

S. R. WOOD.
BOTTLE RINSER AND STERILIZER.
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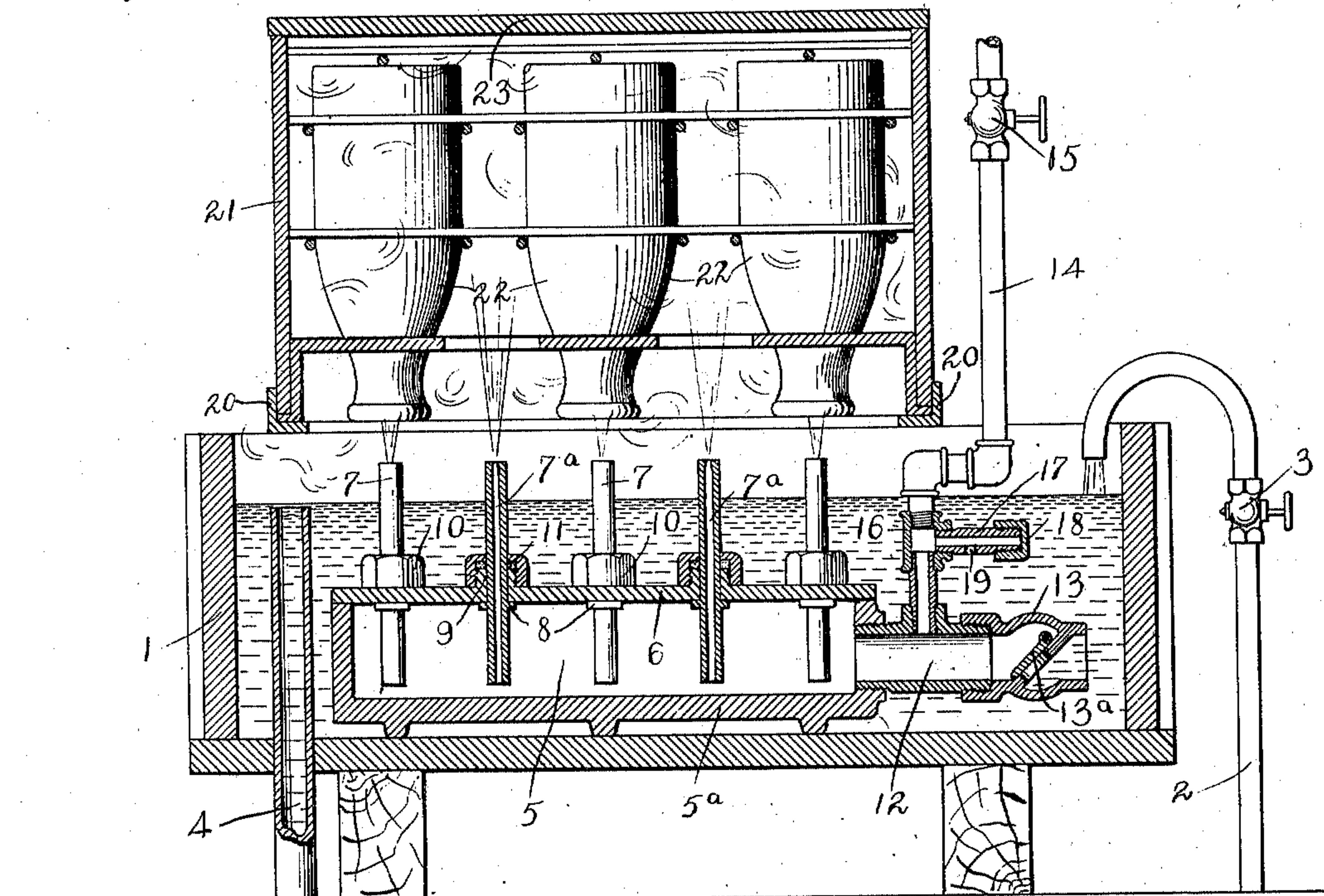


FIG. 1

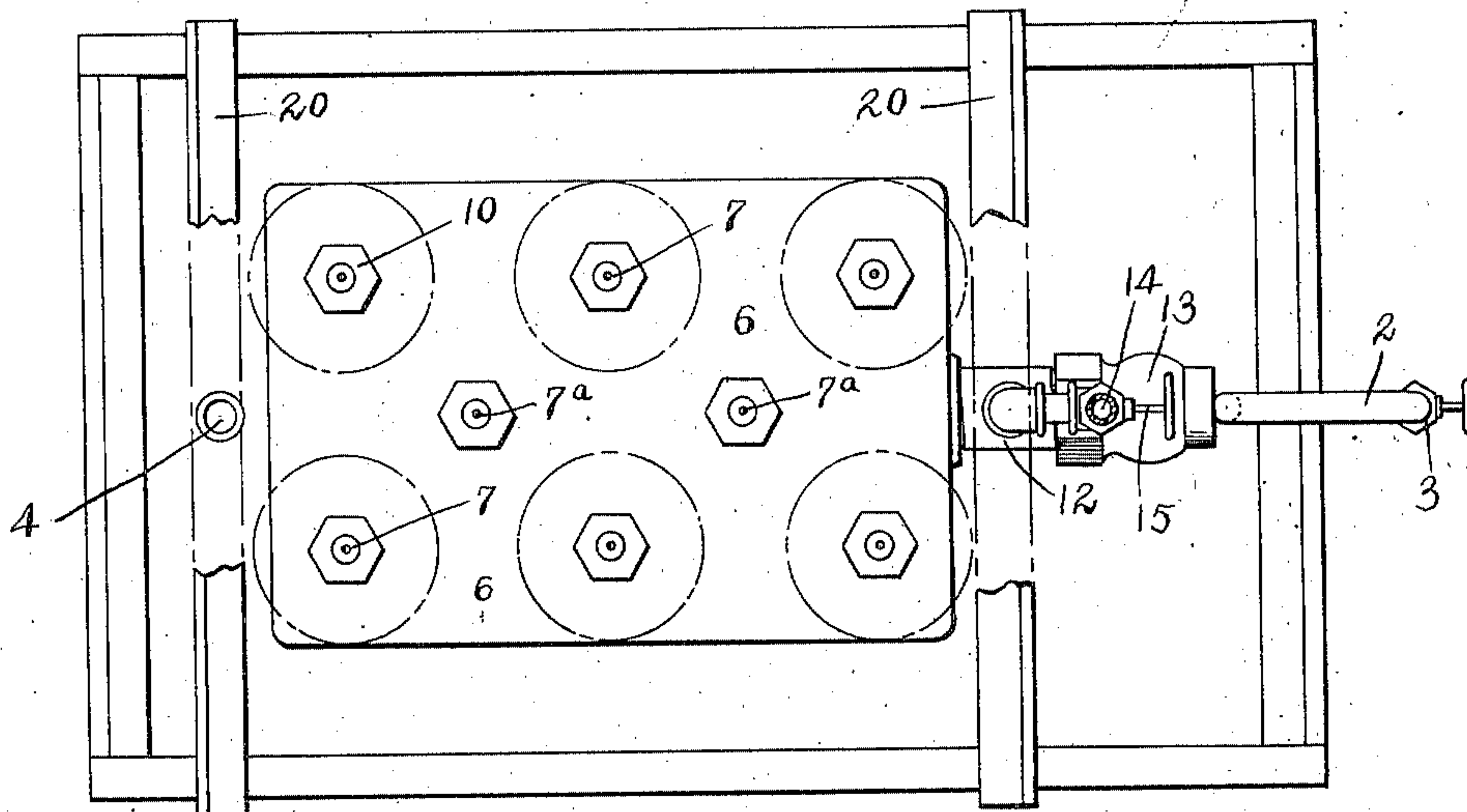


FIG. 2

Witnesses:
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UNITED STATES PATENT OFFICE.

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BOTTLE RINSER AND STERILIZER.

950,885.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL R. WOOD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Bottle Rinsers and Sterilizers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to devices for rinsing and sterilizing bottles and similar articles, and it has for its object the production of a device of that character which shall be economical in construction and simple in operation and which shall efficiently rinse and sterilize the said bottles.

In the accompanying drawings forming a part of this application, Figure 1 is a vertical section taken through my invention on the line 1—1, of Fig. 2; and Fig. 2 is a plan view of the device as shown in Fig. 1, with the rack for the bottles removed and portions of the structure broken away in order to more clearly illustrate the parts beneath the same.

Taking up a fuller description of the invention by use of reference characters, 1 represents a tank or vessel of any desired shape and size into which water may be discharged through a pipe 2, under control of a valve 3 in said pipe, and from which the water may be permitted to escape through an overflow pipe 4 that projects into the tank and terminates some distance above the bottom of the same so as to maintain the water in the tank at the desired level, as shown in Fig. 1.

Within the tank 1, and submerged beneath the water therein, is a hollow body or chamber 5, the same being preferably formed of a casting 5^a that is open on its upper face, said face being adapted to be closed by a plate 6, so as to make said body practically steam tight at its joints. The plate 6 is perforated, and through said perforations extend nozzles 7, said nozzles being projected through the plate from the under side and having annular flanges 8 resting against the under surface of the plate. Surrounding the perforations, the plate is provided on its upper side with screw threaded bosses 9 over which and about the nozzles, I screw caps or nuts 10 so as to compress between the caps and the bosses packing material 11, the same forming a packed joint for the nozzles and thereby preventing the

leaking of steam or water from the body 5. Preferably the nozzles 7 are arranged in longitudinal rows, as shown in Fig. 2, and they extend downwardly from the plate 6 almost to the casting 5^a, for a purpose hereinafter specified.

Into one end of the body 5 I screw a T 12, to one end of which I attach the casting 13 of a check valve 13^a, said valve being adapted to open inwardly so as to permit the water in the tank to automatically open the valve and flow into the body 5. Also connected with the T 12, by means of suitable nipples and elbows, is a steam pipe 14, having a valve 15, the said pipe being connected with a boiler of any suitable construction and location, the passage of the steam from the boiler to the body 5 being controlled by the valve 15. Projecting from a T 16 in the pipe 14 is a vent pipe 17, which is closed at its outer end by a cap 18, said pipe having a vent 19, for a purpose hereinafter set forth.

Resting upon the upper edges of the tank 1 and extending transversely across the tank, are angle iron rails or supports 20 upon which a box 21 may be placed, said box holding the bottles or similar articles 22 which are to be rinsed and sterilized. The boxes may be supported in any other suitable manner, however, that shown being my preferred construction. These boxes are of the usual form being adapted to hold the bottles when inverted and placed upon the supports 20, the bottles being positioned in the box to correspond with the location of the nozzles 7 in the plate 6, so that the mouths of the bottles are brought immediately above the ends of the nozzles, but are spaced therefrom as shown in Fig. 1.

The operation of the device is as follows: Having filled the tank 1 with water up to the open end of the discharge pipe 4 so that the body 5 is submerged therein, and having placed the box 21 upon the supports 20 so as to bring the bottles 22 in proper position with respect to the nozzles 7, the valve 15 is opened so as to permit steam to flow through the pipe 14. As the body 5 is submerged in the water, it will be understood that the check valve 13^a has permitted the water to flow into said body and to practically fill the same, more of the air that may have been entrapped in the said body escaping through the vent 19. The said body being thus practically filled with water, the pressure of the

steam when the valve 15 is open closes the check valve 13^a and forces the water from the body 5 upwardly through the nozzles 7 with great force, the water being injected into the bottles so as to thoroughly rinse the same. The continued entrance of the steam finally brings the level of the water in the body 5 below the lower ends of the nozzles, at which time the jets of water from the nozzles are changed into jets of steam, so that live steam is discharged into the bottles, thus thoroughly sterilizing the same. When the steam has acted upon the bottles for a sufficient length of time, the valve 15 is closed, thus shutting off the steam from the body 5. The water from the pipe 2 is permitted to flow continuously or at least sufficiently to keep the water within the tank clean and cool, so that as soon as the steam is shut off by the valve 15, the temperature within the body 5 is lowered so as to condense the steam therein and permit the water in the tank to again fill the body ready for the next operation.

In Fig. 2 I have shown in dotted lines the locations of the bottles 22 with respect to the nozzles 7. From this it will be seen that there is a nozzle provided for each bottle, and there are also nozzles 7^a located between the rows of bottles so as to rinse and sterilize the outsides of the bottles. As stated, the water and steam are projected from the nozzles with considerable force; and, to confine the same within the box 21, the latter is closed by a suitable cover 23 against which the water and steam from the nozzles 7^a are projected, said board confining the steam within the box so as to sterilize the outer sides of the bottles while the steam from the nozzles 7 sterilizes the insides of the bottles.

The body 5 may be made of any desired shape or capacity. In fact, various changes in the details of my invention may be made without departing from the spirit thereof, and I desire it to be understood that the following claims are not intended to be limited to such details any further than is made necessary by the specific terms therein employed.

I claim:

1. In a combined rinser and sterilizer, means for supporting an article to be rinsed and sterilized, a nozzle, a steam pipe and means for causing the pressure of the steam in said pipe to alternately discharge water and steam through the nozzle and against the said article.

2. In a combined rinser and sterilizer, means for supporting an article to be rinsed and sterilized, a hollow body, a steam pipe connected with said body, a valve in said pipe for controlling the steam, a nozzle connected with said body and extending in the direction of the said article, said nozzle having its end opposite the article below the

upper surface of the interior of the body, and means for admitting a liquid into said body, the construction being such that when the valve is opened the steam will first eject the liquid that is in the body through the nozzle and against the article and will then issue through the nozzle against the article and sterilize it.

3. In a combined rinser and sterilizer, a tank, means for supporting a plurality of bottles above the tank, a series of nozzles one for each bottle within the tank and extending toward the said bottles, a steam pipe, and means for causing the pressure of the steam in said pipe to alternately project water and steam through said nozzles into said bottles.

4. In a combined rinser and sterilizer, a tank, means for supporting a rack of bottles above said tank with the bottles inverted over the tank, a hollow body within the tank, means for maintaining water within the tank submerging the said body therein, nozzles connected with said body and extending toward the mouths of the said bottles, said nozzles having their ends opposite the bottles below the upper surface of the interior of the body, means for permitting the water to flow from the tank into said body, a steam pipe, and a valve in said pipe for permitting steam to flow into said body whereby the water therein is placed under pressure and is ejected through the nozzles into the bottles and whereby, when the liquid is thus ejected, the steam from the said pipe will issue through the nozzles and sterilize the bottles.

5. In a combined rinser and sterilizer, a tank, means for supporting a rack of bottles above said tank with the bottles inverted over the tank, a hollow body within the tank, means for maintaining water within the tank submerging the said body therein, nozzles extending into said body and outwardly toward the mouths of the said bottles, means for permitting the water to flow from the tank into said body, a steam pipe, and a valve in said pipe for permitting steam to flow into said body whereby the water therein is placed under pressure and is ejected through the nozzles into the bottles and whereby, when the liquid is thus ejected, the steam from the said pipe will issue through the nozzles and sterilize the bottles.

6. In a combined rinser and sterilizer, a tank, means for supporting a rack of bottles above said tank with their open ends downwardly over the tank, a hollow body in the bottom of the tank, means for maintaining water in the tank covering the said body, a plurality of nozzles connected with said body and projecting beneath the open ends of the bottles, said nozzles having their ends opposite the bottles below the upper surface of the interior of the body, a check valve

connected with the said body through which water may flow into the body, a steam pipe connected with the said body, a valve in said pipe for permitting the steam to flow into
 5 said body whereby, when the valve is opened, the check valve is automatically closed by the pressure thereagainst and the water within the said body is ejected through the
 10 said nozzles into the bottles and whereby, when the water is thus ejected from the body the steam from the pipe will issue through the nozzles into the bottles and thus sterilize the same.

7. In a combined rinser and sterilizer, a
 15 tank, means for supporting a rack of bottles above said tank with their open ends downwardly over the tank, a hollow body in the bottom of the tank, means for maintaining
 20 water in the tank covering the said body, a plurality of nozzles extending into said body and outwardly beneath the open ends of the bottles, a check valve connected with
 25 the said body through which water may flow into the body, a steam pipe connected with the said body, a valve in said pipe for
 30 permitting the steam to flow into said body whereby, when the valve is opened, the check valve is automatically closed by the pressure thereagainst and the water within
 35 the said body is ejected through the said nozzles into the bottles and whereby, when the water is thus ejected from the body the steam from the pipe will issue through the nozzles into the bottles and thus sterilize the same.

8. In a combined rinser and sterilizer, a
 tank, means for supporting a rack of bottles
 40 above the said tank with their open ends downwardly, a hollow body within the tank, means for maintaining a water level in the tank above the said body, a plurality of
 45 nozzles extending into said body and outwardly above the water level and below the mouths of the bottles, means for permitting
 50 water to enter from the tank into said body, means for permitting the air in the said body to escape as the water enters the latter, a steam pipe connected with said body,
 55 and a valve in said pipe, the construction being such that when the valve is opened and the steam is permitted to pass, the pressure of the steam on the water ejects the latter outwardly through the nozzles into the bottles to rinse the same, and after the water
 60 is thus ejected from the body the steam will flow through the nozzles into the bottles to sterilize the latter.

9. In a combined rinser and sterilizer, a
 60 tank, means for supporting a rack of bottles above the tank with their open ends downwardly, a hollow body within the tank,
 65 means for maintaining a water level in the tank above the said body, a plurality of nozzles extending into said body and outwardly below the open necks of the bottles,

there being one of such nozzles for each bottle, and a second series of nozzles extending into the said body and outwardly opposite the spaces between the bottles, a
 70 check valve connected with the said body through which water may flow to fill the body, means for supplying steam to said body, and a valve within said means, said
 75 valve controlling the steam, the construction being such that, when the steam is permitted to pass the latter valve, the check valve closes and the water within the body is ejected through all of the nozzles to rinse
 80 the bottles both inside and outside and when the water is thus ejected the steam will issue from each of said nozzles to sterilize the bottles.

10. An apparatus for sterilizing bottles comprising a water tank and a closed chamber therein adapted to be substantially filled
 85 with water from said tank, and a valved passage between said parts, tubes having open ends projecting both above and below the top of said chamber, and means to introduce fluid pressure into the top of said
 90 chamber over the water therein.

11. A sterilizing apparatus comprising a tank and a closed chamber therein having a valved opening adapted to admit water from
 95 said tank, a series of tubes fixed in the top of said chamber and projecting above and below the said top and open throughout, and a pipe in position to discharge steam beneath said top into said chamber.

12. The combination of the water tank
 100 and the chamber therein having an inlet for water from said tank and open tubes in series set into the same through the top and extending down to near the bottom thereof; and means to introduce steam to said chamber.

13. In sterilizing apparatus for milk bottles and the like, a closed chamber and means
 110 to introduce water therein, a series of tubes extending both above and below the top thereof and means to introduce steam into said chamber and discharge the same through said tubes, in combination with
 115 means to support bottles in inverted position directly over said tubes.

14. In sterilizing apparatus for milk and other bottles, a chamber and means to introduce water to the chamber, variously disposed tubes projecting through the top of
 120 said chamber into the same and means to supply steam to said chamber whereby the bottles are cleansed both internally and externally.

15. In a bottle washing and sterilizing apparatus, a water tank, a pressure chamber
 125 supported therein, a valve arranged to admit water from the tank to the chamber, a plurality of vertical nozzles secured in the top of said chamber and extending downward into the same adjacent to the bottom
 130

thereof, a portion of said nozzles having a definite arrangement with respect to the arrangement of crated bottles of a definite size and number, said nozzles serving to wash
5 and sterilize the interior of the bottles and other nozzles having a different arrangement and serving to wash and sterilize the exterior of the bottles, and means for admit-

ting steam into the upper portion of said chamber.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.
SAMUEL R. WOOD.

Witnesses:

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BRENNAN B. WEST.