J. HAUK, JR.

BOTTLE STERILIZING AND CLEANSING APPARATUS.

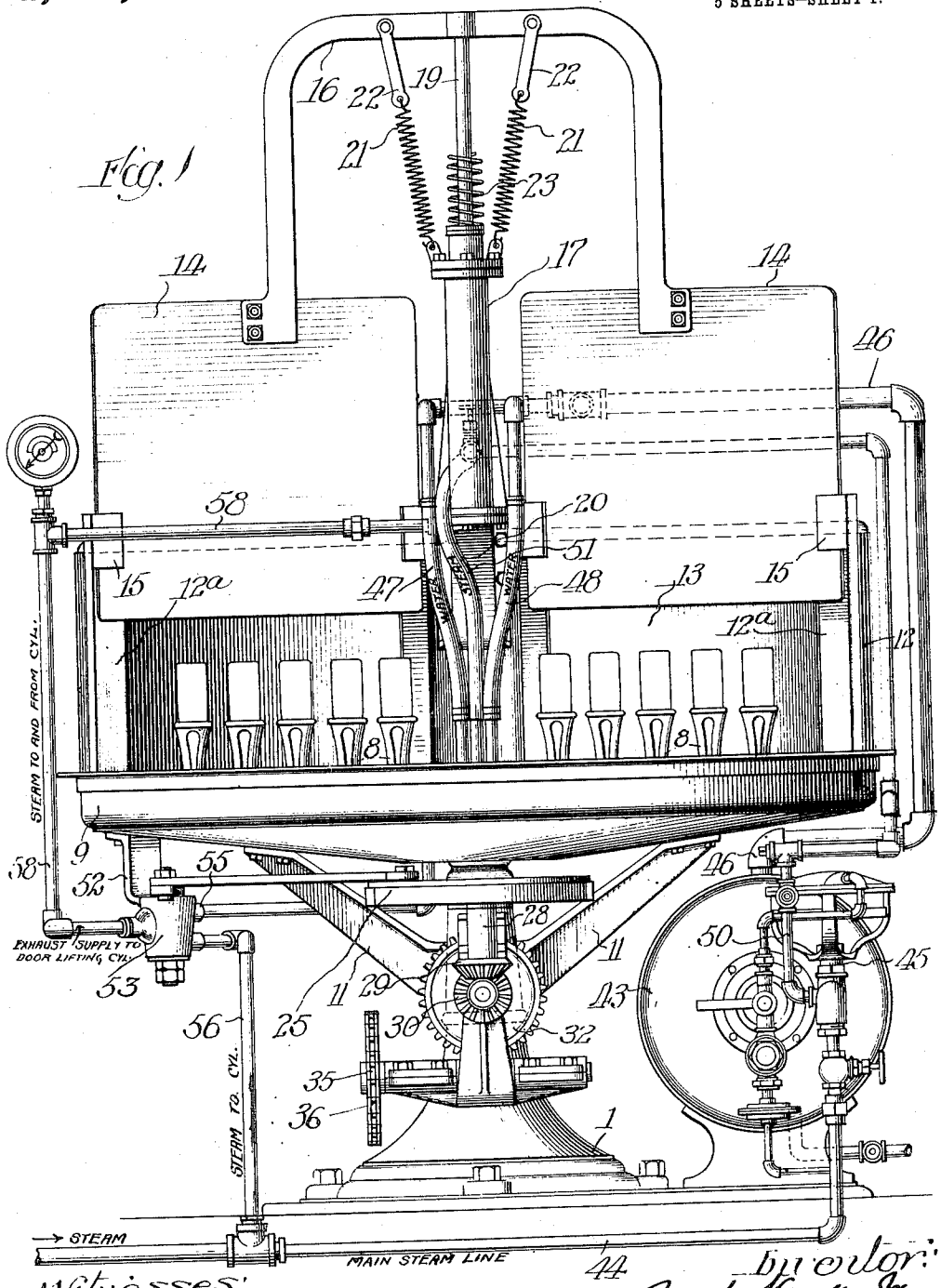
APPLICATION FILED OCT. 7, 1909.

1,030,887.

Patented July 2, 1912.

5 SHEETS—SHEET 1.

Fig. 1



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5 SHEETS—SHEET 2.

Fig. 2.

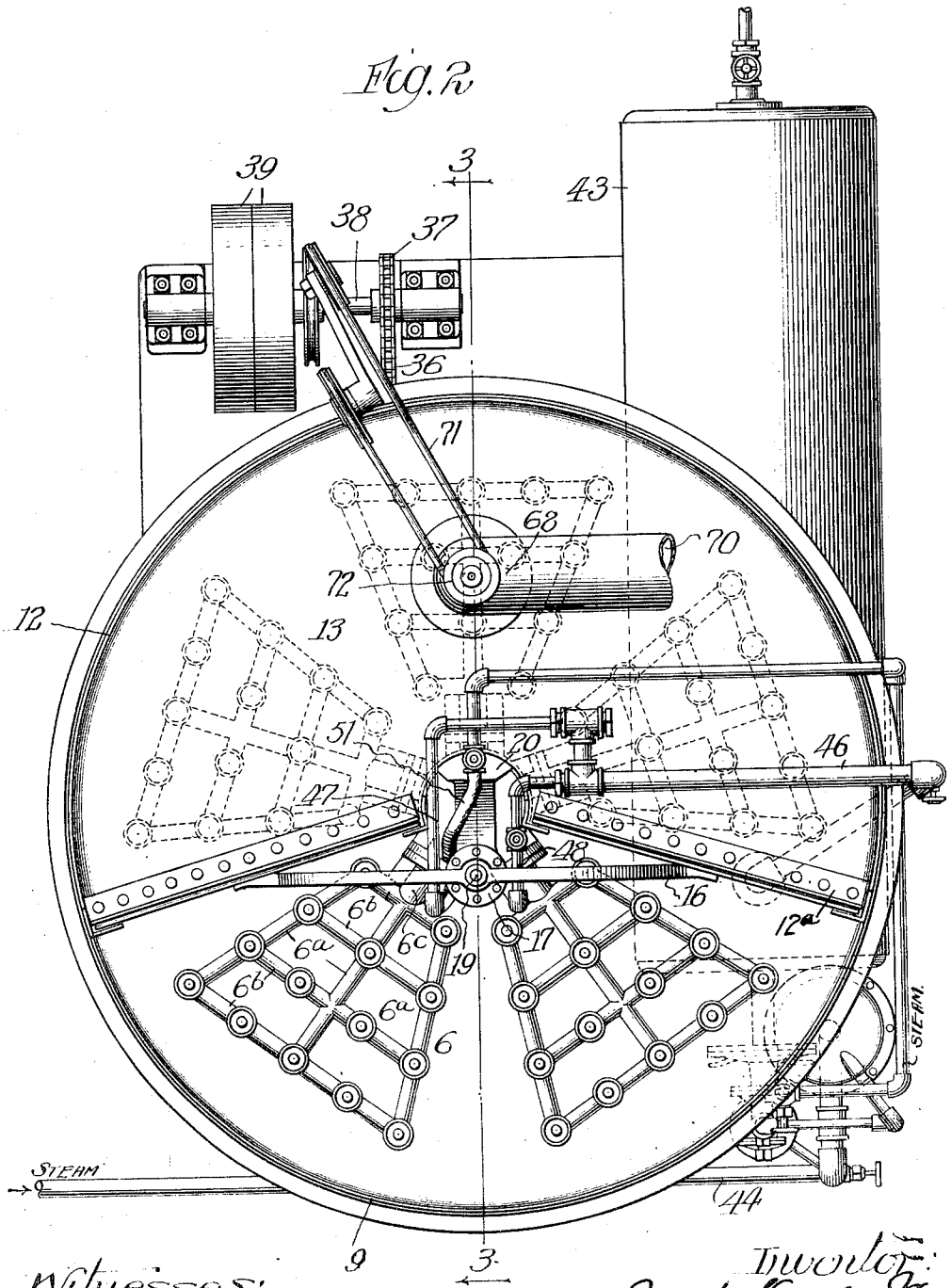

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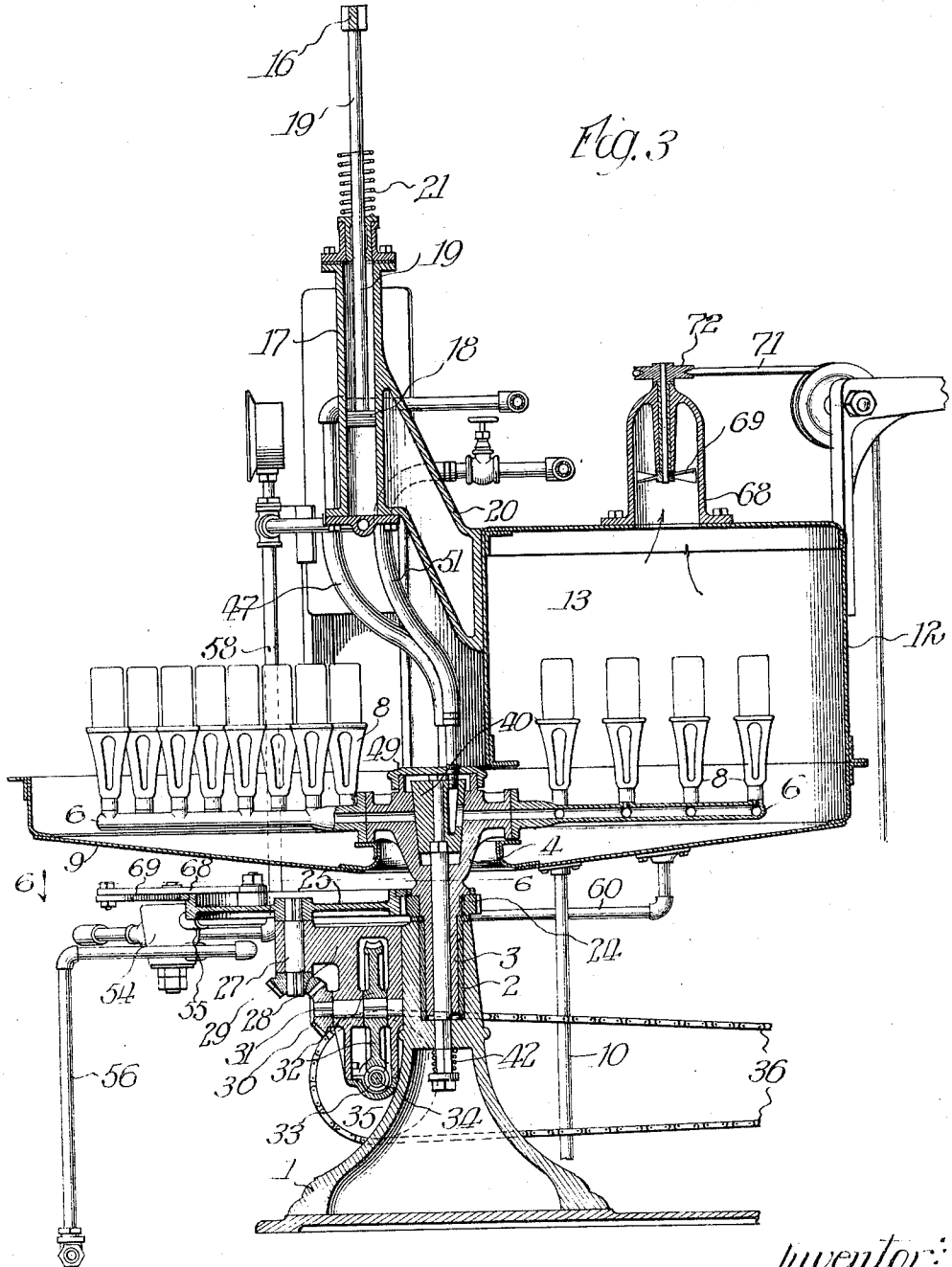
Fig. 3



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5 SHEETS—SHEET 4.

Fig. 4

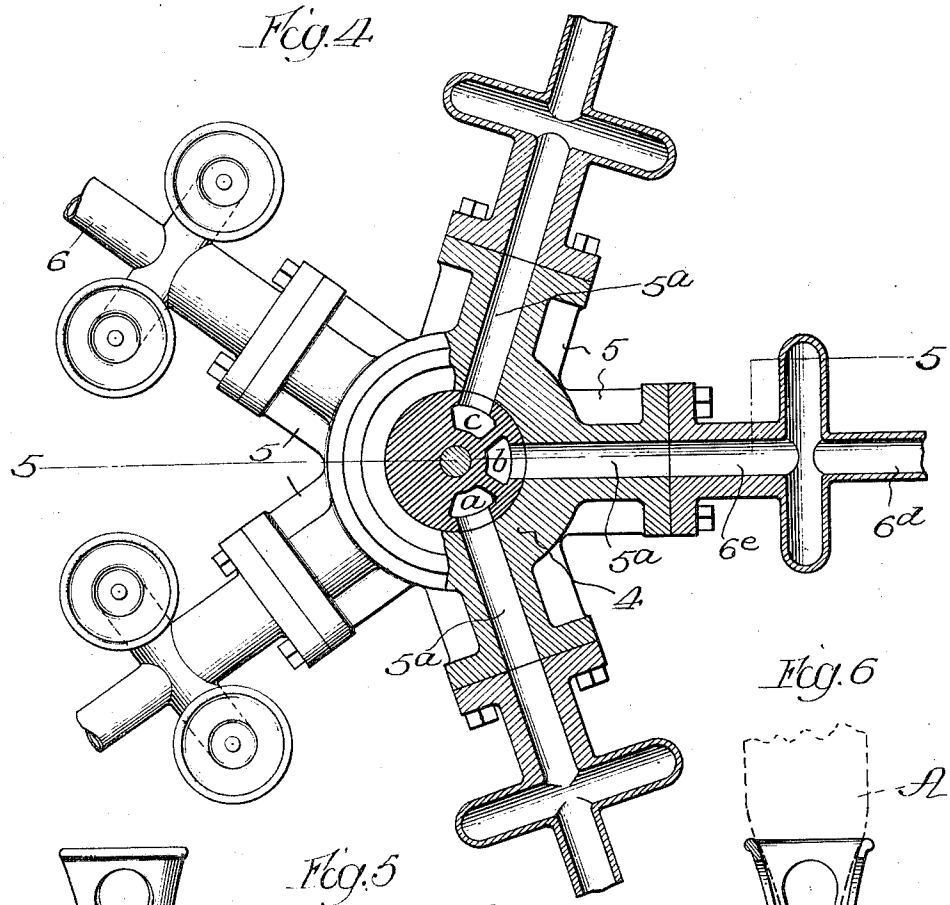


Fig. 6

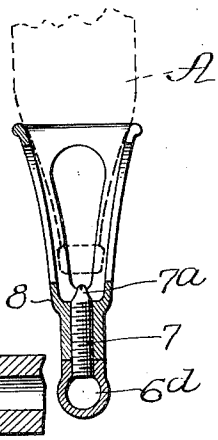
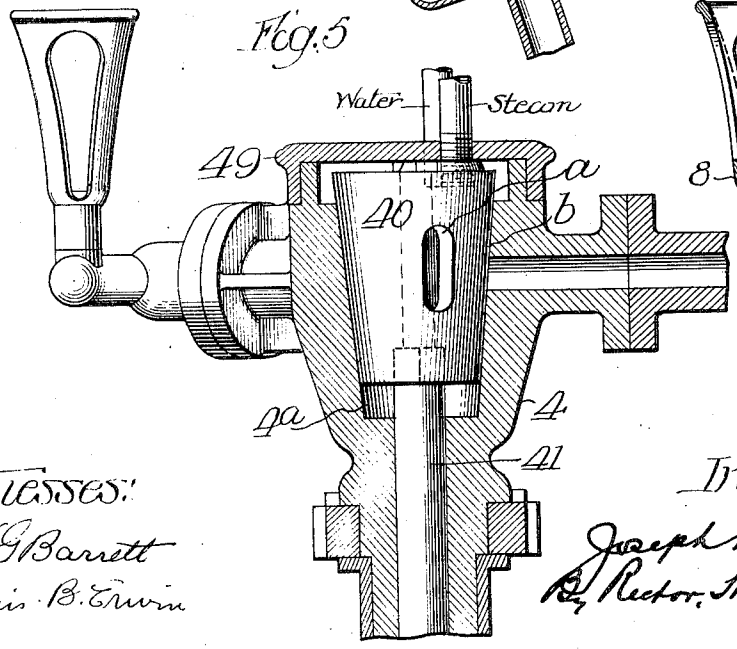


Fig. 5



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5 SHEETS—SHEET 5.

Fig. 7

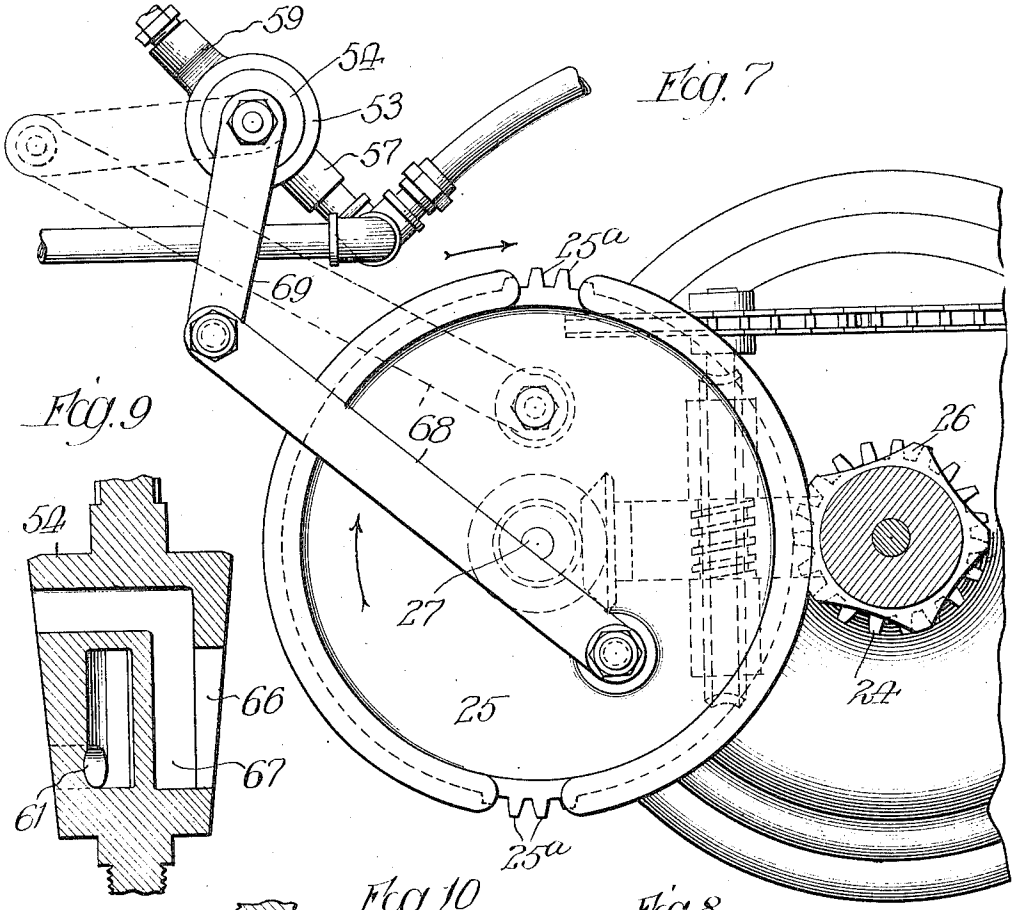


Fig. 9

Fig. 10

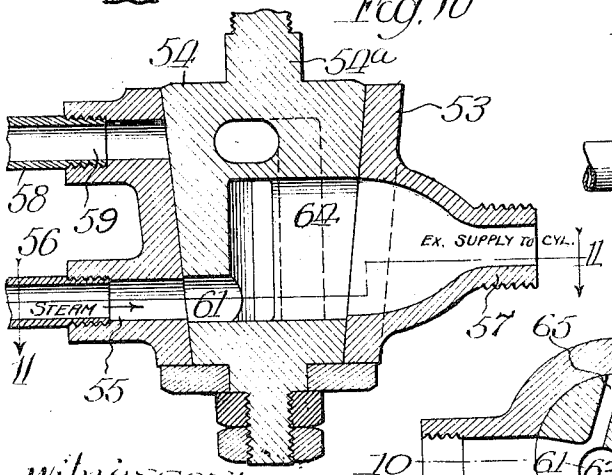


Fig. 8

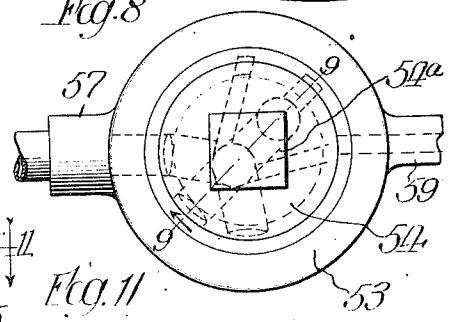
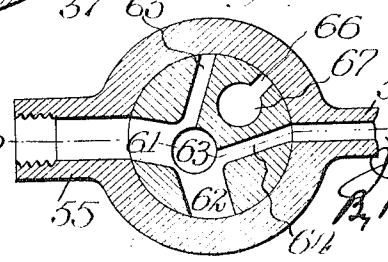


Fig. 11



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UNITED STATES PATENT OFFICE.

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BOTTLE STERILIZING AND CLEANSING APPARATUS.

1,030,887. Specification of Letters Patent. Patented July 2, 1912.

Application filed October 7, 1909. Serial No. 521,609.

To all whom it may concern:

Be it known that I, JOSEPH HAUK, Jr., a citizen of the United States, residing at Waukegan, Lake county, Illinois, have invented certain new and useful Improvements in Bottle Sterilizing and Cleansing Apparatus, of which the following is a specification.

My invention relates to apparatus for sterilizing and also cleansing bottles, more particularly but not necessarily beer bottles, and the object thereof is to provide a comparatively simple and efficient machine or apparatus of this character and one, moreover, which has great capacity as well as economy in operation.

The various features of advantage and utility in my machine will be apparent from the description hereinafter given.

In the drawings, Figure 1 is an elevation of my apparatus; Fig. 2 a plan view thereof; Fig. 3 a central vertical section thereof on the line 3—3 of Fig. 2; Fig. 4 a detail view on a larger scale showing the inner ends of the segmental bottle carriers or racks and the stationary distributing valve; Fig. 5 a vertical section of said distributing valve and the upper end of the head which carries the bottle racks; Fig. 6 a detail view of a nozzle and bottle holder; Fig. 7 a detail view also on a larger scale illustrating the operating connections for the valve for admitting and exhausting the steam to and from the cylinder operating the doors or gates; Fig. 8 a detail plan view of said last named valve; Fig. 9 a section on line 9—9 of Fig. 8; Fig. 10 a section on line 10—10 of Fig. 11; and Fig. 11 a section on the line 11—11 of Fig. 10.

Before describing my machine or apparatus in detail I will explain in general that the same consists of mechanism for automatically carrying a series of bottle carrying frames or racks by intermittent motion through a compartment or chamber and subjecting the bottles carried by said frames or racks in automatic manner first to the action of water at a suitable warming temperature, such as 120 degrees, which is automatically admitted to the frames or carriers when in the proper position for that purpose, then admitting at the next position of said frames or carriers live steam at a temperature of say 240 degrees and finally at the next position or stage of the frames or carriers subjecting the bottles to water at said temperature of about 120 degrees for the purpose of now cooling them down after being subjected to the action of the steam as stated. It will be understood that said frames or carriers are arranged in series rotatable in a horizontal plane and that they are subjected to said operations consecutively during their intermittent rotation. Moreover provision is made by means of a hood for a compartment or chamber which is arranged to inclose all but two of said frames or carriers at a time, which latter two carriers are exposed in order that the operator may remove the sterilized bottles and substitute other bottles to be sterilized, automatically operating doors or gates being provided for closing the ends of the chamber or compartment in order to permit the entrance of a bottle carrier and its bottles at one side and the exit of another bottle carrier and its bottles at the other side. With the exception of the feeding and removal of the bottles the operations are entirely automatic and the movements of the parts are timed for the proper results.

Referring to the present embodiment of my invention as illustrated in the drawings, my machine comprises a base or pedestal 1 adapted to rest upon a floor or other support and provided at its upper end with a vertical socket receiving a bushing 2 which in turn receives the depending tubular extension or bearing 3 of a rotatable head 4, Fig. 3. This head is provided at its upper portion with a series of radial extensions 5 which are here five in number, to which are secured a corresponding series of bottle frames 6 having the shape and formation particularly illustrated in Fig. 2, which may be described as substantially segmental in shape. In practice each frame is a casting composed of three radial arms 6^a and parallel cross arms 6^b, which arms are provided with cored passages 6^d, all communicating with a central radial arm 6^c having a passage 6^e as shown in Fig. 4. The latter passage of each segmental frame or bottle carrier communicates with a radial passage 5^a of the extension 5 to which it is secured as clearly illustrated in Fig. 4. As shown in

detail in Fig. 6, the upwardly directed openings from said passages 6^d are screw-threaded in order to receive the nozzles 7 whose upper end terminates in a nozzle outlet indicated at 7^a. Each nozzle which is externally screw-threaded forms a means of attachment for the bottle holders 8 whose upper portions are in the form of an open framework, to receive the inverted bottles indicated by A, and whose lower portions are internally screw-threaded so as to screw upon the nozzle 7 and thereby become secured to the bottle frames or racks. When the bottles are placed in inverted manner in the bottle holders the nozzles will project water or steam upwardly into the bottles according to the relative position of the particular frame or bottle rack, it being understood that the nozzles do not of course close the bottle mouth which is left open to permit the exit of the introduced steam or water or both.

The bottle frames or racks are arranged to revolve in a horizontal plane and beneath them is provided a drain or drip pan 9 having a sloping bottom with an outlet communicating with a water drain 10. This pan is supported by means of the brackets 11 secured to and extending upwardly from the pedestal as shown in Fig. 1. This pan in turn supports a hood 12 which extends in circular manner coextensive with the pan with the exception of a space in front of the machine where a segmental open portion is left sufficient to expose two of the bottle frames or racks as seen in Fig. 2. This hood forms a chamber or compartment 13 through which the frames and consequently the bottles are caused to pass when operated upon by the action of the water and steam. The ends of this chamber or compartment thus formed by the hood are adapted to be governed by a pair of vertically movable doors or gates 14 operated in unison in automatic manner to permit the entrance of one bottle frame or rack and the exit of another. These gates move vertically in guides formed by the ends 12^x of the hood and angle irons 15 and the same are connected by means of a yoke 16. These doors are operated by fluid pressure mechanism—in the present instance by steam pressure admitted in automatic manner as hereinafter described to the lower end of the cylinder 17 in which operates a piston 18 whose piston rod 19 is connected with the yoke 16. This cylinder is supported by the attachment of its bracket 20 to the hood 12, Fig. 3. This cylinder is a single-acting one, the steam pressure being alternately admitted to and exhausted from the lower end of the cylinder by an automatic valve hereinafter referred to. In order to prevent any sudden movement or jar of these doors caused by sudden admission of steam into said cylinder I cause the piston to work against the action of a pair of springs 21 anchored at their lower ends to the upper end of the cylinder and at their upper ends to a pair of links 22 in turn pivotally connected with the upper portion or cross bar of the yoke 16 as clearly shown in Fig. 1. In order to accomplish cushioning of the downward movement of these doors I provide the coiled spring 23 surrounding the piston rod 19 and adapted to be compressed by the yoke on its downward movement.

As hereinbefore stated, the bottle frames or racks have an intermittent rotary movement which in the present instance is accomplished by the following operating connections: To the intermediate portion of the depending extension 3 is secured a pinion 24 adapted to mesh with a mutilated gear 25 having at diametrically opposite portions the gear teeth 25^a adapted to mesh with the pinion 24 but having the remainder of its periphery blank as clearly illustrated in Fig. 7. In order to lock the pinion 24 against movement during the rotation of the blank portion of the gear 25 thereby I provide a Geneva lock 26 connected directly or indirectly with said pinion 24 and adapted to move in unison therewith. The gear 25 is secured to a vertical shaft 27 mounted in a bearing bracket 28 secured to the pedestal 1. This shaft carries at its lower end a miter gear 29 meshing with a corresponding miter gear 30 and secured to a horizontal shaft 31 which in turn is provided with a worm gear 32. This worm gear is actuated by means of a worm 33 secured to the shaft 34 of a sprocket wheel 35. This latter wheel is driven by means of the sprocket chain 36 and sprocket wheel 37 which is mounted upon a shaft 38 to which the usual tight and loose pulleys 39 are secured, Figs. 1, 2 and 3. It will be understood that the continuous rotation of the pulley shaft 38 and the described operating connections will impart an intermittent movement to the gear 24 by reason of the provision of the mutilated gear 25, which is so constructed and related with respect to the pinion 24 that the engagement of the gear teeth 25^a will cause a one-fifth rotation of said pinion, with the result that the bottle frames or racks will be given a one-fifth rotation, thereby moving them the distance of a single station.

For the purpose of automatically supplying the bottle frames or racks with hot water and steam I provide suitable distribution mechanism which is here in the form of a stationary valve around which the head 4 of said frames rotates. As shown in Figs. 3, 4, and 5, this valve 40, which is truncated conical, fits into a corresponding socket 4^a in the upper portion of said head 4. This valve is supported at the upper end of a

vertical pin or rod 41 whose upper angular portion enters the lower end of the valve as shown in Fig. 5, and whose lower angular end passes through the correspondingly angular opening in the pedestal as clearly shown in Fig. 3. The intermediate portion of this rod is cylindrical where it passes through the depending extension 3 of the head 4, thereby permitting such extension to rotate freely. The valve is thus held against rotation by this rod and the same is moreover held downwardly in the socket 4^a of the head with a yielding pressure by means of the coiled spring 42, Fig. 3.

The distribution valve 40 is provided with a series of ports which are here three in number in order to accommodate the bottle frames or racks while within the confines of the chamber or compartment 13. These ports, indicated by *a*, *b* and *c* are arranged to register simultaneously with three of the passages 5^a of the extensions 5 and the head 4 as shown in Fig. 4. At this time the other two passages 5^a are blanked by one side of the valve 40. The two ports *a* and *c* are connected with the hot water supply while the intermediate port *b* is connected with the live steam supply according to the following pipe connections: First describing the hot water supply and following the pipe connections therefor, the supply of hot water is kept in a tank or drum 43 kept heated by an interior steam coil (not shown) by means of steam supplied to said coil through the main steam line 44. The temperature of the water is regulated by a well-known form of regulator, illustrated in Fig. 1 and indicated generally by the reference character 45, the temperature of the water being in practice kept at about 120 degrees F. The hot water supply pipe 46 is connected with the top of the water tank or drum and leads upwardly at one side of the hood 12 and across the top thereof to the central portion of the apparatus where it divides into two branches, 47 and 48, Figs. 1 and 2, the former of which leads downwardly through the cap 49 and is screw-threaded at its lower end into a vertical opening in the top of the valve 40 so as to communicate with the port *a*. In like manner the branch supply pipe 48 leads downwardly and is connected to the valve 40 in a passage communicating with the port *c*. It will be understood that the supply of the water through these supply pipes is constant and that the same is distributed by means of the stationary valve during the intermittent rotation of the bottle frames or racks. Following next the steam supply pipe connections, a branch pipe 50 leads from the main steam line 44 upwardly parallel with the water supply pipe 46 and thence downwardly as a vertical supply pipe 51 through the cap 49 and into the valve 40 so as to communicate with the port *b*. The supply or admission of the steam is governed in the same manner as the water supply, that is by the rotation of the bottle frames around the stationary valve 40.

It will be understood from the foregoing description that in the present embodiment of my invention there are five bottle holding frames or racks three of which are in the chamber or compartment 13 at a time while the other two are in the segmental open space at the front part of the machine. The ports and passages in the valve 40 are such that hot water will be admitted to the two frames within the chamber 13 adjacent the doors while steam will be admitted to the intermediate frame within said chamber. At this time the blank portion of the valve 40 is presented to the other two frames which are exposed in the segmental open space.

As hereinbefore stated the two doors are automatically operated in unison with the movements of the rotatable frames by means of fluid pressure mechanism controlled by a valve which is itself governed by the same operating means which rotates said frames. As shown this valve is arranged below the pan 9 and supported by means of the bracket 52. For the particular purposes in view this valve is constructed as shown in detail in Figs. 8 to 11, the same comprising essentially a casing 53 and an oscillating plug 54. The casing is provided with a pipe connection 55 communicating with the main steam line through the pipe 56 and also with a pipe connection 57 communicating by means of pipes 58 with the cylinder 17. In addition the casing has a pipe connection 59 which communicates by means of the pipe 60 with the chamber 13 whereby the exhaust from said fluid pressure mechanism is admitted into said chamber and thereby utilized in externally heating the bottles. The plug or valve proper is provided with the two ports 61 and 62 which communicate with a vertical port 63 which in turn communicates with the substantially radial slots 64 and 65. The plug is also provided with an exhaust slot 66 which communicates with a longitudinal exhaust port 67. The operation of this valve and the registering of the different ports will be explained after the description of the operating connections for oscillating the plug valve.

To the gear 25 is pivotally connected a link 68 whose outer end is pivotally connected to a lever or arm 69 whose inner end is secured to the stem 54^a of the plug valve. The link 68 is so connected to the gear 25, that is, intermediate the center and the circumference, that in the rotation of the gear the plug valve will be given an oscillating movement in the rotation of such gear, as indicated by the full and dotted lines in Fig. 7. The parts are so constructed and timed that just before the gear teeth

25ª mesh with the pinion 24 the plug valve has been oscillated to such a position that the live steam will be admitted through the ports and slots 61, 63 and 64, and thence through the pipes 58 to the cylinder 17, thereby raising the doors. At the proper time, which is immediately upon the opening of the doors, the gear teeth 25ª mesh with the pinion 24 and the rotatable frames are turned or advanced in an anti-clockwise direction a distance of ⅓ turn or rotation. As soon as this intermittent movement or rotation of the frames is completed the plug valve is brought to a position so that the exhaust slot and port 66 and 67 register with the port of the pipe connection 57, thereby exhausting the cylinder 17 and permitting the doors to close. The upward movement of these doors was against the tension of the two springs 21 in order to prevent any jar or shock in the opening movement and the downward movement of the doors is cushioned by means of the spring 23. The continued rotation of the gear 25 still further oscillates the plug valve with the result that the slot 65 is now brought into communication with the port in the pipe connection 57, thereby again admitting steam to the cylinder 17 and opening the doors just prior to the next intermittent movement or rotation of the frames, at this time the steam being admitted through the valve, through the ports and slots 61, 63 and 65. Continued movement of the gear 25 now oscillates the plug valve in the opposite direction, that is in an anti-clockwise direction when viewed as in Fig. 11, the operation of admitting and exhausting steam being continued as before described.

In order to prevent the exhaust steam admitted into the chamber 13 from passing outwardly and into the open space in front of the machine, where it would interfere with the operator, I provide a suction fan at the top of the hood 12, the same consisting of a suitable casing 68 containing a suction fan 69 with an exhaust pipe 70 leading therefrom as seen in Fig. 2. This fan is operated in suitable manner, as by means of the endless belt 71 running from the pulley 72 connected with the fan, the belt 71 being driven in any suitable manner.

It will be understood that the first frame on the righthand side of the machine within the chamber 13 (Fig. 2) is subjected to the action of the hot water from the tank 43 which is automatically kept at a temperature of 120 degrees. The fluid passages within said frames have retained the water which was last admitted to them, which water has become somewhat cooled while the frame was traversing said open segmental space, with the result that this cooler water will first be forced into the bottles thereby slightly warming the same before the still warmer water from the tank 43 is introduced therein. Following the operation or action of this one frame without regard to the other frames which are being acted upon within said chamber, the next intermittent movement brings this frame to the next station whereupon live steam at a temperature of about 240 degrees F. is admitted, after forcing the water out of the frames, thereby thoroughly sterilizing the bottles. The frames are advanced by intermittent movement to the next station, whereupon water from the tank is admitted into the bottles for cooling them down from the higher temperature to which they have been subjected in the steaming operation. However, before this cooler water reaches the bottles the steam or mixed steam and water which have remained in the passages within the bottle frames since the previous operation are forced into the bottles so that there will be somewhat of a gradual change from the higher to the lower temperature. The frame then passes through the openings governed by the doors and into the segmental open space, whereupon the operator removes the bottles. Upon the next intermittent movement the frame is advanced to the next station, still in the open space, where the operator places new bottles thereon, the operation being repeated. It will be understood of course that the three frames within the chamber 13 at one time are simultaneously acted upon.

I claim:

1. In a machine of the class described, the combination of a hollow rotatable head, a series of radially arranged bottle frames provided with passages for fluid and outlets for projecting fluid into the bottles in said frames, said head having a tubular bearing extension, a support having a socket for such extension, a valve located within the head which rotates therearound, and means extending through the tubular bearing extension for holding the valve in place and non-rotatable.

2. In a machine of the class described, the combination of a hollow rotatable head, a series of radially arranged bottle frames provided with passages for fluid and outlets for projecting fluid into the bottles in said frames, said head having a tubular bearing extension, a support having a socket for such extension, a valve located within the head which rotates therearound, and means for holding the valve in place and non-rotatable comprising a rod passing through said extension and having angular end portions for engagement with the valve and support respectively.

3. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate inter-

mittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, doors for separating the chamber from the space, the frames being arranged to rotate through such chamber and space, and means for supplying fluid to said passages.

4. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, means for operating the doors in unison with the movements of the frames, and means for supplying fluid to said passages.

5. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, vertically sliding doors governing the ends of said chamber, means for operating the doors in unison with the movements of the frames and means for supplying fluid to said passages.

6. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, vertically sliding doors governing the ends of said chamber, fluid pressure operated means for operating the doors in unison with the movements of the frames and means for supplying fluid to said passages.

7. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, means common to both doors for operating them in unison with the movements of the frames, and means for supplying fluid to said passages.

8. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, a yoke connecting said doors, means coöperating with the yoke for operating the doors in unison with the movements of the frames, and means for supplying fluid to said passages.

9. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, means for operating the doors in unison with the movements of the frames, and means for supplying fluid to said passages, said door operating means being controlled by the movements of said frames.

10. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, means for operating the doors in unison with the movements of the frames, and means for supplying fluid to said passages, said doors being normally held to closed position with a yielding pressure.

11. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, springs tending to hold the doors in closed condition, means for opening the doors against the tension of the springs and in unison with the movements of the frames, and means for supplying fluid to said passages.

12. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, springs tending to hold the doors in closed condition, means for opening the doors against the tension of the springs and in unison with the movements of the frames, means for cushioning the closing of the doors, and means for supplying fluid to said passages.

13. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid,

a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, fluid pressure mechanism including a piston whose rod is operatively connected with the doors for actuating them, and means for supplying fluid to said passages.

14. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, fluid pressure mechanism including a piston whose rod is operatively connected with the doors for actuating them, a valve controlling fluid pressure to said mechanism and governed by the movements of said frames, and means for supplying fluid to said passages.

15. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, fluid pressure mechanism including a piston whose rod is operatively connected with the doors for actuating them, a valve controlling fluid pressure to said mechanism and its exhaust therefrom, means for conducting such exhaust to the hood, and means for supplying fluid to said passages.

16. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, a yoke connecting the doors, fluid pressure mechanism including a piston whose rod is connected with the yoke for actuating the doors, and means for supplying fluid to said passages.

17. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chambers, a yoke connecting the doors, fluid pressure mechanism including a cylinder and a piston whose rod is connected with the yoke for actuating the doors, springs interposed between the yoke and cylinder tending to keep the doors closed, and means for supplying fluid to said passages.

18. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having passages for fluid, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, a yoke connecting the doors, fluid pressure mechanism including a cylinder and a piston whose rod is connected with the yoke for actuating the doors, springs interposed between the yoke and cylinder, tending to keep the doors closed, a cushioning spring around such rod, and means for supplying fluid to said passages.

19. In a machine of the class described, the combination of a hollow rotatable head, a series of radially arranged bottle frames provided with passages for fluid and outlets for projecting fluid into the bottles, said head having a tubular bearing extension, a support having a socket for such extension, a valve located within the head which rotates therearound, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of the hood, fluid pressure mechanism actuating the doors, means for supplying pressure fluid to said mechanism, a valve governing such mechanism, and means for operating the valve and head.

20. In a machine of the class described, the combination of a hollow rotatable head, a series of radially arranged bottle frames provided with passages for fluid and outlets for projecting fluid into the bottles, said head having a tubular bearing extension, a support having a socket for such extension, a valve located within the head which rotates therearound, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of the hood, fluid pressure mechanism actuating the doors, means for supplying pressure fluid to said mechanism, an oscillating valve governing such mechanism, and means for oscillating the valve and for intermittently operating the head.

21. In a machine of the class described, the combination of a series of bottle holding frames or racks adapted to rotate intermittently, said frames having fluid pressure passages, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, means for supplying fluid to said passages, and a suction de-

vice connected with said chamber for withdrawing air and steam therefrom.

22. In a machine of the class described, the combination of a series of bottle holding frames or racks, a hood forming a chamber which is circular except for a segmental space, the frames being arranged to rotate through such chamber and space, doors governing the ends of said chamber, means for operating the doors in unison with the movements of the frames, and means for supplying cleansing fluids to the bottles when the latter are within the chamber.

JOSEPH HAUK, JR.

Witnesses:
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GEORGE BRANDT.