

No. 714,041.

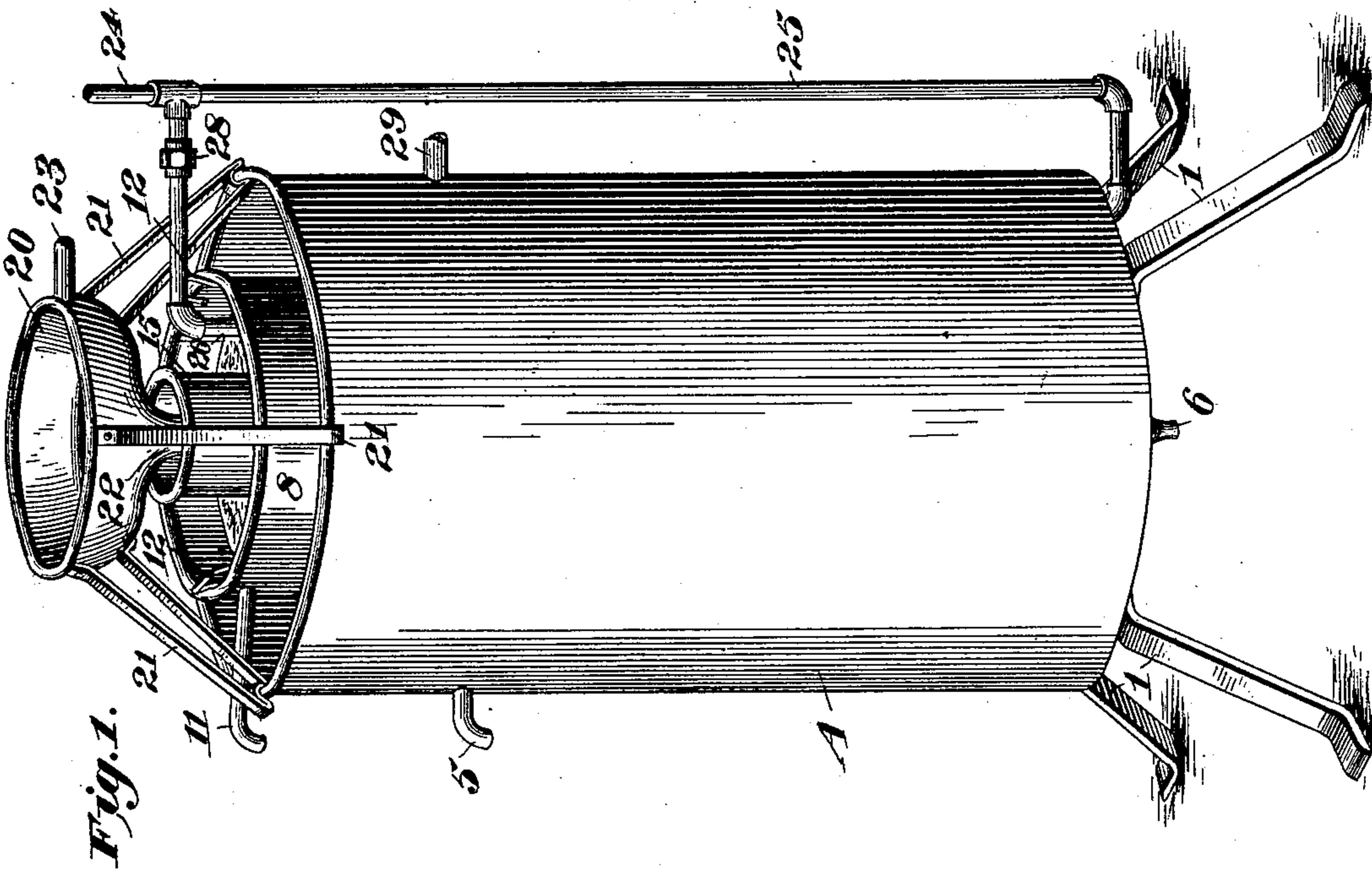
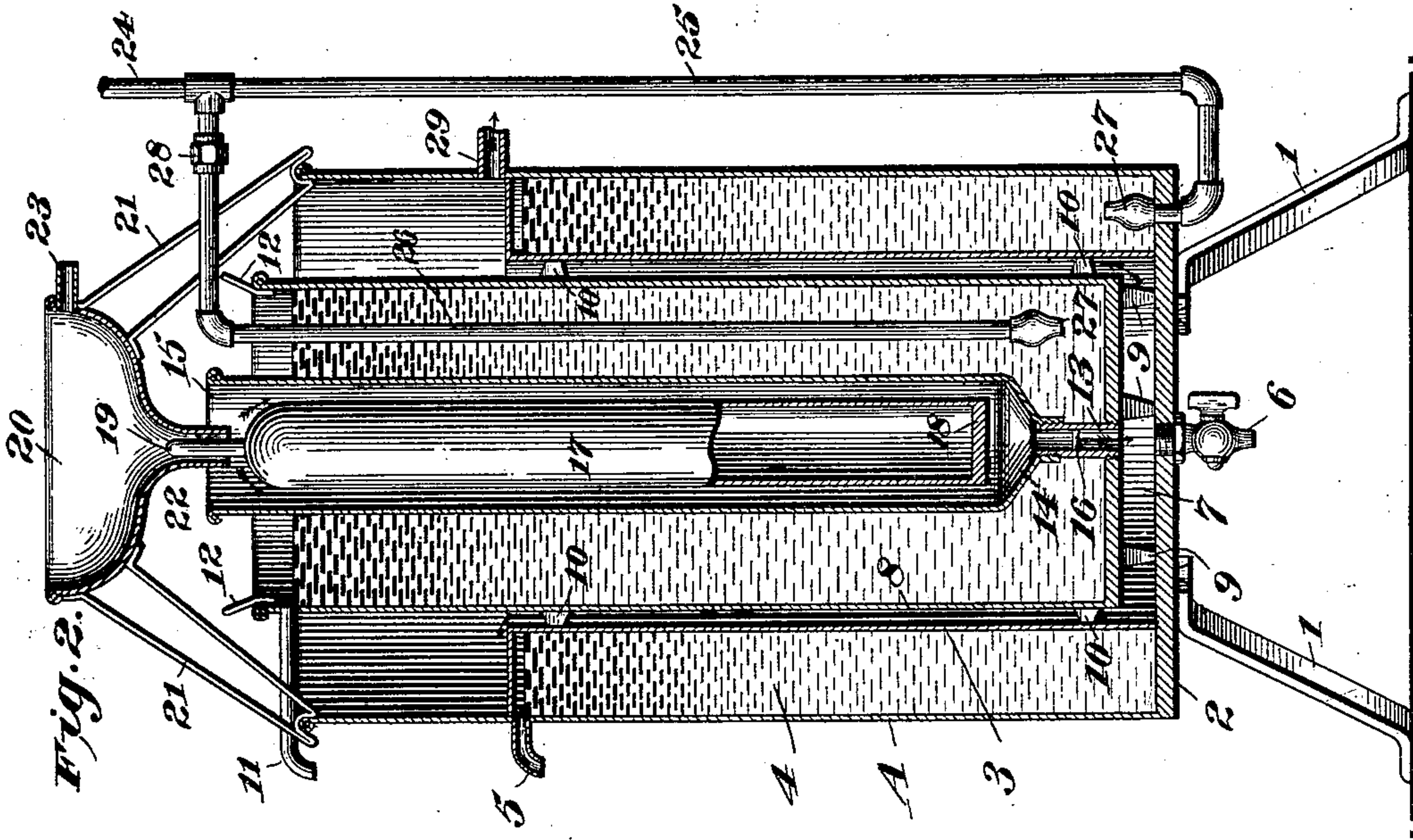
Patented Nov. 18, 1902.

I. E. SCHOCH.

STERILIZER FOR LIQUIDS OR FLUIDS.

(Application filed May 6, 1902.)

(No Model.)



Witnesses

Elmer Seavery
New E. H. Dyer.

Inventor

Irwin E. Schoch

By Addison H. DeBakey
his Attorney

UNITED STATES PATENT OFFICE.

IRVIN E. SCHUCH, OF DAMASCUS, ILLINOIS.

STERILIZER FOR LIQUIDS OR FLUIDS.

SPECIFICATION forming part of Letters Patent No. 714,041, dated November 18, 1902.

Application filed May 6, 1902. Serial No. 106,145. (No model.)

To all whom it may concern:

Be it known that I, IRVIN E. SCHUCH, a citizen of the United States, residing at Damascus, in the county of Stephenson and State of Illinois, have invented new and useful Improvements in Sterilizers for Liquids or Fluids, of which the following is a specification.

My invention relates to improvements in sterilizers for liquids and fluids, the principal objects being, first, to provide a device of this character wherein a greater heating-surface is presented to the liquid or fluid to be sterilized; second, to provide a device of this character wherein the liquid or fluid to be treated passes between perfectly-smooth surfaces, to which access can easily be had for cleansing purposes, and, third, to provide a device which will be in a measure automatic in its action—that it is to say, when the device has received a predetermined quantity of fluid or liquid the latter will automatically cause the operation of certain elements hereinafter described to prevent the further ingress of the liquid or fluid, and when the device can accommodate a further supply the liquid already in the receptacle will permit the ingress of such further supply without hindrance thereto.

Other minor objects will be brought out in the full description of the invention hereinafter.

My invention consists, mainly, in the provision of heating means between which are located conduits adapted to receive and through which the liquid or fluid to be treated is conveyed in combination with inlets and outlets for the heating medium and the fluid or liquid.

It further consists in the provision of circulating-chambers adapted to receive the liquid or fluid to be sterilized, the circulating-chambers surrounded by heating-chamber, whereby the liquid is subjected to caloric action during its travel through the circulating-chamber.

It also consists in the provision of automatically-operating means for closing the entrance to the circulating-chamber when the chamber empties to permit the entrance of a further supply of liquid thereto.

My invention also consists in certain other

details of construction and combinations of parts, which will be more fully described hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my invention, and Fig. 2 is a vertical section therethrough.

A indicates the outer casing or receptacle of my improved sterilizer. This casing or receptacle is shown as being cylindrical, which shape is preferable; but it may be rectangular in cross-section without in any wise impairing the novelty or operation of the device. This receptacle is supported on suitable legs 1 1, thereby avoiding the necessity of providing a bench or special platform on which to rest the sterilizer, such as is necessary with other devices of a like character in order that they may be raised sufficiently to permit the fluid to escape therefrom by gravity into a separator, for instance. The bottom of this receptacle A is thickened, as shown at 2, to afford additional strength thereto. An annular wall 3 extends interiorly of the casing A, the wall joining the casing at its bottom and at a short distance from the top of the casing to form an annular reservoir 4 and an interior chamber 7. The wall is right angular in cross-section, as shown in Fig. 2. Located in the casing is a faucet or spout 5, communicating with reservoir 4, just beneath the point where the wall 3 joins the casing. A cock 6 is located in the bottom 2 of the receptacle and communicates with the interior chamber 7, formed by the wall 3, the interior chamber being entirely surrounded by the reservoir 4, from which it is separated by the wall 3. The casing A is also provided with an outlet 29, located just above the top of wall 3. Received within the central chamber 7 is a removable reservoir 8. The bottom of reservoir 8 is supported upon short legs 9 9 to raise it above the bottom of the casing A and is thickened in the same manner as is the bottom of the casing A. Lugs 10 10 project at intervals from the side of the removable reservoir 8, which is smaller in size than the interior chamber 7, and these lugs are adapted to contact with the sides of the chamber 7, which side is the wall 3, for the purpose of retaining the removable reservoir exactly in the center of the interior chamber 7 in order that

there may be equal space all around the removable reservoir. This removable reservoir is provided with a discharge-outlet 11, extending beyond the side of the outer casing A, which is designed to convey away any over-
 5 plus of liquid received in the reservoir, and handles 12 12 are provided whereby to remove the reservoir from the interior chamber when desirable. The reservoir 8 is of slightly-
 10 greater height than the casing A, out of the open upper end of which it projects. A screw-threaded orifice is centrally located in the bottom of the removable reservoir 8, and received in this orifice and projecting upward
 15 therefrom is a pipe 13. The upper end of this pipe is screw-threaded and is adapted to receive thereon the tapered end 14 of the milk or other fluid or liquid receiver 15, which extends upward above the plane of the interior
 20 reservoir 8. The pipe 13 has located therein and across the bore thereof a bar 16, for a purpose hereinafter described. A large hollow air-tight elongated float 17, provided with a weighted bottom 18, is located within the
 25 milk-reservoir 15, the upper portion of the float being rounded or convex and having a stem 19 extending upward from the convex top thereof. A bowl-shaped funnel or conductor 20, provided with legs 21 21, slightly
 30 forked at their ends, is supported upon the casing A, the forked ends of the legs 21 21 passing astride the edge of the casing A. The depending tube 22 of the funnel or conductor receives the stem 19 of the float 17
 35 therein. This float is of large diameter, as shown, in order that the milk or other liquid or fluid to be treated may be forced to take its course close to the wall of the milk-reservoir 15. The weight in the bottom of the float
 40 is sufficient to retain it in an upright position in the milk reservoir or receiver 15, and it operates to retain the milk at a certain level in the receiver, as will be described hereinafter. The depending tube 22, in which the
 45 stem 19 of the float is received, operates to guide the float in its reciprocations. The conductor 20 is provided with an overflow-pipe 23, which conveys any overplus of the liquid or fluid under treatment back to the vat from
 50 which it has been pumped to the conductor. The annular chamber 4 of the casing and the removable reservoir 8 are each adapted to contain a supply of water or other easily-heated liquid. A steam-pipe 24, leading from any
 55 suitable source, conveys the steam to branch pipes 25 26, the ends of which are received within the respective water-reservoirs 4 and 8. The open ends of these branch steam-pipes are provided with mufflers 27, which will prevent
 60 the disagreeable noise otherwise caused by the steam being driven directly into the water in the reservoirs. The pipe 25 enters the casing A through a suitably-packed aperture therein. A removable union 28 connects branch pipe
 65 26 with the main steam-supply pipe 24, whereby the branch pipe may be removed from reservoir 8 when desirable. Water may be

lead to reservoirs 4 and 8 through the pipes 24, 25, and 26 when necessary. The thickened or strengthened bottoms of the casing
 70 A and the removable water-reservoir 8 are preferably made of galvanized cast-iron, and the steam-pipes and legs or supports of the casing are also preferably composed of iron. The remaining parts are constructed of tin or
 75 copper, as the case may be.

Having described the various features comprised in my invention, I will now set forth the manner in which it operates and is used.

The machine is primarily designed for the
 80 treatment of milk in creameries for the purpose of heating the milk before it passes to the separator; but it is obvious that the device might be used as a sterilizing process for the heating of any other liquid or fluid, if de-
 85 sired.

The description of the use and purpose of the device will be set forth in connection with its use for creamery purposes as follows: The milk is pumped from the vats (not shown)
 90 into the bowl-shaped funnel or conductor 20, from whence it flows through tube 22 into the milk-receiver 15, wherein is located the float 17. From the milk-receiver the liquid passes by gravity downward through the pipe
 95 13, which leads into the interior chamber 7 of the casing, the pipe 13 permitting free communication between the milk-receiver and the interior chamber 7. The milk then gradually
 100 fills the narrow space existing between the outside of the removable water-reservoir 8 and the inner annular wall 3 until it reaches the upper horizontal portion of the wall, over which it spreads and escapes from the out-
 105 let 29 from the casing. The water-reservoirs 4 and 8 are of course filled with water and the steam admitted thereto through branch pipes 25 26, whereby the water is heated to the desired degree before the milk is pumped into
 110 the funnel or conductor 20. Any excess of water in the reservoirs escapes through the spouts or discharge-outlets 5 and 11. A thermometer may be provided by which the desired temperature may be ascertained. As
 115 soon as sufficient milk has flowed through the depending tube 22 of the funnel 20 to just fill the space reserved for the milk the float 17 will rise and close the end of the tube 22; but as the milk flows away to the separator through spout or outlet 29 the float will de-
 120 scend or fall a sufficient distance to permit exactly the same amount of milk to enter the milk-reservoir as is being discharged from the spout 29, thus insuring a uniform discharge or feed of heated milk to the separator, and
 125 the milk-receiver will be kept filled all the while, but will not overflow. Of course it will be understood that the milk is being pumped into the conductor from the vats in order to keep the bowl-shaped conductor full,
 130 and when the milk therein rises to the level of the outlet-spout 23 it is returned to the vats, from which it is again pumped when needed. The milk is at all times confined

within narrow annular spaces between the heating-reservoirs, whereby to thoroughly heat every drop thereof before it passes to the separator, and it will be noticed that the milk passes over the annular outer reservoir 4 just prior to its discharge from the casing to insure a complete treatment thereof.

In taking my invention apart for the purpose of cleaning the parts I proceed as follows: The cock 6 is opened in order to drain all the milk from the device. The union or joint 28 is then removed by means of a wrench or other suitable implement and the branch steam-pipe 26 withdrawn from the removable water-reservoir 8. The connection of the outlet or overflow 23 and the vat is disconnected and the funnel or conductor 20 removed from the casing A. Next the float 17 is lifted out of the milk-receiver 15. A wrench having a long handle provided with a slot in one end is then inserted into the milk-receiver and into the pipe 13 until the bar 16 is received in the slot in the wrench, which latter is then turned and operates to unscrew the pipe from the central screw-threaded orifice in the removable water-reservoir 8, whereupon the milk-receiver 15 and the pipe may be withdrawn from the movable water-reservoir and the pipe unscrewed from the milk-receiver. The water in the removable water-reservoir is then allowed to run out through cock 6, and the removable water-reservoir 8 is then lifted out of the interior chamber 7 by means of handles 12 and the device is ready for cleansing.

It will be easily understood that my invention can be utilized for cooling the milk as it circulates between the float and the wall of the milk-receiver and in the space between the annular stationary and removable water-reservoirs by merely substituting a flow of cold water for the steam through pipes 24, 25, and 26, and it will also be noted that the branch steam-pipes have their outlets located in the bottoms of the water-reservoirs, whereby the heated water may ascend to the upper portions thereof, thereby permitting the water to absorb the greatest possible amount of heat therefrom.

It is likewise evident that many changes might be made in the form and arrangement of these several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact features of construction herein set forth; but,

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

1. A device for treating liquids comprising, a stationary reservoir, a removable reservoir contained therein and spaced apart therefrom, a liquid-receiver, the liquid-receiver out of communication with the removable reservoir, means for permitting an overflow from the reservoirs, a receptacle communicating with the liquid-receiver for supplying the latter with liquid, means in the liquid-receiver

for closing and regulating the supply of liquid thereto and an outlet for the liquid.

2. A device for treating liquids comprising an outer casing, a stationary reservoir therein, a removable reservoir surrounded by and spaced apart from the stationary reservoir, overflows for the reservoirs, a liquid-receiver located within the removable reservoir, the liquid-reservoir having the space inclosed thereby isolated from the space inclosed by the removable reservoir, a communication between the liquid-receiver and the space between the stationary reservoir and the removable reservoir, an outlet from the casing for the liquid, an independent removable receptacle containing a supply of liquid, the removable receptacle located above the liquid-receiver and communicating therewith, an overflow for the receptacle, means in the liquid-receiver for regulating the size of the communication through which the liquid is supplied to the receiver, and means for conducting heating or cooling liquids to the reservoirs.

3. A device for treating liquids comprising a casing, a stationary reservoir contained therein of less height than the casing, an overflow from the reservoir, an outlet from the casing, a removable reservoir located within the casing and surrounded by the stationary reservoir, the two reservoirs spaced apart from each other, the removable reservoir supported above the bottom of the casing, an overflow for the removable reservoir, a liquid-receiver located within and surrounded by the removable reservoir, the liquid-reservoir isolated from the removable reservoir, a pipe connecting the liquid-receiver with the space between the stationary reservoir and the removable reservoir, an independent liquid-receptacle located above and communicating with the liquid-receiver, and means in the liquid-receiver for regulating the flow of liquid from the receptacle thereto.

4. A device for treating liquids comprising a casing, a plurality of independent non-communicating reservoirs therein, and spaced apart from each other, overflow-outlets for the reservoirs, an outlet from the casing, a liquid-receiver located within one of the reservoirs and non-communicating therewith, means connecting the liquid-receiver and the space between the reservoirs, a receptacle for supplying liquid to the liquid-receiver and means in the liquid-receiver which regulates the supply of liquid thereto.

5. A device for treating liquids comprising a casing, a discharge-spout therefrom, a plurality of independent reservoirs located within the casing, overflows for the reservoirs, the outer reservoir surrounding the inner reservoir and spaced apart therefrom, the inner reservoir supported above the bottom of the casing, a liquid-receiver secured within the inner reservoir, means of communication between the liquid-receiver and the space between the reservoirs, a receptacle in commu-

5 nication with the liquid-receiver for supply-
ing liquid thereto, means in the reservoir for
automatically regulating the supply of liquid
thereto, means for supplying the reservoirs
with heat, and means for draining the receiver
and inner reservoir.

6. A device for treating liquid, comprising
an outer casing provided with a strengthened
bottom, supports for the casing, a discharge-
10 spout therefrom, an annular stationary res-
ervoir located within the casing an overflow
therefrom, an inner removable reservoir re-
ceived in the casing and surrounded by the
outer stationary reservoir, means on the in-
15 ner reservoir for retaining it in a central po-
sition with respect to the casing and outer
reservoir, to leave a space around the inner
casing a pipe extending into the inner reser-
voir and communicating with the space sur-
20 rounding the reservoir, a liquid-receiver de-
tachably secured to the pipe, a liquid-recep-
tacle supported upon the casing and commu-
nicating with the liquid-receiver, means in
the receiver for regulating the supply of liquid
25 thereto and means for supplying the reser-
voirs with heat.

7. A device for treating liquid, comprising
a suitably-supported hollow casing, a station-
ary water-reservoir contained therein of less
30 height than the casing, a removable reservoir
located within the casing and surrounded by
the stationary reservoir, the removable res-
ervoir spaced apart from and independent of
the stationary reservoir, overflow-spouts for
35 the reservoirs, a discharge-spout for the cas-
ing, a liquid-receiver located within the re-
movable water-reservoir, the liquid-receiver
in communication with the space between the
two reservoirs, a cock for draining the space
40 in the casing surrounded by the stationary
reservoir and means for heating the water in
the reservoirs.

8. A device for treating liquids comprising
an outer casing, a stationary reservoir there-
45 in, having an inlet and an outlet, an interior
chamber inclosed by the stationary reservoir
a removable reservoir located centrally of the
interior chamber and spaced apart from the
walls thereof, the stationary reservoir sup-
50 ported above the floor of the chamber, lugs
on the removable reservoir in contact with
the wall of the interior chamber, a drain-cock
for the chamber, an inlet and an outlet
for the removable reservoir, a liquid-receiver
55 located centrally in the removable reservoir
and a communication extending between the
liquid-receiver and the interior chamber.

9. A device for treating liquids comprising
an outer casing, a stationary reservoir there-
60 in, an interior chamber surrounded by the
reservoir, an overflow-spout for the reservoir,
a discharge-spout for the casing, a removable
reservoir centrally received in and supported
above the floor of the interior chamber, the
65 removable reservoir of such diameter as to
leave a space between itself and the wall of
the interior chamber, a liquid-receiver located

in the removable reservoir, a pipe affording
communication between the receiver and the
interior chamber, a float in the receiver, a
70 funnel supported upon the casing, the end of
the float received within the funnel to regu-
late the supply of liquid from the funnel to
the receiver, an overflow for the removable
reservoir and inlets leading into the station- 75
ary and removable reservoirs.

10. A device for treating liquid, comprising
a suitably-supported casing, an annular wall
therein which divides the interior of the casing
into a closed stationary reservoir and an in- 80
terior chamber, a discharge-spout for the cas-
ing, a drain-cock for the interior chamber, a
removable reservoir received in and support-
ed above the floor of the interior chamber to
leave a space between the walls of the two 85
reservoirs, a liquid-receiver located within
the removable reservoir, a detachable pipe-
section connecting the liquid-receiver with
the interior chamber, a bar located across the
bore of the pipe by which the pipe is removed, 90
a liquid-receptacle supported on the casing
and in communication with the liquid-re-
ceiver, means in the receiver for regulating
the supply of liquid from the receptacle to
the receiver, and inlet and outlet means for 95
the reservoirs.

11. A device for treating liquid, comprising
a suitably-supported casing, an annular wall
therein which divides the interior of the cas- 100
ing into a closed stationary reservoir and an
interior chamber, a discharge-spout for the
casing, a drain-cock for the interior chamber,
a removable reservoir received in and sup-
ported above the floor of the interior chamber
to leave a space between the walls of the two 105
reservoirs, a liquid-receiver located within
the removable reservoir, a detachable pipe-
section connecting the liquid-receiver with
the interior chamber, a bowl-shaped funnel
supported on the casing, above the liquid-re- 110
ceiver, a float in the liquid-receiver, the end
of the float received in the discharge-mouth
of the funnel to regulate the supply of liquid
from the funnel to the receiver, and inlet and
outlet pipes for the reservoirs, one of the in- 115
let-pipes being detachable.

12. A device for treating liquid, comprising
a suitably-supported casing, an annular wall
therein which divides the interior of the cas- 120
ing into a closed stationary reservoir and an
interior chamber, a discharge-spout for the
casing, a drain-cock for the interior chamber,
a removable reservoir received in and sup-
ported above the floor of the interior cham- 125
ber to leave a space between the walls of the
two reservoirs, a liquid-receiver located with-
in the removable reservoir, a detachable pipe-
section connecting the liquid-receiver with
the interior chamber, a bowl-shaped funnel,
the funnel provided with legs having slotted 130
ends, the recessed ends of the legs adapted
to engage the upper edge of the casing to sup-
port the funnel above the liquid-receiver, a
weighted float in the liquid-receiver, the float

provided with a stem receivable within the discharge-mouth of the funnel to regulate the supply of liquid to the receiver, outlet-spouts for the reservoirs, inlet-pipes therefor, the
5 ends of the inlet-pipes located near the bottoms of the reservoirs, and mufflers on the ends of the pipes, the pipe extending into the removable reservoir being detachable.

13. A liquid-treating device comprising an
10 outer casing provided with double walls, a removable reservoir received within the casing and spaced apart therefrom, the removable reservoir and the space between the double walls being non-communicating, a liquid-re-
15 ceiver located within the removable reservoir and non-communicating therewith, the liquid-receiver communicating through the bottom thereof with the space located between the removable reservoir and the inner wall of
20 the casing, separate overflows for the removable reservoir and the space inclosed between the double walls, means for regulating the flow of liquid into the liquid-receiver, a discharge from the casing for the liquid received
25 therein and means for heating or cooling the liquid to be treated.

14. A liquid circulating and treating device comprising a double-walled casing, the walls extending to a distance from the top of the casing and forming a reservoir therebetween, a removable reservoir located within
30 and spaced apart from the inner wall and bottom of the casing, a milk-receiver detachably secured within the removable reservoir and non-communicating therewith, communication
35 extending between the bottom of the milk-receiver and the space surrounding the removable reservoir, outlets for the reservoirs, a removable receptacle for supplying milk to the milk-receiver means for subject-
40 ing the water contained in the reservoir to variations in temperature and a discharge for the milk located in the casing above the double walls thereof.

In testimony whereof I have signed this
45 specification in the presence of two subscribing witnesses.

IRVIN E. SCHOCH.

Witnesses:

A. J. BATES,

WILLIAM H. WAGNER.