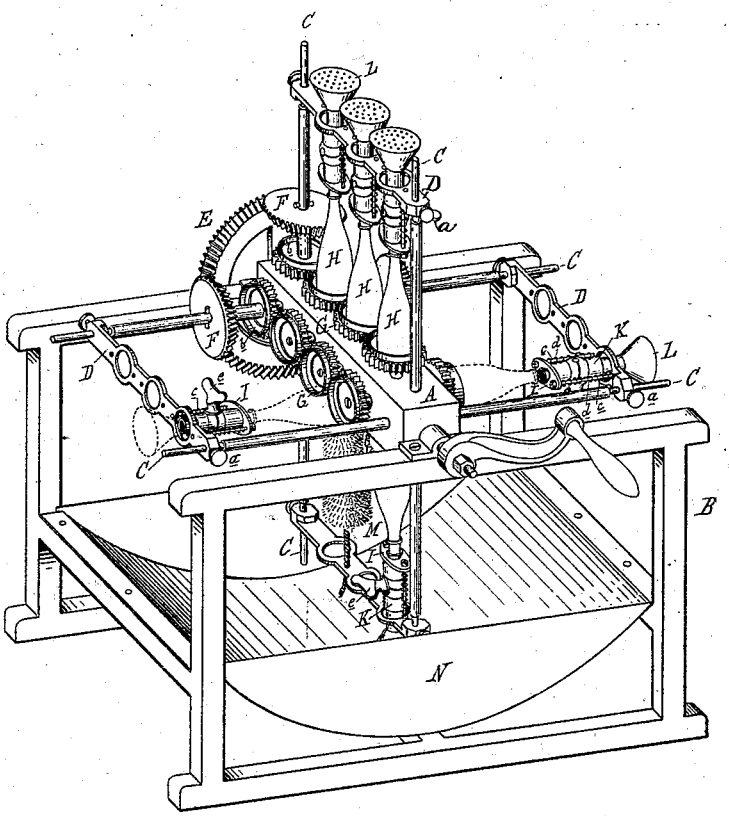
R. SCHULZ & E. O. NAGEL.
Bottle-Washing Machine.

No. 216,899. Patented June 24, 1879.



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RUDOLPH SCHULZ AND EMIL O. NAGEL, OF DETROIT, MICHIGAN.

IMPROVEMENT IN BOTTLE-WASHING MACHINES.

Specification forming part of Letters Patent No. **216,899**, dated June 24, 1879; application filed December 4, 1878.

To all whom it may concern:

Be it known that we, RUDOLPH SCHULZ and EMIL O. NAGEL, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Bottle-Washing Machines, of which the following is a specification.

The nature of this invention relates to new and useful improvements in machines for simultaneously washing or cleaning the interior and exterior of bottles, such as are used extensively for putting up wines and beer.

The invention consists in the details of construction of the various parts and their necessary combinations, as more fully hereinafter described.

In the accompanying drawing, which forms a part of this specification, our invention is shown in perspective.

A represents a shaft, suitably journaled at each end upon a proper frame, B, and to this shaft any suitable power may be applied. This shaft, with the exception of the journals, is preferably made square, as shown, or polygonal in shape, to form a base upon each face of said shaft for a train of gearing.

Standards C are rigidly secured to each face of the shaft, and upon each pair of such standards is sleeved the yoke D, adjustable in or out upon said standards by means of the set-screws *a*.

Secured to one side of the frame, and axially central with the shaft, is the bevel burr-wheel E, which gives motion to bevel-pinions F, which are secured to thimbles sleeved upon the standards contiguous to that side of the frame to which the burr-wheel is secured. To the inner end of each of these thimbles is secured a pinion, *b*, which engages with and gives motion to a train of cog-wheels, G, the inner ends of the hubs of which are suitably stepped at equal distances apart in each face of the shaft. The outer faces of these cog-wheels are recessed to receive the bottom ends of the bottles H; and if desired there may be imposed a cushion between the bottom of each bottle and the metal-face of the recess on which it rests to diminish danger of breaking.

Supported from the inner side of the yoke are a series of smaller yokes, I, by means of the rods *c*, and these yokes are readily adjustable by means of the springs *d*, wound upon the rods which support them. Secured within a central aperture in said yokes I are the tubes K, each one being provided with a stop-cock, *e*. Upon the outer ends of these tubes are sleeved the funnel-shaped shot-receptacles L, the outer ends of which are provided with perforated heads, as shown. The inner ends of the tubes K are designed to engage with the neck of the bottle, and may be provided with rubber cups or cushions to prevent contact between the glass and the metal.

Brushes M, of a conical shape, corresponding to the shape of the bottles, are stretched from the shaft A to each yoke D, one between each pair of bottles, so that each pair of bottles in their rotation will be brought into contact with opposite sides of the brush. In the drawings but one brush is shown; but in the construction of a machine they are put in as above described.

Secured within the frame and below the revolving mechanism is a water-tank, N, so arranged that as each series of bottles are presented in rotation the outer ends of the standards and their attachments pass through the water.

Each face of the shaft should be provided with the devices and their attachments hereinbefore described, each series to receive motion from the burr-wheel.

The tank N is to be filled, or partly filled, with water, and as each row of bottles is swung through the tank the brushes for cleaning the outsides of the bottles are furnished with water, and some water passes through the perforated heads of the funnels L and acts with the shot to clean the interior of the bottles as they move.

In practice one of the faces of the shaft is presented upward, the bottles to be cleaned set into the recesses of the cog-wheels, and the small yokes raised sufficiently to allow the neck of the bottle to enter the inner ends of the tubes, the stop-cocks of which are open. The shot-receptacles are then removed, filled with shot, and replaced, when the shot will pass through the tubes into the bottles. The stop-cocks are now closed, the next face of the shaft presented, and the same operations performed until the various faces of the shaft are filled with bottles to be cleaned. The shaft is

then rapidly rotated, whereby the shot are rapidly thrown from top to bottom of the bottles, and in all directions, cleaning thoroughly the interior while the brushes are cleaning the exterior of the bottles. When this is sufficiently done the stop-cocks are opened in each series, when the mouths of the bottles are presented vertically downward, to retain the shot in their receptacles, into which they will pass when the bottles are in the position last described.

By the use of a machine substantially as described, wherein the exterior and interior of the bottles are simultaneously cleaned, a great saving in labor, with more thoroughness in result, is obtained than by the use of machines as ordinarily constructed.

What we claim as our invention is—

1. In a bottle-washing machine, the combination, with a water-tank, of a horizontal shaft revolving above said tank, and carrying one or more rows of bottles projecting radially from said shaft and dipped into the water of the tank as the shaft revolves, and shot placed within such bottles, which shot is rapidly thrown from one end to the other to clean the interior of the same, substantially as described and shown.

2. In a bottle-washing machine, the combination, with a water-tank, of a horizontal shaft, above such tank, carrying one or more rows of radially-projecting bottles, shot placed within the bottles for cleaning their interior, and brushes carried by the shaft for cleaning the exterior of said bottles, substantially as described and shown.

3. In a bottle-washing machine, the combination, with a tank, of a horizontal shaft revolving above it, and carrying bottles, each of which is turned on its own axis, and brushes mounted in the bottle-clamping frames between the bottles, substantially as described and shown.

4. A bottle-cleaning machine consisting of the frame B, shaft A, standards C, yokes D, burr-wheel E, bevel-pinions F, pinions *b*, cog-wheels G, yokes I, tubes K, receptacles L, and brushes M, when constructed and arranged to operate substantially in the manner and for the purposes specified.

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Witnesses:
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