

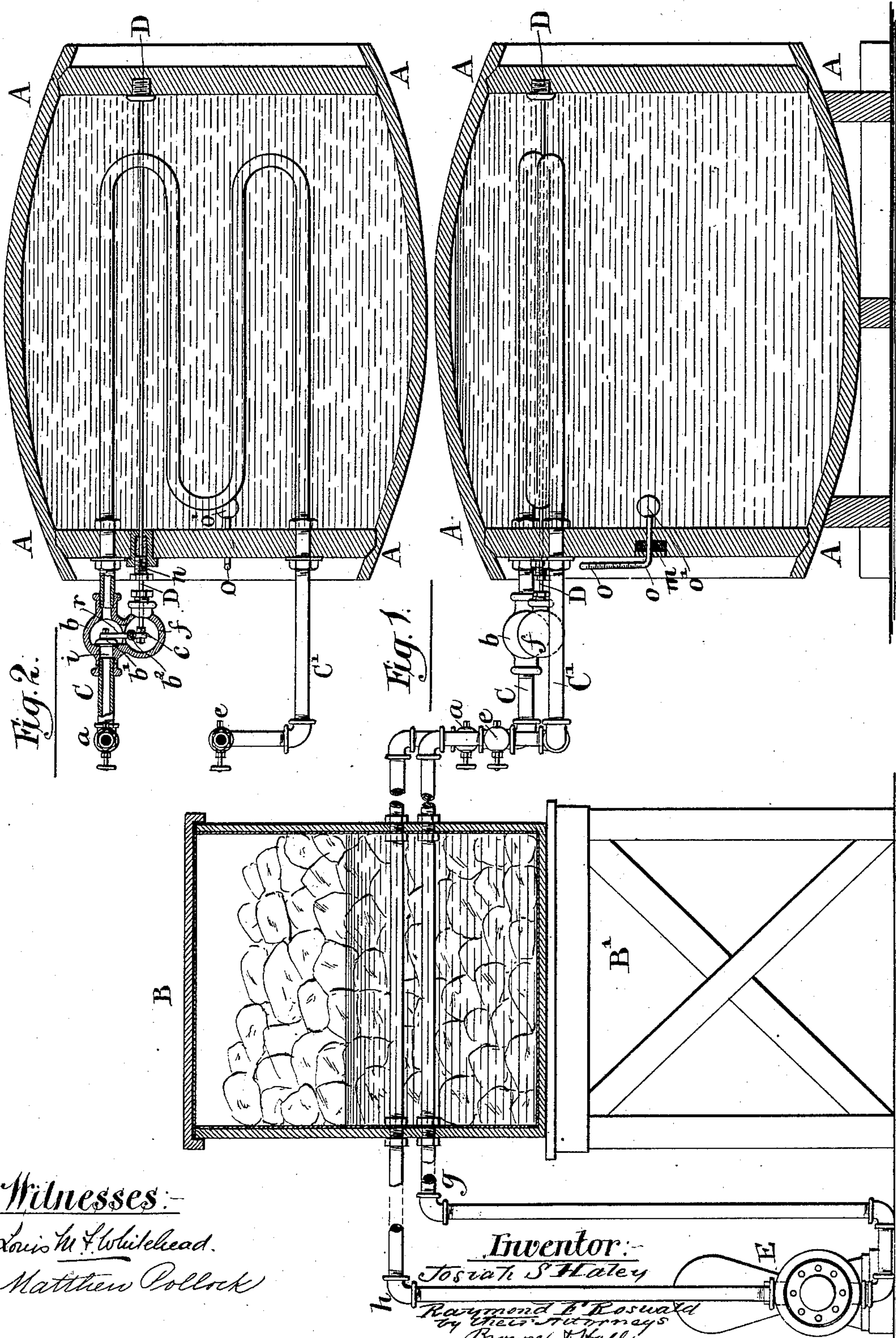
(No Model.)

J. S. HALEY & R. F. ROSWALD.

MEANS FOR REGULATING THE TEMPERATURE OF BEER, &c.

No. 308,666.

Patented Dec. 2, 1884.



*Witnesses:-*

*Louis M. Whitehead.*

*Matthew Pollock*

*Inventor:-*

*Josiah S. Haley*

*Raymond F. Roswald*  
*by their Attorneys*  
*Brown & Hall*



# UNITED STATES PATENT OFFICE.

JOSIAH S. HALEY AND RAYMOND F. ROSWALD, OF NEW YORK, N. Y., ASSIGNORS OF ONE-FOURTH TO TOWNSEND W. SHOTWELL, OF RAHWAY, NEW JERSEY.

## MEANS FOR REGULATING THE TEMPERATURE OF BEER, &c.

SPECIFICATION forming part of Letters Patent No. 308,666, dated December 2, 1884.

Application filed August 8, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, JOSIAH S. HALEY and RAYMOND F. ROSWALD, citizens of the United States, and residents of the city and county of New York and State of New York, have invented a new and useful Improvement in Means of Regulating the Temperature of Beer and other Fluids in Casks and other Vessels, of which the following is a specification, reference being had to the accompanying drawings.

Heretofore it has been the practice of brewers and other persons whose business it was to handle and store beer, ale, porter, and like fluids to keep such fluids in casks, in cellars, and other chambers, in which, when necessary, were packed large quantities of ice to act as a refrigerant to the entire chamber. Necessarily this entailed great labor and expense in preparing suitable chambers, storing ice, and keeping up a supply of ice in the chambers where the casks of fluid were stowed. Sometimes, to accomplish the same purpose, a blast of cold air was forced into the chamber where the liquid was stored to act as a refrigerant and cool all the atmosphere of the chamber. This was only accomplished at a great expense of power, which was necessarily very costly, and in many cases it was found, after great expense and trouble, that the apparatus was inadequate to accomplish the purpose for which it was constructed.

The object of my invention is to provide such an apparatus as will do away with a great deal of this labor and expense of cooling liquids stored in casks and other large vessels, in a much better and a much cheaper way than has heretofore been in use.

The invention consists in the combination, with a vessel containing the liquid which is to be cooled and kept at a uniform temperature below the surrounding atmosphere, of a cooling apparatus and train of circulating-pipes which are arranged so that they are partly within said vessel and partly within the cooling apparatus, a circulating device for producing a circulation of refrigerating-liquid through said pipes, a valve within said pipes, and an expansion-rod within said vessel con-

nected with said valve, to control the flow of refrigerating-liquid through said valve.

Figure 1 is a vertical sectional view of a cask and apparatus illustrating my invention. Fig. 2 is a horizontal section of the same cask and its immediate appurtenances.

Similar letters of reference denote corresponding parts in all the figures.

A is a vessel in which the beer or other liquid to be cooled is stored. It may be of any convenient construction, and may be made of any suitable material. The example given illustrates an ordinary wooden beer-cask.

B is the refrigerating device, which may be, as illustrated in the drawings, a box in which the cold is directly derived from ice in contact with the circulating-pipes; or this device may be in any other cheap and proper form, in which cold may be produced in any other economic and convenient way, either by ice, freezing-mixtures, or mechanical apparatus.

C C' is the circulating-pipe, which, bending in serpentine form, passes through a part of the fluid in the cask, through the refrigerator B, and, bending at *h* and *g*, extends to the circulating-pump E, to which it is connected in the usual way for producing circulation.

D is the expansion-rod, which, being fastened in one head of the cask, passes through the fluid and through a stuffing-box, *n*, in the other head, and projects outside of the vessel. The inlet end C of the circulating-pipe is provided near the cask with a double bulb, (designated by *b f*.) In one lobe of this double bulb, against *i*, the throat of the inlet-pipe C, is fitted the valve *b'*. This valve is attached to the longer arm of a lever, *r*, which is pivoted at *b''* in the narrow space between the two lobes of the double bulb *b f*, and attached by its shorter arm to the projecting end of the expansion-rod D. The circulating-pipes are provided with suitable stop-cocks at *a* and *e*.

At *o o* is placed a thermometer, which may be of any suitable form. In the example given the tube of the thermometer is bent, so that while the bulb *o'* is inside of the cask the said tube, passing through a hole, *m*, in the head of the cask, displays its gradations on the outside



of the cask, as illustrated in Fig. 1. This hole *m* in the head of the cask may be packed with india-rubber or any other suitable material to prevent leakage. In the example given the circulating device is an ordinary steam force-pump. It may, however, be a rotary pump, centrifugal wheel, or of any other convenient form suitable to produce a sufficient current in the circulating-pipe C C'.

To use our invention the cask is filled with beer or other liquid to be cooled, the refrigerator B packed with ice or otherwise prepared to make cold, and the circulating-pipe C C' filled with brine or any other fluid which may be reduced to a low temperature without congelation. The circulating device E is then set in motion to produce a current through the circulating-pipe C C'. It will then be found that the fluid in the circulating-pipe C C', in passing through the refrigerator, will be very much reduced in temperature, and, passing from thence through the part of the pipe in the cask, will reduce the temperature of the fluid in the cask much below that of the surrounding atmosphere, and when the temperature is as low as desired will retain approximately that condition as long as the current in the pipes continues and the cooling process is kept up in the refrigerator. If the temperature of the fluid in the cask falls, the expansion-rod D, by contracting, will cause the valve-lever to which it is attached in the double bulb *b f* to turn

on its pivot and partly close the valve over the throat *i* of the inlet-pipe C, and by obstructing the flow of the fluid in the circulating-pipe cause a weaker flow in the part in the cask. If the fluid in the cask should grow warmer, the expansion-rod, expanding, will open the valve and allow a more copious flow of the cool brine through the circulating-pipe. Thus the expansion-rod D acts as a governor to control the flow of the fluid in the circulating-pipe, and thereby to regulate the temperature of the fluid in the cask.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination, with a vessel for containing liquid which is to be kept at a nearly uniform temperature below that of the surrounding atmosphere, of a cooling apparatus, a train of circulating-pipes arranged partly within said vessel and partly within said cooling apparatus, a circulating device for producing the circulation of a refrigerating-liquid through said pipes, a valve in said pipes, and an expansion-rod in said vessel connected with said valve, substantially as and for the purpose herein set forth.

J. S. HALEY.  
R. F. ROSWALD.

Witnesses:  
FREDK. HAYNES,  
EMIL SCHWARTZ.