

No. 840,273.

PATENTED JAN. 1, 1907.

E. WAGNER.

PROCESS OF AND APPARATUS FOR CLEANSING BOTTLES.

APPLICATION FILED OCT. 9, 1905.

2 SHEETS—SHEET 1.

Fig. 2.

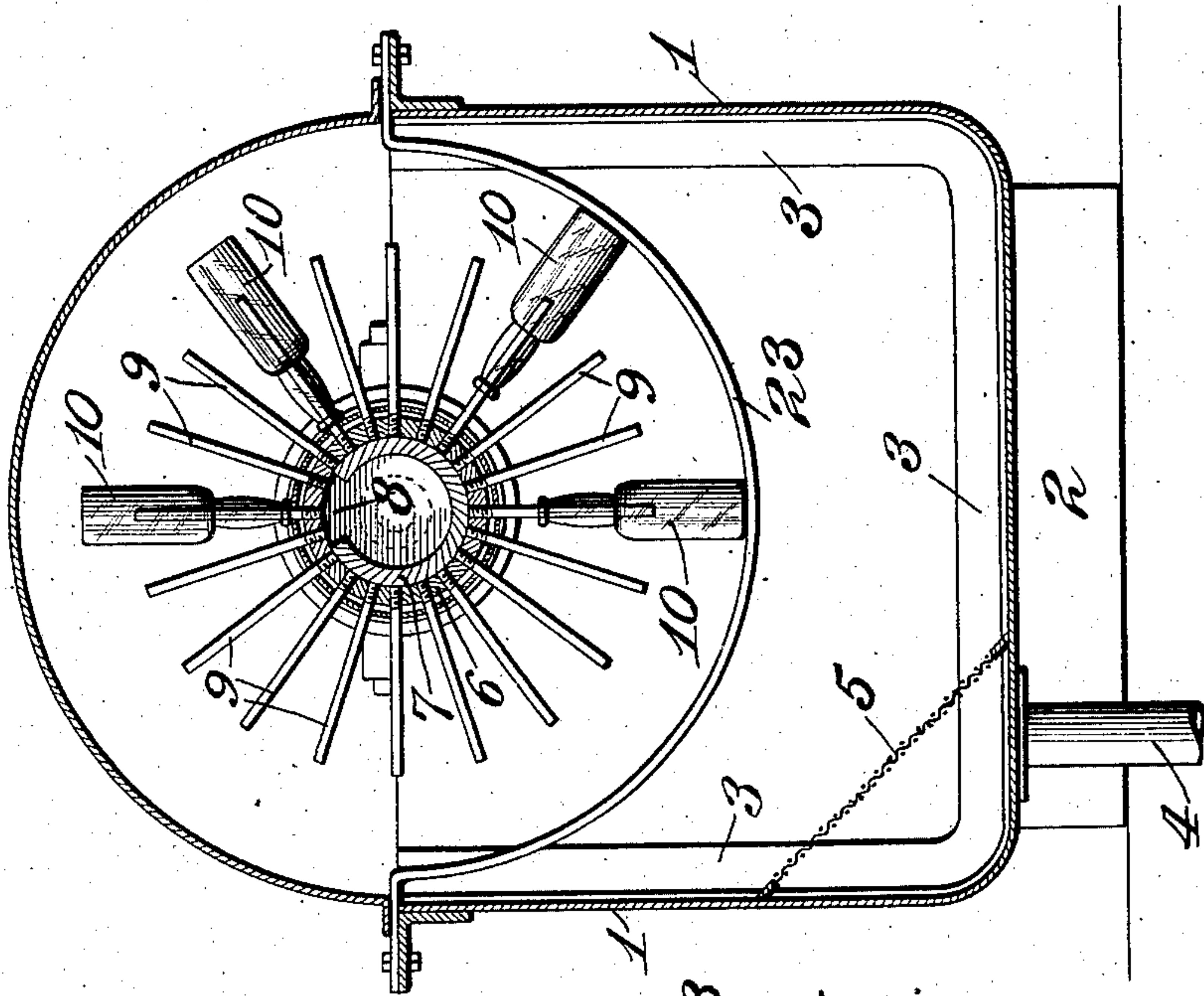
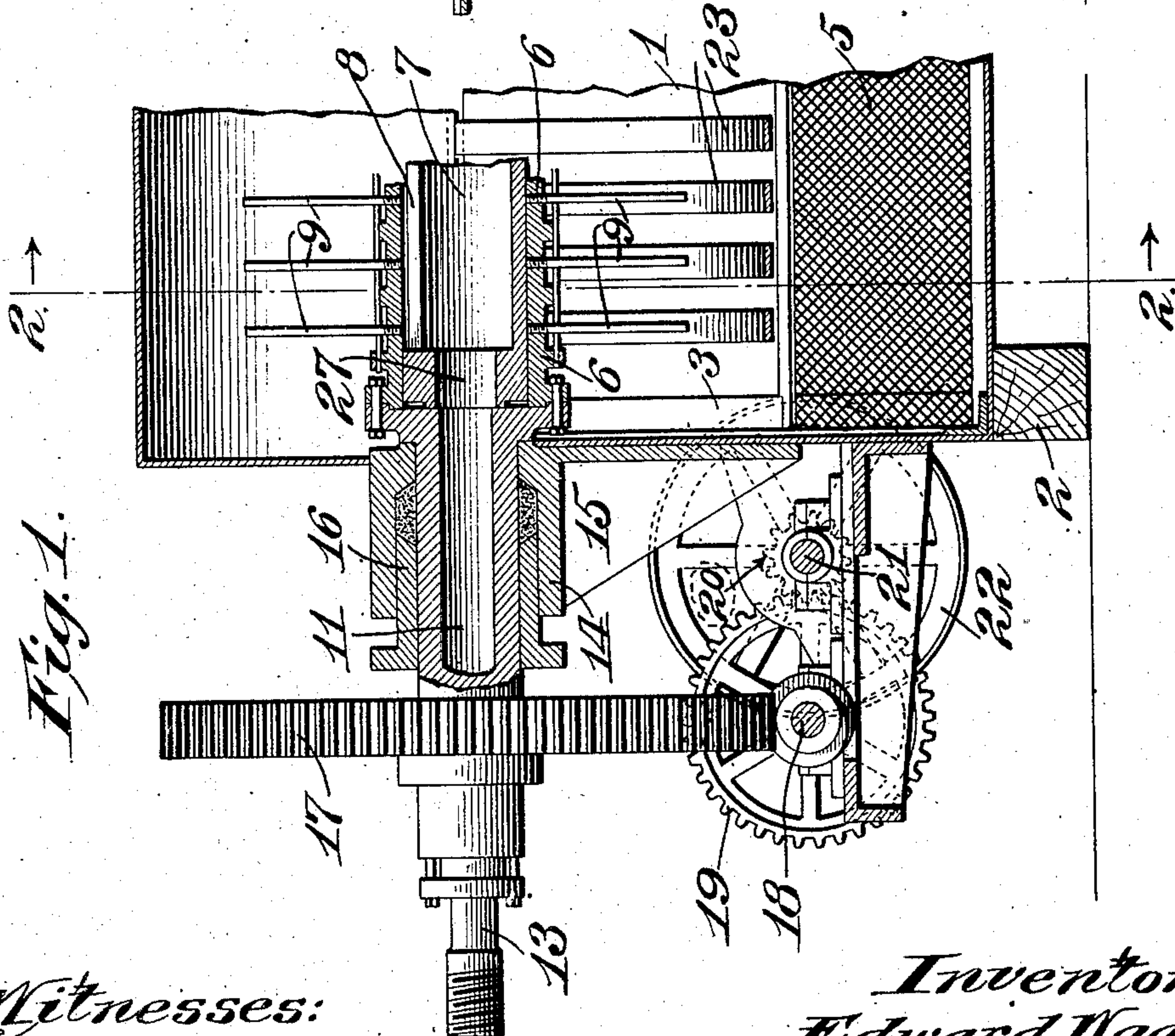


Fig. 1.



Witnesses:
Elliott R. Goldsmith
Gladys Walton.

Inventor:
Edward Wagner,
By Hugh K. Wagner,
His Atty.

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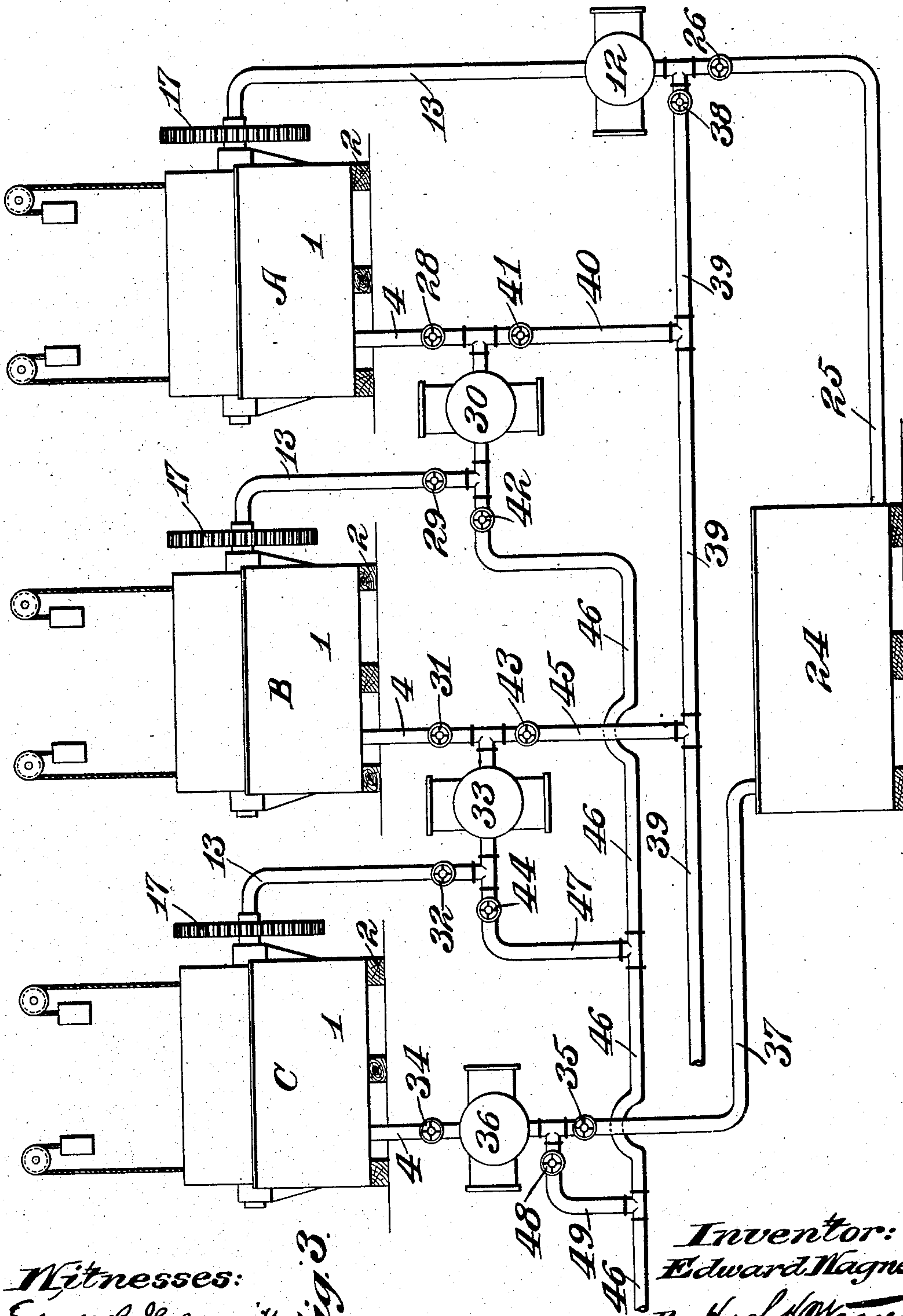
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Elliott R. Holdsmith
Gladye Walton.

Fig. 3.

Inventor:
Edward Wagner,
By Hugh N. Wagner,
His Atty.

UNITED STATES PATENT OFFICE.

EDWARD WAGNER, OF ST. LOUIS, MISSOURI.

PROCESS OF AND APPARATUS FOR CLEANSING BOTTLES.

No. 840,273.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed October 9, 1905. Serial No. 281,880.

To all whom it may concern:

Be it known that I, EDWARD WAGNER, a citizen of the United States, residing at the city of St. Louis and State of Missouri, have
5 invented certain new and useful Improvements in Processes of and Apparatus for Cleansing Bottles, of which the following is a specification.

This invention is of the system and process
10 of cleansing bottles, jars, and similar articles in which the same cleansing fluid (consisting usually of a lye solution or the like) is used more than once and of the apparatus and arrangement of apparatus for accomplishing
15 that result. Said process is usually practiced by arranging a bank of bottle-cleaning machines in such manner that the same may utilize the same body of cleansing fluid in series and suitably connecting same by
20 pipes and arranging pumps in a proper manner with relation to same, suitable drain-pipes being also provided. The preferred form of bottle-cleaning machine which I propose thus to arrange in a bank or series and
25 which I have illustrated and described in this application for patent is that illustrated, described, and claimed in my application for patent for bottle-cleaner filed July 21, 1905, Serial No. 270,616.

30 In the accompanying drawings, forming part of this specification, in which like characters of reference denote like parts wherever they occur, Figure 1 is a fragmentary sectional view of one end of a bottle-cleaning
35 machine of the kind mentioned above. Fig. 2 is a sectional view on the line 2-2, Fig. 1; and Fig. 3 is a diagrammatical view of a bank of three bottle-washing machines such as that illustrated in the preceding figures and
40 in detail in the drawings of my said copending application, arranged with suitable pumps, supply and drain pipes, and a common reservoir for cleansing fluid, so as to operate in series.

45 The tank 1 may be elevated above the floor upon blocks 2 or upon standards and is approximately rectangular in form. It is strengthened at its corners by the U-shaped angle-irons 3. A drain-pipe 4 allows of the
50 exit of fluid from said tank, the mouth of said drain-pipe 4 being covered by the strainer 5, composed of reticulated material, to prevent labels which have been soaked off the bottles during the operation of washing

from floating into and clogging the drain- 55 pipe. The same object may be accomplished by any other appropriate means. The bottle-carrier consists of a revoluble cylinder 6, within which is situated the cylinder-valve 7, having the longitudinal slot 8. In- 60 serted in threaded openings in the periphery of the bottle-carrier 6 are a plurality of nozzles 9, threaded at their ends so inserted. Said nozzles 9 are inserted through the necks
65 of the bottles 10, and the latter are thereby held upon the bottle-carrier 6 and carried through the operations hereinafter to be described in the various positions illustratively shown in Fig. 2. Through said nozzles 9 the
70 cleansing fluid is ejected with considerable force into the bottles carried by said nozzles.

The cylinder-valve 7 is normally stationary, while the bottle-carrying cylinder 6 is intended to revolve around same. The slot 8
75 of the valve 7 is normally stationary in the upper arc of the circumference of said valve and in the path of rotation of the nozzles 9 as borne by said bottle-carrier 6, as is clearly indicated in Fig. 2. The slot 8 is preferably
80 long enough to be opposite a plurality of circumferential rows of nozzles mounted on the bottle-carrier 6 and is preferably wide enough to be opposite about three longitudinal rows of said nozzles at one time, as
85 shown in Fig. 2.

As the bottle-carrier 6 revolves around the valve 7 each longitudinal row of nozzles 9 and bottles 10, inverted thereupon, passes
90 the slot 7, at which time cleansing fluid is injected into the bottles through the nozzles 9, the interior of the cylinder-valve 7 being filled with same under pressure.

The fluid enters the cylinder 7 through the hollow shaft 11 of the bottle-carrier 6, which
95 is bolted or otherwise suitably and rigidly fastened thereto. The pump 12 forces the fluid through the supply-pipe 13, hollow shaft 11, cylinder-valve 7, and nozzles 9 into the bottles. The shaft 11 at one end of the
100 machine is mounted in the bearing 14, supported by the bracket 15, which projects from the end wall of the tank 1, being provided with a packing-gland 16.

The shaft 11 is driven by the large gear-wheel 17, which meshes with a worm (not
105 shown) on the shaft 18. The shaft 18 is rotated by the gear 19, fixed thereto, meshing with the pinion 20, mounted on the shaft 21,

bearing the band-wheel 22. Within the tank 1 flat curved rails 23, approximately semicircular in form in their longitudinal side elevation in that portion which is within the tank, act as guides or supports for the bottles for their travel through the lower half of their circuit, there being one such rail for each circumferential row of bottles borne by the bottle-carrier 6. The object of these rails 23 is to prevent the bottles from slipping off their respective nozzles when they arrive at and while going through the lower half of their revolution—that is to say, in their travel through the soaking solution in the tank. In the upper arc of their travel there is no danger of their thus slipping off the nozzles, because of the inverted position which they then occupy.

The machine operates as follows: Motion is imparted to the band-wheel 22, which by means of shaft 21 rotates the pinion 20, and that by meshing with gear 19 causes the worm on shaft 18 to rotate. The gear 17, meshing with the worm, revolves its shaft 11, and thereby rotary motion is imparted to the bottle-carrier 6. The bottles 10 are slipped over the nozzles 9 and form a plurality of longitudinal and a plurality of circumferential rows of bottles upon the bottle-carrier 6. The pump 12 is started and draws the cleansing solution from the reservoir 24 through a pipe 25, controlled by valve 26, and forces the same through supply-pipe 13, through the hollow shaft 11, and the opening 27 in one end wall of the valve 7 into the interior of said valve-cylinder 7. With the rotation of the bottle-carrier 6 on its axis each longitudinal row of nozzles 9 and bottles 10, borne thereby, is successively brought opposite the slot 8, whereupon the cleansing fluid within the cylinder 7 is forced out through said slot 8 into the nozzles 9 and into the interior of the bottles 10, effectually cleansing same. While traveling along the rails 23 the bottles are externally soaked in cleansing solution, which fills the tank. After the bottles have been revolved the desired number of times (one or more times, as the case may require) past the slot 8 of the valve 7 and through the fluid contained in the tank 1 and after the cleansing fluid has been drained or pumped from said tank a supply of clear water for rinsing the bottles is then injected into the same under the pressure of the pump 12, forcing same through the supply-pipe 13, hollow shaft 11, valve 7, and nozzles 9. After the rinsing has been accomplished the rinsing-water is allowed to waste, which may be by running out through the drain-pipe 4. In Fig. 3 an arrangement of a bank of bottle-washers of the kind hereinbefore described to operate in series is illustrated. In this arrangement the cleansing fluid is drawn from the reservoir 24 through the pipe 25,

past the valve 26 (when open) by the pump 12, which thereupon forces the cleansing fluid through the supply-pipe 13 into the hollow shaft 11, valve 7, and nozzles 9. The cleansing fluid running out of the bottles into the tank 1 accumulates until the tank 1 is approximately full. Upon the conclusion of the washing and soaking operation in machine A valves 28 and 29 are opened and valve 26 closed, and pump 30 thereupon draws the cleansing solution through drain-pipe 4 from machine A and forces the same through supply-pipe 13 into machine B, where the washing and soaking operations hereinbefore described are accomplished, after which valves 31 and 32 are opened and valves 28 and 29 closed, which allows pump 33 to draw the cleansing solution from machine B through drain-pipe 4 and to force it through supply-pipe 13 into machine C. When the washing and soaking operations have been concluded in machine C, valves 34 and 35 are opened and valves 31 and 32 closed, which allows pump 36 to return the cleansing solution through return-pipe 37 to the reservoir 24. When valve 26 is closed, as above mentioned, and all of the solution has been drawn from the tank of machine A and forced into machine B, valve 38 may be opened, whereupon pump 12 acts to draw a supply of clear or rinsing water through pipe 39 and forces same through supply-pipe 13 into machine A in order to accomplish the rinsing process hereinbefore described. In like manner when all of the cleansing solution has been drawn from the tank of machine B and forced into that of machine C valve 38 may be closed, while 26 is reopened, so that while pump 12 is forcing cleansing solution for the second time into machine A pump 30 will be drawing rinsing-water from pipe 39 through branch pipe 40 past valve 41, (open,) valve 28 being closed, and forcing same past valve 29, (open,) valve 42 being closed, through supply-pipe 13 into machine B. A similar operation can in due course be performed with relation to machine C with valve 31 closed, valves 32 and 43 open, and valve 44 closed, the rinsing-water being drawn through branch pipe 45 from the pipe 39 in this instance. When the rinsing has been accomplished in machine A and it is desired to run the water into the waste-pipe 46, valve 38 will be closed, (valve 26 being already closed,) valve 41 will be left closed, valve 28 will be opened, valve 29 will be left closed, and valve 42 will be opened. When it is desired to allow the rinsing-water for machine B to waste, valve 29 is closed and valves 31 and 44 opened, while valves 32 and 43 are left closed. This allows the water to run into waste-pipe 46 through the branch waste-pipe 47. In a similar operation in connection with machine C valves 32 and 35 would be closed.

while valves 34 and 48 would be opened, thus allowing the rinsing-water to waste through branch pipe 49 and waste-pipe 46.

From the foregoing description it will be evident that this system of bottle-washing allows of a very convenient, useful, and economical arrangement of a plurality of bottle-washers operating in series in which the same cleansing solution does service in all in succession, and whereby waste of time is minimized, the rinsing operation going on in one machine while the cleansing process is being practiced in one more advanced in the series and the unloading of bottles from the bottle-carrier in one of the series taking place while the rinsing-water is draining from the tank of that machine.

Having thus described my said invention, what I claim, and desire to secure by Letters Patent, is—

1. A bank of bottle-cleansers arranged to operate successively in series so as to utilize the same body of cleansing fluid more than once.

2. A bank of bottle-cleansing machines so connected together and arranged as to use the same body of cleansing fluid repeatedly.

3. A bank of bottle-cleansers each provided with a supply-pipe and an exit-pipe, said supply-pipe being adapted by suitable valves to admit first a cleansing solution or fluid, and later a rinsing fluid, and said exit-pipe being adapted by suitable valves to drain said cleansing solution into a receptacle where it may be used again, but said rinsing fluid into a separate pipe or receptacle.

4. A bank of bottle-cleansers adapted and arranged to operate successively in series so that, when the bottle-cleansing solution is in use in one of said machines, the bottle-rinsing operation will be proceeding in another, each machine being adapted to be used alternately for cleansing and for rinsing.

5. A bank of bottle-cleansers so arranged and adapted to operate successively in series that, when the bottle-cleansing fluid is in use in one of said machines, the bottle-rinsing operation is proceeding in another, while in a third the unloading of the bottles is taking place, each machine being adapted to be used successively for cleaning, for rinsing, and for unloading and loading.

6. The herein-described process of cleansing bottles, consisting in mounting the bottles on one group of bottle-supports, injecting a cleansing solution under pressure through said bottle-supports in said bottles, allowing said cleansing solution to run out of said bottles to form a bath, passing said bottles through said bath; mounting another batch of bottles upon another group of bottle-supports, pumping said cleansing-solution bath from contiguity with the first-mentioned group of bottles and forcing the same un-

der pressure through said second-mentioned group of bottle-supports into the bottles supported thereon, allowing same to escape from said last-mentioned bottles to form a bath therefor, and passing said bottles through said bath; repeating the operations hereinbefore mentioned in connection with the first-named groups of bottles as may be desired; injecting rinsing-water under pressure through the first-mentioned group of bottle-supports into the first group of bottles when all of the cleansing solution has been withdrawn from contiguity therewith; and repeating said rinsing operation in connection with the second group of bottles when the cleansing-solution bath for said second group of bottles has been withdrawn from contiguity therewith.

7. The herein-described process of cleansing bottles, consisting in mounting the bottles on one group of bottle-supports, injecting a cleansing solution under pressure through said bottle-supports in said bottles, allowing said cleansing solution to run out of said bottles to form a bath, passing said bottles through said bath; mounting another batch of bottles upon another group of bottle-supports, pumping said cleansing-solution bath from contiguity with the first-mentioned group of bottles and forcing the same under pressure through said second-mentioned group of bottle-supports into the bottles supported thereon, allowing same to escape from said last-mentioned bottles to form a bath therefor, and passing said bottles through said bath; repeating the operations hereinbefore mentioned in connection with the first-named groups of bottles as may be desired; injecting rinsing-water under pressure through the first-mentioned group of bottle-supports into the first group of bottles when all of the cleansing solution has been withdrawn from contiguity therewith; repeating said rinsing operation in connection with the second group of bottles when the cleansing-solution bath for said second group of bottles has been withdrawn from contiguity therewith; and removing the bottles from the first group of bottle-supports while the said rinsing operation is being performed in connection with the second group of bottle-supports.

8. The herein-described process of cleansing bottles, consisting in mounting the bottles on one group of bottle-supports, injecting a cleansing solution under pressure through said bottle-supports in said bottles, allowing said cleansing solution to run out of said bottles to form a bath, passing said bottles through said bath; mounting another batch of bottles upon another group of bottle-supports, pumping said cleansing-solution bath from contiguity with the first-mentioned group of bottles and forcing the same under pressure through said second-mentioned

group of bottle-supports into the bottles supported thereon, allowing same to escape from said last-mentioned bottles to form a bath therefor, and passing said bottles through said bath; repeating the operations hereinbefore mentioned in connection with the first-named groups of bottles as may be desired; injecting rinsing-water under pressure through the first-mentioned group of bottle-supports into the first group of bottles when all of the cleansing solution has been withdrawn from contiguity therewith; and repeating said rinsing operation in connection with the second group of bottles when the cleansing-solution bath for said second group of bottles has been withdrawn from contiguity therewith, the same body of cleansing solution being used for the first step of the process in a plurality of groups of bottles.

9. A bank of independent bottle-cleansing machines, so connected that the cleansing fluid used in one can be reused in the others.

10. A bank of independent bottle-cleansing machines so connected that the cleansing fluid, having been used in one can be drawn off into another; and the first machine then used for another operation.

11. A bank of independent bottle-cleansing machines adapted and arranged to operate in series so that each machine can successively perform distinct steps in the cleansing process, each machine performing a particular step after the preceding machine has performed the same step, the fluid used in the first machine being passed on to and reused in the second machine.

12. A bank of bottle-cleansing machines, each of which is provided with a supply-pipe and an exit-pipe, said supply-pipe being adapted by suitable valves to admit first a cleansing solution and later a rinsing solution, and said exit-pipe being adapted to be connected to the supply-pipe of the succeeding machine so that the fluid used in one machine may be used again in the other machines, and said exit-pipes being also adapted by suitable valves to drain said cleansing solution into a receptacle where it may be used again, but said rinsing fluid into a separate receptacle.

13. A bank of bottle-cleansing machines arranged to perform different parts of the cleansing process simultaneously, the fluid used in one machine being passed on to the next, whereupon each machine performs that part of the cleansing process last performed by the machine immediately preceding it.

14. A bank of independent bottle-cleansing machines adapted and arranged to operate in series so that each machine can successively perform distinct steps in the cleansing process, each machine performing a particular step after the preceding machine has

performed the same step, suitable pipes connecting the different machines by which the fluids used in the first machine are passed on to and reused in the second machine, and the identity of the fluids used in the different steps are preserved.

15. A bank of independent bottle-cleansing machines adapted and arranged to operate in series so that each machine can successively perform distinct steps in the cleansing process, each machine performing a particular step after the preceding machine has performed the same step, suitable pipes connecting the different machines, a separate fluid being used for each particular step, said fluid being used in the first machine, then passed on to and used in the second machine, and having its identity preserved throughout.

16. A bank of independent bottle-cleansing machines adapted and arranged to operate in series so that each machine can successively perform distinct steps in the cleansing process, each machine performing a particular step after the preceding machine has performed the same step, suitable pipes connecting the different machines, a separate fluid being used for each particular step of the cleansing process, each of said fluids being used in the first machine, then passed on to and used in the second machine, without being mixed with the fluid used in any other step.

17. A system of bottle-cleaning, consisting in the arrangement of a plurality of bottle-cleansing machines in bank to operate successively in series, each of same being provided with a supply-pipe and an exit-pipe for cleansing liquid, the supply-pipe of each machine after the first in series connecting with the exit-pipe from the machine preceding it in series, so as to allow the cleansing fluid used in said preceding machine to be used in said succeeding machine.

18. A bank of bottle-cleaners each provided with a supply-pipe and an exit-pipe, the supply-pipe of each machine after the first in series connecting with the exit-pipe from the machine preceding it in series, other pipes connected to said exit-pipe, and suitable valves whereby the fluid discharged from each machine through its exit-pipe may be conveyed to the machine succeeding it in series through the supply-pipe thereof, and there reused, or may be conveyed to another receptacle through said other pipe.

19. A bank of bottle-cleaners each provided with a supply-pipe and an exit-pipe, the supply-pipe of each machine after the first in series being connected to the exit-pipe from the one preceding it in series, said supply-pipe being adapted by suitable valves to admit first a cleansing fluid then a rinsing fluid, said exit-pipe being adapted to convey

said cleansing fluid to the machine succeeding it in series, and said rinsing fluid to another receptacle.

20. A bank of bottle-cleaners arranged successively in series, a supply-pipe and an exit-pipe for each, the supply-pipe of each machine after the first being connected to the exit-pipe of the machine preceding it, suitable valves in said pipes, and other pipes connected to said exit-pipe, said exit-pipe

being adapted to convey the fluid from each machine to the supply-pipe of the succeeding machine or to said other pipe.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWARD WAGNER.

Witnesses:

ELLIOTT R. GOLDSMITH,
GLADYS WALTON.