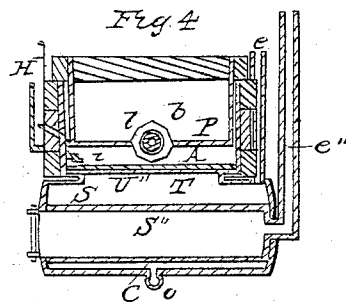
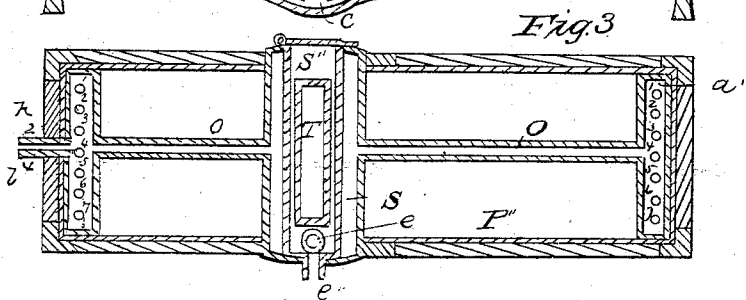
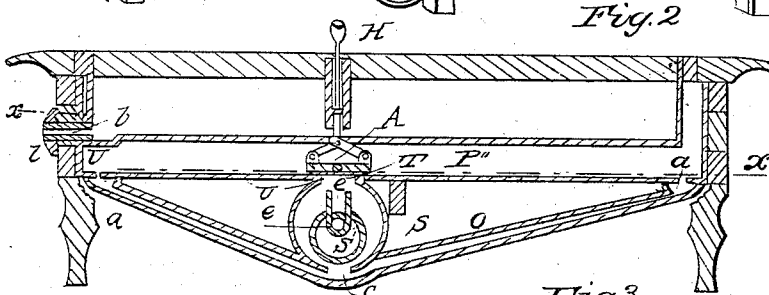
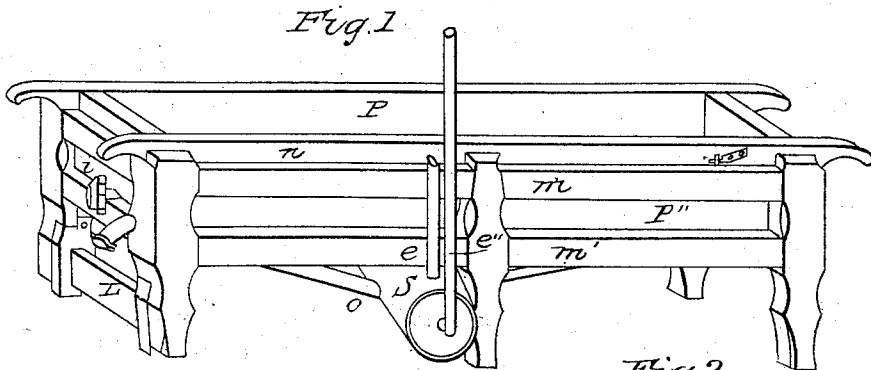


CARLISLE & BOWERS.

Cheese Vat.

No. 56,176.

Patented July 10, 1866.



Witnesses  
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# UNITED STATES PATENT OFFICE.

J. A. CARLISLE AND GEO. A. BOWERS, OF ELGIN, ILLINOIS.

## IMPROVEMENT IN CHEESE-VATS.

Specification forming part of Letters Patent No. 56,176, dated July 10, 1866.

*To all whom it may concern:*

Be it known that we, J. A. CARLISLE and GEO. A. BOWERS, of the city of Elgin, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Cheese-Vats; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, and the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a perspective view of the vat. Fig. 2 is a vertical longitudinal section through the same. Fig. 3 is a detached section on line *x x*. Fig. 4 is a vertical transverse section of the same.

Similar letters of reference, when they occur in the separate figures, denote like parts in each of the drawings.

Our invention consists, first, in constructing or arranging one vat or tub within another, the interior one being of suitable size and shape to form a vacuum between the lower and outward sides of the two for the reception of hot or cold water; and, secondly, in the construction and application of a device for heating the same. A more particular description will be hereinafter given.

To enable others skilled in the art to more fully understand and construct our invention, we will proceed to describe the same with reference to the drawings.

M M represent the main frame, within which is a metallic lining or case, which forms the outward or main vat, P". At the top of the main frame is a frame, N, to which is attached a second metallic case or vat, P, which is suspended within and extends downward to within a few inches of the bottom of vat P", leaving a vacuum between the bottom and outward sides of the two. Attached to the lower side of vat P", at or near its center, is a cylindrical heater, S, which extends transversely across from side to side of the vat, and is provided at the upper side with a cavity or opening, T, passing upward through the bottom of the vat and extending transversely (nearly) its entire width. Above this cavity or opening, and attached to the sides of the vat by means of a hinge or joint, is a folding

or double-acting valve, A, this valve being provided with a packing, U, which may be of thick cloth or any suitable substance, said valve being capable of vertical adjustment by means of levers I I" and vertical rod H. Within said cylinder S is a second cylinder, S', less in diameter, passing its entire length, and so arranged as to form a furnace or heater. Attached to the center and lower side of said cylinder S is a pipe, O, extending diagonally upward to the ends of vat P", and is there connected with pipes *a a'*, which pass transversely across the ends of the vat and are provided with cavities or openings 1 2 3 4 5, more or less, or of which there may be any suitable number. These openings pass upward from the top of pipes *a a'* through the bottom of the vat. There is also a second opening, C, from the top of pipe O through the bottom of cylinder S. The object of these pipes with their cavities or openings is to form a current or circulation of the water from the vat to and around the cylinder or heater. There is also a pipe, *h*, passing from the end of the interior vat, P, through the end of vat P" and frame M, and has a nut, *l*. At the outward end this pipe is provided with packing U between the two vats, so arranged that the two vats may be drawn together against the packing, and thus make a tight joint where the pipe passes through vat P", which prevents any leakage of water from the same.

We have said that in our invention the external vat is of a metallic substance. It may be, or it may be of wood, as found most convenient in manufacturing, as either will produce the required result.

Our invention is operated as follows: A given quantity of milk is first placed in vat P, the vacuum in vat P" and cylinder S being filled with water, a fire then being made in cylinder or heater S'. Valve A being adjusted, the water is caused to circulate from the ends of the vat through the openings in pipes *a a'* and pipe O around the cylinder or heater S', and thus the entire amount of water in the vat is rapidly and evenly heated without the least liability of burning the milk. It is found that when the heat of the milk has progressed to a temperature of from 80° to 82°, it should remain at that temperature

for a space of time (from sixty to eighty minutes) for the curd to form or set. For this we close the valve, and the steam and heat passes off from the heater through pipe *e* at the end of the cylinder. When the curd is formed it is necessary that it should be subjected to a still higher degree of heat. For this we draw off part of the whey by means of pipe *h*, again adjust the valve, and raise the heat to a temperature of from 104° to 108°, allowing it to remain at that for a short space of time; then the remainder of the whey is drawn off and the curd is ready for the press.

We are aware that cheese-vats have been previously known and used—that is to say, one vat within another, heated by a cylindrical heater with two or more small cavities or openings in the ends or center of the heater, covered with as many valves; but such vats are not so convenient or effective, as it is more difficult to produce and keep the required temperature of the milk, while in our vat the cavity or opening from the heater being large and extending across the vat covered with the double valve, together with the pipes which convey the water from the vat around the heater, the desired degree of heat can be more readily produced and in a much shorter space of time, and be kept at a more even temperature than by any of the heretofore-known arrangements.

Having thus fully described the nature and object of our invention, we disclaim the mere construction of cheese-vats with cylindrical heaters, as formerly known and used, broadly considered; but

What we do claim as new, and desire to secure by Letters Patent, is—

1. Cavity or opening *T*, in combination with valve *A*, packing *U*", levers *I I*", and rod *H*, the whole constructed, arranged, and operated substantially in the manner and for the purpose set forth.

2. Pipes *O* and *a a*", when constructed, arranged, and operated, with regard to its cavities or openings, substantially in the manner and for the purpose set forth.

3. Pipe *h*, packing *U*, and nut *l*, the whole constructed, arranged, and operated substantially in the manner and for the purpose described.

In witness whereof we have signed our names before two subscribing witnesses.

J. A. CARLISLE.  
GEO. A. BOWERS.

Witnesses:

N. H. SHERBURNE,  
B. BURRITT.