

H. H. ROE.

Improvement in Cheese-Vat Heaters.

No. 131,302.

Patented Sep. 10, 1872.

Fig. 1.

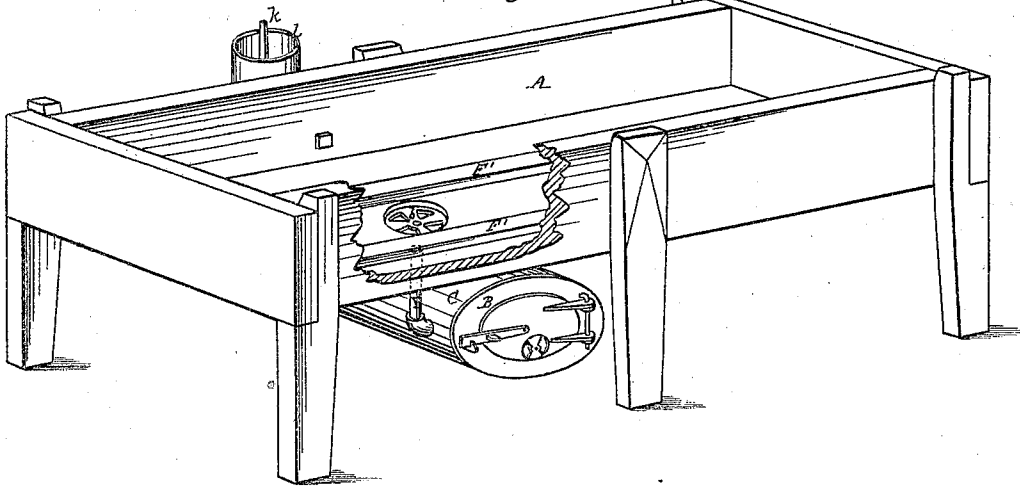


Fig. 2.

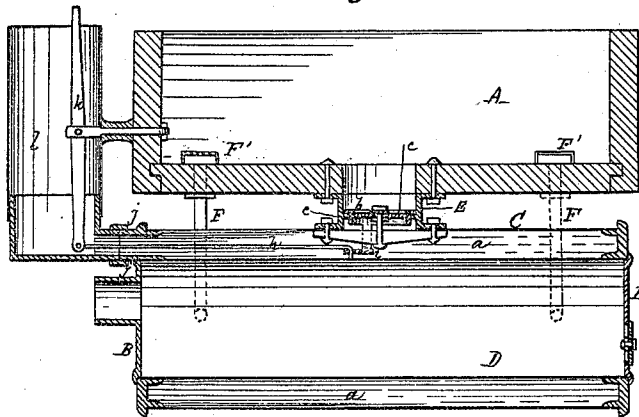
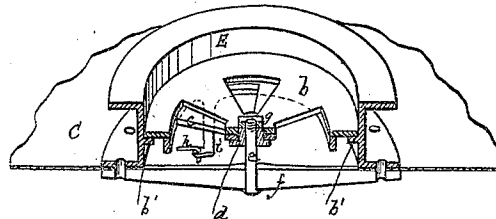


Fig. 3.



Witnesses
C. B. Nottingham.
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UNITED STATES PATENT OFFICE.

HENRY H. ROE, OF MADISON, OHIO.

IMPROVEMENT IN CHEESE-VAT HEATERS.

Specification forming part of Letters Patent No. **131,302**, dated September 10, 1872.

To whom it may concern:

Be it known that I, HENRY H. ROE, of Madison, Lake county, Ohio, have invented certain new and useful Improvements in Cheese-Vats and Heaters for the same, of which the following is a specification:

This invention relates to cheese-vats provided with heaters, by means of which hot water is caused to circulate through the body of the vat; and it has special reference to the construction and arrangement of the valve, by means of which the passage of the water from the heater into the vat is regulated; the object being to obtain a simple and efficient arrangement of valve mechanism for this purpose. The nature of my invention and the manner in which it is or may be carried into effect will be readily understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of the heater and vat, the side of the latter being broken away to show the opening in the bottom of the same, through which the heated water passes up from the water-space of the heater below. Fig. 2 is a transverse vertical section in a plane passing through the axis of the heater, and exhibiting clearly the arrangement of the valve and the parts immediately adjacent thereto. Fig. 3 is a sectional view of the tube that contains the valve detached from the heater and vat.

The wooden vat A is of ordinary or suitable construction. Under and across it is placed a heater, which may also be constructed in any suitable manner. In the present instance it consists of two heads, B, of cast-iron, and an outside shell, C, and an inside fire-flue, D, both made of sheet metal. The heads are fitted to the ends of the shell and flue, as shown in Fig. 2, and are then secured in place by means of rods or long bolts, four or more in number, running lengthwise of the heater and binding together the heads. This arrangement leaves between the shell and flue a space, *a*, which is designed to contain the water to be heated. The water-space of the heater is connected with the water-space of the wooden vat by the large tube E, through which the hot water passes into the wooden vat; and the smaller tubes or pipes F, through which the water in the vat as it cools returns to the heater, this being effected by return pipes F', extending

along the bottom of the vat to within a short distance of its ends, and communicating with pipes F. The tube E is flanged at each end, and is bolted or otherwise suitably secured to the heater and the vat, as shown in the drawing. In this intermediate tube, thus communicating with the heater and the vat, is placed the valve for regulating the supply of hot water to the vat. The valve consists of a valve-plate, *b*, which rests on a rim or ledge, *b'*, around the inside of the tube E, and is provided with a suitable number of openings or apertures for the passage of the water. This plate in effect constitutes the seat of the valve proper, *c*, which is provided with apertures corresponding to those in the plate. The valve in this instance is placed below that plate, in order that it may be conveniently operated from the outside by means of a valve-rod passing through the heater, as hereinafter described. It is desirable to so arrange these parts—*i. e.*, the valve-plate and valve—that they may be readily taken out together whenever required for repair or any other purpose. To this end the valve is mounted so as to turn freely on a flanged tubular pin, *d*, which screws into the valve-plate and serves to hold the valve in its proper position. To hold the valve, an upright rod, *e*, is provided, which is fixed to a cross-bar, *f*, in the heater, and extends up into the tube E. Upon this rod the tubular pin *d* fits, passing down on the stem until the valve-plate rests on its supporting-ledge *b'*. By screwing a nut, *g*, down on the projecting screw-threaded upper end of the rod *e* until it bears upon the valve-plate, the valve-device will be held tightly in proper position, the valve proper *c* being at the same time free to work on the pin *d*. To remove the valve, all that is required is to remove the nut *g* and draw up the valve-plate and valve through the tube E and the opening in the bottom of the vat, the valve being of course previously disconnected from the rod by which it is actuated, as will be presently described. Under this arrangement it will be noticed that the valve can be conveniently handled, removed, and replaced through the bottom of the vat, thus rendering it unnecessary to disturb, for this purpose, the heater or any of its connections. The valve may be operated in various ways. In the drawing I have shown the arrangement which I pre-

fer, and which in principle is the same as that described and claimed in H. A. Roe's patent No. 35,396, of 1862. The valve *c* is operated by means of a rod, *h*, which hooks into a ledge formed on the lower end of a standard, *i*, attached to the valve and extending down into the water-space of the heater, as shown. The rod extends out through a tube, *j*, at one end of the heater, and is jointed to the lower end of a lever-handle, *k*, pivoted, as shown, to the inside of the upright open tube or reservoir *l*, which is bolted to the tube *j*, the joint being made tight by packing. This open reservoir gives sufficient vent to the water and steam in the heater when the valve is closed, and also allows the valve-rod to be used without the employment of stuffing-boxes or ground joints. By working the lever *k* the valve can be operated at pleasure. When it is desired to disconnect the valve-rod from the valve, in order to remove the latter, this can be done by unhinging or unfastening the rod from the lower end of the lever, and then taking hold of the end of the rod projecting into the reservoir *l*, and working it so as to unhook the inner end of the rod from the valve. In lieu of this arrangement the valve may be operated by a rod extending along the bottom and out through the side or end of the vat. This, however, would require the valve proper to be placed on top instead of underneath the valve-plate; the valve-rod can connect with or hook into a standard or projection on the valve, which should be on the upper side of the valve, and would, under this arrangement, be worked by means of a lever similar to *k*, but arranged on the outside of the vat. A stuffing-box would of course be required at the point where the rod passed through the vat; or the valve-rod might be arranged so as not to extend through the side or end of the vat, and in this

case the lever *K* would be placed on the inside of the vat.

The last-described arrangement is practicable, but I prefer the arrangement first described. It will be understood, however, that so far as this invention is concerned it does not depend upon the peculiar mechanism for operating the valve, which mechanism may be of any suitable construction and arrangement.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a cheese-vat and heater for the same, of a hot-water-supply regulating-valve, located in the passage leading from the water-space of the heater into the vat, and constructed and arranged substantially as herein shown and described, so that it may be removed and replaced through the bottom of the vat, as set forth.

2. The arrangement of the valve, consisting of a stationary valve-plate and a rotary valve proper, within a tube intermediate between and communicating with the vat and heater, substantially as herein shown and set forth.

3. The combination of the valve-plate and valve proper and tubular pin which holds together the same with the hot-water-supply tube, provided with an annular ledge or its equivalent for the support of the valve, and the rod *e* and nut *g*, substantially as herein shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

HENRY H. ROE.

Witnesses:

A. S. STRATTON,
I. B. SPRAGUE.