J. M. FELGER.

BOTTLE WASHING MACHINE.

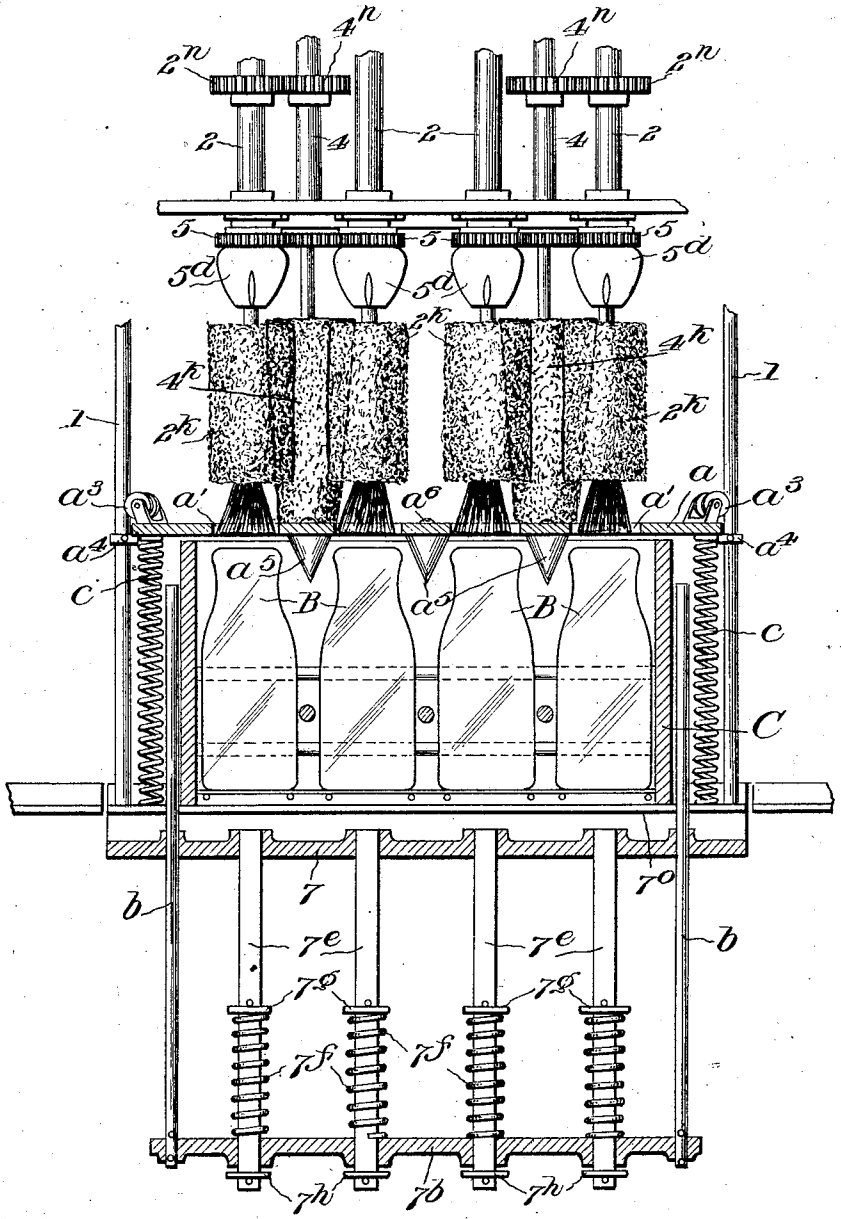
APPLICATION FILED MAR. 22, 1912.

1,049,832.

Patented Jan. 7, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

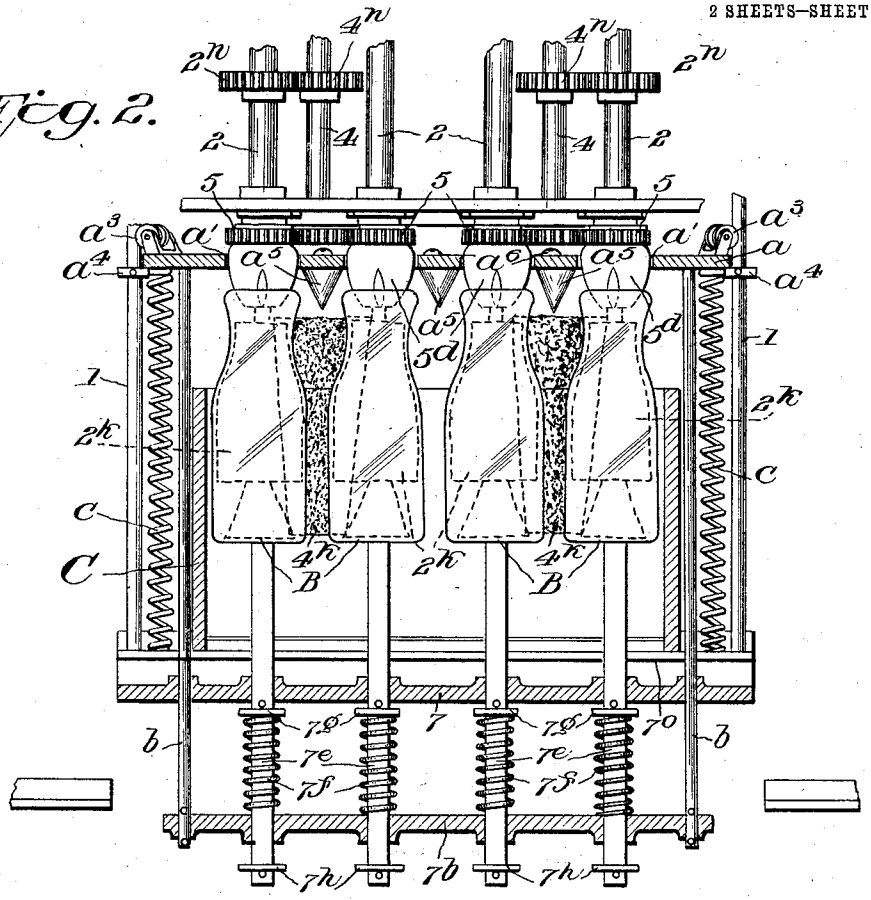
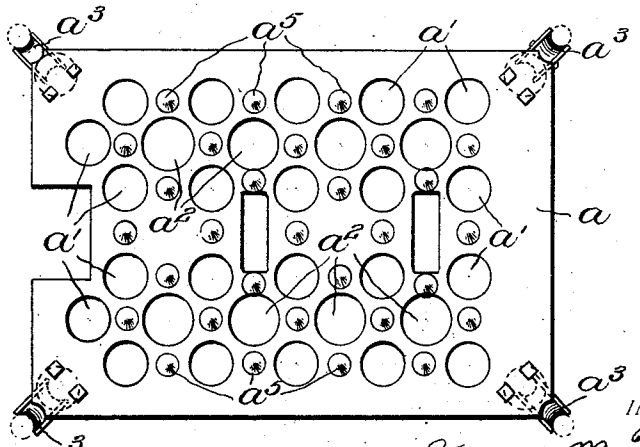


Fig. 3.



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UNITED STATES PATENT OFFICE.

JONAS M. FELGER, OF RICHMOND, VIRGINIA.

BOTTLE-WASHING MACHINE.

1,049,832. Specification of Letters Patent. Patented Jan. 7, 1913.

Application filed March 22, 1912. Serial No. 685,534.

To all whom it may concern:

Be it known that I, JONAS M. FELGER, of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Bottle-Washing Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to machines for washing bottles and in particular is an improvement upon the machine shown in my Patent No. 1,005,110 dated Oct. 31, 1911. In operating said machine I have found that occasionally a bottle might hang on a brush or stick to the plug when the bottles and crates were being lowered, then such bottle might drop and break, or, if it remained suspended it would be caught when the next crate of bottles was raised, and thus cause considerable annoyance and delay.

The primary object of the present invention therefore is to prevent such annoyances and to insure that all the bottles shall be properly presented to the brushes for scrubbing, as the bottles are raised toward the brushes, and that the bottles shall all clear the brushes and descend into and with the crate at the end of the scrubbing operations.

I will explain the invention as used in connection with the machine as shown in my aforesaid application, and set forth in the claims the novel features and combinations of parts for which protection is desired.

In said drawings—Figure 1 is a view of part of my aforesaid machine showing the bottles in a crate in position beneath the brushes, preparatory to being raised and scrubbed. Fig. 2 is a similar view showing the bottles in raised, scrubbing, position. Fig. 3 is a bottom plan view of the bottle controller plate.

The machine shown in my aforesaid application has four sets of vertically disposed interior brushes 2^k mounted on spindles which are rotated by suitable gearing; these brushes correspond in number with the number of bottles which a carrying crate contains: for example if such crate contains twenty bottles, then twenty brushes 2^k are employed; and so spaced apart that when such a crate of bottles is properly inserted in the machine, each bottle in the crate will come directly under a corresponding brush 2^k. The brushes 2^k are adapted to wash the interior of the bottles and are therefore referred to as "interior brushes." All the interior brushes can be rotated simultaneously; and each is yieldable vertically to enable the brush to adjust itself to slight variations in the height of the bottles, or unevenness of the bottle supports in the crates, to prevent injury to the bottles by being caught between unyielding surfaces. The bottles while in the crates are presented to said brushes by means hereinafter described; and while the bottles are being washed internally they are also scrubbed externally by means of "exterior brushes" 4^k attached to the lower ends of shafts 4 journaled in suitable supports; and there should be one exterior brush intermediate every four interior brushes in adjacent rows. The exterior brush shafts 4 may be driven by gears 4^n meshing with pinions 2^n on the adjacent shaft or shafts 2. By this arrangement of brushes each bottle in the crate can be scrubbed both externally and internally at the same time.

In order that the brushes 4^k may operate effectively on the bottles the latter are rotated during the scrubbing process by means of plugs 5^d attached to pinions 5, loosely mounted on the lower ends of the shafts 2. Each bottle plug 5^d is tapered on its lower side and is adapted to engage and partly enter the mouth of one of the bottles B.

The bottles B are yieldingly pressed upward during the scrubbing operations so that their mouths engage the plugs 5^d with sufficient force to cause the bottles to turn with the plugs, as the latter are rotated, and the bottles are thus caused to rotate slowly in a direction contrary to the rotation of the rapidly rotating interior brushes during the washing operations while the exterior brushes rotate oppositely to the interior brushes.

The bottles to be washed are arranged in ordinary bottomless crates C, having compartments for the bottles, which are supported in the compartments upon smaller intersecting wires, so that the bottles can be readily engaged by lifting devices operating from below the crate, upwardly, and between the intersecting wires. A crate of water-filled bottles is placed on a vertically movable platform 7 which can be raised and

lowered at the proper times by suitable means. Beneath the platform 7 is a second vertically movable platform 7^b, which may also be raised and lowered by suitable means. The platform 7^b however has a greater extent of vertical movement than platform 7. Movable with the platforms 7, 7^b, are a series of bottle lifting rods 7^e, which are guided in openings in the platforms 7, 7^b, and are normally projected upwardly by means of springs 7^f interposed between the platform 7^b and collars 7^g on the rods 7^e. The upward movement of these rods may be limited by collars 7^h thereon below platform 7^b.

At the beginning of a scrubbing operation the platforms 7, 7^b are lowered to the position shown in Fig. 1, and a crate of water-filled bottles may be slid in upon the crate supporting rails 7^c attached to the platform 7. The platforms 7, 7^b are then raised, and the bottles telescope with the interior brushes 2^k, see Fig. 2. Platform 7 is stopped before the bottles reach the plugs 5^d but the platform 7^b continues to rise and causes springs 7^f to project rods 7^e above the platform 7 and into the crate and engage the bottles B therein and raise the bottles partially out of the crate, as shown in Fig. 2, and into engagement with the plugs 5^d; then platform 7^b is stopped. The bottles are scrubbed by the exterior and interior brushes 2^k, 4^k, and the bottles are rotated by plugs 5^d oppositely to brushes 4^k. At the end of the scrubbing operation the platform 7^b is first lowered until the bottles are replaced in the crate, and then both platforms 7, 7^b descend until the crate is lowered to the position shown in Fig. 1; so that the crate of washed bottles can be removed, and a crate of bottles to be scrubbed substituted therefor.

The parts thus far described are or may be constructed and operated as described in my application aforesaid and to which reference should be had for a more complete explanation thereof.

In the operation of said machine it sometimes happens that a bottle may stick to the brushes or to the plugs, and not descend when the rods 7^e are lowered, or when the crate is lowered; but may subsequently drop and be liable to break itself, or break the bottles in the crate beneath, and thus cause considerable annoyance and delay. It also may sometimes happen that the bottles in the crate when rising toward the brushes may be knocked to one side and not properly engage the brushes or plugs. In order to prevent any of these possible contingencies, and insure that the bottle shall be properly guided over the interior brushes and to the plugs when lifted, and to insure that the bottles shall all descend with the rods and crate, I employ the following devices, which form the subject-matter of the present invention: A controller plate a is arranged above the platform 7, and normally lies in about the plane of the lower end of the brushes slightly above the top of a crate of bottles. This plate is provided with openings a' for the passage of the brushes 2^k and with openings a^2 for the passage of the brushes 4^k; and with other openings to accommodate gears in my said machine; it is also provided at its corners with grooved rollers a^3 by which it is guided upon the uprights 1. The plate in its lowermost position is upheld by collars a^4 secured to the uprights 1. The plate may be provided on its under side intermediate the brush openings with projections a^5, which may be small wooden cones secured to the plate by means of screws a^6. These cones guide the bottles into proper position around the interior brushes 2^k as the bottles rise. When the parts are in normal position, as indicated in Fig. 1, it will be seen that the controller plate a lies at the lower ends of the brushes and just above the crate C in which are the bottles. When the crate is lifted by the ascent of platforms 7, 7^b, as described, the plate a will be first raised by contact with the crate and bottles until the brushes 2^k have entered the bottles through openings in the plate; the plate rising past the brushes as the bottles telescope therewith. After the platform 7 has come to rest the platform 7^b continues to ascend as described so as to raise the bottles out of the crate; but the controller plate a is lifted, before the bottles are engaged by the rods 7^e, by means of rods b attached to platform 7^b and projecting through guide openings in the platform 7 beside the crate C. Rods b preferably extend sufficiently upward to engage the plate a just before the mouths of the bottles engage the plugs 5^d, so that when the bottles are engaged with the plugs the controller plate is lifted clear of the bottles as shown in Fig. 2, and is so held while the bottles are being scrubbed; in this way the controller plate does not at all interfere with the individual engagement of the bottles with the plugs, nor with the rotation of the bottles thereby. When the platform 7^b begins to descend at the end of the scrubbing operation the rods b first lower the plate a onto the bottles and the plate forces them into the crate C, and then as the platform 7 descends with the crate of bottles, the plate a will descend with it and would by its weight naturally tend to withdraw all the bottles from the brushes and plugs and cause them to descend with the crate. In practice I employ helical springs c connecting the plate a to the platform 7, and when the platform descends these springs positively but yieldingly compel plate a to descend and disengage the

bottles from the plugs and brushes, thereby avoiding any possibility of the latter remaining suspended on the brushes or plugs.

What I claim is:

1. In a bottle washing machine, the combination of a series of vertically disposed brushes, and means for presenting a similar series of bottles to the brushes and for withdrawing the bottles from the brushes at the end of the scrubbing operation; with means for guiding the bottles to the brushes and a plate normally located between the mouths of the bottles and the brushes and having a series of perforations corresponding to the series of bottles and adapted to positively disengage the bottles from the brushes at the end of the scrubbing operation.

2. In a bottle washing machine, the combination of a series of parallel brushes, and means for moving bottles simultaneously to and from the brushes to cause the bottles to telescope with the brushes; with a movable controller plate normally located between the mouths of the bottles and the brushes and adapted to move past the brushes with the bottles and to cause the bottles to be disengaged from the brushes at the end of the scrubbing operation.

3. In a bottle washing machine, the combination of a series of parallel brushes, means for supporting a series of bottles in upright position beneath the brushes, means for presenting the bottles to the brushes to be scrubbed thereby, and a movable controller normally located between the mouths of the bottles and the brushes and adapted to cause the bottles to be disengaged from the brushes.

4. In a bottle washing machine, the combination of a series of vertically disposed parallel brushes adapted to scrub the interior of bottles, gearing for simultaneously rotating all these brushes, a platform below the brushes adapted to support a series of bottles in upright position, means for moving the platform vertically toward the brushes so as to cause the latter to enter the bottles, and means for yieldingly raising each bottle in the crate during the scrubbing operation; with a movable controller normally located between the bottles and the brushes and adapted to disengage the bottles from the brushes at the end of the scrubbing operation.

5. In a bottle scrubbing machine, the combination of a series of parallel brushes adapted to scrub the interior of the bottles, rotatable plugs concentric to the brush shaft adapted to engage the mouth of the bottle and to rotate the latter during the scrubbing operation, and means for presenting a series of bottles over the brushes and into contact with the plugs during the scrubbing operations; with a plate normally located between the bottles and the brushes and provided with openings for the passage of the brushes, means for raising said plate clear of the bottles while they are engaged with the plugs, and means for returning the plate to normal position.

6. In a bottle scrubbing machine, the combination of a series of parallel brushes adapted to scrub the interior of the bottles, and means for presenting a series of bottles over the brushes; with a plate provided with apertures for the passage of the brushes and provided with cones on its under side adjacent the apertures to center the mouths of the bottles relative thereto.

7. In a bottle washing machine, the combination of a series of vertically disposed brushes, and means for presenting a similar series of bottles to the brushes and for withdrawing the bottles from the brushes at the end of the scrubbing operation; with a movable controller plate normally located between the bottles and brushes and provided with openings for the passage of the brushes; and means for raising said plate clear of the bottles, and means for causing the plate to positively disengage the bottles from the brushes at the ends of the scrubbing operations.

8. In a bottle scrubbing machine, the combination of a series of parallel brushes adapted to scrub the interior of the bottles; means to rotate the bottles during the scrubbing operation, and means for presenting a series of bottles over the brushes during the scrubbing operations; with a plate provided with apertures for the passage of the brushes and provided with cones on its under side adjacent the apertures to center the mouths of the bottles relative thereto, means for raising said plate clear of the bottles while they are engaged with the plugs, and means for causing the plate to positively disengage the bottles from the brushes at the ends of the scrubbing operations.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

JONAS M. FELGER.

Witnesses:
JAMES R. MANSFIELD,
JNO. M. ALEXANDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."