valve for closing the same when the machine is not in operation, and means operable from said moving device for rendering inoperative said valve closing means when the machine is in operation; substantially as set forth.

3. A compression refrigerating machine comprising a moving device, an expansion coil, an expansion valve therefor, and controlling means for said valve comprising a chamber communicating with the expansion coil, a diaphragm in said chamber and link connections leading from said diaphragm to said valve, combined with a rod connected with said link connections, and means for automatically moving said rod to close said valve when the machine is not in operation and adapted to release said rod when the machine is in operation; substantially as set forth.

4. A compression refrigerating machine comprising a moving device, an expansion coil, an expansion valve therefor and controlling means for said valve, combined with independent means operable from said moving device for closing said valve when the machine is not in operation and leaving said valve free to be governed by its said con-

trolling means when the machine is in operation, said independent means comprising a rod joining the valve and a centrifugal device adapted when not in motion to act against said rod to close the valve and when in motion to release said rod; substantially as set forth.

5. A compression refrigerating machine comprising in combination a moving device, an expansion coil, an expansion valve therefor, a centrifugal device actuated by the moving device, a rod for moving the valve, and a stop on the rod, such stop being adapted to be engaged by a portion of the centrifugal device when the moving device is at rest.

6. In a compression refrigerating machine, the combination of a rotatable pump, a motor actuating the same, an expansion valve and means for controlling the valve, a spring rotated with the pump, a weight on the spring, a rod connected to the expansion valve and moving with it, a sleeve sliding upon the rod, the said sleeve being connected to the spring, and a stop on the rod adapted to be engaged by the sleeve as the spring and weight are drawn inward, whereby as the weight is rotated it will move outward by centrifugal force and permit the movement of the valve by its controlling means, and when upon the stoppage of the pump the weight is drawn inward by the spring the sleeve will be engaged by the stop and the expansion valve will be closed.

7. In a refrigerating machine of the compression type, the combination with the pump and moving mechanism therefor, and the expansion valve and regulating mechanism for said valve, of means connecting the expansion valve and moving mechanism, such means being so arranged as to permit the valve to be opened and closed and otherwise regulated by use of the regulating mechanism while the pump is running and will positively close the valve as soon as the pump is no longer in operation.

This specification signed and witnessed this 12th day of September, 1904.

RICHARD WHITAKER.

Witnesses:

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