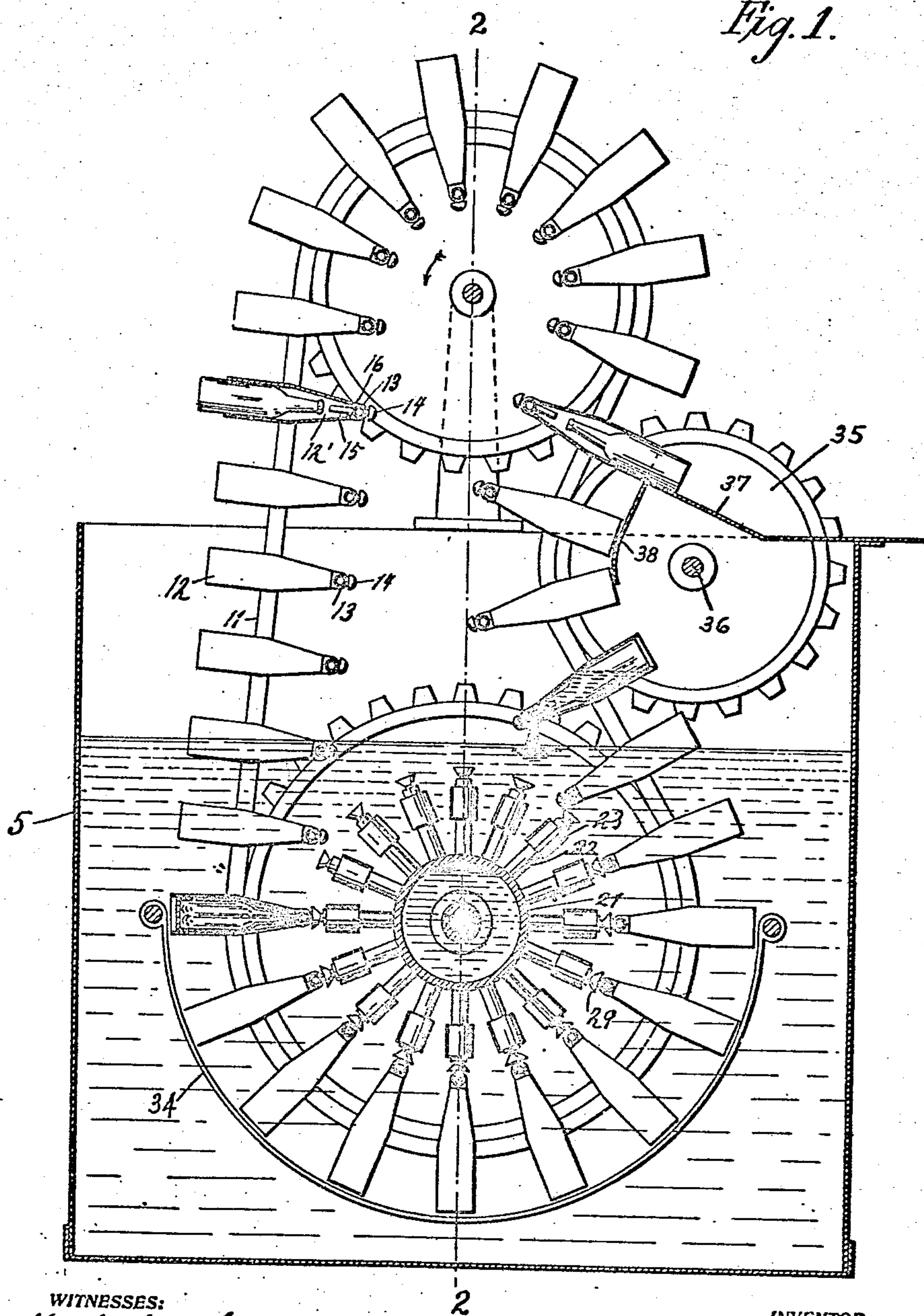


899,017.

G. J. ARNOLD.
BOTTLE SOAKING MACHINE.
APPLICATION FILED FEB. 4, 1907.

Patented Sept. 22, 1908.
3 SHEETS—SHEET 1.

Fig. 1.



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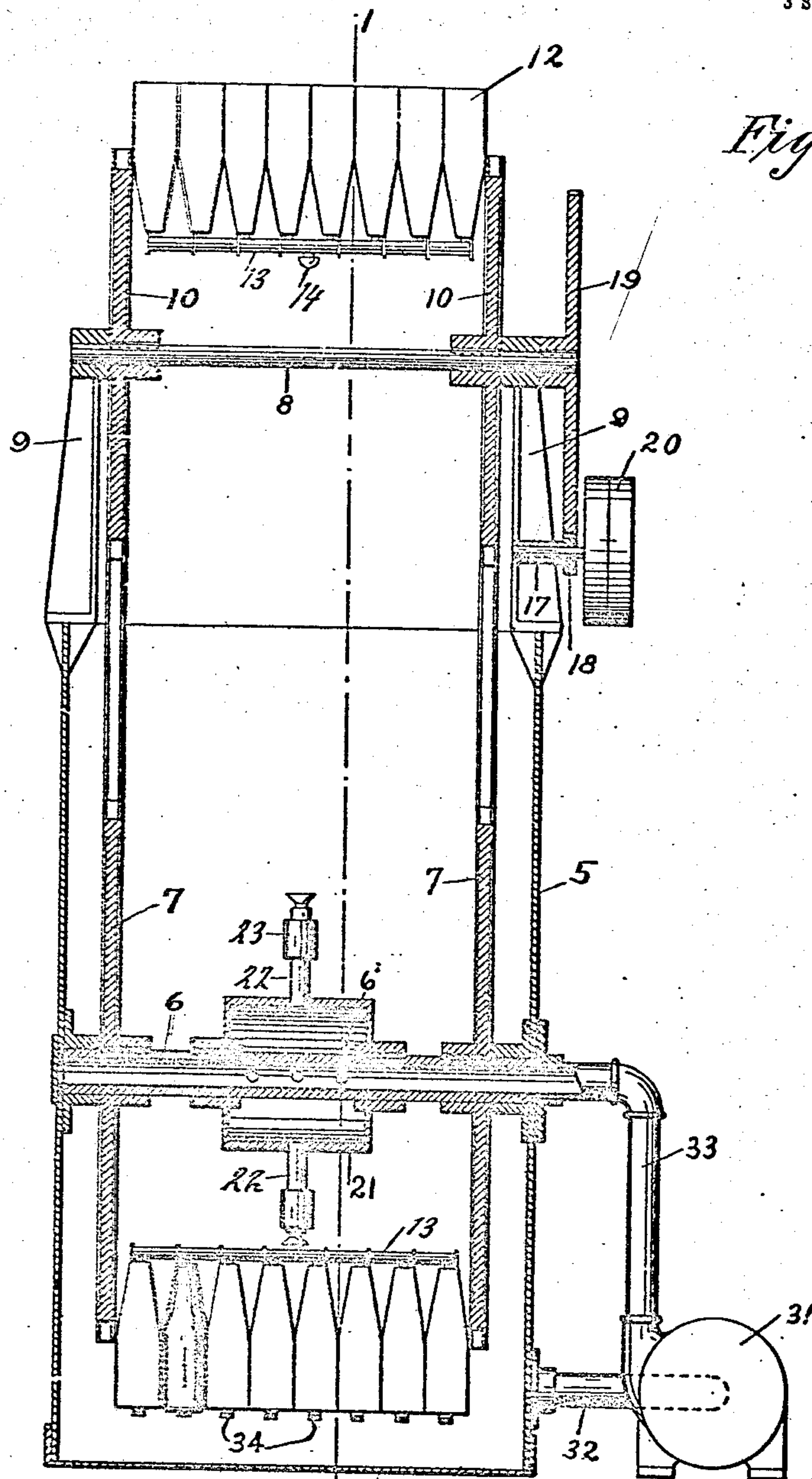


Fig. 2.

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3 SHEETS—SHEET 3.

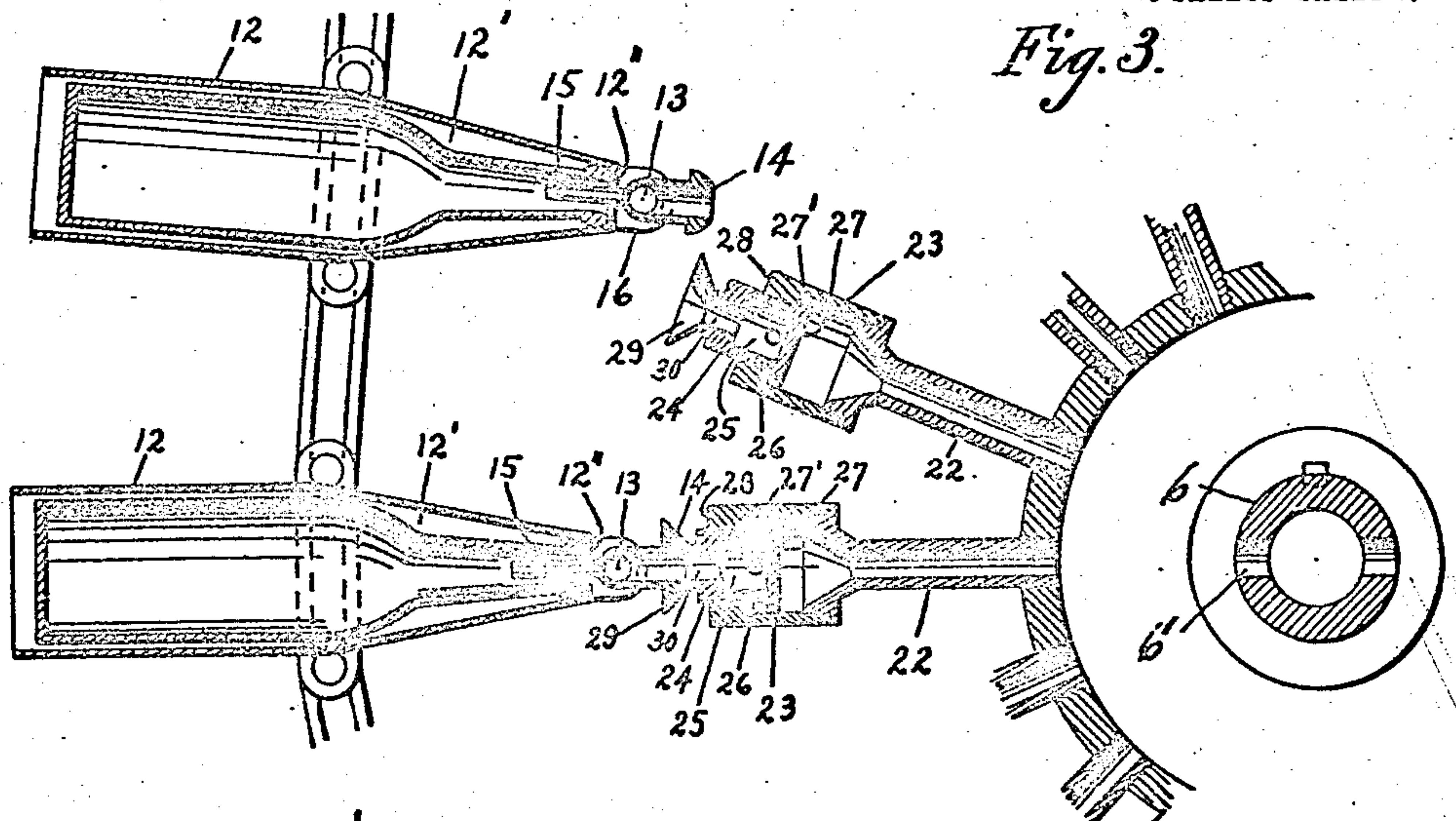


Fig. 3.

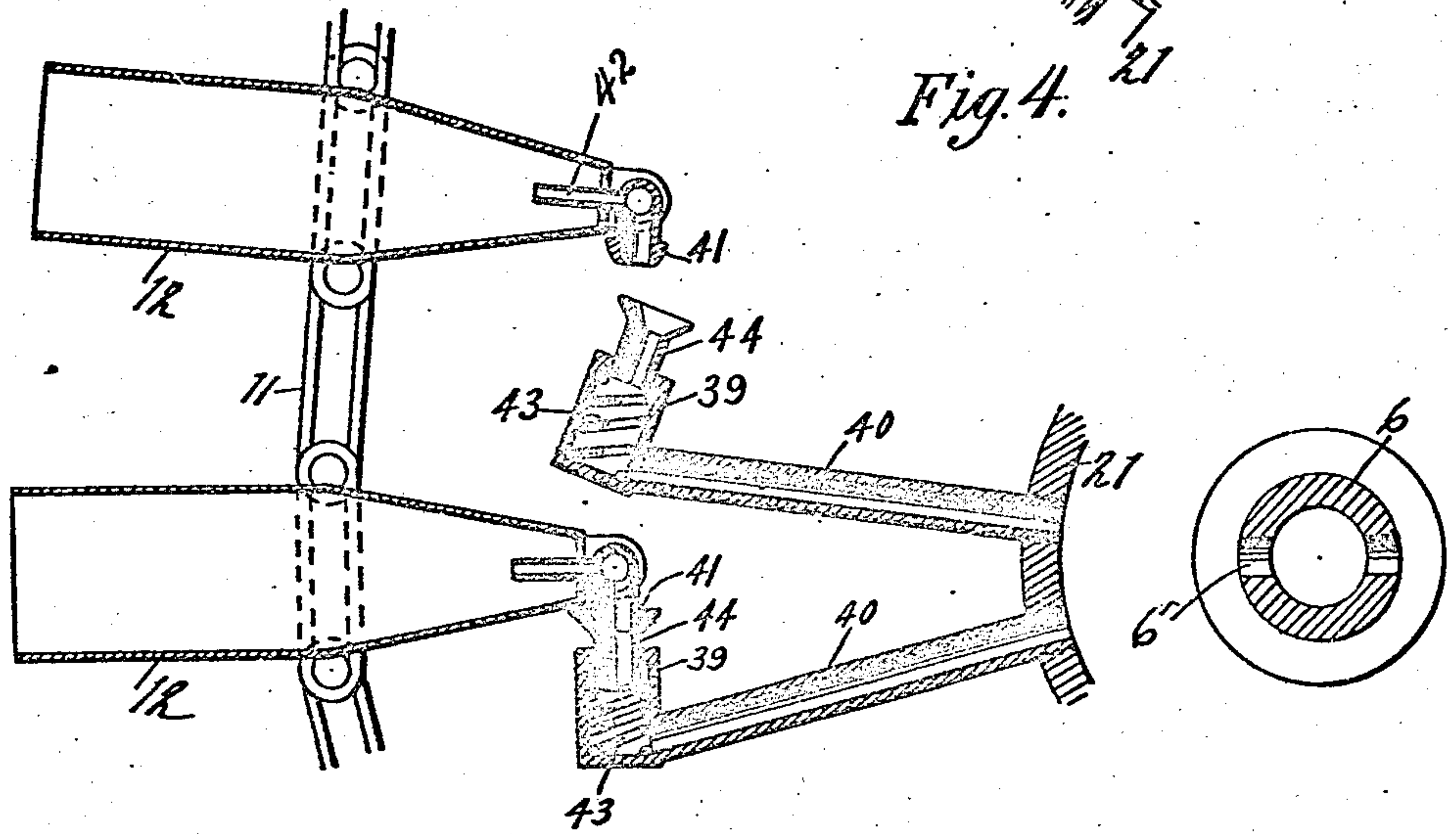


Fig. 4.

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UNITED STATES PATENT OFFICE.

GARFIELD J. ARNOLD, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO SAID ARNOLD AND ONE-HALF TO CHARLES L. BASTIAN, OF CHICAGO, ILLINOIS.

BOTTLE-SOAKING MACHINE.

No. 899,017.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed February 4, 1907. Serial No. 355,605.

To all whom it may concern:

Be it known that I, GARFIELD J. ARNOLD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Bottle-Soaking Machines, of which the following is a specification.

This invention relates to bottle soaking machines of the kind which comprise a bottle carrier and means for filling the bottle with an alkaline solution.

The object of the invention is to introduce a jet into the bottle while the latter is unsealed and full of the alkaline solution to promote an agitation of the solution in the bottle and thereby effectively cleanse the bottle interiorly.

My invention can be adapted to soaking machines of various types and in the accompanying drawings I have shown one embodiment of simple and efficient construction with which the invention is especially adaptable.

In the drawings Figure 1 is a sectional view on the line 1—1 of Fig. 2. Fig. 2 is a sectional view on the line 2—2 of Fig. 1. Fig. 3 is an enlarged detail sectional view. Fig. 4 is a similar view showing a modified construction.

Referring to the drawings 5 is a tank of suitable size and shape containing the alkaline solution. A hollow shaft 6 is journaled in bearings on the tank and this shaft carries sprocket wheels 7. Another shaft 8 is journaled in bearings on brackets 9 on the tank and this shaft carries sprocket wheels 10. A bottle carrier is arranged to travel over said sprocket wheels and this carrier preferably comprises link chains 11 which travel on the sprocket wheels and are connected together by the rows of bottle holders 12. These bottle holders are of substantially tubular form, open at top and bottom, and are fastened together and to the chains in any suitable manner. A distributing pipe 13 is carried by each row of bottle holders, at the inner end thereof, and is provided with an outwardly projecting nipple 14 and with injector tubes 15 which project into the pocket 12' of the bottle holder through the opening 12'' at the inner end thereof. The distributing pipe can be conveniently carried by projections 16 on the bottle holders. A drive shaft 17 is supported in bearings on one of the brackets 9

and it carries a pinion 18 which meshes with a gear 19 on the shaft 8. Power can be communicated to the drive shaft 17 by a belt on the pulley 20, or otherwise, as desired.

The hollow shaft 6 has a plurality of openings 6' which communicate with a drum 21 keyed on said shaft to turn therewith. This drum is provided with a plurality of radial tubes 22, each of which carries a valve casing 23 at its outer end containing a valve member (Fig. 3). This valve member comprises a box 24 having a chamber 25 and ports 26. The bottom 27 of the valve member projects beyond the side walls thereof and seats on the shoulder 28 within the casing, being provided with ports 27' which permit the liquid to flow from the tank through the ports 26 into the chamber 25 when the valve member is unseated. A bell 29 is carried by the valve member outside of the casing and it communicates by a passage 30 with the chamber 25.

A pump 31 takes solution or liquid through a pipe 32 from the lower part of the tank 5 and discharges this solution through a pipe 33 into the hollow shaft 6. Guards 34 are supported within the tank to prevent the bottles from slipping out of the holders as they are carried around the lower sprocket wheels in the tank. Sprocket wheels 35 are carried by a shaft 36 supported by the tank between the upper and lower sprocket wheels 10, 7, to engage the carrier chains and cause the carrier on its upward travel to bend inwardly between said upper and lower sprocket wheels so that as the carrier reaches the upper sprocket wheels the bottle holders will be carried at a downward inclination and permit the bottles to slide out on to a discharge table 37 (Fig. 1). A guard 38 prevents the bottles from slipping out of the holders prematurely.

In practice the tank is filled with liquid, preferably an alkaline solution, to a level which will permit the bottles to fill with the solution before the nipple 14 engages the bell 29. The bottles are inserted in the pockets of the holders above the tank as the carrier travels around the sprocket wheels in the direction indicated in Fig. 1. The injector tubes 15 enter the mouth of the bottles. As a row of bottle holders enters the solution the solution flows into the bottles through the openings 12'' in the holders. The radial tubes 22 on the drum are disposed relatively

to the nipple 14 on the holders so that the nipple on each row of bottle holders will enter a bell as the row of bottle holders and the tube 22 reach horizontal position (Fig. 3).

5 The liquid in the drum 21 is under pressure and this pressure is sufficient to force the valve member outward and seat the flange 27 against the shoulder 28, thus closing the valve ports 26. The nipple engages the bell
10 first while these parts are in a relatively angular position, but as they reach horizontal position, in axial alinement, the nipple pushes the valve member inwardly in the casing and unseats the flange 27 from the
15 shoulder 28 so that the liquid in the drum can be forced out through the tube 22, ports 27' and 26, the passage 30 and bell 29 into the nipple 14 whence it flows through the distributing pipe 13 and injector tubes 15 into
20 the bottle. It will be observed, therefore, that the pressure of the liquid is employed to close the liquid valves and the pressure of the bottle holders is employed to open these valves when the bottles are filled with the
25 liquid and submerged in the liquid in the tank. It is at this time that a jet of liquid is squirted into the bottle causing a violent agitation of the liquid therein which effects a thorough cleansing of the bottle. The bot-
30 tles remain open continuously because they are loosely arranged in the holders and the latter have the openings 12" so that the liquid may run out of the bottles as fast as it is squirted therein. As the bottle holders
35 travel around the lower sprocket wheels 7 and leave the horizontal position the nipple is withdrawn from engagement with the bell and the pressure of the liquid immediately closes the valve. The sprocket wheels 35
40 cause the carrier to travel inwardly above the sprocket wheels 7 and this causes the holders to incline downwardly at their inner ends to permit the bottles to empty before they are discharged on to the table 37.

45 In Fig. 4 I have shown another way of arranging the liquid valve and referring thereto the valve casing 39 is supported in an angular position on the tube 40 and the nipple 41 is located at right angles to the injector tube
50 42. A spring 43 is inclosed within the casing to bear upon the valve member 44 and close the valve. It will be readily understood that as the nipple 41 is carried into operative engagement with the valve member 44 the
55 spring is compressed to open the valve and permit the liquid to be forced into the bottle in the manner heretofore explained.

My improved machine is simple in construction and operation and will thoroughly
60 cleanse the bottles. The solution squirted into the bottles is taken from the tank and the bottles empty into the tank so that the same solution may be used as long as desired. Obviously water may be used instead of an
65 alkaline solution.

What I claim and desire to secure by Letters Patent is:

1. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier operating in the tank to fill the bottles with
70 the tank liquid by submersion, and means for injecting jets of liquid into the bottles while they are full of the tank liquid.

2. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier
75 operating in the tank to fill the bottles with the tank liquid by submersion, and means for injecting jets of liquid into the bottles while they are submerged and are full of the tank liquid.

3. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier
80 operating in the tank to fill the bottles with the tank liquid by submersion, said bottles remaining open constantly to permit the free
85 ingress and egress of liquid, and means for injecting jets of liquid into the bottles while they are full of the tank liquid.

4. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier
90 operating in the tank to fill the bottles with the tank liquid by submersion, a distributing pipe for each row of bottles, a revoluble drum in the tank, means for filling the drum with liquid under pressure, radial tubes carried by
95 the drum, and valves on said tubes adapted to be automatically opened after the bottles are submerged in the tank liquid to permit the discharge of liquid from the drum into the distributing pipes and bottles while the
100 latter are full of the tank liquid.

5. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier operating in the tank to fill the bottles with the tank liquid by submersion, a distributing
105 pipe for each row of bottles, injector tubes on said pipe to enter the bottles, a nipple on the pipe, a revoluble drum in the tank, means for filling the drum with liquid under pressure, radial tubes carried by the drum, and valves
110 on said tubes adapted to be automatically operated by engagement of the nipples therewith to permit the discharge of liquid from the drum into the bottles.

6. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier
115 operating in the tank to fill the bottles with the tank liquid by submersion, a distributing pipe for each row of bottles, injector tubes on said pipe to enter the bottles, a nipple on the
120 pipe, a revoluble drum in the tank, means for filling the drum with liquid under pressure, radial tubes carried by the drum, a valve casing at the outer end of each of said tubes, and a valve member normally in
125 closed position in said casing and adapted to be engaged and opened at one of said nipples.

7. In a bottle soaking machine, the combination of a liquid tank, a bottle carrier
operating in the tank to fill the bottles with
130

the tank liquid by submersion, a distributing pipe for each row of bottles, a revoluble hollow shaft supported in the tank and provided with openings therein, a drum mounted on said shaft over said openings, radial tubes carried by the drum, valves on said tubes adapted to be automatically operated to permit the discharge of liquid from the drum

into the distributing pipes and bottles, and a pump communicating with the tank and said hollow shaft for forcing the liquid from the tank into the drum.

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Witnesses:

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