

No. 812,940.

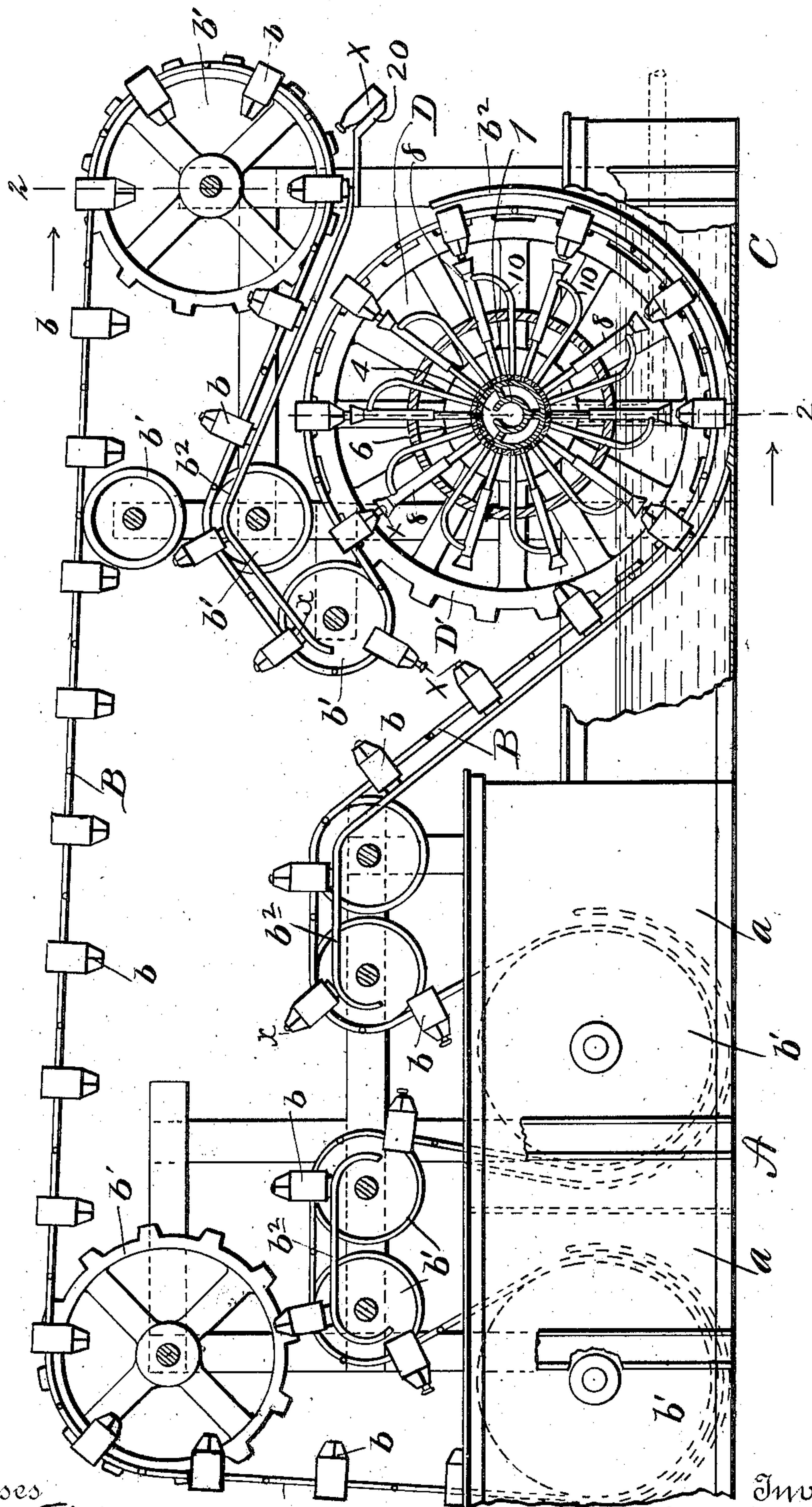
PATENTED FEB. 20, 1906.

C. H. LOEW.  
BOTTLE RINSER.

APPLICATION FILED MAR. 17, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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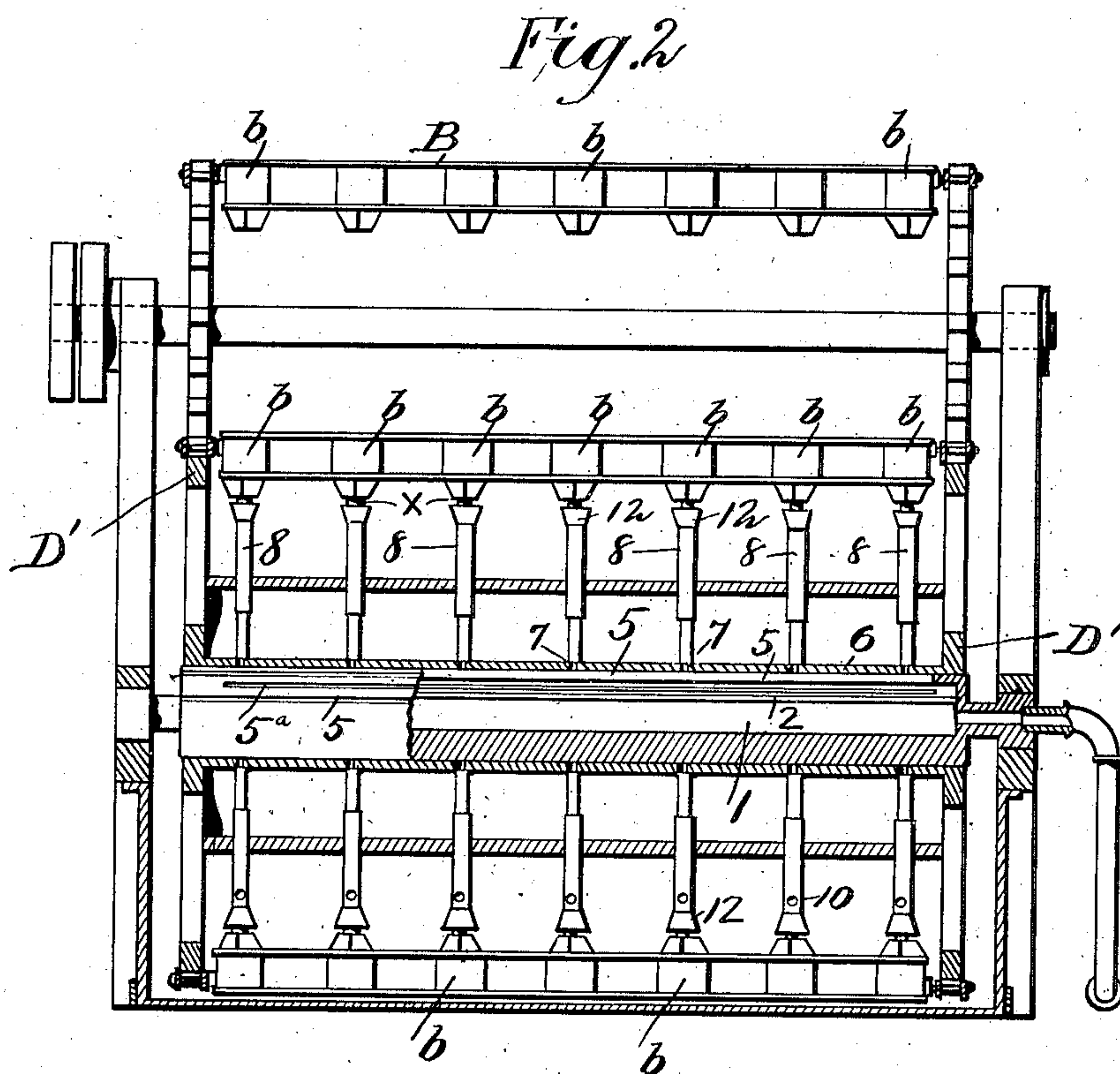
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## BOTTLE RINSER.

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3 SHEETS—SHEET 2.



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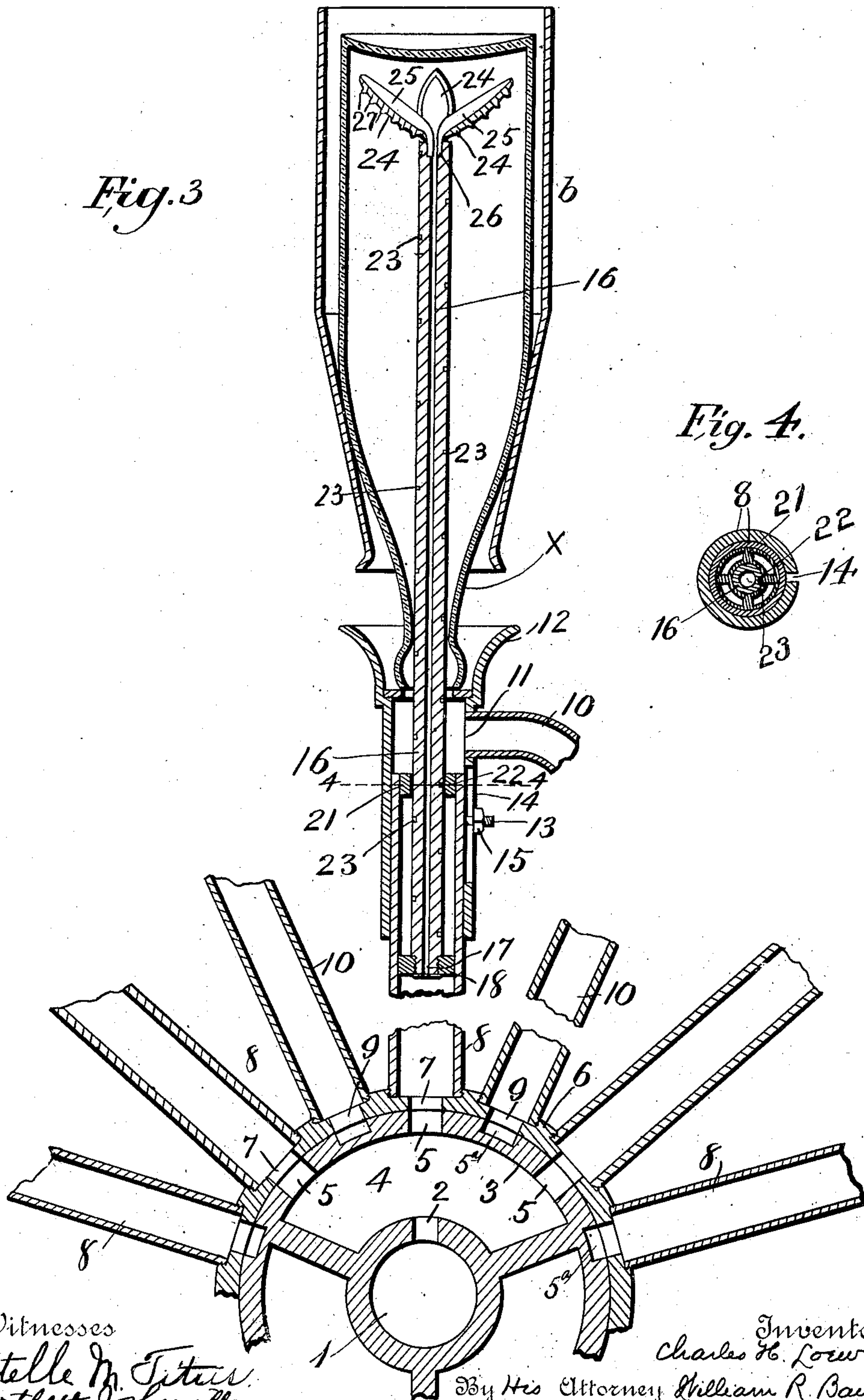
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3 SHEETS—SHEET 3.

*Fig. 3*



*Fig. 4.*

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# UNITED STATES PATENT OFFICE.

CHARLES H. LOEW, OF LAKEWOOD, OHIO.

## BOTTLE-RINSER.

No. 812,940.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed March 17, 1904. Serial No. 198,613.

*To all whom it may concern:*

Be it known that I, CHARLES H. LOEW, a citizen of the United States, and a resident of Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bottle-Rinsers, of which the following is a specification.

This invention has relation generally to means for rinsing bottles after the same have been soaked in a suitable alkaline cleansing fluid, and more particularly to that type of bottle-rinsers wherein fluid-discharge stems are automatically advanced toward and retracted from the bottles.

The present case forms one of a series of copending applications filed by me and wherein I have claimed broadly and specifically, among other things, a bottle-rinser or wheel having fluid-discharge stems which are automatically advanced toward and retracted from the bottle under the control of relative movement of the part which carries said stems and the part from which fluid is supplied to the same or under the control of the pressure of the rinsing fluid, which pressure is or may be itself controlled by said relative movement of said parts. This means, broadly, is more particularly claimed in the earliest filed of my said copending cases, (Serial No. 149,197, filed March 23, 1903,) which shows, describes, and claims a rinsing-wheel having many features in common with that of the present case. In another of my said copending cases (Serial No. 151,457, filed April 7, 1903) there is also shown and described a rinsing-wheel similar in many respects to that of the present application. The particular difference between the structure of the present case and the details shown in my said earlier cases is in the means for retracting the rinsing or fluid-discharge stems, this in the present invention being accomplished by the pressure of the rinsing fluid. In still another of my copending applications (Serial No. 153,058, filed April 17, 1903) I have illustrated and described a rinsing-wheel like that of the present application other than in details of the hub and except for the retraction of the stems by water-pressure and also showing, describing, and claiming a relation of rinsing means and conveyer similar to that shown in the present case. I do not claim in this application, broadly, any feature or combination common to this and either of my before-mentioned earlier-filed cases, as

the claims for such common features and combinations are embraced in the earliest of my said cases upon which they can be read.

A leading object, therefore, of the present invention is to provide a bottle-rinser which is adapted to utilize the pressure of the rinsing fluid as the means for advancing and retracting the discharge-stem, thereby making the apparatus most efficient and reliable in operation and giving it maximum durability.

To this and other ends the invention consists in certain peculiarities in the construction and arrangement of parts and in certain novel combinations of elements substantially as hereinafter described, and particularly pointed out in the subjoined claims.

In the accompanying drawings, illustrating a preferred embodiment of the present invention, Figure 1 is a side elevation of a bottle rinsing and soaking mechanism embodying the present improvements with a part of the rinsing-tank broken away. Fig. 2 is a transverse vertical section on the line 2 2 of Fig. 1. Fig. 3 is a detail sectional view, with parts broken off, of a portion of the rinsing mechanism, showing a bottle-pocket of the conveyer and a bottle in place therein; and Fig. 4 is a section on the line 4 4 of Fig. 3.

The same reference characters designate the same parts in the several views.

The detail construction of rinsing mechanism hereinafter described lends itself very readily for use as a part of a bottle-cleansing mechanism having a soaking-tank and means for carrying the bottles first through said tank and thence automatically to the rinsing means, whereby the several steps of soaking and rinsing (and preferably also brushing) the bottles are successively carried on without intermediate handling of the bottles. For this reason the device of the present invention is shown as a portion of an apparatus which also soaks the bottles; but it will be understood that it is within the scope of the invention to use said rinsing mechanism as a concrete device separate from a soaking-tank and to feed the bottles to it in any suitable way.

A designates a bottle-soaking tank of any suitable construction. The one shown is divided into a plurality of compartments *a* for different alkaline or other cleansing solutions or mediums, and *B* designates a suitable endless conveyer having bottle-pockets *b* of suitable construction and passing over



suitably-arranged wheels  $b'$ , by which it is driven and guided and caused to travel first through the several compartments of the soaking-tank and be turned over each of the same to permit the solution which has filled the bottles to drain back into the tank. The pockets  $b$  are preferably of the well-known construction which are open to permit the bottles to be most readily inserted thereinto at the supply-station and to drop therefrom by gravity at the place of discharge, and therefore guards  $b''$  are placed wherever necessary to prevent premature discharge of the bottles from said pockets. These parts of the apparatus are well known and need no further description. At one end of the soaking-tank there is arranged a tank C for sweet water, through which the soaked bottles are slowly conducted, so as to have their exteriors rinsed thereby. Mounted in said tank B there is a rinsing mechanism, which preferably comprises a rotatably-mounted wheel D, provided with means to receive the bottles, neck downward, and with discharge devices for the rinsing fluid automatically advanced and retracted toward and from the bottles by the pressure of the rinsing fluid at predetermined places in the travel of the wheel. In the construction selected to exemplify the present invention and which is preferred, although the invention is not restricted thereto, the endless carrier B, in common with the construction and arrangement shown, described, and claimed in my copending application, Serial No. 153,058, hereinbefore mentioned, holds the bottles not only while the same are being soaked, but also while they are being rinsed, and in said construction the rinsing-wheel need only be constructed to receive a part of the necks of the bottles. In said construction also the rinsing-wheel is provided with a sprocket-wheel  $D'$ , the teeth of which are engaged by links of the conveyer-chain of the endless carrier B, whereby said rinsing-wheel is rotated. Said rinsing-wheel is mounted on a pipe 1, which is connected with a suitable source of supply of water under pressure and is provided with a discharge-aperture 2, preferably in the form of a slot extending longitudinally thereof. This pipe is preferably encircled by a second pipe 3, arranged therewith to provide a chamber 4 and having in its upper segment suitable provision for the exit of the fluid from said chamber—such, for example, as the series of discharge-apertures 5, which are preferably in the form of slots extending longitudinally thereof. The outer pipe 3 is further provided with peripheral grooves  $5^a$ , which extend longitudinally thereof and alternate with said discharge-apertures 5. I do not in this application broadly claim the hub with a series of discharge-apertures leading from its chamber 4, as the same constitutes one of the claimed features in my copending appli-

cation, Serial No. 215,421, filed July 5, 1904. The rinsing-wheel D is mounted to rotate on said outer pipe 3 and preferably comprises a hub 6, provided with a series of apertures 7, from each of which extends a tube 8, and with a second series of apertures 9, which alternate with said apertures 7 and open into a second series of tubes 10, each of which communicates with a tube 8 through an aperture 11, which is located in the side of said tube 8 at a place suitably above the bottom of the same. At the top of each tube 8 there is provided a cup 12 to receive a bottle-neck. The upper portion of each tube is preferably formed separately from the body portion of the tube and telescopically engaged therewith, whereby the tubes may be extended or contracted to suit different lengths of bottles, and said upper section of each tube is preferably held in adjusted position by a bolt 13, which extends through an elongated slot 14 in said upper section and is provided with a holding-nut 15. It is preferred to attach the tube 10 to said upper (adjustable) section, and said tube is therefore preferably made of flexible material throughout a suitable portion of its length in order not to interfere with the adjustment of said upper section. Within each tube 8 there is mounted a longitudinally-movable hollow fluid-discharge stem 16, having an open end 17 for the admission of the rinsing fluid thereto and provided with a head or piston 18, which reciprocates between the inlets 7 and 11, through which the rinsing fluid has access to said tube 8.

The operation of the device thus far described will readily be understood to be as follows: The attendant stationed at the supply-place (which may be at either end of the apparatus) fills with bottles X to be cleansed the pockets  $b$  as they are successively presented to him, and said bottles are, as above stated, slowly carried through the soaking-tank, from whence they are conducted to the rinsing-wheel and caused to engage the respective cups 12. In the rotation of the rinsing-wheel each tube 8 thereof is successively presented to the discharge-apertures 5 and grooves  $5^a$  of the outer pipe 3, which is similarly true of each tube 10, and said parts are so related that when a tube 8 is in communication with said aperture 5 the tube 10, connected with said tube 8, will be in communication with a groove  $5^a$ , and vice versa. It will thus be seen that in the rotation of the rinsing-wheel the water will first enter the bottom of said tube 8 and a portion thereof will act upon the piston or head 18 of the fluid-discharge stem, thus advancing the stem into the bottle, and a portion of said fluid will also flow through said stem and be discharged into the bottle, thus rinsing the same. At this time each tube 10 is in communication with said grooves  $5^a$  of the pipe 3 and permits the water above the piston or head to drain



back into the tank B or other suitable place therefor. The continued rotation of the rinsing-wheel next carries each tube 8 out of communication with a discharge-aperture 5 and into communication with the next groove 5<sup>a</sup> and also carries each tube 10 into communication with the next discharge-aperture 5, whereby the fluid is discharged through the latter tube under pressure against the piston or head 18, thus forcing the latter rearward and retracting said stem from the bottle. During this movement the water drains back into the tank B through the grooves 5<sup>a</sup> from the lower end of each tube 8. After being thus rinsed the bottles are conveyed to the place of discharge 19, at which place they automatically drop from the conveyer-pockets *b* and are conducted by means of a table 20 to a place provided therefor.

The fluid-discharge stems are preferably moved axially during their longitudinal movements. This is preferably accomplished by a means which comprises a ring 21, (which is preferably in the form of a skeleton or spider in order to not bar access of water to the upper face of the piston or head 18,) having a flange 22, which engages a spiral groove 23 in the stem. It is also preferable to provide the stems with means for brushing the bottles during the advance and retrograde movements of the stems. To this end the tips of the stems are preferably provided with a plurality of flexible brushes 24, preferably made of rubber, which are readily moved toward each other in their insertion into and removal from the bottles and open out to brush the interiors of the bottles during their rotative movement with the stems. Each brush preferably comprises a body having a hollowed or concave surface 25 presented to the discharge-opening 26 at the tip of the stem 16 and provided on its front face with ribs or projections 27, as clearly shown in Fig. 3. I do not herein claim, broadly, a reciprocatory fluid-discharge stem having such brush, as the same forms a claimed portion of the structure embraced in my before-mentioned co-pending application, Serial No. 153,058.

Having thus described the invention, what I believe to be new, and desire to secure by Letters Patent, is—

1. A bottle-rinsing mechanism comprising a reciprocatory fluid-discharge stem, and means whereby said stem is advanced and retracted by the pressure of the rinsing fluid.

2. A bottle-cleaning apparatus comprising fluid-supply means and a bottle-holder, one of which is rotatable relatively to the other, a tube, a fluid-discharge stem mounted in said tube and having means by which it is reciprocated by the pressure of the fluid and means by which the supply of said fluid to said tube is controlled by the rotation of the rotatable part.

3. A bottle-cleaning apparatus comprising

fluid-supply means and a bottle-holder one of which is movable relatively to the other, a discharge-stem having a head and means by which the fluid is conducted alternately to opposite sides of said head at predetermined places in the movement of the movable part, said stem being arranged in a portion of the conducting means.

4. A bottle-rinsing mechanism comprising supply and drainage means for the rinsing fluid, a reciprocatory discharge-stem having a head or piston, a tube in which the same reciprocates and means for establishing communication of the portion of the tube at one side of the piston with said supply means and of the portion thereof at the other side of said piston with the drainage means, to thereby force the piston and stem in one direction, and for reversing said communication, to cause the rinsing fluid to reverse the direction of movement of said piston and stem.

5. A bottle-rinsing mechanism comprising a fluid-supply pipe having a discharge-aperture, bottle-carrying means movable relatively to said aperture, a tube movable with said carrying means, a fluid-discharge stem reciprocatorily mounted in said tube and provided with a head or piston, and means through which said tube has communication with said aperture alternately above and below said piston.

6. A bottle-rinsing mechanism comprising a fluid-supply pipe having a discharge-aperture and drainage-groove, bottle-carrying means movable relatively to said pipe, a tube movable with said carrying means and provided with a reciprocatory piston and means through which the portions of said tube, above and below said piston, each alternately communicates with said discharge-aperture and drainage-groove.

7. A bottle-rinsing mechanism comprising a fluid-supply pipe having a discharge-aperture and a drainage-groove and a rinsing-wheel mounted to rotate around said pipe with the bottles being rinsed, and comprising a fluid-discharge stem provided with a head or piston, a tube in which said stem and head or piston reciprocate, and means through which the portions of said tube above and below said piston each alternately communicate with said discharge-aperture and drainage-groove.

8. A bottle-rinsing mechanism comprising a fluid-supply pipe having a discharge-aperture and a drainage-groove, and a rinsing-wheel mounted to rotate around said pipe with the bottles being rinsed, and comprising a fluid-discharge stem provided with a head or piston, a tube in which said stem and head or piston reciprocate, said tube having an open lower end alternately communicating with said discharge-aperture and drainage-groove and a separate tube entering the first-mentioned tube above said piston or head and



having an open lower end alternately communicating with said discharge-aperture and drainage-groove.

9. A bottle-rinsing mechanism, comprising  
5 a fluid-supply pipe having a discharge-aperture and a drainage-groove and a rinsing-wheel mounted to rotate around said pipe and comprising a hub having a series of pairs of apertures, each of which apertures alternately registers with said discharge-aperture  
10 and drainage-groove, a plurality of tubes radiating from said hub and provided with open lower ends communicating with one of said apertures of the respective pairs and having  
15 at the outer end cups to engage the bottle-necks, a fluid-discharge stem mounted to reciprocate in each of said tubes and provided with a head or piston, and a plurality of tubes carried by said hub and extending  
20 from the other apertures of the respective pairs and each opening into one of said first-mentioned tubes above said piston.

10. A bottle-cleaning means, comprising a reciprocatory fluid-discharge stem, means for  
25 causing said stem to be advanced and retracted by the pressure of the rinsing fluid, and means for causing said stem to rotate during its reciprocation.

11. A bottle-cleansing means comprising a  
30 fluid-discharge stem having a head or piston, means in which the same is reciprocatorily mounted, a brush carried by said stem, means for admitting the rinsing fluid under pressure to the interior of the first-mentioned means  
35 alternately at the upper and lower side of said piston and means for causing said stem to rotate during its reciprocations.

12. A bottle-cleansing means comprising a  
40 hollow fluid-discharge stem, having a piston or head, a tube in which the same is mounted, said tube having a cup to engage the bottle-neck, and means for admitting fluid under pressure to said tube alternately at opposite sides of said piston to thereby reciprocate  
45 said stem.

13. A bottle-cleansing means comprising a

hollow fluid-discharge stem having a piston or head, a tube in which the same is mounted, said tube having a cup to engage the bottle-neck, means for admitting fluid under pressure to said tube alternately at opposite sides  
50 of said piston to thereby reciprocate said stem and means for causing said stem to rotate during its reciprocations.

14. A bottle-cleansing means comprising a  
55 hollow fluid-discharge stem having a piston or head, a tube in which the same is mounted, said tube having a cup to engage the bottle-neck, means for admitting fluid under pressure to said tube alternately at opposite sides  
60 of said piston to thereby reciprocate said stem, and brushing means carried by said stem.

15. A bottle-cleansing means comprising a  
65 hollow fluid-discharge stem having a piston or head, a tube in which the same is mounted, said tube having a cup to engage the bottle-neck, means for admitting fluid under pressure to said tube alternately at opposite sides  
70 of said piston, to thereby reciprocate said stem, brushing means carried by said stem, and means for causing said stem to rotate during its reciprocations.

16. A bottle-rinsing mechanism, comprising  
75 a fluid-supply pipe having a discharge-aperture, and means revolubly mounted on said pipe, said revolubly-mounted means being provided with a fluid-discharge stem having a head or piston, a tube in which said  
80 stem works, means through which communication of the said aperture with the interior of said tube and below said piston or head is alternately established, and means for turning said stem in said tube during its reciprocations.  
85

Witness my hand this 29th day of February, 1904, at the city of Cleveland, in the county of Cuyahoga and State of Ohio.

CHARLES H. LOEW.

Witnesses:

L. F. GRISWOLD,  
HENRY G. MILLER.