(No Model.)

J. F. LEEPER.

BOTTLE WASHER.

No. 574,155. Patented Dec. 29, 1896.

Fig. 3.

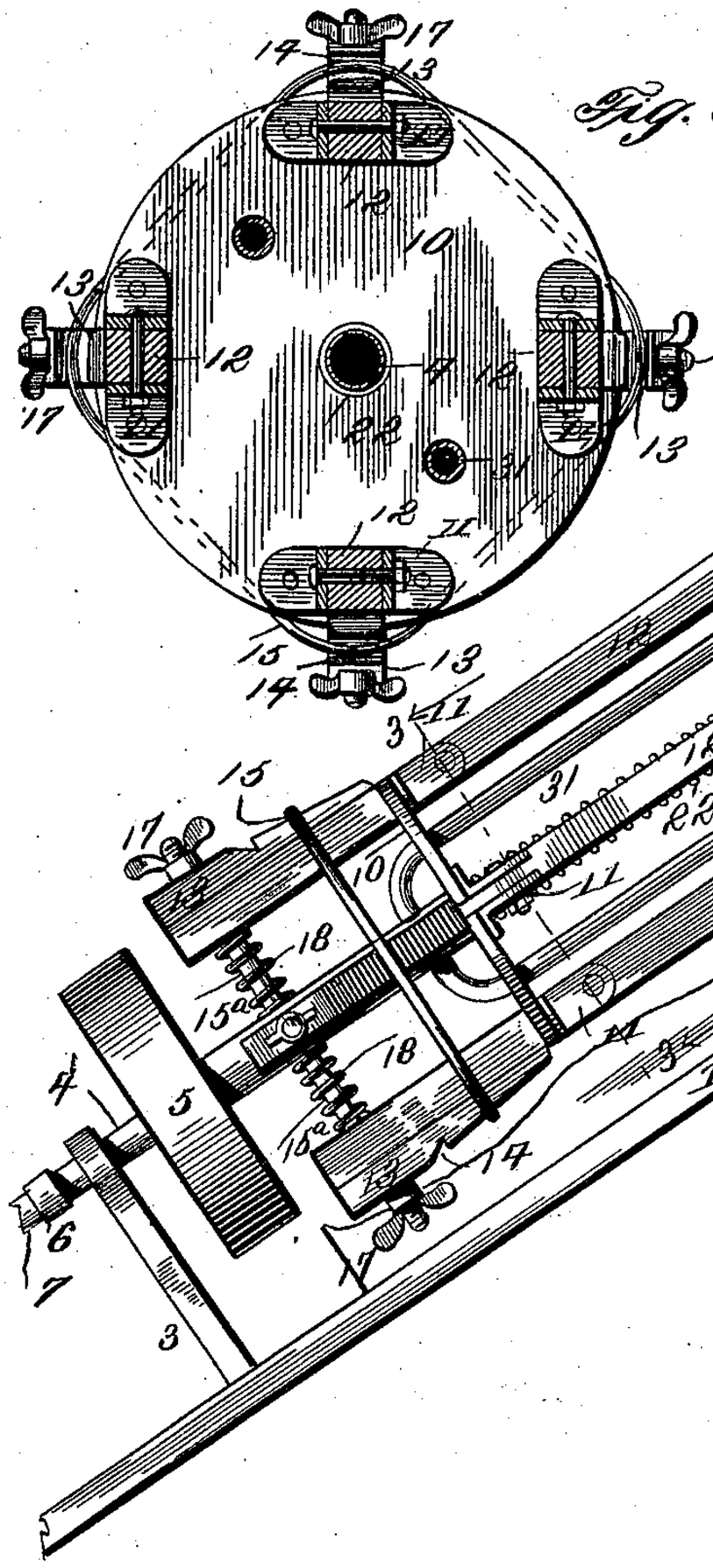
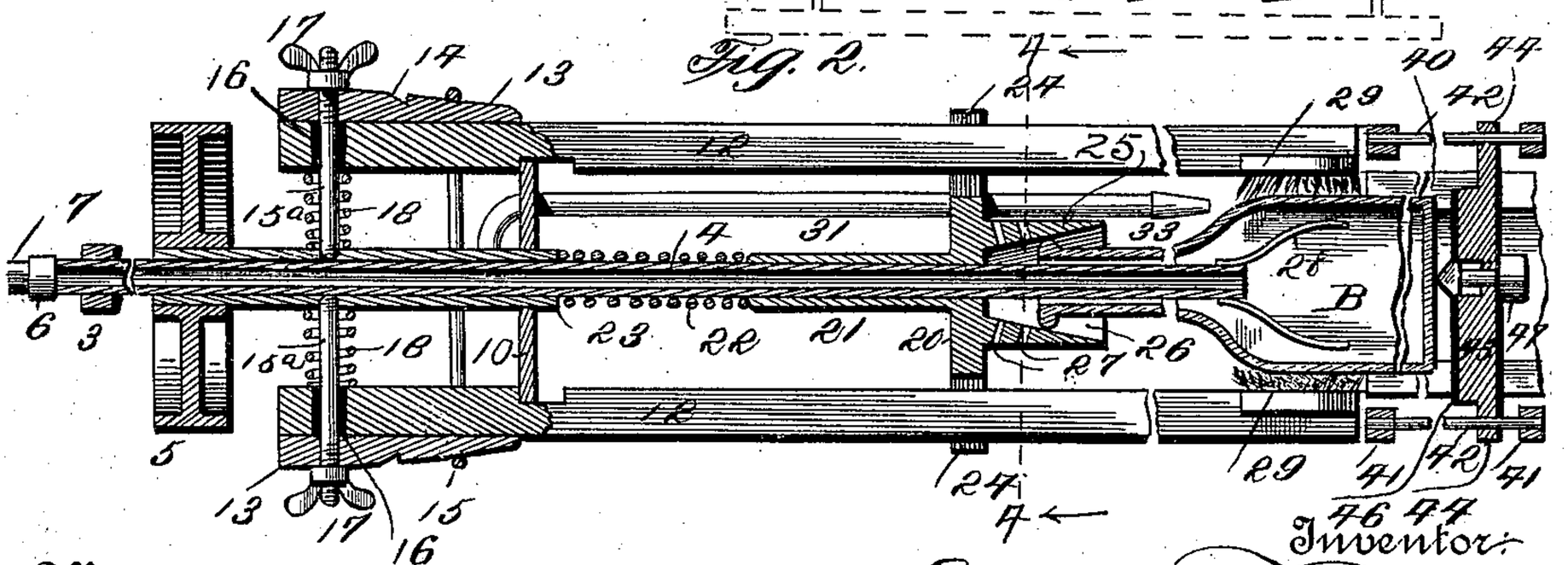


Fig. 1.

Fig. 4.

Fig. 2.



Witnesses:
J. H. Jochum Jr.
John Dennie

Inventor:
James F. Leeper,
by Collamer & Co., Attorneys.

UNITED STATES PATENT OFFICE.

JAMES FRANKLIN LEEPER, OF LEWISTOWN, PENNSYLVANIA.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 574,155, dated December 29, 1896.

Application filed May 7, 1896. Serial No. 590,557. (No model.)

To all whom it may concern:

Be it known that I, JAMES FRANKLIN LEEPER, a citizen of the United States, and a resident of Lewistown, Mifflin county, State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Washing Machines; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to washing apparatus, and more especially to that class of devices thereunder known as "bottle-washers;" and the object of the same is to produce a machine of this character which will wash the inside, outside, and bottom of a bottle simultaneously.

To this end the invention consists in the specific details of construction hereinafter more fully described and claimed, and as illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of this machine complete with its parts in position ready for the reception of a bottle. Fig. 2 is a longitudinal section taken on a plane through the center of the main shaft and showing the machine with a bottle in position in the act of being washed. Fig. 3 is a section on the line 3 3 of Fig. 1, looking toward the wheel which carries the brackets. Fig. 4 is a section on the line 4 4 of Fig. 2, looking toward the disk.

Referring to the said drawings, the numeral 1 designates a suitable base mounted on proper supports, so as to stand at an angle to a horizontal plane, and 2 is a casing approximately of semicircular shape rising from such base and covering or inclosing the rotary portions of the mechanism hereinafter described, as will be understood, although this casing is herein shown as broken away, the better to illustrate the mechanism therein contained. In bearings 3, supported by the base, is mounted a main shaft 4, which is tubular, and to it rotary motion is imparted by the main driving-wheel 5, which may be driven by a flat belt, a chain belt, or gearing led from a suitable source of power. (Not shown.)

6 is a coupling with which the inlet end of the main shaft or pipe is connected with a water-supply pipe 7, whereby water is fed to and through said tubular shaft 4 in an obliquely-upward direction, it being understood that after having served its purpose this water flows back over the oblique base 1 to the sewer or other receptacle. On said main shaft is rigidly mounted a wheel 10, carrying pairs of brackets 11, (preferably four in number,) in which are pivoted arms 12, whose inner ends extend beyond the wheel 10 and carry wedges 13 on their outer faces, provided with notches 14, and 15 is a collar or band surrounding these wedges and adapted to be moved on the same until it engages the notches 14, for a purpose to be described below.

15ª are rods secured to the shaft 4, radiating therefrom, extending through slots 16 in the arms 12, and carrying thumb-nuts 17 at their outer ends, and 18 are expansive springs carried on said rods between the exterior of the shaft 4 and the inner faces of the arms 12. By this construction, when the thumb-nuts 17 are tightened, the inner ends of the arms 12 are pressed toward the shaft 4; but when said thumb-nuts are loosened such inner ends of the arms are permitted to move away from the shaft 4 under the influence of the springs 18. These thumb-nuts are useful for adjusting the positions of the arms 12 individually about their pivots in the brackets 11, while the collar 15 is for adjusting them around their pivots simultaneously in a manner which will be clear.

The numeral 20 designates a disk whose hub 21 slides on the main shaft 4 and is borne outwardly thereon by an expansive spring 22, bearing against the end of a sleeve 23, mounted on said shaft. The disk 20 is provided with radial slots 24, in which the arms 12 are permitted to move as they are adjusted around their pivots in the brackets 11. The forward end of said hub 21, or that portion thereof in front of the disk 20, is enlarged, as at 25, and is conical on its interior, as at 26, while its body may be provided with a series of holes 27, through which the water flowing through the main shaft 4 into the interior of the bottle may pass outward in a manner described below. The extreme outer end of the main shaft 4 carries a device 28 for washing the interior of the bottle, and whose construction I do not herein describe for the reason that any suitable device of this character and for this purpose may be here employed. At-

tached to the outer or free ends of two of the arms 12 are brushes 29 of bristles, and attached to the intermediate arms are brushes 30 of wire, the construction of these brushes being such as preferred and forming no essential part of the present invention.

In order to supply water to the exterior of the bottle, I employ two (more or less) tubes or pipes 31, which open from the shaft 4, preferably at a point adjacent the wheel 10, extend thence parallel with said shaft through holes 32 in the disk 20, and have their outer or free ends 33 provided with jets or nozzles directed toward and upon the bottle, the bodies of these pipes standing parallel with the main shaft, so that the disk 20 may be adjusted longitudinally thereon in a manner described below. The water flowing in at 7 and through the coupling 6 passes into the main shaft 4, and thence into the interior of the bottle, while some of it passes through the pipes 31 and is directed by their delivery ends onto the exterior of the bottle in a manner which will be clear.

The numeral 40 designates a support for a bottle, preferably grooved or recessed on its upper side, so as to adapt it to hold a bottle of any size, (within certain limits,) and rising from this support are posts 41, carrying rods 42, standing parallel with the groove in the support.

43 is a presser-plate having side ears 44 loosely mounted on said rods 42 and preferably provided with a handle 45, by which it may be manipulated longitudinally of the support. The inner or front face of this plate is covered or coated with a rubber facing-sheet, a brush, or other suitable scraping or washing device 46, adapted to press against the bottom of the bottle, and through the center of this sheet passes a pin 47, which is adapted for longitudinal movement, so that its point may engage the depression in the bottom of the bottle, as seen in Fig. 2.

All parts of this machine are of the desired sizes, shapes, proportions, and materials, and considerable change in the specific details of construction may be made without departing from the principle of my invention.

In use, fresh water being admitted through the pipe 7 and rotary motion imparted to the device through the instrumentality of the wheel 5, the parts stand normally as seen in Fig. 1. The free ends of the arms 12, carrying the brushes, may be thrown simultaneously outward by adjusting the ring or collar 15, or such brushes may be adjusted individually or in pairs by setting the thumb-nuts 17 in a manner which will be clear. Having adjusted such brushes to the proper distance from the axial line of the machine, the bottle B is placed upon the grooved support 40 with its bottom against the presser-plate 43, and the latter is borne forward by its handle 45 (its ears 44 sliding on the rods 42) until the mouth of the bottle receives the interior-washing device 28 and is borne into the conical mouth 26 at the outer end of the hub of the disk 20. Further pressure on the plate 43 moves said hub longitudinally on the hollow shaft 4 against the tension of the spring 22 until the interior-washing device 28 passes down within the bottle, so as to cleanse all parts of the interior thereof, the inflowing water meanwhile passing into the bottle through said shaft 4 and thence passing out of the bottle and flowing away. The water is applied to the exterior of the bottle through the pipes 31, and the brushes 29, revolving upon the exterior of the bottle while it is wet, thoroughly cleanse that portion thereof. If there be a label pasted upon the bottle, the wire brushes will quickly and effectually remove the same by tearing it into shreds, while the bristle brushes will remove all particles of the label and other extraneous matter from every portion of the exterior of the bottle. In order to wash the bottom of the bottle on the exterior, the operator presses on the pin 47, which moves said bottom away from its close frictional contact with the brush or rubber sheet 46 on the face of the plate 43 and permits the rotation of the bottle about the pin 47 and in contact with the facing-sheet 46, so as to cause the washing of said bottom in a manner which will be clear. After the bottle has been thoroughly cleansed inside and out the plate 43 is retracted and the spring 22 throws the bottle backward upon the support 40, whence it is removed and is ready for future use, while the machine is in condition for the reception of another bottle for washing, in a manner which will be clear. Obviously the collar 15 may be set on the wedges 13, so as to limit the inward movement of all the brushes, as may be desired, or the thumb-nuts 17 may be adjusted on the threaded rods 15^a to limit the inward movement of said brushes individually under the tension of the springs 18, whereby the bristle brushes alone may be employed, or wire brushes alone, or both kinds of brushes with the same or different degrees of pressure upon the exterior of the bottle.

The device for washing the exterior of the bottom of the bottle may be replaced by mechanism of different construction without departing from the principle of my invention.

This machine will be found to quickly and thoroughly cleanse bottles of varying sizes, both interiorly and exteriorly, as well as to remove therefrom all labels, tin-foil, and other foreign substances; and its operation is automatic in every detail excepting only the actual presentation and longitudinal movement of the bottle itself, excepting possibly the adjustment of the arms 12 so that the brushes shall properly bear upon all portions of the exterior of the bottle.

What is claimed as new is—

1. In a bottle-washing machine, the combination with a rotary hollow shaft, a wheel carried thereby, arms pivoted in said wheel and standing approximately parallel with the shaft, brushes carried by the free ends of said

arms, and springs pressing said brushes normally inward; of a disk whose hub slides longitudinally on said shaft and is provided with a conical mouth, said disk having a series of radial slots in which the arms move, and a spring forcing said conical mouth toward the end of the shaft, as and for the purpose set forth.

2. In a bottle-washing machine, the combination with a rotary hollow shaft, a wheel carried thereby, arms pivoted in said wheel and standing approximately parallel with the shaft, brushes carried by the free ends of said arms, and means for limiting the movement of the brushes; of a disk sliding on the shaft and having radial slots in which said arms move and provided with a conical mouth for the reception of the mouth of the bottle, as and for the purpose set forth.

3. In a bottle-washing machine, the combination with a rotary hollow shaft, a wheel carried thereby, and a radially slotted disk also carried thereby and having a hub with a conical mouth; of arms pivoted in said wheel and movable radially in the slots of said disk, inwardly-facing brushes carried by the free ends of said arms, rods radiating from said shaft and passing through the inner ends of the arms, expansive springs between the shaft and said inner ends, and thumb-nuts on the outer ends of said rods, as and for the purpose set forth.

4. In a bottle-washing machine, the combination with a rotary hollow shaft, and a wheel carried thereby, the end of the shaft having a conical mouth; of a series of arms pivoted in said wheel, inwardly-facing brushes at their outer ends, wedges on the outer sides of their inner ends, a collar surrounding said inner ends and wedges, expansive springs between the shaft and said inner ends, and means for limiting the outward throw of said springs, as and for the purpose set forth.

5. In a bottle-washing machine, the combination with a rotary hollow shaft having a sleeve forming a shoulder, a wheel carried by said shaft and having brackets, a series of arms pivoted in said brackets and standing approximately parallel with the shaft, brushes of wire and of bristles carried by the front ends of alternate arms, and means for adjusting the opposite ends of said arms to and away from the shaft; of a disk whose hub slides longitudinally on said shaft and is provided with a conical mouth, the body of the disk having radial slots for the reception of said arms, and an expansive spring between said disk and the shoulder of the shaft, as and for the purpose set forth.

6. In a bottle-washing machine, the combination with a hollow rotary shaft, a disk thereon whose hub has a conical mouth and whose body is provided with radial slots, and a series of arms pivotally connected with the shaft, extending through said slots, and having inwardly-facing brushes on their free ends; of pipes leading outwardly from said shaft, extending through holes in said disk, standing parallel with the shaft, and having their delivery ends directed toward the brushes, as and for the purpose set forth.

7. In a bottle-washing machine, the combination with a base having bearings, a hollow rotary shaft journaled therein and carrying at its extremity an interior-washing device, a spring-pressed cone mounted on said shaft, and a series of brushes carried by the shaft for washing the exterior of the bottle; of a bottle-support mounted upon said base, posts rising therefrom, longitudinal rods connecting the posts in pairs, and a presser-plate for the bottom of the bottle having lateral perforated ears sliding on said rods, as and for the purpose set forth.

8. In a bottle-washing machine, the combination with a base, a hollow rotary shaft, carried thereby, a spring-pressed cone mounted on said shaft, and a series of brushes connected with the shaft for washing the exterior of the bottle; of a bottle-support, also carried by the base, a presser-plate movable longitudinally on guides carried by the support, a handle on the rear of said plate, and a facing on the front of said plate making frictional contact with the exterior of the bottom of the bottle, as and for the purpose set forth.

9. In a bottle-washing machine, the combination with a base, a rotary shaft thereon having a spring-pressed conical mouth for the reception of the bottle-mouth, and a series of brushes carried by said shaft for washing the exterior of the bottle; of a bottle-support on the base, a presser-plate movable longitudinally thereon and having a facing-sheet on its front face bearing frictionally against the exterior of the bottom of the bottle, and a pin movable longitudinally through said support and through the center of such sheet so as to impinge against the bottom of the bottle, as and for the purpose set forth.

10. In a bottle-washing machine, the combination with a base, a hollow rotary shaft carrying interior bottle-washing devices, a spring-pressed cone mounted on said shaft, and a series of radially-adjustable brushes carried by said shaft for washing the exterior of the bottle; of a bottle-support, a presser-plate mounted longitudinally thereon, a sheet carried by the face of said plate and bearing frictionally against the exterior of the bottom of the bottle, and a longitudinally-movable pin adjustable through the center of said sheet, as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature on this the 6th day of May, A. D. 1896.

JAMES FRANKLIN LEEPER.

Witnesses:

C. B. WINN,

JOHNSON MUTHERSBAUGH.