

W. L. BODMAN.
BOTTLE SOAKING MACHINE.
APPLICATION FILED OCT. 14, 1908.

966,403.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

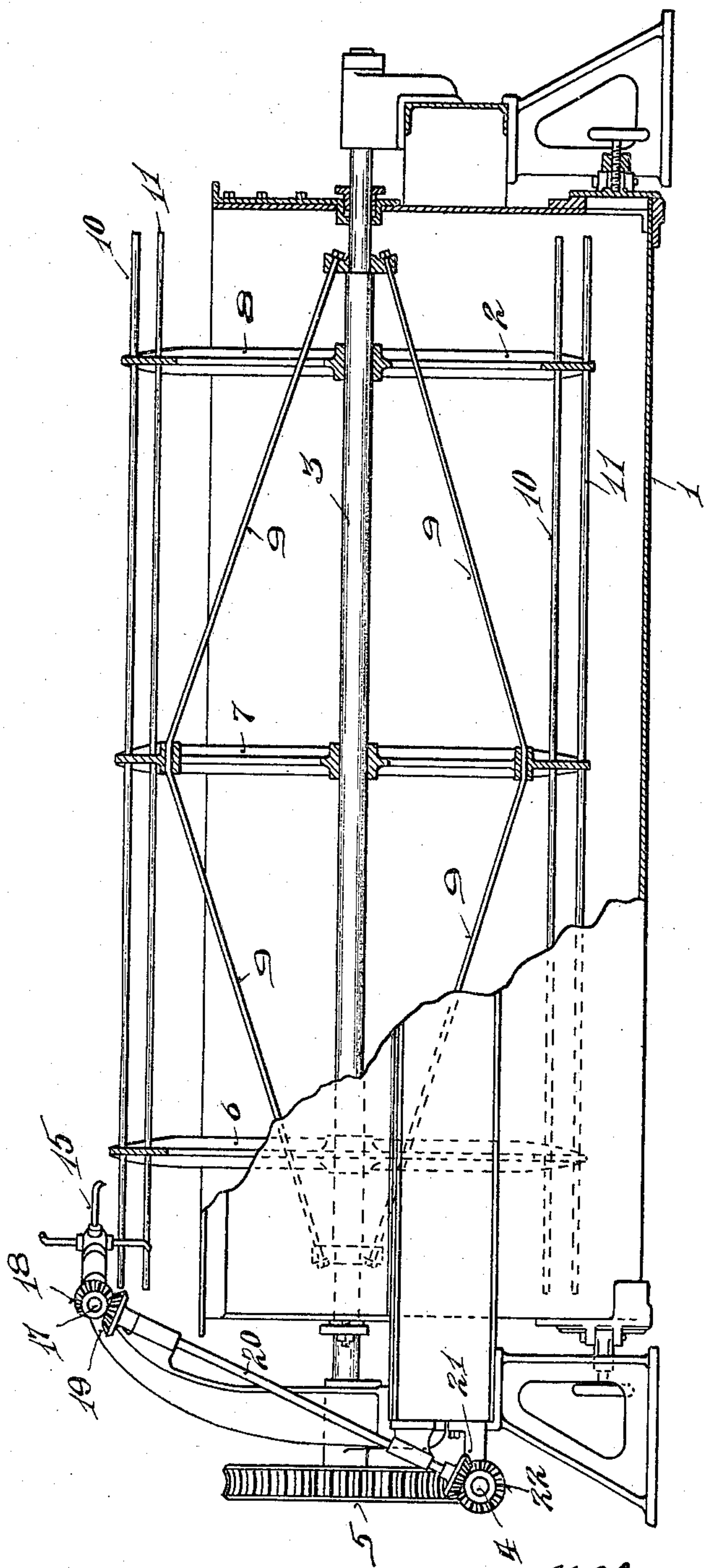


Fig. 1 -

Inventor

Witnesses

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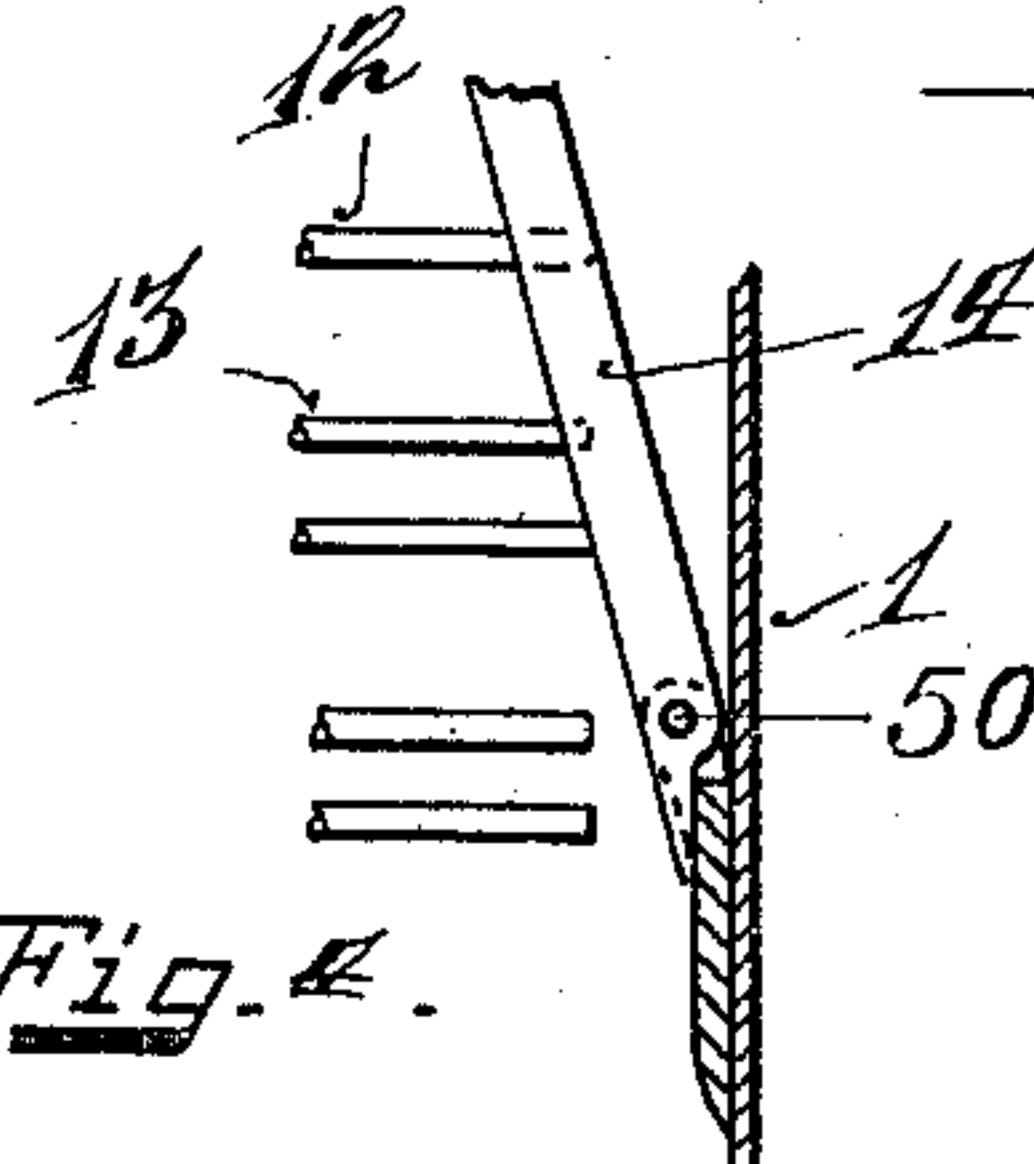
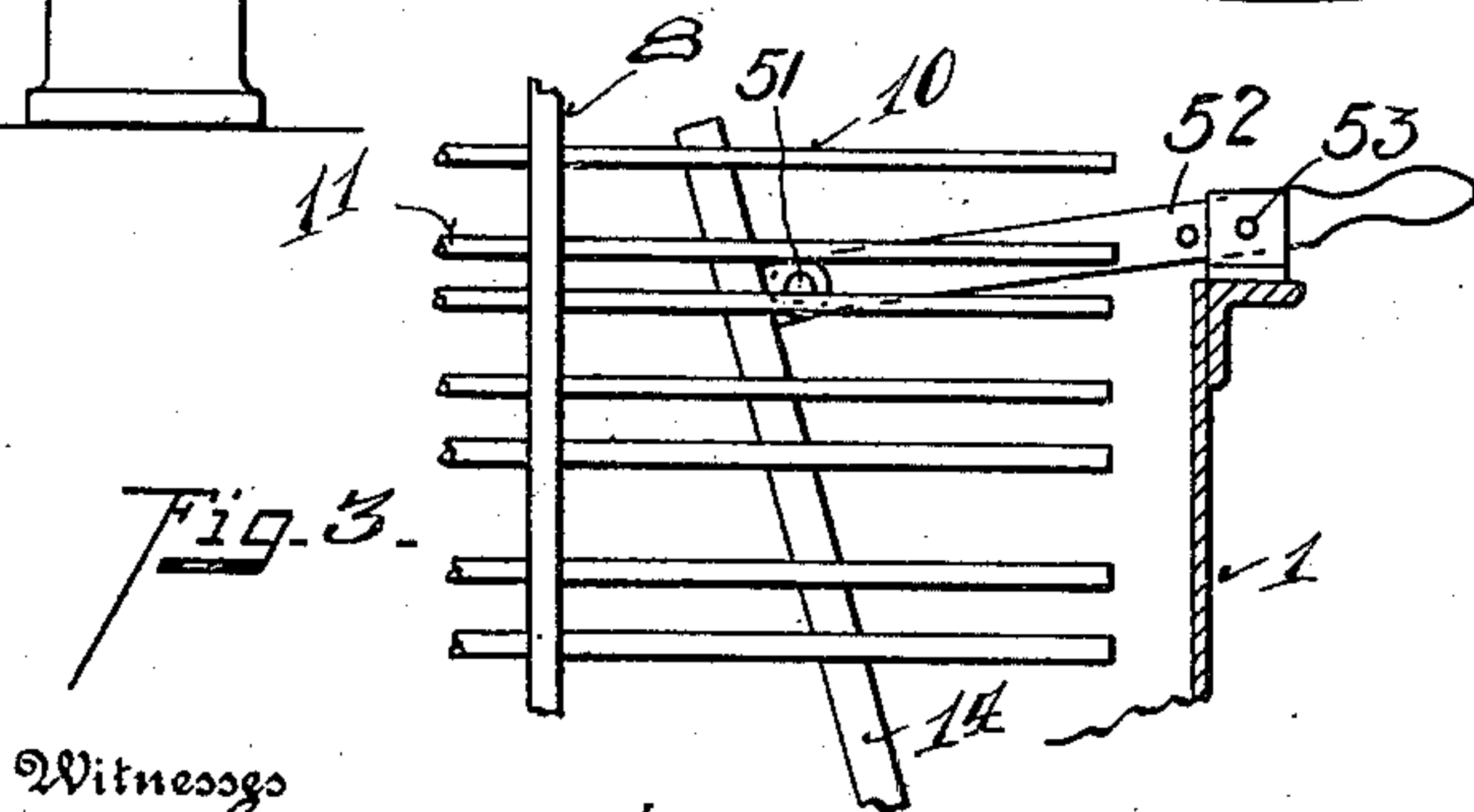
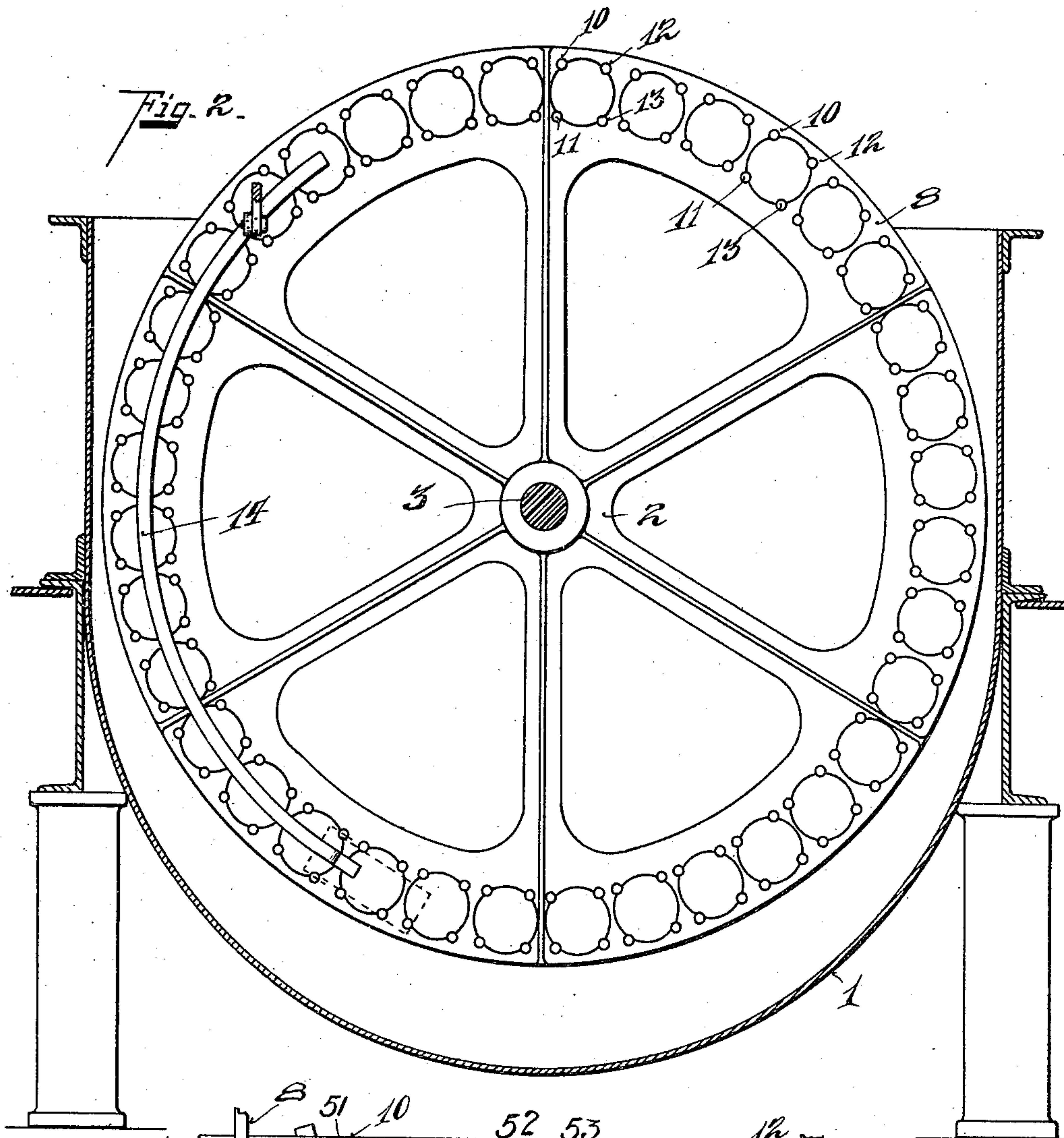
Attorney

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UNITED STATES PATENT OFFICE.

WALTER L. BODMAN, OF CINCINNATI, OHIO, ASSIGNOR TO ISAAC RHEINSTROM, OF CINCINNATI, OHIO.

BOTTLE-SOAKING MACHINE.

966,403.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed October 14, 1908. Serial No. 457,697.

To all whom it may concern:

Be it known that I, WALTER L. BODMAN, subject of the Kingdom of Great Britain, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Bottle-Soaking Machines, of which the following is a specification.

While my invention relates specifically to a bottle soaking machine, its utility can be best understood by briefly calling attention to its purpose and place in a general system in which it is one of the units.

It is my purpose to produce a single, homogeneous system for the handling of bottles throughout their several steps through the brewery or other analogous art. In other words, instead of intermittently washing a number of bottles and then rinsing them and discharging them, and then taking up another batch, the art as I propose to handle it, will consist in causing the bottles to travel in procession form, continuously from one mechanism to the other, with the least possible manual attendance, and under conditions assuring not only a vast capacity with the highest efficiency of results, but, equally important, an absolute uniformity of results.

It will, therefore, be understood that the machine of the present invention is designed to fit into this system and to work in conjunction with other mechanisms representing other stages of the art.

The machine of this invention is a soaking apparatus, but by reason of its organization it may have other uses, such as sterilization.

This machine embodies the idea of continuously conducting the bottles serially through the operation, the bottles being fed into the apparatus, one at a time, and ejected in the same way at the conclusion of the operation.

The machine is in continuous motion so that the bottles are always in movement, and the organization also retains each bottle under motion a sufficiently protracted period to insure its thorough soaking or sterilization under the most favorable conditions of operation, and with an inconsequential manual superintendence in comparison with the vast capacity of the apparatus.

Another object of the invention is that

the mechanism should require as little manual attention as possible, so that a comparatively few workmen can take care of a large quantity of bottles in the cleaning operation.

Another object of the invention is to devise means for revolving a large quantity of bottles in a vertical plane through a tank, and at the same time traversing them horizontally through the tank, longitudinally of the axes of the bottles, and in lines parallel with the axis of rotation of the carrier. With such an organization a vast quantity of bottles may be handled, the bottles continuously traversing the tank in constantly changing vertical and horizontal planes and thus submitted to the greatest possible amount of soaking as they are being fed progressively through the tank.

The features of the invention are more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a front elevation of the machine, showing a section of the tank broken away. Fig. 2 is a central vertical section. Figs. 3 and 4 are detailed views, partly in section, showing the adjusting means for automatically shifting the bottles.

The apparatus preferably consists of a tank 1, in which rotates the carrier 2, mounted on axis or driving shaft 3, the tank preferably having a depth slightly less than the diameter of the wheel. This bottle carrier, while shown specifically as a wheel, may be any endless carrier, adapted to revolve the bottles in a vertical plane within the tank. Motion is imparted to shaft 3, through the worm shaft 4, and worm wheel 5. The wheel consists of the sections 6, 7, 8, preferably reinforced by the truss rods 9. The peripheries of these sections 6, 7, 8, support a series of rods 10, 11, 12, 13, running parallel with the axis from one end of the tank to the other, each four of said rods being rectilinearly arranged and constituting a bottle holder adapted to support a series of bottles upon their sides and to permit of their longitudinal movement. The periphery of the wheel sections is thus made up of axially supported bottle holders, each individual holder being adapted to hold a series of bottles lying upon their sides. In this way it is obvious that the carrier can

support a great quantity of bottles, and that the bottles may be revolved in a vertical plane, and at the same time caused to move longitudinally in lines parallel with the axis of rotation of the carrier. In order to automatically shift the bottles thus supported relative to their supports, I preferably employ a cam 14 within the tank, at the loading end of the carrier, the cam face of which occupies the position of a segment of the wheel, engaging laterally between the bars constituting the bottle holders. Preferably, the cam 14 is a curved rod pivoted at one side of the tank at 50, see Fig. 4, the free end of this cam rod 14 is pivoted at 51, see Fig. 3, to an adjusting rod 52, this adjusting rod being secured to the side of the tank, by the pin and bolt hole connection 53, which permits the rod 52 to be adjusted inwardly or outwardly, thus changing the angle of the cam 14 to vary its feeding influence. This rod lies between the ends of the rods, constituting the bottle holders, as shown in Fig. 2, and is inclined relative to the bottle holders, as shown in Fig. 3, so that this rod being stationary and the bottle holder moving, the relative movement will bring the rear ends of the bottles into a sliding engagement with the outer edge of the cam 14 and force a row of bottles longitudinally along toward the discharging end of the tank. Thus, when a bottle is loaded or inserted into position in the holders, the revolution of the carrier will bring the end of the bottle to bear against the cam, which is stationary, and hence will force the bottle along laterally in its seat. Thus the machine can be serially loaded while the carrier is in rotation and the bottles can be fed along progressively until they take up all of the bottle holding capacity of the carrier and the continued feeding of the bottles into the carrier will then serve to discharge the bottles at the other side of the wheel. For the purpose of effecting this discharge with absolute assurance and safety, I have preferably employed an ejecting device 15, which is specifically a wheel, consisting of fingers driven by beveled gears and shafts 17, 18, 19, 20, 21 and 22. As the ejector rotates, the fingers are spaced to successively engage the bottles presented by the rotation of the carrier and to accelerate the discharge. The wheel 15 is rotated at a predetermined ratio relative to the rotation of the bottle holder and it is set askew, so that the fingers act very much as gear teeth between the rods constituting a bottle holder to engage the individual bottles as they are carried into the line of action of the wheel 15. Each individual finger of the wheel 15 moves into and out of the space between the rods of the bottle holders without any interference and in movements timed so as to engage the end

of the bottle and move endwise. By this means a bottle from the time it is fed into the carrier until it is ejected, has traversed the tank many times, being carried around the tank in a spiral path by reason of its combined axial and circumferential movement. The position of the bottles upon their sides, moving with the mouths foremost, gives the best possible results in the way of a thorough soaking.

The rod form of holder, herein described, is particularly advantageous in that it offers the least resistance to the water, and at the same time exposes the bottles most completely to the soaking action. Also, this form of holder readily adapts itself to the axial shifting of the bottles longitudinally and it admits of convenient means for initially shifting the bottles and for finally ejecting them, and further this form permits of substantially the entire circumference of the wheel being utilized.

Having described my invention, I claim:—

1. In a bottle cleaning machine, a tank, a shaft within the tank, a series of circumferential carrying members supported by the shaft and provided with longitudinal compartments each adapted to carry a row of bottles lying on their sides, means to rotate the shaft, and means to move the bottles longitudinally in each compartment, substantially as described.

2. In a bottle cleaning machine, a tank, a rotary member therein having on its periphery a series of axially disposed channels each adapted to permit of a longitudinal transmission of a series of bottles lying upon their sides while the said member is in motion, and means adapted to engage the end of a bottle and move it endwise, whereby a plurality of bottles are traveling through each channel as the rotary member is in motion, substantially as described.

3. In a bottle cleaning machine, a tank, a rotary member therein having a circumferential series of axially disposed channels each adapted to permit of a longitudinal transmission of a row of bottles lying on their sides while the said member is in motion, and means coöperating with the said rotating member adapted to axially shift the bottles in the channels, substantially as described.

4. In a bottle cleaning machine, a tank, a rotary member therein having circumferentially arranged bottle supports on its periphery, each adapted to hold a row of the bottles upon their sides and to permit of an axial movement of the bottles, and means coöperating with the said rotary member adapted to slide the bottles along axially while the supports are in motion, substantially as described.

5. In a bottle soaking machine, a tank, an elongated rotary member having a horizon-

tal axis in the tank, a circumferential series of rods on the periphery of the rotary member running parallel with the axis and grouped to form a series of independent bottle holders each adapted to contain a row of bottles lying upon their sides, means for actuating the rotary member, and means for moving the bottles endwise between their supporting rods, substantially as described.

6. In a bottle soaking machine, a tank, a wheel therein, having axially disposed rods on its periphery constituting a series of bottle holders each adapted to hold a row of bottles and to permit the bottles to rest upon their sides and to be moved horizontally while the wheel is in motion, substantially as described.

7. In a bottle soaking machine, a tank, a wheel therein, having peripherally arranged bottle holders each adapted to support a row of bottles upon their sides and to permit of their axial movement, means for engaging the bottles endwise at one end of the machine and forcing them in a lateral direc-

tion, and an ejecting device at the other side of the wheel, substantially as described.

8. A tank, an elongated wheel, a series of rods on the periphery running parallel with the axis, three or more of which are grouped to surround the bottle, thereby constituting an independent series of channels parallel with the axis and each adapted to hold a row of bottles lying upon their sides, substantially as described.

9. In a bottle soaking machine, a tank, means for supporting a series bottles lying upon their sides in position end to end and means for simultaneously moving the bottles circumferentially and axially whereby they are progressively fed through the tank in a spiral path, substantially as described.

In testimony whereof, I have hereunto set my hand.

WALTER L. BODMAN.

Witnesses:

OLIVER B. KAISER,
LUISE BECK.