No. 667,709. Patented Feb. 12, 1901.

E. KERSTEN.

BOTTLE WASHER.

(Application filed Oct. 28, 1898.)

(No Model.)

FIG. 1.

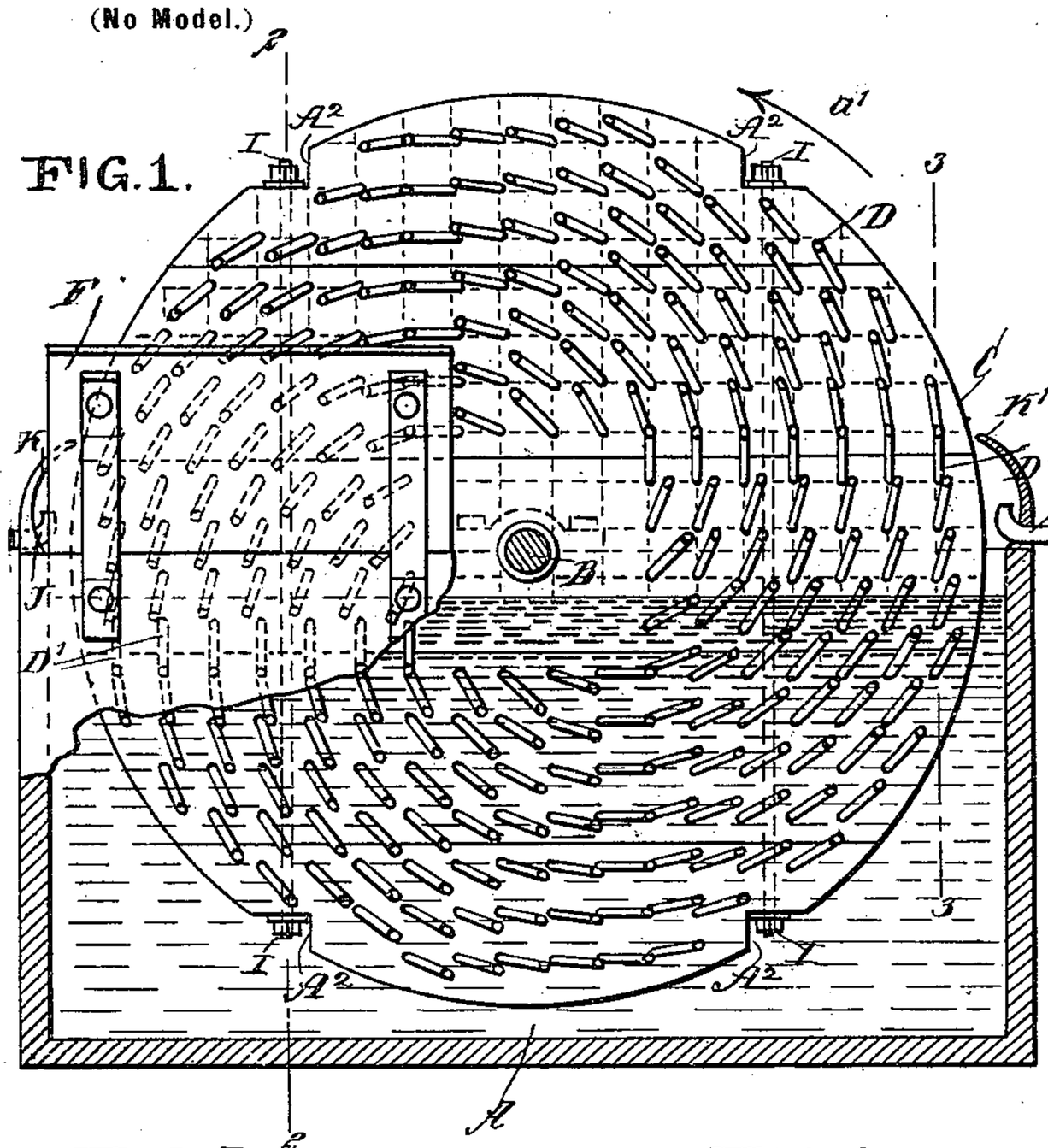


FIG. 2.

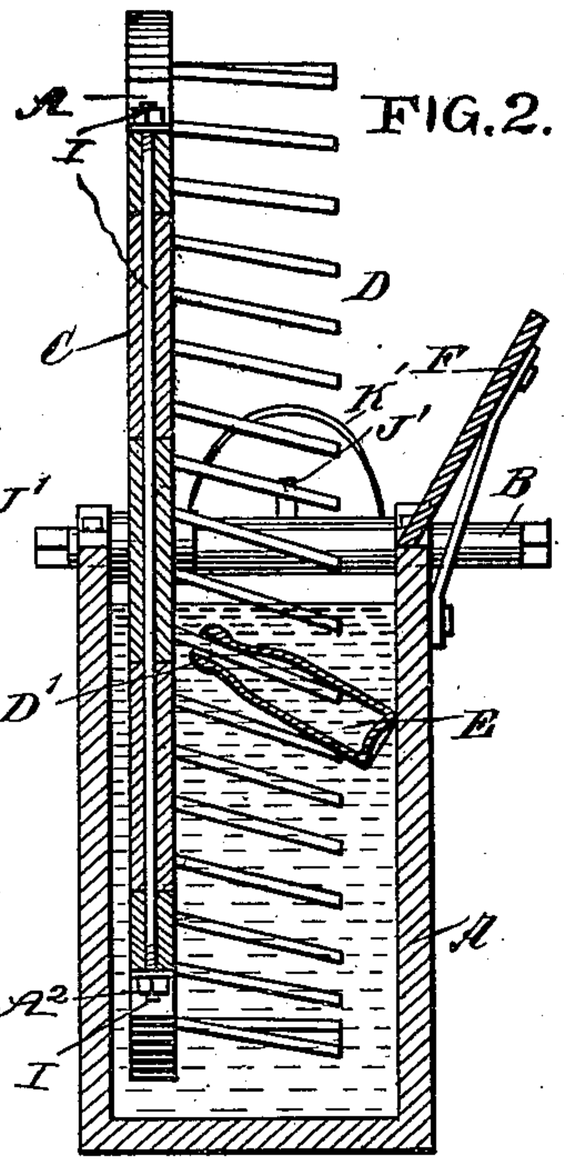


FIG. 5.

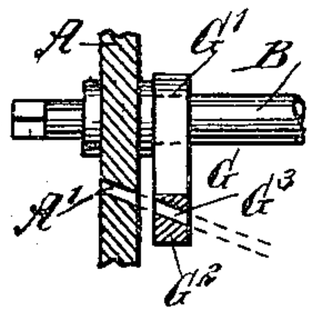
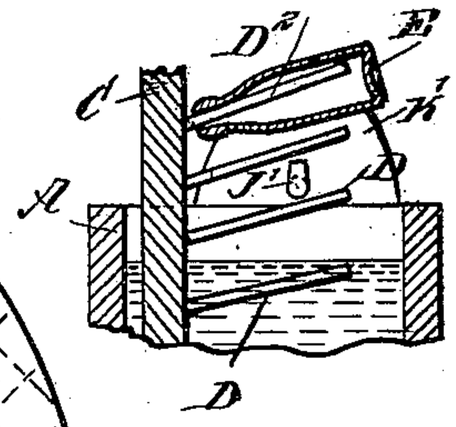


FIG. 4.

FIG. 3.



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EMIL KERSTEN, OF RICHMOND, VIRGINIA.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 667,709, dated February 12, 1901.

Application filed October 28, 1898. Serial No. 694,831. (No model.)

To all whom it may concern:

Be it known that I, EMIL KERSTEN, of Richmond, in the county of Henrico and State of Virginia, have invented a new and Improved Machine for Soaking and Sterilizing Bottles, of which the following is a full, clear, and exact description.

The invention relates to machines for soaking and sterilizing bottles such as shown and described in the Letters Patent of the United States No. 582,505, granted to me on May 11, 1897.

The object of the invention is to provide certain new and useful improvements in machines for soaking and sterilizing bottles whereby the bottles are quickly filled with a cleansing and sterilizing liquid upon being immersed in the latter, and the bottles are quickly drained of the liquid when passing out of the same to permit their convenient removal.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement with parts in section. Fig. 2 is a transverse section of the same on the line 2 2 in Fig. 1. Fig. 3 is a similar view of part of the same on the line 3 3 in Fig. 1. Fig. 4 is a face view of the wheel and the guide for the drill which provides the wheel with holes for the bottle-supports, and Fig. 5 is a transverse section on the line 5 5 in Fig. 4.

In constructing bottle-washers such as shown, for instance, in the Letters Patent above referred to I have found by experience that the bottle-supports, although standing in an inclined position relatively to the face of the wheel, do not insure a proper and equal filling of the bottles at the time the latter pass below the level of the liquid, owing to the fact that such bottles do not then assume their greatest downward inclination, which is essential to a rapid filling of the bottles. In order to overcome this objection, I construct the bottle-washer in the manner presently to be described in detail.

The improved bottle-washer is provided with a suitably-constructed tank A, adapted to receive a cleansing liquid, such as hot soda or a like suitable solution, and on the top of the tank A, at or near the middle thereof, is journaled a transversely-extending shaft B, on which is secured a wheel C, the lower half of which is adapted to extend into the liquid contained in the tank A, as is plainly indicated in Figs. 1 and 2. One or both outer ends of the shaft B are adapted to receive crank-arms (not shown) or other means for imparting a rotary motion to the shaft and its wheel C in the direction of the arrow a'.

On the front face of the wheel C are secured supports D, made in the form of pins, short pipes, or the like and adapted to receive the bottles E, the open mouths of which pass upon said supports. The supports stand at an angle to the face of the wheel C and are placed suitable distances apart, and each support is adapted to receive a bottle E. The supports are arranged in such a manner that at the time the supports pass below the level of the liquid at the left-hand side of the tank said supports stand at their greatest downward inclination. As shown in Fig. 1, the supports in row D′ appear in their greatest downward inclination to hold the bottles in a corresponding position and allow the said bottles to rapidly fill with the cleansing liquid.

By reference to Fig. 1 and the row D′ mentioned it will be seen that the supports stand in vertical planes at a right angle to the face of the wheel C, and consequently the supports have at this time their greatest downward inclination, and as the wheel rotates in the direction of the arrow a' and the supports are carried along the inclination decreases, the supports after passing the vertical center of the wheel finally standing in an upward direction relatively to the wheel and assuming their greatest upward inclination at the right-hand side of the wheel after the supports have left the level of the liquid and are above the horizontal center of the wheel, as indicated by the row D^2 of supports. The supports of this row now stand in vertical planes at right angles to the face of the wheel similarly to the supports in the row D′.

The bottles to be cleansed are placed on the supports above the liquid at the left-hand side

of the wheel C, and as said wheel is rotated in the direction of the arrow a' the empty bottles are carried along and are finally immersed in the liquid contained in the tank A at the left-hand side of the wheel, the bottles quickly filling soon after immersion, as they stand at their greatest downward inclination. The bottles by passing through the liquid in the tank are also subjected to the action of the liquid for cleaning the outside of the bottles. When the bottles pass out of the liquid at the right-hand side of the wheel, the liquid readily runs out of the bottles, and they are then removed from the supports, and unwashed bottles are placed in position on the wheel for treatment in the manner above described.

It is evident from the foregoing that the bottles fill rapidly upon immersion in the liquid, and yet the supports stand at the smallest possible inclination to the wheel to prevent the bottles from slipping off the supports after being readily placed thereon above the liquid on the left-hand side of the wheel, as before stated.

On the front of the tank A, at the left side thereof, is arranged a guide-board F, adapted to be engaged by the butt-ends of the bottles as the latter move downward into the liquid, so that said bottles are prevented from falling off the supports while moving into the liquid contained in the tank, said tank being of such width as to prevent the bottles from sliding off the supports during the time the bottles travel through the liquid.

In order to provide the wheel C, which is preferably in the form of a disk, with inclined apertures for receiving the straight supports D and to bring the latter in the position described for insuring a rapid filling of the bottles, I provide a jig G, (shown in Figs. 4 and 5,) which jig has two arms G' G^2 at a right angle to one another, the arm G' being mounted to turn loosely on the shaft B. The outer end of the arm G^2 is adapted to rest on a fixed support H, and said arm is provided with guide-openings G^3, arranged in a transverse direction and inclined at the angle (about seventy degrees) to be given to the supports relatively to the face of the wheel. The latter is provided with two sets of temporary lines, as indicated in Fig. 4, one set being at a right angle to the other and the lines being spaced an equal distance apart, as shown in Fig. 4. At the intersection of the two lines a hole A' is drilled for receiving a corresponding support D.

When the jig is applied and the wheel C is turned, then the upper edge of the arm G^2 of the jig is at the intersection of the lines, and the operator upon holding the wheel stationary drills through the holes G^3 at the intersection of the lines to provide the wheel with the desired aperture for receiving a support, as will be readily understood by reference to Fig. 5. This operation is repeated—that is, the wheel C is turned until the upper edge of the arm G^2 comes to the point of intersection of the two lines—and a hole is drilled through the corresponding aperture G^3, leading to the point of intersection. The wheel is thus provided at the points of intersection of two lines with apertures, and in these apertures the supports D are driven or otherwise secured.

It is evident from the foregoing that the supports on the left-hand side of the wheel will assume their greatest downward inclination when passing below a plane extending horizontally through the center of the wheel—that is, when the supports pass below the level of the liquid, as indicated by the row D' of supports previously mentioned—and in a like manner the supports assume their greatest upward inclination when above said horizontal plane, as indicated by the row D^2 of supports.

The disk or wheel C is preferably made in sections fastened together by bolts I extending through the sections, as shown in Fig. 2, washers and nuts being at the ends of the bolts in recesses or notches A^2, cut out of the peripheral surface of said wheel. The ends of the bolts do not extend beyond the peripheral surface of the wheel, and hence form no obstruction to the movement of the disk or wheel in the tank. By this construction of the disk or wheel the operator is enabled to screw up the nuts or slacken the same according to the expansion and contraction of the material (wood) of which the wheel is made, it being understood that as the wheel travels alternately in a hot liquid and in the atmosphere considerable expansion and contraction take place, especially when the wheel is first used.

It is evident that the wheel is not liable to warp or bend and be rendered unfit for use, as the sections can always be readily adjusted by the bolts and nuts to keep the wheel in proper shape and permit the use of wood, the most desirable material in the construction of the wheel or disk, as the bottles when placed in position and upon striking the wood are not liable to crack or break, as would be the case if the wheel were made of metal.

In order to temper the bottles previously to entering the hot liquid in the tank A to prevent cracking of the bottles, I spray the bottles with jets of warm water, issuing from a stationary nozzle J and deflected by a deflector K onto the bottles at the left-hand side of the wheel. A similar nozzle J' and deflector K' are provided on the right-hand side of the wheel on the top of the tank A to keep the bottles emerging from the liquid in the tank A in a moist or wet condition and at the same time reduce the temperature of the bottles. As the bottles are not only soaked, but sterilized, while passing through the liquid in the tank A, it is necessary to employ a liquid of a comparatively high temperature, and as the bottles would dry very quickly on leaving the liquid it is necessary to spray and keep the same moistened, as otherwise

the previous soaking would be rendered ineffective, especially as the bottles are subjected to a washing operation after removal from the machine.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for soaking and sterilizing bottles comprising a tank adapted to contain a heated cleansing liquid, a wheel mounted to turn and adapted to pass with its lower portion through said liquid supports on the face of said wheel and arranged at an angle thereto for supporting the bottles to be soaked and sterilized, means for spraying said bottles while on the supports to warm and temper the same before entering the heated liquid and means for spraying the bottles on the supports after leaving the liquid to keep the same in a moist or wet condition and reduce the temperature of the bottles, for the purpose set forth.

2. A machine for soaking and sterilizing bottles, comprising a tank adapted to contain a heated cleansing liquid, a wheel mounted to turn and adapted to pass with its lower portion through said liquid, supports on said wheel for the bottles to be soaked and sterilized while passing through the said liquid and means for tempering the bottles on the supports previously to entering the hot liquid in the tank, the said means comprising a stationary nozzle for spraying the bottles with a tempering fluid and a deflector extending upward and over the outlet of said nozzle for deflecting the spray issuing from the nozzle onto the bottles, substantially as shown and described.

3. A machine for soaking and sterilizing bottles comprising a tank adapted to contain a heated cleansing liquid, a wheel mounted to turn and adapted to pass with its lower portion through said liquid, supports on said wheel for the bottles to be soaked and sterilized while passing through the said liquid, means for spraying the bottles on the supports before entering the liquid, the said means comprising a nozzle supported at the top of the tank at one end thereof and having its outlet directed upward and a curved deflector extending upward and over the outlet of said nozzle for deflecting the spray upon the bottles and a similar nozzle and deflector at the opposite end of the tank for spraying the bottles on the supports after leaving the liquid, as and for the purpose set forth.

EMIL KERSTEN.

Witnesses:
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