

No. 869,333.

PATENTED OCT. 29, 1907.

D. E. SHAW.  
BOTTLE RINSER AND STERILIZER.

APPLICATION FILED JAN. 12, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

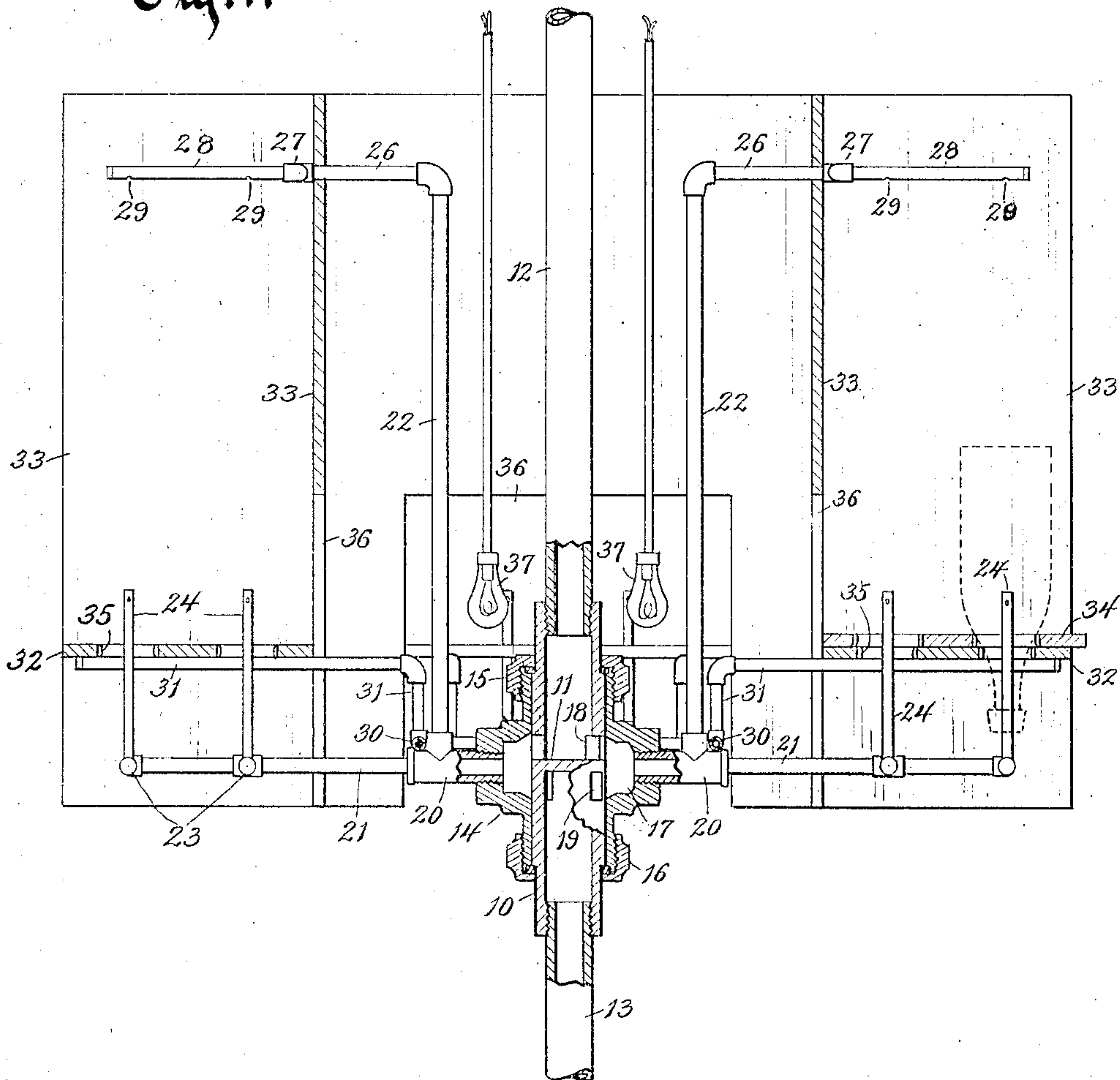
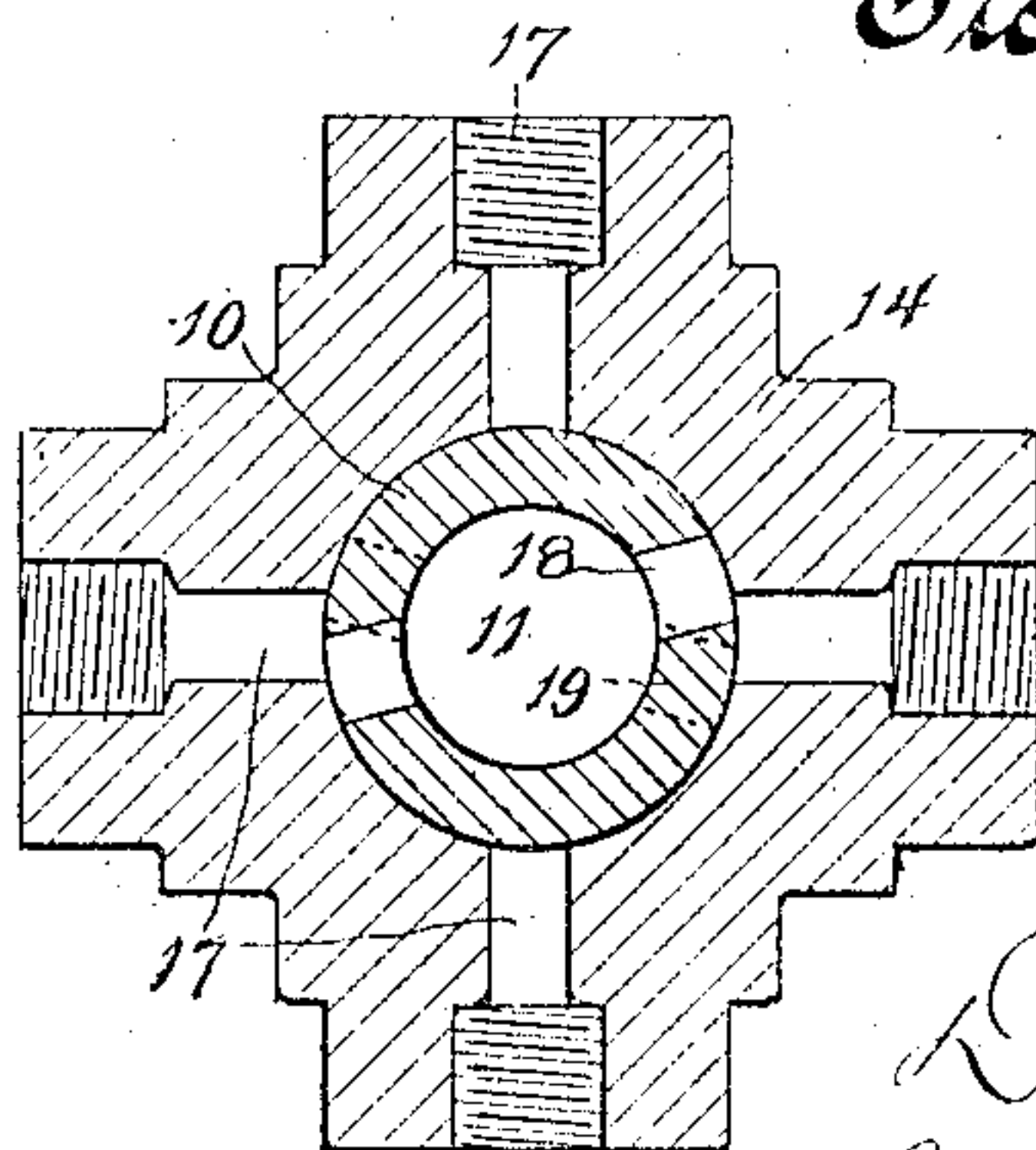


Fig. 2.



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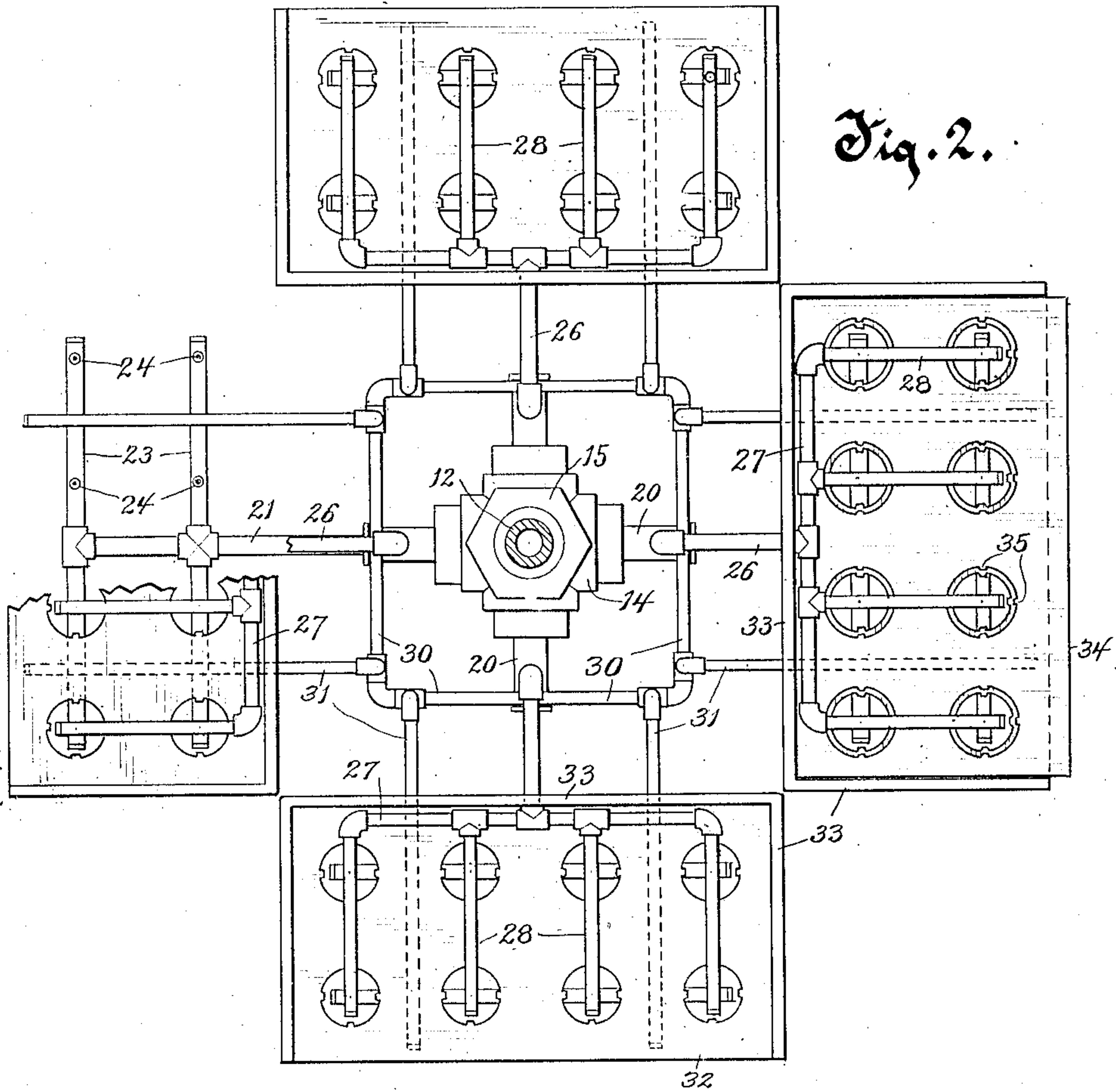
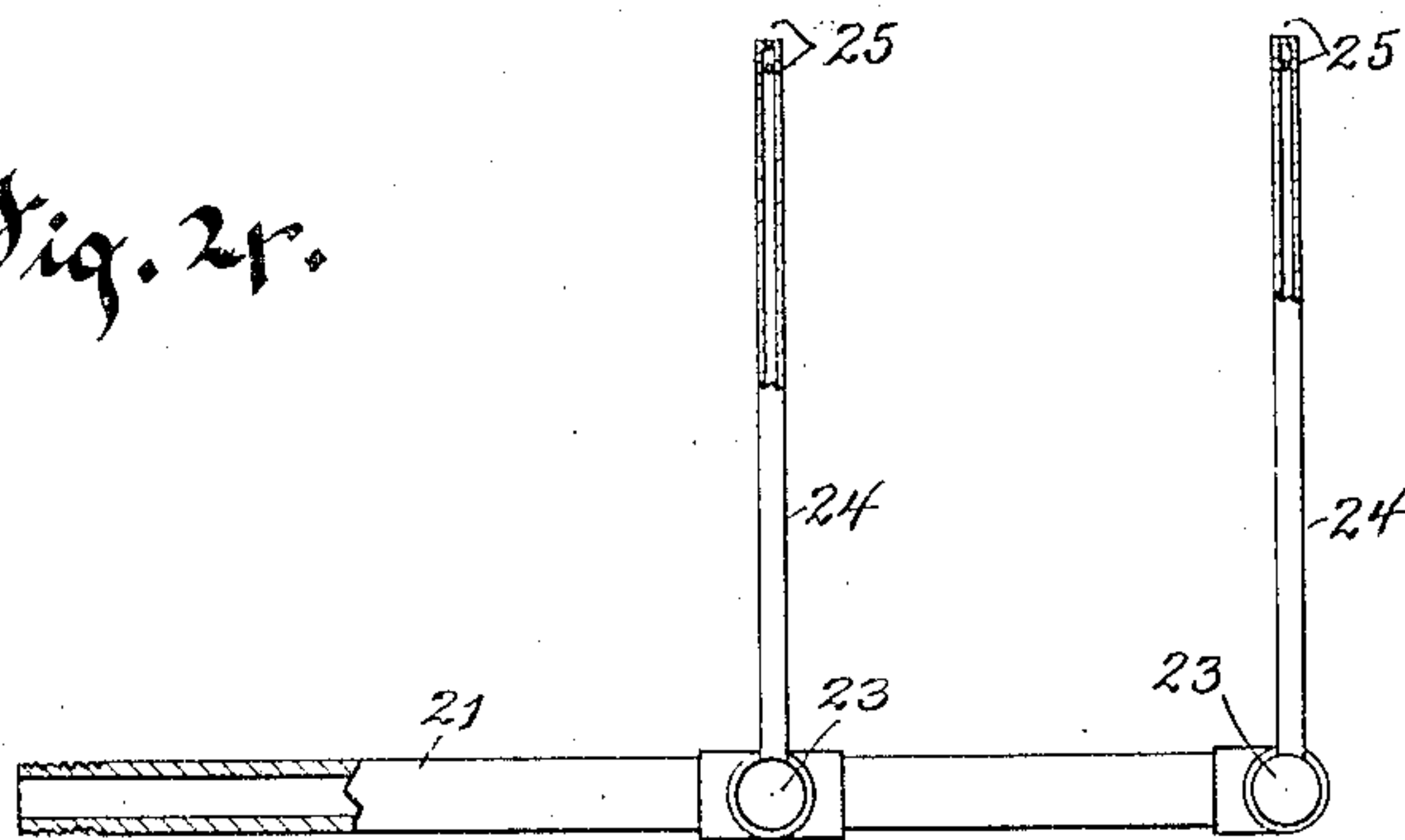


Fig. 2.



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3 SHEETS—SHEET 3.

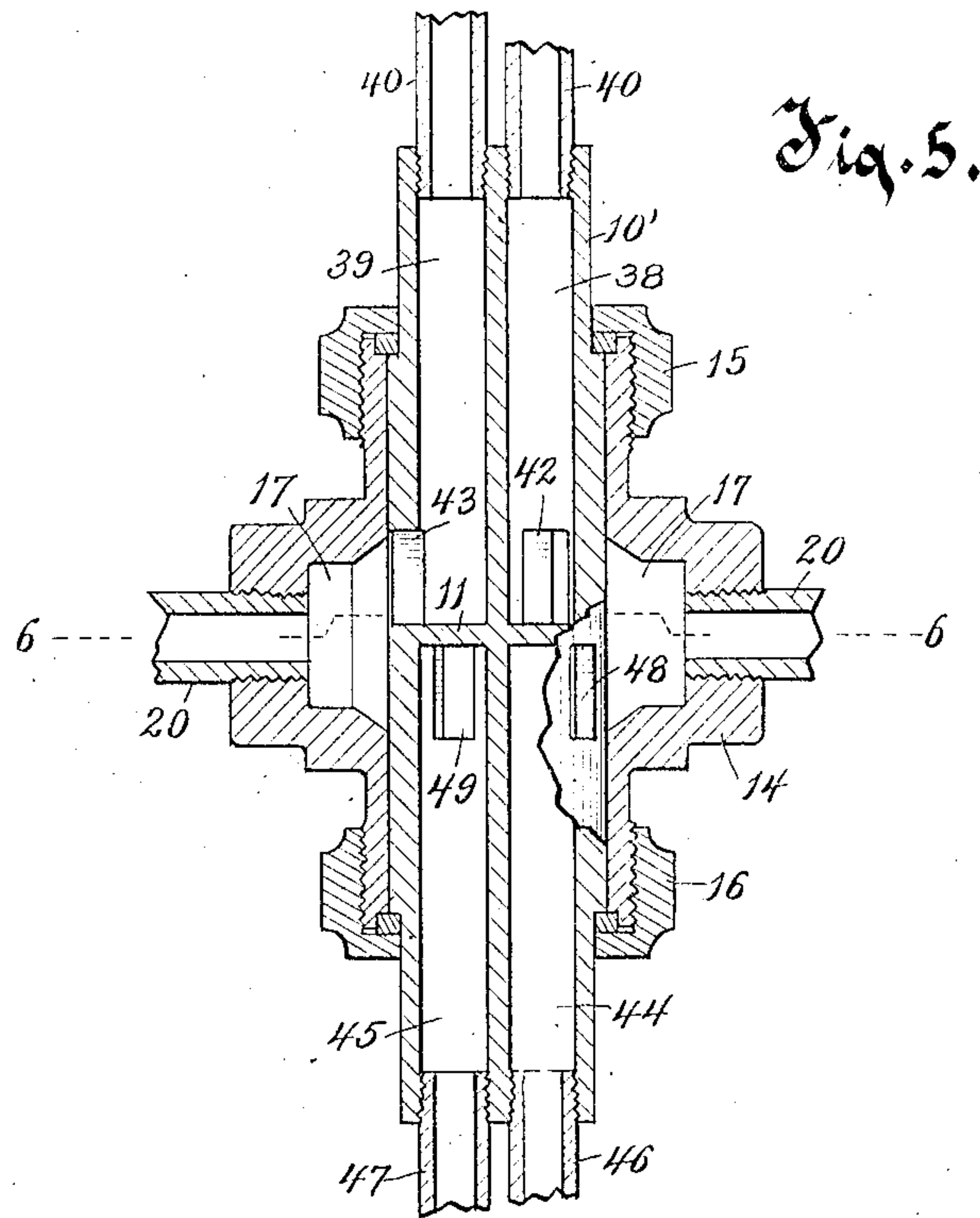
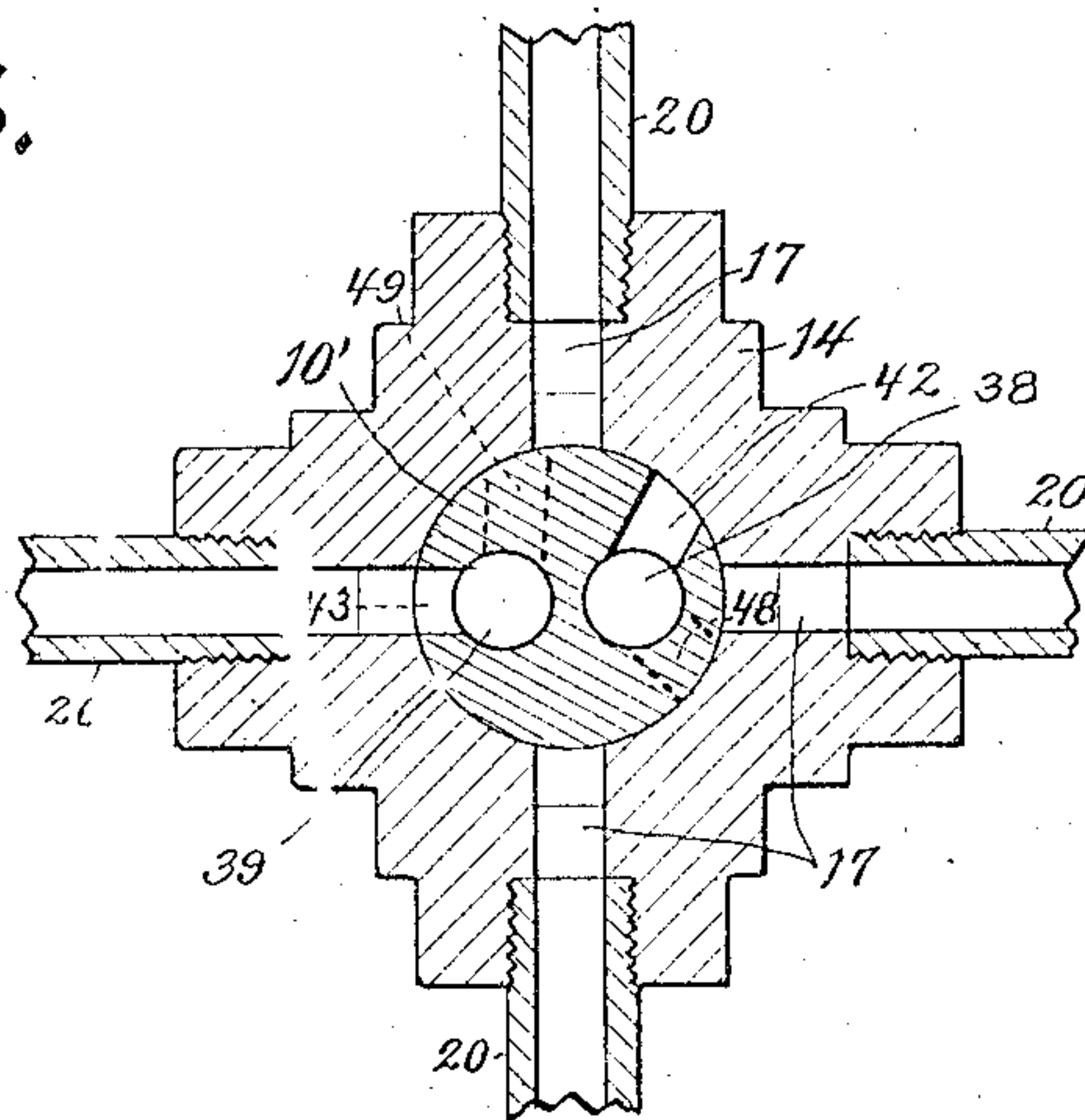


Fig. 5.

Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## BOTTLE RINSER AND STERILIZER.

No. 869,333.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed January 12, 1907. Serial No. 352,020.

*To all whom it may concern:*

Be it known that I, DAVID E. SHAW, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Bottle Rinsers and Sterilizers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide a bottle rinser and sterilizer which will clean bottles inside and outside at the same time by means of jets of water or other fluid, the flow of the rinsing liquid being automatically controlled by the movements of the bottle supports from one position to another.

Another object of this invention is to enable the use of rinsing liquid of different temperatures or of liquids of different kinds to be automatically controlled by the movements of the bottle supports from one position to another to cause their successive operation.

Another object of this invention is to provide a bottle rinser which will permit an operator being located on each side thereof to supply the bottles thereto, the bottles which are placed in position by one operator being automatically subjected to the rinsing and sterilizing operation while being moved from that operator to the other.

With the above and other objects in view the invention consists in the bottle rinser and sterilizer herein claimed, its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the several views:—Figure 1 is a central sectional elevation of a bottle rinser constructed in accordance with this invention; Fig. 2 is a plan view thereof with parts broken away for clearness of illustration; Fig. 3 is a transverse sectional view of the automatic valve; Fig. 4 is an elevation partly in section of a frame of internal nozzle tubes; Fig. 5 is a vertical sectional view of a modified form of automatic valve for using a greater number of cleansing or rinsing liquids; and, Fig. 6 is a transverse sectional view thereof taken on the plane of line 6—6 of Fig. 5.

In these drawings 10 represents a vertical tubular stationary valve member which is provided with a transverse partition 11 dividing it into an upper and a lower chamber, the former being connected to a liquid supply pipe 12 and the latter being connected with a liquid supply pipe 13. The liquids of the two supply pipes are preferably water at different temperatures, though they may be of different cleansing or rinsing liquids.

A valve casing 14 surrounds the valve member 10 and fits thereon as a sleeve, with packing glands 15 and 16 at its ends fitting against shoulders of the valve member to prevent the leakage of liquid from between the valve member 10 and the casing 14. The valve casing 14 has

a series of ports or openings 17, there being four of them as here shown, which extend above and below the partition 11 so as to communicate with openings 18 in the upper chamber of the valve member and with openings 19 in the lower chamber thereof, these openings being so located with relation to each other that they alternately communicate with the respective ports 17 during the rotation of the valve casing 14 on the valve member.

T-couplings 20 connect with each of the ports 17 of the valve casing to establish communication with horizontal feed pipes 21 and vertical feed pipes 22 leading therefrom, each of the former having two sets of horizontal oppositely extending nozzle branches 23 with upwardly extending nozzle tubes 24 having perforations 25 at their upper ends for spraying the interior of the bottles. Each of the vertical feed pipes 22 is provided with an upper feed pipe 26 considerably above the lower feed pipe 21 and provided with a pair of oppositely extending nozzle branches 27 having a series of parallel horizontal nozzle tubes 28 with spray openings 29 in the bottom thereof to spray liquid onto the upturned bottoms of the bottles when they are mounted on the nozzle tubes 24.

A rectangular frame 30 surrounds the automatic valve, being supported by the T-couplings 20, and carries arms 31 from each of its four sides. A base 32 is mounted on the supporting arms 31 of each section of the machine and has a protecting frame 33 formed thereon with side and back walls extending from above the upper spray nozzles to below the lower feed pipes 21 and preventing the splashing of water or other rinsing liquid outside of the respective sections.

A removable tray 34 is adapted to be placed onto the base 32 and has a series of openings registering with smaller corresponding openings in the base through which the necks of bottles may be passed as they are lowered onto the nozzle tubes 24 which pass through these openings, the openings being provided with inwardly extending lugs 35 to space the bottles from the walls of the openings and permit the liquid passing therebetween.

The protecting frames 33 have openings 36 in their back members and electric lights 37 or other illuminants are located within the device and behind these openings so that the bottles may be inspected as they are placed on the nozzle tubes.

In operation it is intended that there should be operators on opposite sides of the machine whose duty it is to wash the bottles and place them in position on the rinsing machine, and then move the bottle holders of the rinsing machine around so that the bottles placed in position by one operator may be removed by the other operator, they in the meantime having been subjected to the influence of the different cleansing or rinsing liquids supplied by pipes 12 and 13.

The openings 18 and 19 are so positioned that from



their closed position in which the operators complete the work of placing the bottles on the bottle holders of opposite sections, a part-turn of the device will cause one pair of openings to register with the ports  
5 leading to said sections and thereby deliver the first liquid to the bottles, and a further shorter part-turn will cause the other openings to register with the ports leading to said sections and thereby deliver the second liquid to the bottles.

10 The position of the bottle carriers when one section is in place to receive the first water presents the succeeding section to the first position before the operator, where he removes the tray 34 of rinsed bottles which were placed in position by the other operator and sub-  
15 stitutes another tray 34 and begins to place newly washed bottles upon the valve tubes 24. The position of the device when the section is receiving the second water presents the succeeding section to the second position in front of the operator, where he completes  
20 the placing of the washed bottles on the nozzle tubes. Thus in moving the section in front of him from the first to the second position, the operator at the same time moves the preceding section from the position for the first water to the position for the second water,  
25 and in moving this section to the position for the first water he brings the succeeding section to the first position in front of him. When the sections of the device are moved to positions intermediate of the second position in front of the operator and the position for the  
30 first water the flow of liquid is stopped entirely, while in positions intermediate of the first water and the second water positions the liquid may flow through both of the openings 18 and 19 and be delivered to the bottles as a mixture. Thus, if warm water and hot water are  
35 respectively delivered by pipes 13 and 12, a mixture of these two at an intermediate temperature will be drawn when both openings register with the ports 17, permitting the gradual heating of the bottles so as to stand the action of water at a high sterilizing tempera-  
40 ture which might cause the bottles to break if it were not for the preliminary gradual heating. In this connection it will be noted, that from the fact that water of the same temperature is injected into the interior of the bottles and is sprayed upon the inverted bottoms  
45 thereof at the same time, there is a tendency to equalize the heating effect on all parts of the bottle and thereby prevent uneven expansion which would cause the bottles to break.

In the modification of the valve construction shown  
50 in Figs. 5 and 6 provision is made for admitting water of four different temperatures or four different liquids differing from each other in any respect. In this construction the valve member 10' is provided with the partition 11 as before, but above it are a pair of cham-  
55 bers 38 and 39 fed by supply pipes 40 and 41 respectively and having openings 42 and 43 respectively adapted to communicate with the ports 17 in the valve casing 14 as before. Likewise below the parti-  
60 tion 11 are a pair of chambers 44 and 45 supplied by feed pipes 46 and 47 respectively and having openings 48 and 49 respectively also communicating with the ports 17 as before, the openings 48, 42, 49 and 43 being arranged around the valve member consecutively in the order mentioned, so as to communicate with the  
65 ports at different positions thereof and admit their re-

spective liquids in the order named. With this construction it is intended that a tray of bottles will pass entirely around the device in order to complete the process, thus enabling a single operator to apply and remove the bottles without the assistance of another  
70 operator on the other side of the machine. It is obvious that, by so arranging the openings for communication with the ports 17, these four waters or as many as desired may be made to flow to the bottles during a half-revolution thereof or during the complete revo-  
75 lution, the principles involved being the same.

While this invention is primarily designed for rinsing and sterilizing bottles which have been previously washed, it may also be employed for cleaning the bot-  
80 tles when a suitable cleansing liquid is admitted through one of the supply pipes. By successively admitting liquid of different temperatures, the bottles may be sterilized perfectly without danger of their being broken by suddenly admitting very hot liquid to cold bottles.

What I claim as my invention is;

1. In a device of the character described, a stationary valve member having a plurality of liquid supply cham-  
90 bers, supply pipes connecting with the supply chambers, a valve casing rotatably mounted on the valve member and having a port communicating with the chambers suc-  
cessively by registering with openings in the valve member leading from said chambers, and a bottle spraying device comprising a coupling connected with the valve casing and communicating with the port, a lower feed pipe lead-  
95 ing from the coupling and provided with branch pipes, upwardly standing nozzle tubes extending from the branch pipes, an upper feed pipe connected with the coupling, branch pipes on the upper feed pipe having nozzle tubes, the lower nozzle tubes being adapted to have bottles placed thereon and to inject liquid into the interior thereof, and  
100 the upper nozzle tubes being adapted to spray the inverted bottoms of the bottles.

2. In a device of the character described, a valved liquid supply chamber, a coupling communicating therewith, a lower feed pipe leading from the coupling and provided  
105 with branch pipes, upwardly standing nozzle tubes extending from the branch pipes, an upper feed pipe connected with the coupling, branch pipes communicating therewith and provided with nozzle tubes, the lower nozzle tubes being adapted to receive bottles thereon and inject  
110 liquid into the interior thereof and the upper nozzle tubes being adapted to spray the inverted bottoms of the bottles.

3. In a device of the character described, a stationary valve member having a plurality of liquid supply cham-  
115 bers, supply pipes connecting with the supply chambers, a valve casing rotatably mounted on the valve member and having a port communicating with the valve chambers successively by registering with openings in the valve member leading from said chambers, and a bottle spray-  
120 ing device comprising a coupling connected with the valve casing and communicating with the port, a lower feed pipe leading from the coupling and provided with branch pipes, upwardly extending nozzle tubes on the branch pipes, an upper feed pipe connected with the coupling and having  
125 branch pipes, nozzle tubes connected therewith, a tray support carried by the valve casing, a tray mounted on the tray support having openings through which the lower nozzle tubes project and adapted to receive the necks of bottles, and lugs in the openings to space the bottles from the walls of the openings and permit liquid to pass there-  
130 between.

4. In a device of the character described, a stationary valve member, a supply pipe connected with the valve member, a valve casing rotatably mounted on the valve member and having a port communicating with an opening  
135 in the valve member, a bottle support having lower and upper nozzle tubes adapted to spray bottles contained on the support, and a protecting casing carried by the bottle support for preventing the splashing of water, there being an opening in the back of the protecting casing through  
140 which the light may shine for inspecting the bottles.



5. In a device of the character described, a stationary valve member, a supply pipe connecting with the valve member, a valve casing rotatably mounted on the valve member and having a number of ports communicating with  
5 an opening in the valve member, couplings connected with the ports of the valve casing, nozzle tubes communicating with the couplings for injecting water into the bottles and for spraying the inverted bottoms thereof, a frame mounted on the couplings, supporting arms carried by the frame,  
10 bases seated on the supporting arms and provided with openings to receive the nozzle tubes that inject water into the bottles, and removable trays resting on the bases and also provided with openings through which the nozzle tubes project, said openings being adapted to receive the  
15 necks of bottles to support the bottles, there being lugs in the openings of the trays for providing a space between the bottles and the walls of the openings.

6. In a device of the character described, a stationary

valve member having a plurality of liquid supply chambers, supply pipes connecting with the supply chambers, a valve 20 casing rotatably mounted on the valve member and having a number of ports communicating with the chambers successively by registering with openings in the valve member leading from said chambers, bottle spraying devices carried by the valve casing and communicating with the ports, 25 each of the valve chambers having a pair of openings diametrically opposite each other whereby the same effect is produced upon the bottle spraying devices in their passage one half way around the valve member that is produced in their passage the other half way around the valve member. 30

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

DAVID E. SHAW.

Witnesses:

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