

No. 634,950.

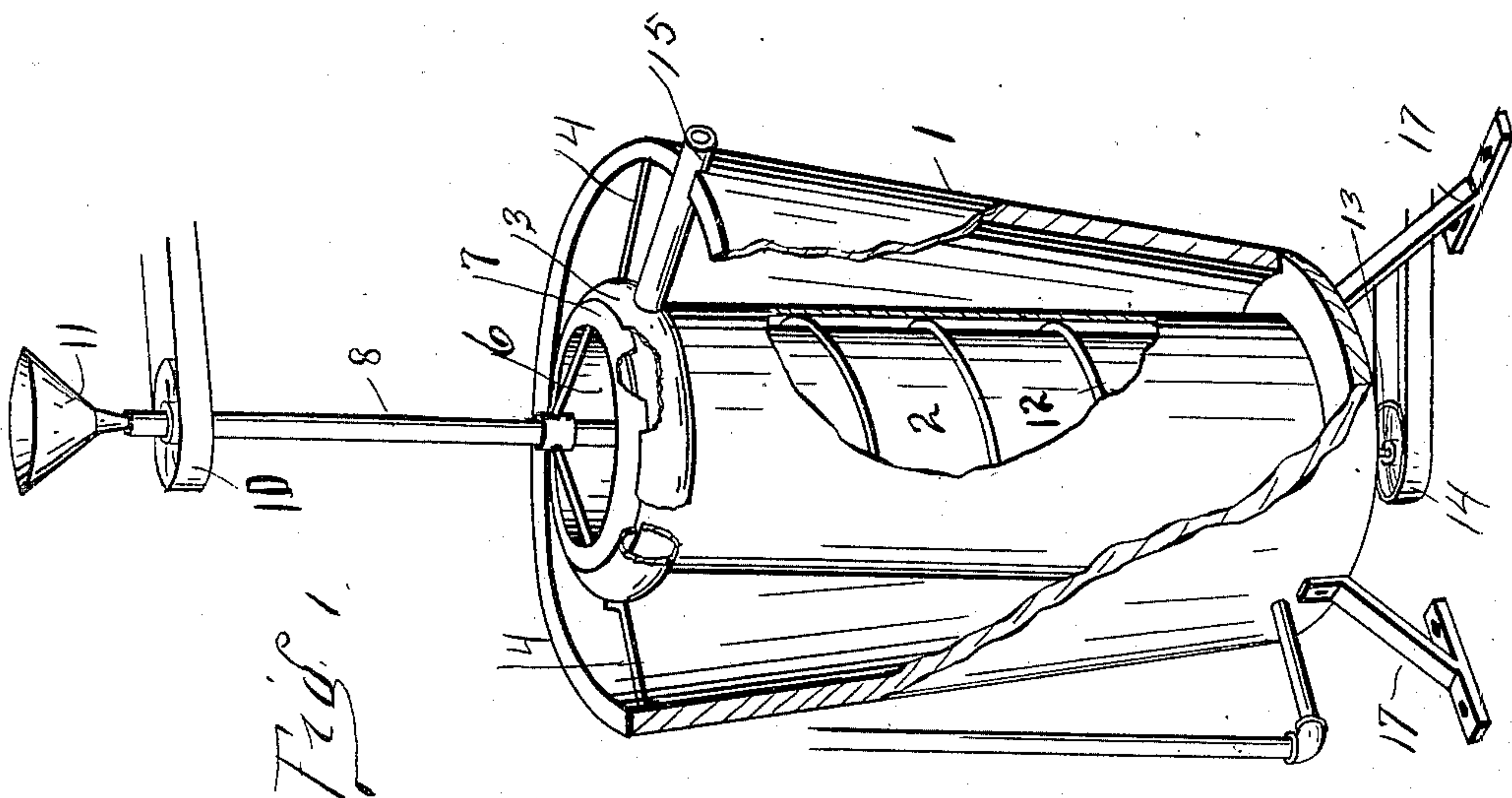
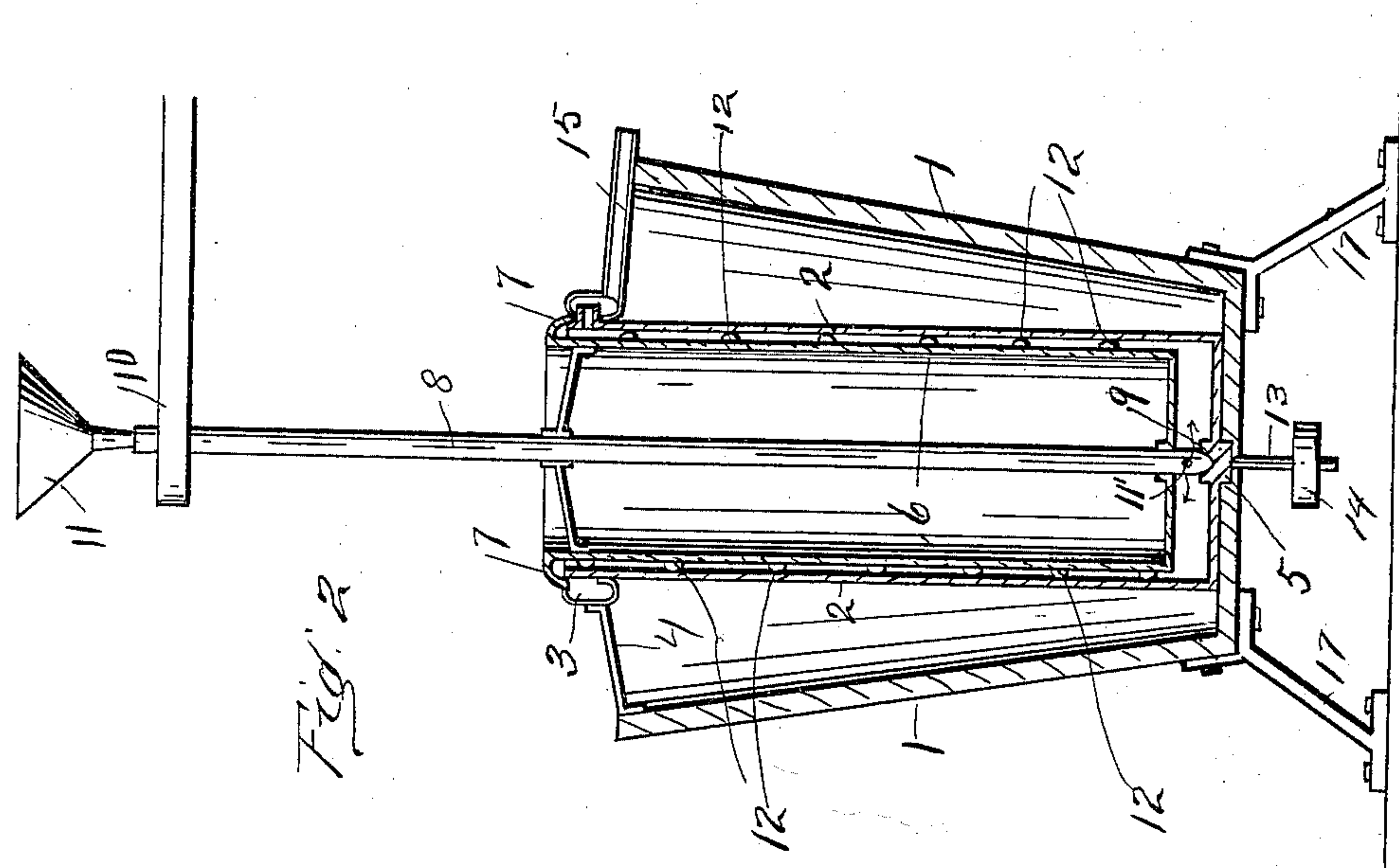
Patented Oct. 17, 1899.

J. C. MILLER.

MACHINE FOR STERILIZING, COOLING, OR HEATING LIQUIDS.

(No Model.)

(Application filed Feb. 16, 1898.)



WITNESSES:  
C. J. CROSS,  
*[Signature]*

16  
John C. Miller, INVENTOR,  
By *[Signature]* Fred W. Bond

A777.



# UNITED STATES PATENT OFFICE.

JOHN C. MILLER, OF CANTON, OHIO, ASSIGNOR TO JACOB H. MILLER, OF  
SAME PLACE.

## MACHINE FOR STERILIZING, COOLING, OR HEATING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 634,950, dated October 17, 1899.

Application filed February 16, 1898. Serial No. 670,502. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. MILLER, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have  
5 invented certain new and useful Improvements in Machines for Sterilizing, Cooling, or Heating Liquids; and I do hereby declare that the following is a full, clear, and exact  
10 description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a perspective view showing parts of the outer casing broken away, also showing a portion of the outer cylinder or tub  
15 broken away. Fig. 2 is a vertical section.

The present invention has relation to machines for sterilizing, cooling, and heating liquids; and it consists in the different parts  
20 and combination of parts hereinafter described, and particularly pointed out in the claim.

Similar numbers of reference indicate corresponding parts in both figures of the drawings.  
25

In the accompanying drawings, 1 represents the outer casing or tub, which may be of any desired size, reference being had to the capacity of the machine designed to be  
30 constructed. Within the casing or tub 1 is located the cylinder 2, which cylinder is formed of a length to correspond substantially with the height of the casing or tub 1, but is preferably formed somewhat higher  
35 for the purposes hereinafter described. At the top or upper end of the cylinder 2 is located the annular trough 3, which annular trough is held in proper position by means of the bars 4, which bars are connected in any  
40 convenient and well-known manner to the casing 1 and to the trough 3. The trough 3 is so located and arranged that it will support and hold the cylinder 2 in an upright position, the bottom or lower end of said cylinder  
45 being held by means of the bearing 5 or its equivalent, which bearing is seated into the bottom of the casing 1.

Within the cylinder 2 is located the cylinder 6, which cylinder extends a short distance  
50 above the top or upper end of the cylinder 2 and is provided with the flange 7, which flange comes directly over the top or upper

edge of the trough 3. The cylinder 6 is supported upon the hollow shaft 8, which hollow shaft is journaled at its bottom or lower end  
55 and is seated into a recess or socket 9, formed in the bottom of the cylinder 2. The hollow shaft 8 extends any desired distance above the casing 1 and the cylinders, and for the purpose of rotating the cylinder 6 a wheel,  
60 such as 10, is provided; but it will be understood that any other means may be employed to rotate the shaft 8, together with the cylinder 6, without departing from the nature of my invention.

For the purpose of conveying the liquid designed to be operated upon, the funnel 11  
65 is provided, which funnel guides the liquid into the hollow shaft, from whence it is conveyed to the bottom or lower end of the cylinder 2, the liquid escaping through an aperture or apertures 11', formed in the bottom  
70 or lower portion of the hollow shaft 8, from whence it is conveyed as hereinafter described. To the outer periphery of the cylinder 6 are securely attached in any convenient  
75 and suitable manner the convolutions of the screw 12, which convolutions extend from the bottom of the cylinder 6 to the top or upper end thereof. The convolutions of the screw  
80 are formed of wire or like material and are formed of a diameter or thickness corresponding substantially with the space between the inner periphery of the cylinder 2 and the  
85 outer periphery of the cylinder 6.

For the purpose of bringing about a rapid treatment of the liquid a small space is to be provided between the cylinders, by which arrangement a thin column of liquid is produced. When it is desired to cool the liquid,  
90 the tub 1 is provided with ice, which is placed around the cylinder 2, and, if desired, ice may be placed in the cylinder 6, so that a bed of ice is provided upon each side of the column of liquid, and when it is desired to heat the  
95 liquid hot water or steam may be used to heat the cylinder 2, it being understood that if steam is to be used the top or upper end of the cylinder 6 should be closed, so as to properly retain the steam; but if in the event heated  
100 water is to be employed the upper end of the cylinder may be open, as shown in the drawings.

In use the liquid designed to be treated is



placed in the funnel 10 or its equivalent and rotary motion conveyed to the cylinder 6, the direction of the rotation being such that the convolutions 12 will elevate the liquid, from  
5 whence it is conveyed to the trough 3, the liquid passing over the top or upper end of the cylinder 2, and when it is desired to bring about a more rapid treatment of the liquid the cylinder 2 may be rotated by means of  
10 the shaft 13 and the pulley 14 or their equivalents, the rotation of the outer cylinder being in the opposite direction from that of the inner cylinder.

It will be understood that it is not absolutely necessary to rotate both cylinders, inasmuch as the purposes can be carried out by the rotation of one or both cylinders, as desired.

For the purpose of conveying the liquid after it has been properly treated a tube, such as 15, is provided, which is connected at any desired point to the trough 3 and extends outward and beyond the tub 1 to any desired point.

25 It will be understood that by my peculiar arrangement I produce an exceedingly thin column of liquid, thereby providing a means for rapid treatment of the liquid.

The invention above described is particularly designed for sterilizing milk and the heating and cooling thereof, as desired, as it will be readily seen that no change in the construction is required to produce the above results except to provide for the proper degree  
30 of heat or cold, as desired. For the purpose of conveying heated water so that it will surround the outer cylinder 2 the pipe 16 is provided, which pipe may lead to any place of supply, or it may be provided with a proper  
40 funnel.

If in the event the outer cylinder is not to be rotated, the pipe 16 may be continued through the outer cylinder and form a supply-pipe for the liquid designed to be treated; but it will be readily seen that in case the  
45 outer cylinder is to be rotated the liquid must be supplied through the hollow shaft 8.

In the drawings I have illustrated the tub or casing 1 supported upon a suitable standard or legs, such as 17; but it will be understood that any support may be provided, as  
50 the only object is to hold the casing or tub 1, together with the different parts, in an upright and firm position.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the tub or casing 1, the cylinder 2 located within the casing and provided at its top or upper end with the inner  
60 trough 3, bars 4 connected to the trough and to the casing, the cylinder 6 located within the cylinder 2 and extended above the top or upper end of said cylinder 2, and provided with the flange 7, the hollow shaft 8 journaled  
65 at its bottom or lower end and provided with the aperture 11', the screw 12 located upon the outer periphery 6 and extended from the top or upper end thereof to the bottom or lower end thereof, and means for rotating the  
70 cylinder 6, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN C. MILLER.

Witnesses:

F. W. BOND,  
J. A. JEFFERS.