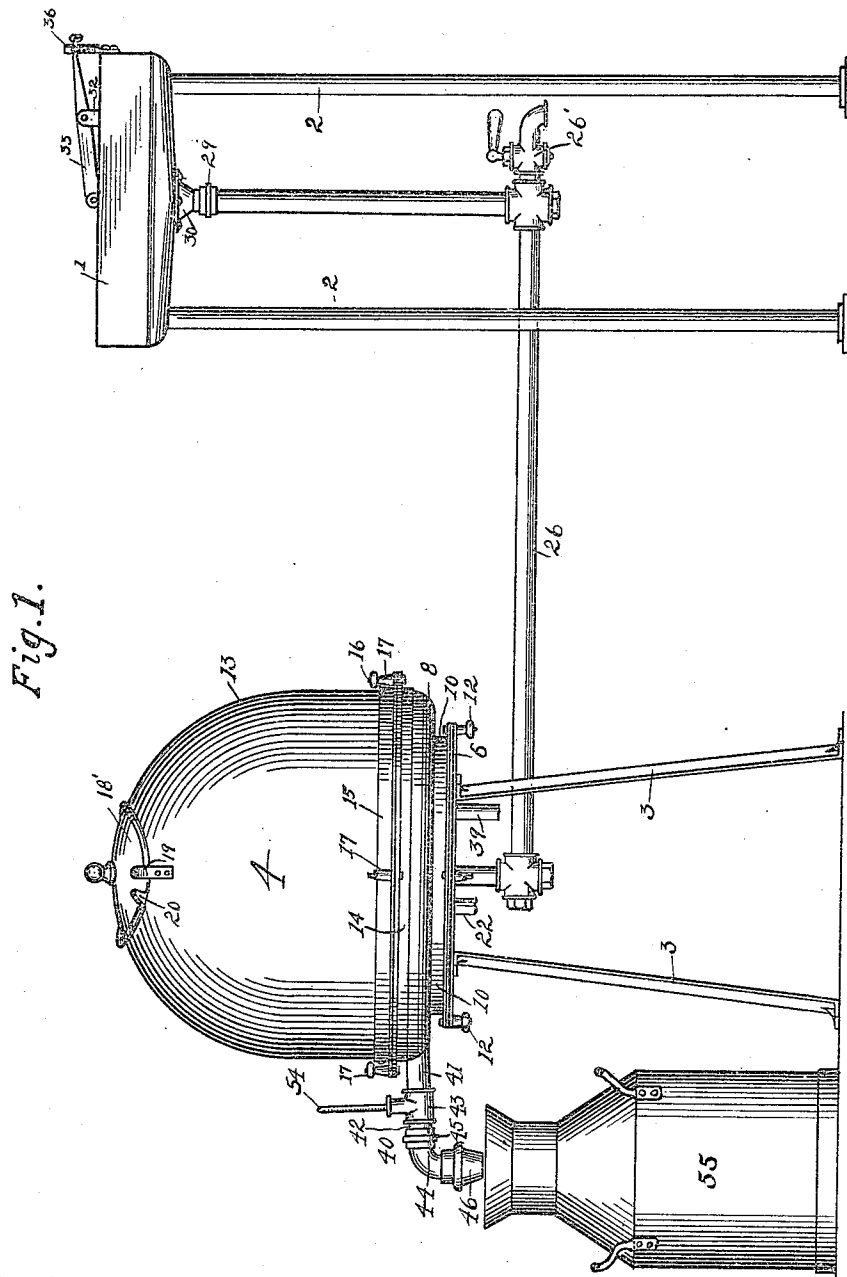


M. THOMSEN.
 APPARATUS FOR PASTEURIZING OR COOLING LIQUIDS.
 APPLICATION FILED APR. 5, 1909.

952,767.

Patented Mar. 22, 1910.
 3 SHEETS—SHEET 1.



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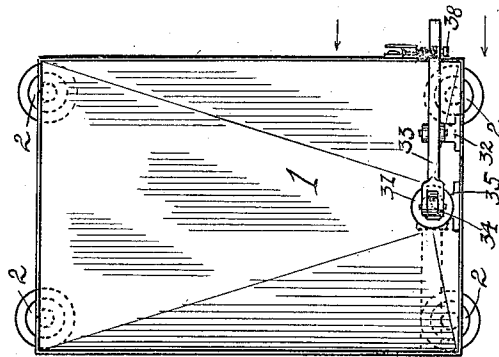


Fig. 2.

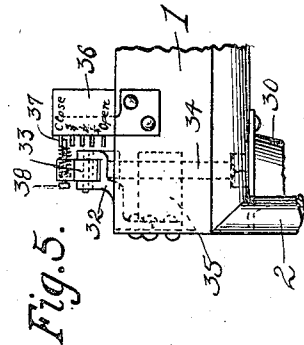
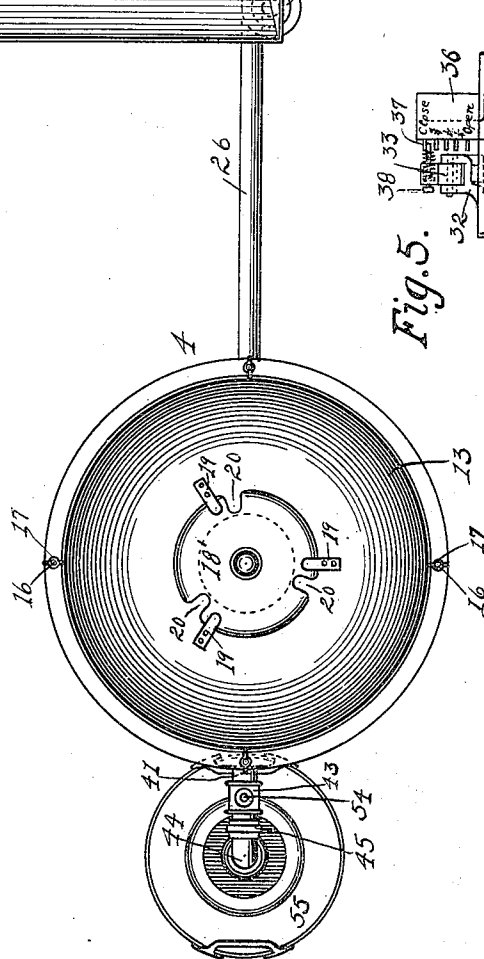


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 3.

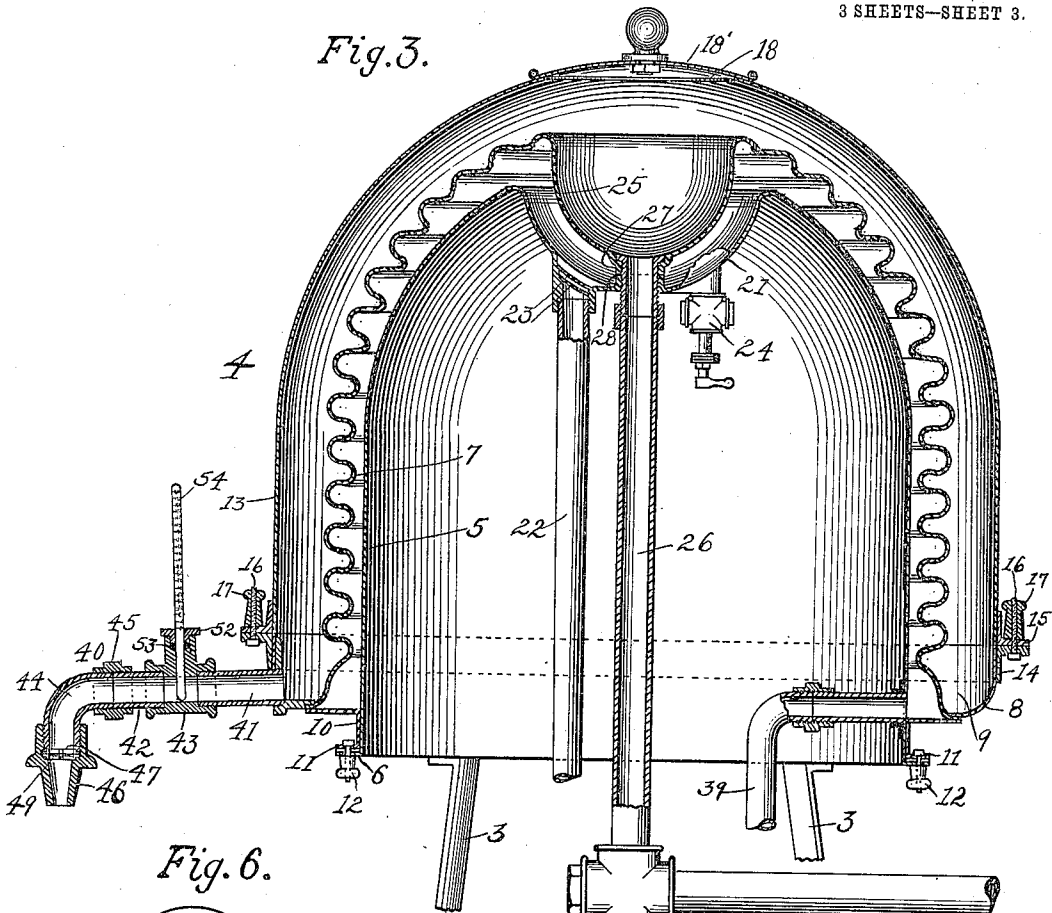


Fig. 6.

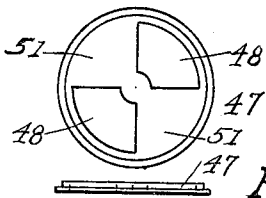


Fig. 7.

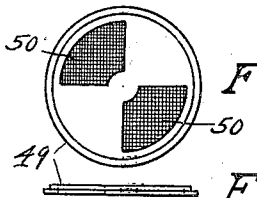
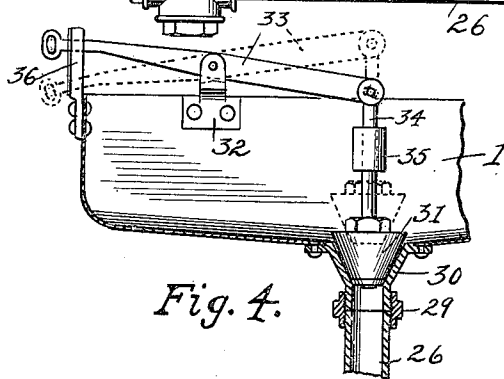


Fig. 8.

Fig. 9.

Fig. 4.



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UNITED STATES PATENT OFFICE.

MAGNUS THOMSEN, OF DAVENPORT, IOWA.

APPARATUS FOR PASTEURIZING OR COOLING LIQUIDS.

952,767.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed April 5, 1909. Serial No. 488,002.

To all whom it may concern:

Be it known that I, MAGNUS THOMSEN, a citizen of the United States, residing at Davenport, county of Scott, and State of Iowa, have invented certain new and useful Improvements in Apparatus for Pasteurizing or Cooling Liquids, of which the following is a specification.

My invention relates to apparatus designed so as to be adapted for employment either as a pasteurizer or a cooler for liquids, particularly milk, and the object of my invention is to provide an apparatus of such character which will be effective in its operation and strong and durable in its construction.

A further object is to provide an apparatus of the nature stated which will be so constructed as to be readily taken apart or dismembered to facilitate thorough cleansing the same, hence resulting in the provision of an apparatus of a highly hygienic nature.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a liquid receiving basin and an inverted semi-spheroidally formed cooler or heater arranged adjacent to said basin and connected therewith by suitable conduit, a valve being provided in the latter whereby the flow of liquid from the basin may be readily governed.

My invention further consists in a corrugated semi-spheroidally formed member embodied in the cooler or heater, over the outer surface of which the liquid to be acted upon is caused to flow resulting in either the lowering or the raising of the temperature thereof depending upon the provision of either cooling or heating means at the opposite side of the corrugated member.

My invention further consists in certain details of construction and arrangement of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of my complete apparatus, Fig. 2 is a top plan view thereof, Fig. 3 is an enlarged central vertical section of the cooling or heating member embodied in my apparatus, Fig. 4 is a detail sectional view of a portion of the re-

ceiving basin of the apparatus illustrating the construction and the operation of the valve employed therein, Fig. 5 is a fragmentary detail of an end portion of said receiving basin, Figs. 6 and 7 are a top plan view and a side elevation respectively of one of the perforated disks embodied in the disk valve provided in the liquid exhaust nozzle of the apparatus, and Figs. 8 and 9 are a bottom plan and a side elevation respectively of the valve disk cooperating with the disk shown in Figs. 6 and 7.

Referring now to the drawings 1 indicates a receiving basin which, as is shown, is preferably rectangular in form, 2 indicating suitable supporting legs therefor. Arranged adjacent to the basin 1, the same being supported upon suitable legs 3, is a heating or cooling device 4. Embodied in said device 4 is a substantially semi-spheroidally formed inner wall 5 to a flange 6 formed at the lower edge of which are secured the upper extremities of the legs 3. Incasing said wall, the same being concentrically arranged and slightly spaced apart therefrom, is a similarly shaped horizontally corrugated intermediate wall 7. The lower edge portion 8 of said wall is formed with an angular trough 9 the lower edge of which is supported upon and secured, preferably soldered, to the upper edge of an angular channel iron 10. The lower edge portion of said channel iron 10 rests upon the flange 6 of the member 5 it being secured thereto by means of bolts 11 passing through registering perforations provided in said channel portion and said flange and thumb nuts 12 threaded upon said bolts, a gasket being preferably interposed between the contacting surfaces of said channel and flange to insure a tight connection. Incasing the member 7, the same being slightly spaced apart therefrom, is a similarly shaped concentrically arranged cover or casing 13 the lower edge thereof resting upon the upwardly extending lower edge of the former. The adjoining edge portions of said members 7 and 13 are provided with reinforcing annular angle irons 14 and 15 respectively passing through registering perforations provided in which are bolts 16, thumb nuts 17 threaded upon said bolts serving an obvious purpose. A gasket might be interposed between the contacting surfaces of said angle irons to insure a tight connection between the same, however such provision is not essential. An opening 18 pro-

vided in the upper end of member 13 is closed by a removable cover 18'. Radially positioned hooks or engaging members 19 provided upon the member 13 adjacent the opening 18 therein, the same being adapted to extend through slots 20 provided in the periphery of said cover 18' for the reception thereof and to engage said periphery of the latter, are adapted to hold said cover in closed position upon said member 13.

The upper portion of the inner wall forming member 5 is formed with a substantially semi-spheroidally shaped depression 21. Communicating with the bottom of the depression 21 is a drain pipe 22 traversing the upper extremity of which are strainers 23. A safety valve 24 of any ordinary or preferred construction also communicating with said depression is provided for reasons which will be hereinafter stated. The upper portion of the wall 7 is provided with a similarly shaped depression or basin 25 communicating with the bottom of which is a liquid supply pipe 26, the latter being preferably threaded into a depending flange 27 formed upon the last named depression and an upwardly extending flange 28 formed in the depression 21. By this construction it will be seen that when the basin 25 is filled to overflowing, a thin sheet of milk will flow down over the corrugated walls 7, evenly and uniformly, in all directions and thus be exposed to an extensive surface. Owing to the fact that the corrugations in walls 7 are horizontally disposed, there will be no accumulations of milk in them but the milk will follow the corrugations in a thin, uniform sheet. The opposite extremity of said supply pipe 26 communicates with the basin 1, the same being connected by means of a union 29 to a tubular valve seat forming member 30 secured to the bottom of said basin in registering position with the drain opening provided therein preferably close to one end thereof. 26' indicates a drain cock interposed in the pipe 26, the same being provided for hygienic reasons. Adapted to be seated in said member 30 is a plug valve 31.

Pivotaly secured in the bifurcated upper end portion of a bracket 32 secured to the upper edge of an end wall of the basin 1 is a lever 33 to the forward extremity of which is pivoted the upper extremity of the stem 34 of the valve 31. A tubular member 35 secured to the end wall of the basin 1 in which is reciprocally mounted the stem 34 serves as a guide for the latter. Secured to the upper edge of one of the side walls of said basin adjacent the rearward extremity of the lever 33, is a plate 36 projecting from which are pins or stops 37. A pin 38 slidably mounted in the rearward extremity of the lever 33 is adapted to engage said stops 37, such provision being made to ef-

fect the adjustment of the position of the valve 31.

Communicating with the lower extremity of the annular chamber formed between the walls 5 and 7 is an inlet pipe 39. Communicating with the lower extremity of the chamber formed between the walls 7 and 13 is an outlet or exhaust pipe 40 preferably comprised of the pipe sections 41 and 42 connected by the pipe connection 43, an elbow 44 connected to the pipe section 42 by a union 45, and a nozzle 46 threaded upon the lower end portion of the elbow 44. Fixed in the lower extremity of the elbow 44 is a disk 47 provided with diametrically opposed quadrant slots 48. Fixed in the upper extremity of the nozzle 46 is a disk 49 provided with similarly positioned and similarly shaped slots 50, the latter being however traversed by wire mesh strainers fixedly secured therein. By such provision, when the slots 48 and 50 are in registering position a free passage through the exhaust pipe 40 will be effected. By rotating the nozzle 46 through 90 degrees either to the left or right, said slots will be entirely closed by the disk portions 51 hence causing the closing of the passage through the pipe 40. Having its lower extremity extending into the passage through the latter, the same being detachably secured by a plug 52 and a washer or gasket 53 in the pipe connection 43, is a thermometer 54, such provision obviously effecting the ready ascertainment of the temperature of the liquid passing through the pipe 40.

The operation of the apparatus is as follows: The milk or other liquid to be treated is delivered to the basin 1, the valve 31 is then adjusted by means of the lever 33 to such a position as to permit of the passage of liquid through the pipe 26 at the desired rate. Said liquid passes through said pipe 26 entering first the depression 25, the same rising in said depression and finally overflowing or escaping over the upper edge thereof, whence it flows in a thin layer down over the outer corrugated surface of the member 7 to the trough 9. Thence the liquid is exhausted through the outlet pipe 40 into a receiving receptacle 55. If it is desired to heat the liquid, steam or hot water is admitted through the pipe 39 which communicates with any suitable source of supply, such steam or hot water exhausting through the pipe 22 causing a constant circulation through the device. The safety valve 24 which communicates with the heat medium containing chamber is provided to prevent an explosion due to over-heating of the device.

If it is desired to cool the liquid passed through the apparatus ice water is delivered through the supply pipe 39. If found necessary chipped ice may be supplied and it

is to prevent the latter entering and clogging the exhaust pipe 22 that the strainers 23 which traverse the upper extremity thereof are provided.

5 While I have shown what I deem to be the preferable form of my apparatus, I do not wish to be limited thereto as there might be many changes made in the details of construction and the arrangement of parts
10 without departing from the spirit of my invention. And although I have designed my device with special reference to the treatment of milk, I may use the same in the treatment of any other substance for which
15 it is applicable.

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

1. In an apparatus of the class described,
20 the combination with a semi-spheroidal body provided with a receiving basin in its top and horizontally disposed corrugations on its sides; a closed chamber, the outer wall of which is formed by said semi-spheroidal
25 body; means of admission and exhaust for said chamber; a closed chamber surrounding said semi-spheroidal body; means for draining said last mentioned chamber; and adjustable means of admission to said receiving
30 basin, substantially as described.

2. In an apparatus of the class described, the combination with a semi-spheroidal body provided with a receiving basin in its top and horizontally disposed corrugations on
35 its sides; a closed chamber, the outer wall of which is formed by said semi-spheroidal body; means for admission and exhaust for said chamber; a closed chamber surrounding

said semi-spheroidal body; an exhaust pipe for said last mentioned chamber; a thermometer and strainer in said exhaust pipe
40 and adjustable means of admission to said receiving basin, substantially as described.

3. In an apparatus of the class described, the combination of a receiving basin, a substantially semi-spheroidally formed heater or
45 cooler arranged adjacent to said basin, said heater or cooler being comprised of three concentrically arranged shells of successively increasing diameters, the intermediate of
50 said shells being circumferentially corrugated, the two innermost of said shells being provided at their upper end portions with concentric depressions, a conduit extending from said basin communicating with
55 and depending from the outermost of said depressions, a valve interposed in said conduit for governing the flow of liquid there-through a valved exhaust pipe communicating with the lower extremity of the chamber
60 formed between the two outermost shells, a thermometer depending into the passage through said pipe, and an inlet pipe and an exhaust pipe communicating with the upper and lower extremities of the chamber formed
65 between the two innermost of said shells, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of
70 two subscribing witnesses.

MAGNUS THOMSEN.

Witnesses:

C. J. RAYMOND,
LOUIS OTTO.