L. S. PFOUTS.

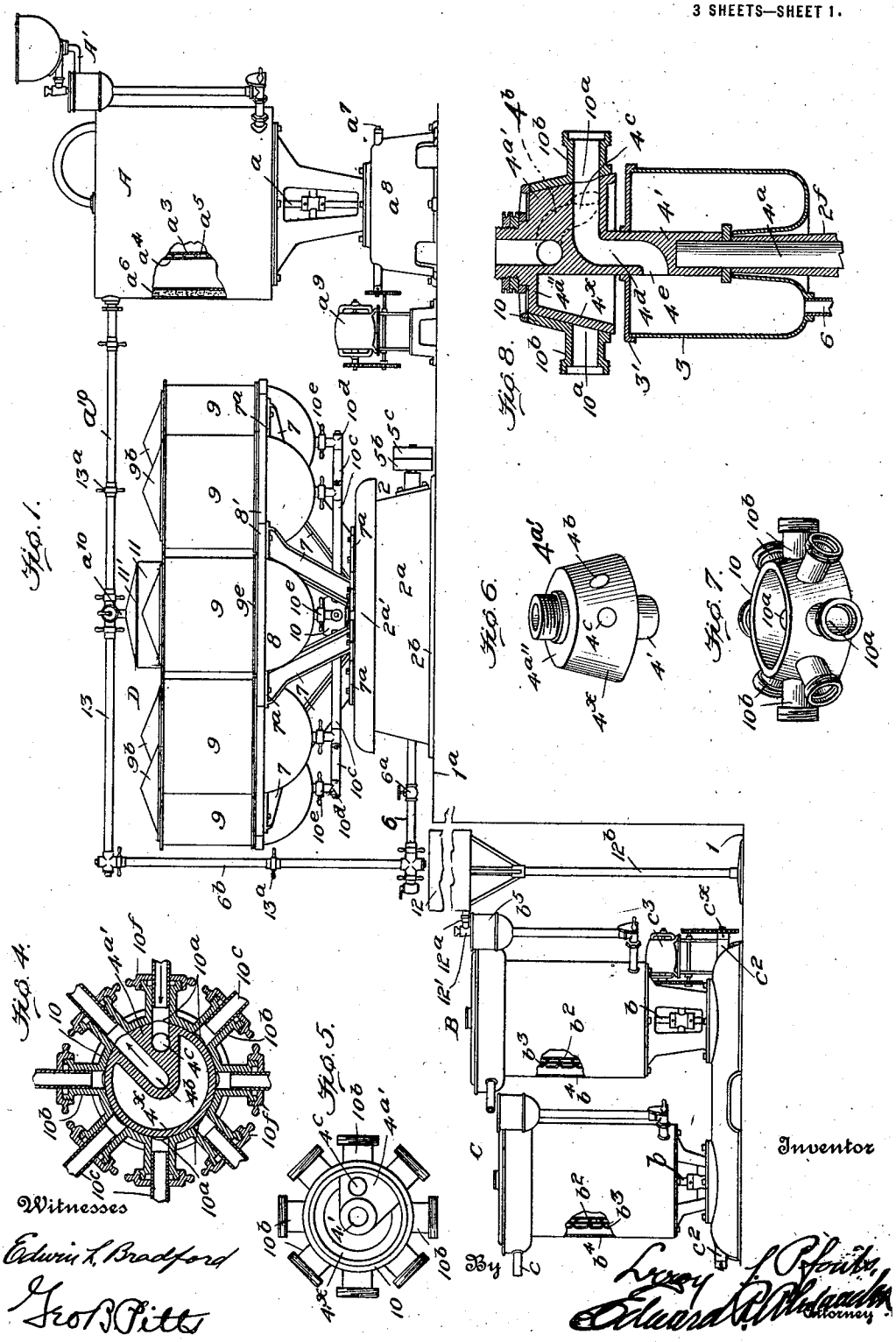
PASTEURIZING APPARATUS.

APPLICATION FILED AUG. 6, 1913.

1,185,531.

Patented May 30, 1916.

3 SHEETS—SHEET 1.



Witnesses

Edwin L. Bradford

Geo. B. Pitts

Inventor

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3 SHEETS—SHEET 2.

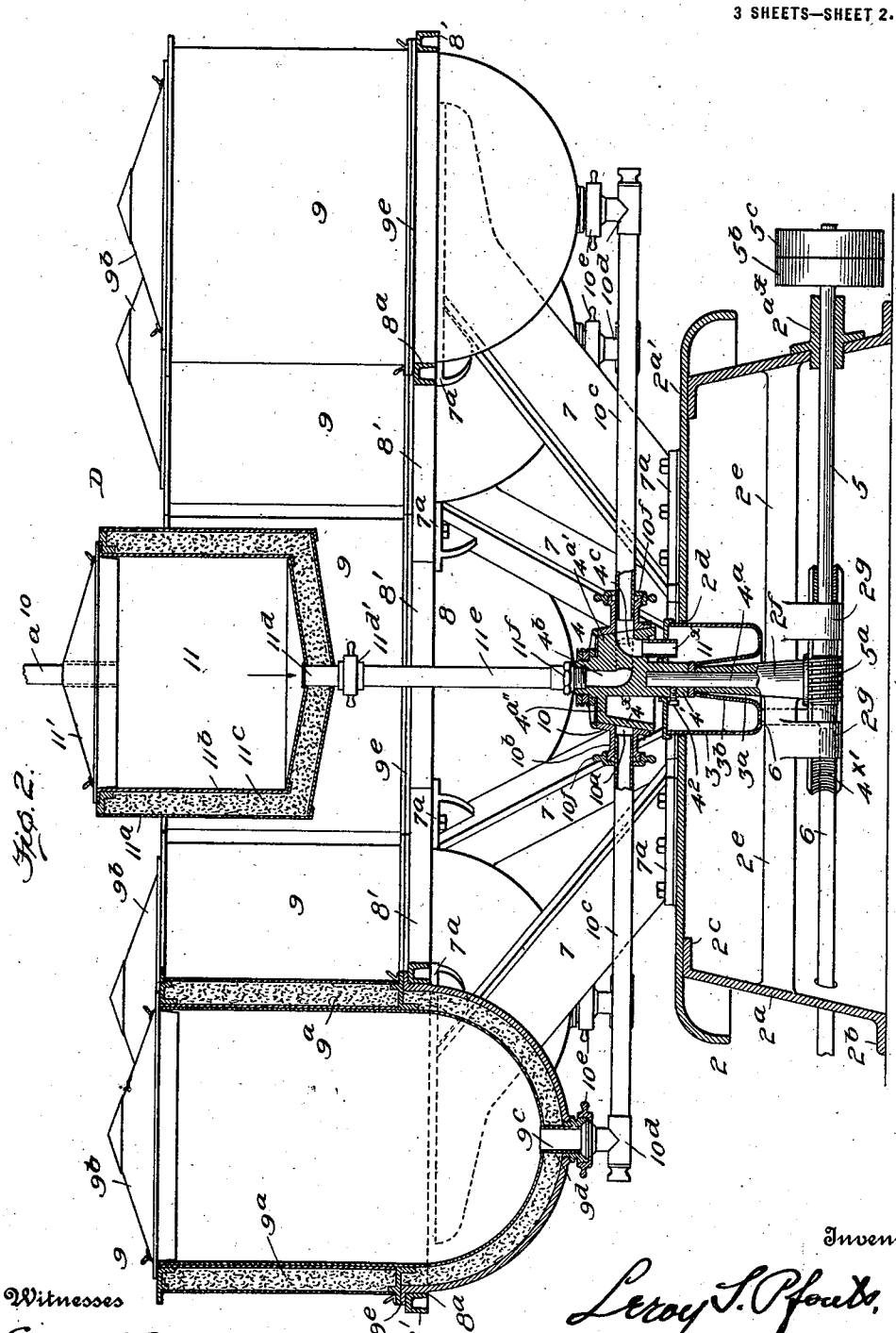


Fig. 2.

Witnesses

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PASTEURIZING APPARATUS.

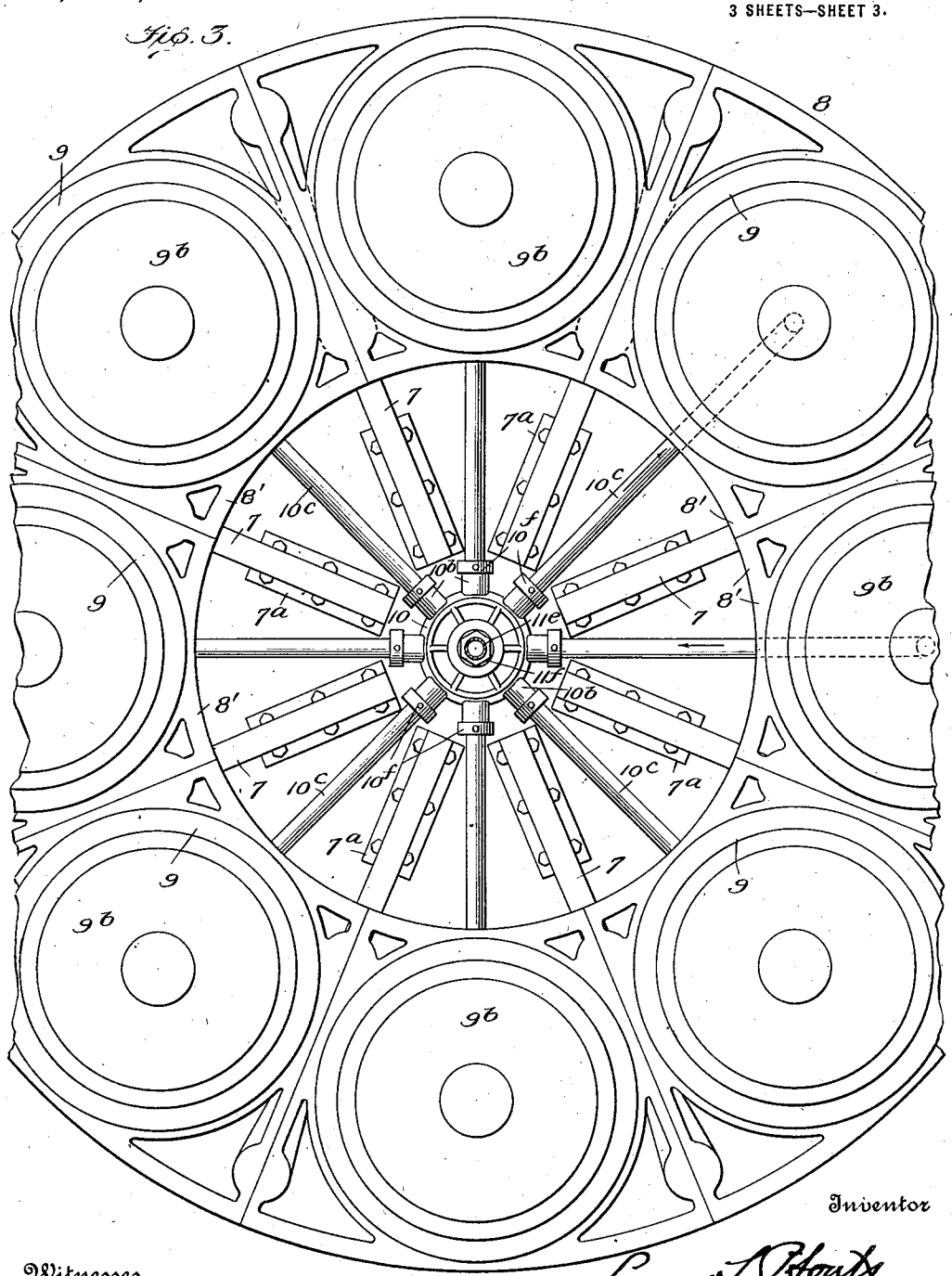
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3 SHEETS—SHEET 3.

Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

LEROY S. PFOUTS, OF CANTON, OHIO, ASSIGNOR TO THE MILLER PASTEURIZING MACHINE COMPANY, OF CANTON, OHIO, A CORPORATION OF NEW JERSEY.

PASTEURIZING APPARATUS.

1,185,531. Specification of Letters Patent. Patented May 30, 1916.

Application filed August 6, 1913. Serial No. 783,353.

To all whom it may concern:

Be it known that I, LEROY S. PFOUTS, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in and Relating to Pasteurizing Apparatus, of which the following is a specification.

This invention relates to pasteurizing apparatus and particularly to apparatus adapted to treat liquid, such as milk.

I have illustrated my invention in connection with a liquid treating apparatus, such as shown and described in my application filed January 25, 1909, Serial No. 474,128. It will be understood, however, that my improvements in liquid distributing and holding mechanism for pasteurizing apparatus may be used in connection with a liquid treating apparatus of any suitable or preferred construction, and while the embodiment of the invention illustrated herein has been conformed to coöperate with the general construction of apparatus shown in my said application, it may be adapted to suit any particular construction of apparatus in connection with which it may be used

Referring to the drawings, which show one embodiment of the invention: Figure 1 is a side elevation of my apparatus operatively connected with the liquid treating apparatus described in my aforesaid application. Fig. 2 is a side elevation, partly in section, of the liquid distributing and holding mechanism. Fig. 3 is a top plan view of the apparatus shown in Fig. 2. Fig. 4 is a horizontal section through the valve mechanism. Fig. 5 is a bottom plan view of the valve member and valve seat element. Figs. 6 and 7 are perspective views of the valve members. Fig. 8 is a fragmentary section showing a slightly modified form of the invention.

In the drawings, A indicates a heater for the liquid, B a preliminary cooler, and C a final cooler, each of which is shown merely for the purpose of illustration.

D indicates as a whole a liquid distributing and holding apparatus, preferably interposed between the heater A and preliminary cooler B.

The heater A, holding apparatus D, and coolers B, C, are preferably arranged in stepped relationship to each other in order that the liquid may flow by gravity from one to the other and finally be discharged by the discharge pipe, indicated at c, carried by the final cooler C, into any suitable receptacle (not shown). Preferably the floor 1 for the apparatus D is elevated, as shown at 1^a, to provide for the proper flow of the liquid therefrom to the preliminary cooler B.

The heater A comprises an inner rotary vessel a^3 connected with a driven shaft a and adapted to hold a heating medium; an intermediate vessel a^4 surrounding the vessel a^3, and forming therewith a liquid film space a^5; and an outer vessel a^6, surrounding the inner and intermediate vessels a^3, a^4, and adapted to form with the outer walls of the latter vessel a chamber to receive a suitable heating medium.

The shaft a is geared to a driving shaft a^7, which is mounted in bearings in a pedestal a^8. The shaft a^7 may be driven by a suitable motor, such as indicated at a^9.

Each of the coolers B and C comprises an inner rotary vessel b^2, connected with a driven shaft b; an intermediate vessel b^3, and an outer vessel b^4. These vessels are constructed and arranged relatively to each other to form a liquid film space, and a space or chamber on opposite sides of the film space for a suitable cooling medium.

The shafts b, are connected to and driven by a driving shaft c^x, which is mounted in bearings provided therefor in the base, indicated at c^2, on which the preliminary and final coolers, B, C, are mounted. The shaft c^x may be driven from any suitable source of power, such as a motor c^3.

The heater A, and coolers B and C, are constructed, generally, and operate similarly to corresponding parts shown and described in the patent issued to John C. Miller, on the 4th day of February, 1908, and numbered 878,225; and as the particular construction of each thereof forms no part of the present invention, further description of these parts will be omitted, as they are fully shown and described in the aforesaid patent, to which reference may be made.

Of the distributing and holding apparatus D, 2 indicates a base of any suitable construction, but preferably formed from metal. The base 2 may comprise an annular member 2^a and a plate $2^{a'}$. The member 2^a

is preferably provided with flanges 2^b, 2^c, around its opposite peripheral edges, the flange 2^b serving as a bearing surface on which the base 2 rests, and the flange 2^c serving as a support for the plate $2^{a'}$, the latter being secured to the flange 2^c in a well known manner. At 2^d, the plate $2^{a'}$ is formed with an opening to receive a liquid receiving vessel 3, which will be later described.

2^e indicates one or more cross members, preferably integrally connected at their opposite ends to the wall of the annular member 2^a. The cross bars 2^e carry a vertically arranged axial member 2^f, having a bearing to receive a shaft 4^a of a valve mechanism 4, which will be later described. At its lower end the shaft 4^a has fixed to it a worm gear $4^{x'}$.

2^g indicates a plurality of lugs depending from one of the cross bars 2^e. These lugs are bored to receive and support the inner end of a driving shaft 5. The opposite end of the shaft 5 is supported in a bearing 2^{ax} provided on the annular member 2^a.

5^a indicates a worm fixed to the shaft 5 and meshing with the gear $4^{x'}$ to drive it in a well known manner.

5^b, 5^c, indicate fast and loose pulleys carried by the outer end of the shaft 5 and adapted to receive a belt (not shown), whereby the driving shaft may be caused to rotate.

It will be understood from the drawings that the worm gear $4^{x'}$ and worm 5^a serve as reduction gearing, whereby the speed of the shaft 4^a, as compared with that of the driving shaft 5, is relatively slow.

The vessel 3 is formed with an axial opening 3^a having an upwardly extending flange 3^b which engages with the bearing member 2^f. The wall of the bearing member 2^f and the flange 3^b are preferably inclined upwardly and inwardly so that the bearing member 2^f may serve as a support for the vessel 3.

As will be understood from the drawings, the flange 3^b coöperates with the outer wall of the vessel 3 to form an annular liquid receiving receptacle surrounding the shaft 4^a.

6 indicates a conduit connected with a suitable opening formed in the bottom of the receptacle 3 and adapted to conduct the liquid from the receptacle to the point of delivery indicated at 12.

7 indicates a series of brackets mounted on the plate $2^{a'}$. The brackets are preferably inclined upwardly and extend radially of the axis of the shaft 4^a and support at their outer or free ends an annular table or support 8. As will be understood from the drawings, each bracket 7 is provided at its opposite ends with suitable flanges 7^a which permit the bracket to be rigidly secured in a well known manner to the plate $2^{a'}$ and table 8. As the flanges 7^a at the opposite end of each bracket are inclined relative thereto, but arranged parallel to each other, it will be seen that they serve to support the adjacent bracket in an inclined position and the table 8 in a horizontal position. This arrangement provides for the use of a table 8 of relatively large size. The brackets 7 may be T-shaped in cross section for the purpose of imparting rigidity to them.

The table or annular support 8 preferably comprises a series of arc sections 8′ arranged end to end and each flanged along its opposite side edges to strengthen it.

8^a indicates a plurality of openings formed in the table 8 and adapted to receive a series of independent or separate holding vessels 9. The openings 8^a are preferably uniformly spaced from each other and disposed midway between the brackets 7.

The valve mechanism 4 includes a valve member $4^{a'}$ and a valve seat element 10 which coöperate to control the flow of the liquid to and from the vessels 9. The valve member $4^{a'}$ preferably comprises a circular plate $4^{a''}$ provided with a depending rim or wall 4^x, which may be of conical shape, and a socket member 4′ to receive the upper end of the shaft 4^a. At one side and between the plate $4^{a''}$ and rim 4^x, the walls of the valve member $4^{a'}$ are thickened and formed with two ducts 4^b, 4^c. The duct 4^b serves as the conduit for the liquid as it flows to the vessels 9, its inner end opening upwardly preferably centrally of the valve member $4^{a'}$ and its opposite or outer end leading through the rim 4^x. The duct 4^c conducts the liquid through the valve member when a vessel 9 is emptying, its receiving end or port leading through the rim 4^x, and preferably adjacent to the port of the duct 4^b, and its opposite or discharge port opening downwardly at one side of the shaft 4^a, as shown in the drawings. The valve seat element 10 preferably comprises a ring member formed with a series of openings 10^a, (preferably uniformly spaced thereabout and corresponding in number to the number of holders or vessels 9), with which the ports of the ducts 4^b, 4^c, in the member $4^{a'}$ successively register as said valve member rotates. The inner wall of the ring member is shaped to snugly fit the outer conical wall of the member $4^{a'}$ to prevent leakage of the liquid.

10^b indicates a series of pipe sections, preferably formed integral with the ring member 10 and extending radially therefrom, there being a pipe section for each opening 10^a. The function of the pipe sections will be later described.

The vessels 9 may each comprise inner and outer walls to form a space between them. This space may be filled with cork, as shown at 9^a, or some other non-conductor of heat to

provide a suitable insulating jacket. Each of said vessels is preferably provided with a detachable cover 9^b, and a duct 9^c in its bottom, a suitable pipe section 9^d being provided for said duct and adapted for conveying the liquid to and from the vessel as will be later described.

9^e indicates a flanged ring secured to the outer wall of each vessel 9. As will be understood from the drawings, when a vessel 9 is inserted in an opening 8^a, the flange of the ring 9^e will engage with the upper surface of the table 8 and serve to maintain the vessel 9 thereon. This construction serves to support the vessels in upright position and to permit their removal at will for cleaning or other purposes.

11 indicates a receiving chamber preferably arranged substantially axially of the holders 9 and slightly elevated relative thereto to permit the flow of the liquid by gravity to the holders. The chamber 11 is provided with a suitable cover 11′ through which extends the discharge end of a pipe a^{10}, which conducts the liquid in a substantially continuous and uniform manner from the liquid trough or discharge duct of the heater A to the chamber of the distributing and holding apparatus D. The chamber 11 is preferably formed of two parts or members, an outer member 11^a, and an inner member 11^b, between which is provided a suitable insulating jacket 11^c. The jacket 11^c serves to maintain the liquid in its heated condition. The chamber 11 is provided with an axially arranged outlet pipe section 11^d, which is detachably connected to the upper end of a conduit 11^e, by a coupling $11^{d'}$. The lower end of the conduit 11^e is detachably connected in a well known manner to a coupling 11^f which in turn is screw-threaded in the inner end or opening for the duct 4^b. The pipe or conduit 11^e and its connections with the chamber 11 and valve member $4^{a'}$ serve as suitable means for rigidly supporting the chamber 11 upon the latter and at a suitable height to effect the flow of the liquid through the apparatus.

The socket member 4′ of the valve member $4^{a'}$ may be secured to the shaft 4^a in any well known manner; such connection preferably comprises a set screw 4^2, whereby the rotary motion of the shaft 4^a will be imparted to the valve member $4^{a'}$, conduit 11^e and chamber 11.

It will be noted that the connection between the discharge end of the pipe a^{10} and the cover 11′ for the chamber 11 is of a character which permits the chamber and cover to rotate without affecting the discharge of the liquid from the pipe a^{10}. Preferably, the pipe a^{10} extends through an axial opening in the cover 11′ and the latter may be provided with a bearing which loosely receives the said pipe.

11^x indicates a depending discharge pipe connected with the discharge end of the duct 4^c. The pipe 11^x is open at its lower end and discharges the liquid into the receptacle 3. A cut off cock or valve 6^a may be provided for the pipe 6. 12^a indicates a discharge pipe leading from the receiver 12 and arranged to convey the liquid in a substantially continuous and uniform manner to the receiving tank b^5 for the preliminary cooler B. A valve 12′ may be provided for controlling the flow of liquid from the receiver to the tank b^5.

The receiver 12 is preferably mounted on a standard 12^b. It may be dispensed with if desired, in which event the liquid will be conducted directly to the tank b^5. The tank b^5 permits the liquid, after treatment in the holding apparatus D, to be inspected.

10^c indicates a pipe, leading from the outer end of each pipe section 10^b to the adjacent vessel 9. As shown in the drawings, the outer end of the pipe 10^c leads to and is connected with the pipe section 9^d of the vessel 9 by a T-member 10^d and coupling 10^e. The opposite or inner end of the pipe 10^c is connected to the outer end of the pipe section 10^b by a coupling 10^f in a well known manner.

The pipes 10^c and their unions with the vessels 9 and pipe sections 10^b serve as rigid liquid tight connections between the valve seat element 10 and vessels 9.

From the foregoing description it will be understood that the ring member 10 and walls of the member $4^{a'}$ constitute a valve mechanism which controls the flow of the liquid through the pipes 10^c, to and from the vessels 9 as the openings of the ports 4^b, 4^c, register with each opening 10^a successively.

During the time that the valve 10^a for an adjacent vessel 9 is in registry with the duct 4^b, as the valve member $4^{a'}$ rotates, liquid will flow therethrough from the chamber 11 to the vessel to fill the same, the speed of the valve member $4^{a'}$ and the size of the openings 4^b, 10^a, being proportioned so that during the registry thereof sufficient liquid will flow through the valve to substantially fill the vessel.

The liquid is held in the vessel 9 during the rotary movement of the valve member $4^{a'}$ until the port of the discharge duct 4^c registers with the valve opening 10^a, whereupon the liquid will flow by gravity from the vessel through the valve opening 10^a and duct 4^c to the discharge pipe 11′. As the ducts 4^b, 4^c, and the valve ports thereof are of substantially the same size, and the valve member $4^{a'}$ rotates uniformly, it will be understood that substantially the same quantity of liquid may flow out of each vessel as flowed into it in the same time interval.

The valve port for the duct 4^c, is preferably arranged in the rim 4^x immediately

forward of the valve port for the duct 4^b, so that the filling operation for each vessel will follow immediately after it has been emptied. This arrangement also provides for the operation of filling and emptying adjacent vessels simultaneously.

As the vessels 9 are connected in series around the valve member $4^{a'}$, provision is made for filling the vessels progressively; likewise, by providing a discharge duct which registers successively with the valve ports for the vessels, provision is made for emptying the vessels in a progressive manner. While the effect of this construction and operation is to produce a more or less variable and intermittent flow of the liquid through the apparatus, the apparatus may be so proportioned to the apparatus to which it delivers as to give completely satisfactory results in connection therewith.

13 indicates a pipe or conduit leading from the pipe a^{10} and connected at its outer end to a delivery pipe 6^b. A valve, preferably of the three-way type may be interposed at the connection of the pipe 13 with the pipe a^{10} to control the flow of the liquid to either the distributing and holding apparatus D or direct to the cooler B, or to cut off the flow of the liquid entirely. The pipes 13 and 6^b may be used to conduct the liquid from the heater A to the cooler B, when it is unnecessary to treat the liquid in the distributing and holding apparatus D. The pipes 6^b and 13 may be formed in sections and connected together by couplings 13^a in a well known manner.

It will be understood that in the system of pasteurizing liquid to which my invention is particularly applicable and in which the liquid is maintained at a pasteurizing temperature for a predetermined period, it is desirable to quickly and uniformly heat the liquid to the predetermined temperature, maintain the liquid at that temperature for a certain definite length of time in order to destroy or render innocuous any germs or bacteria contained in the liquid, and finally to cool the liquid to a normal temperature; and that it is also desirable that these steps shall be carried out in a progressive manner, that is, that there shall be a substantially continuous flow of the liquid to and through the apparatus, heater, and from the heater to the holder. The holder, however, may deliver or discharge the milk in a more or less variable and intermittent manner. These results are all accomplished in the apparatus herein described and illustrated, as will be more fully understood from the following described operations: The liquid is delivered to a receiving tank having a discharge pipe A', which operates as a supply means and from which it flows by gravity to the heater A. In passing through the heater the liquid is suddenly and uniformly raised to the desired temperature and is discharged from the heater by means of the pipe a^{10}, which conveys the liquid to the receiving chamber 11. As the valve member $4^{a'}$ rotates, the duct 4^b thereof registers successively with the valve openings 10^a in the ring valve 10 and permits a predetermined quantity of the liquid to flow by gravity to each of the vessels, each duct registering with a valve port for a given period of time, in the rotary movement of the valve member sufficient, at least, to substantially fill the adjacent vessel. Likewise, the discharge duct 4^c registers successively with the valve openings 10^a of the valve ring 10 and permits the automatic discharge of the vessels successively.

The valve duct 4^c of the valve mechanism 4 may be arranged at any predetermined point angularly of the axis of the valve member $4^{a'}$ relative to the port 4^b, so that the distance of travel of the valve member $4^{a'}$ from the position for filling to the position for emptying may be of proper length in order that the period for holding the liquid may be fixed according to any particular circumstances desired. From this construction and operation it will be seen that the vessels will be automatically filled and emptied at predetermined points, and that the liquid in each vessel will be held therein for a predetermined period, the extent of which depends upon the length and time of travel from the place of filling to the place of discharge. It will be obvious that the speed of the valve member can be changed in various ways to increase or decrease the period between the filling and emptying of the vessels.

I am aware of the fact that it has been heretofore proposed to provide apparatus for treating or pasteurizing milk, cream or other liquids in which the milk was heated to a pasteurizing temperature while flowing continuously, was then maintained at the pasteurizing temperature for a sufficient period of time to destroy or render innocuous the bacteria without cooking the albumin in the milk, and without the discontinuing of the flow of the milk while being heated, and then cooling the milk, as for example as disclosed in Letters Patent of the United States No. 684,319, to Frederick G. Short, and I do not lay any claim broadly to a process of treating milk or other liquids and to apparatus such as set forth and disclosed in the said Short patent. On the contrary, I have sought to provide improved apparatus for the treating of milk or other liquids by first heating it to a pasteurizing temperature, then holding it at that temperature for a predetermined time, and then cooling it.

It will be noted that all walls of the conduits and receptacles in the holding mecha-

nism, with which any liquid to be treated may come into contact, are readily accessible for the purpose of cleaning merely by disassembling adjacent parts or conduits. The importance of this in the sanitary handling of milk, for example, is well known.

In Fig. 8, I have illustrated a modified form of valve mechanism and discharge-way for the liquid. The tank 3 may be supported as above described. The valve member $4^{a'}$ has an extended hub or socket member 4' and the discharge duct 4^{c} leads inwardly from the port which registers with the ports of the valve member 10 to the axis of the hub, where it is extended downwardly as at 4^{d} and then laterally so as to form a discharge port 4^{e} below the top of the vessel 3. A cover 3' may be placed upon the tank 3 to exclude therefrom dirt and foreign substance.

In both constructions, it will be noted that the vessel 3 may, if desired, be removed for cleaning by disassembling the parts of the apparatus immediately above it. In fact, when said parts are removed, the tank 3 may be lifted bodily upwardly and removed from the apparatus for cleaning or replacing.

To those skilled in the art of making apparatus of the class described, many alterations in construction and widely differing embodiments and applications of my invention will suggest themselves, without departing from the spirit and scope thereof. My disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. The combination of a series of vessels, a valve mechanism comprising a valve member mounted to rotate on a vertical axis and formed with inlet and outlet ducts, each having an inner port and an outer port, and a valve seat member formed with a series of horizontally arranged ports with which the outer ports of the ducts register successively, a single pipe connection between each of said ports of said valve seat member and the adjacent vessel through which liquid flows to and from said vessel, means for maintaining uninterrupted communication between the inner port of the inlet duct of said valve member and a source of liquid supply, means for receiving the liquid discharged by the outlet duct of said valve member, and means for rotating said valve member.

2. The combination of a series of closed vessels each formed with a duct in its bottom wall, a valve mechanism comprising a valve member mounted to rotate on a vertical axis and formed with inlet and outlet ducts, each having an inner port and an outer port, and a valve seat member formed with a series of horizontally arranged ports with which the outer ports of the ducts register successively, a single pipe connection between each of the ports of said valve seat member and the duct for the adjacent vessel through which liquid flows to and from said vessel, means for supplying liquid to the inner port of the inlet duct of said valve member, means for receiving the liquid discharged by the inner port of the outlet duct of said valve member, and means for rotating said valve member.

3. The combination of a series of v ssels, a valve mechanism comprising a rotary valve member formed with an inlet duct having an outer port through which liquid flows always in one direction to fill the vessels successively and an outlet duct having an outer port through which the liquid flows always in one direction to empty the vessels successively and a valve seat member formed with a series of ports with which each outer port of the inlet and outlet ducts registers successively, a connection between each of said ports of the valve seat member and the duct for the adjacent vessel through which liquid flows to and from said vessel, means for supplying liquid to the inlet duct of said valve member, means for receiving the liquid discharged by the outlet duct of said valve member, and means for rotating said valve member.

4. The combination of valve mechanism comprising two members, one rotatable relative to the other and formed with two ducts, through each of which liquid always flows in one direction, each having an inlet and a discharge port and the other member being stationary and formed with a plurality of ports, each arranged to register successively with the discharge port of one of said ducts in said rotatable member and the inlet port of the other of said ducts in said rotatable member, a series of stationary liquid holding compartments, a duct leading from each of said ports in said stationary valve member to one of said compartments to conduct liquid thereto and therefrom, means for supplying liquid to the inlet port of one of said ducts, and means for rotating said rotatable member.

5. In mechanism of the class described, the combination of a series of liquid holding vessels, a valve member arranged to rotate on a vertical axis and formed with an inlet duct and an outlet duct, the inlet port of said inlet duct being arranged axially in the top of said valve member and the outlet port of said inlet duct and the inlet port of said outlet duct being arranged in a horizontal plane in the side wall of said valve member, and a valve seat member coöperating with said valve member and formed with a series of horizontally arranged ports with which the outlet and inlet ports in the side wall of said valve member register successively, a liquid supply connection between

each of said ports in the valve seat member and the adjacent vessel, means for supplying liquid to the axially arranged inlet port of the inlet duct, means for receiving the liquid discharged through said outlet duct, and means for rotating said valve member.

6. In mechanism of the class described, the combination of a series of liquid holding vessels each formed with a duct in its bottom through which the vessel is filled and emptied, a rotary valve mechanism comprising a valve seat member and a valve member mounted within said valve seat member to rotate on a vertical axis, the said valve seat member being formed with a series of horizontally arranged ports, one for each vessel, and the valve member being formed with inlet and outlet ducts having ports opening radially in the side wall of said valve member and adapted to register successively with the ports in the said valve seat member, the inlet port of the inlet duct opening in line with the axis of said valve member, a liquid tight connection between each of said ports in said valve seat member and the duct of the adjacent vessel, means for supplying liquid to the inlet port of said inlet duct, and means for rotating said valve member.

7. In mechanism of the class described, the combination of a series of liquid holding vessels, a valve seat member formed with a series of ports arranged in a horizontal plane, a rotary valve member formed with inlet and outlet ducts through each of which liquid always flows in the same direction, each said duct having an inner port, and an outer port which is arranged to register successively with the ports of said valve seat member, a liquid supply connection with the inner port of said inlet duct, a connection between each of said ports in said valve seat member and the bottom of one of said vessels, whereby the liquid rises and falls therein, means for rotating said valve member, and means for receiving the liquid discharged through the outlet duct of said valve member.

8. In mechanism of the class described, the combination of a series of liquid holding vessels, a valve mechanism arranged in a plane below said vessels, the said valve mechanism comprising a valve seat member formed with a series of ports arranged in a horizontal plane and a rotary valve member formed with inlet and outlet ducts, one port of each of said ducts being arranged to register successively with the ports of said valve seat member, a connection with the other port of said inlet duct, whereby liquid flows through said duct always in one direction, a connection between each of said ports in said valve seat member and the bottom of the adjacent vessel, means for rotating said valve member, and means for receiving the liquid discharged through the outlet duct of said valve member.

9. The combination with a support, of a series of vessels mounted thereon, a valve ring member having openings, one for each vessel, liquid-tight connections between each of said openings and the adjacent vessel, a valve rotatably fitting said valve ring member and formed with inlet and outlet ducts having ports each arranged to register successively with the openings in said valve ring member, a supply chamber connected with the inlet duct, means for rotating the valve, and an annular receptacle arranged about the axis of said valve to receive the liquid from the outlet duct of said valve.

10. The combination with a base, of a circular series of vessels surrounding said base and supported thereby, a valve ring member having openings, one for each vessel, liquid-tight connections between each of said openings and the adjacent vessel, a valve rotatably fitting said valve ring member and formed with inlet and outlet ducts having ports each arranged to register successively with the openings in said valve ring member, a supply chamber connected with the inlet duct, means for rotating the valve and supply chamber, and an annular receptacle arranged to receive the liquid from the outlet duct of said valve.

In testimony whereof I affix my signature, in the presence of two witnesses.

LEROY S. PFOUTS.

Witnesses:
HAZEL OWEN,
W. H. MILLER.

It is hereby certified that in Letters Patent No. 1,185,531, granted May 30, 1916, upon the application of Leroy S. Pfouts, of Canton, Ohio, for an improvement in "Pasteurizing Apparatus," errors appear in the printed specification requiring correction as follows: Page 6, line 19, claim 6, strike out the words "opening radially"; same page, line 38, claim 7, after the word "port", first occurrence, strike out the comma; same page, lines 83–85, claim 10, strike out the words "base, of a circular series of vessels surrounding said base and" and insert the words *support, of a series of vessels;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of July, A. D., 1916.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.

Cl. 137—21.