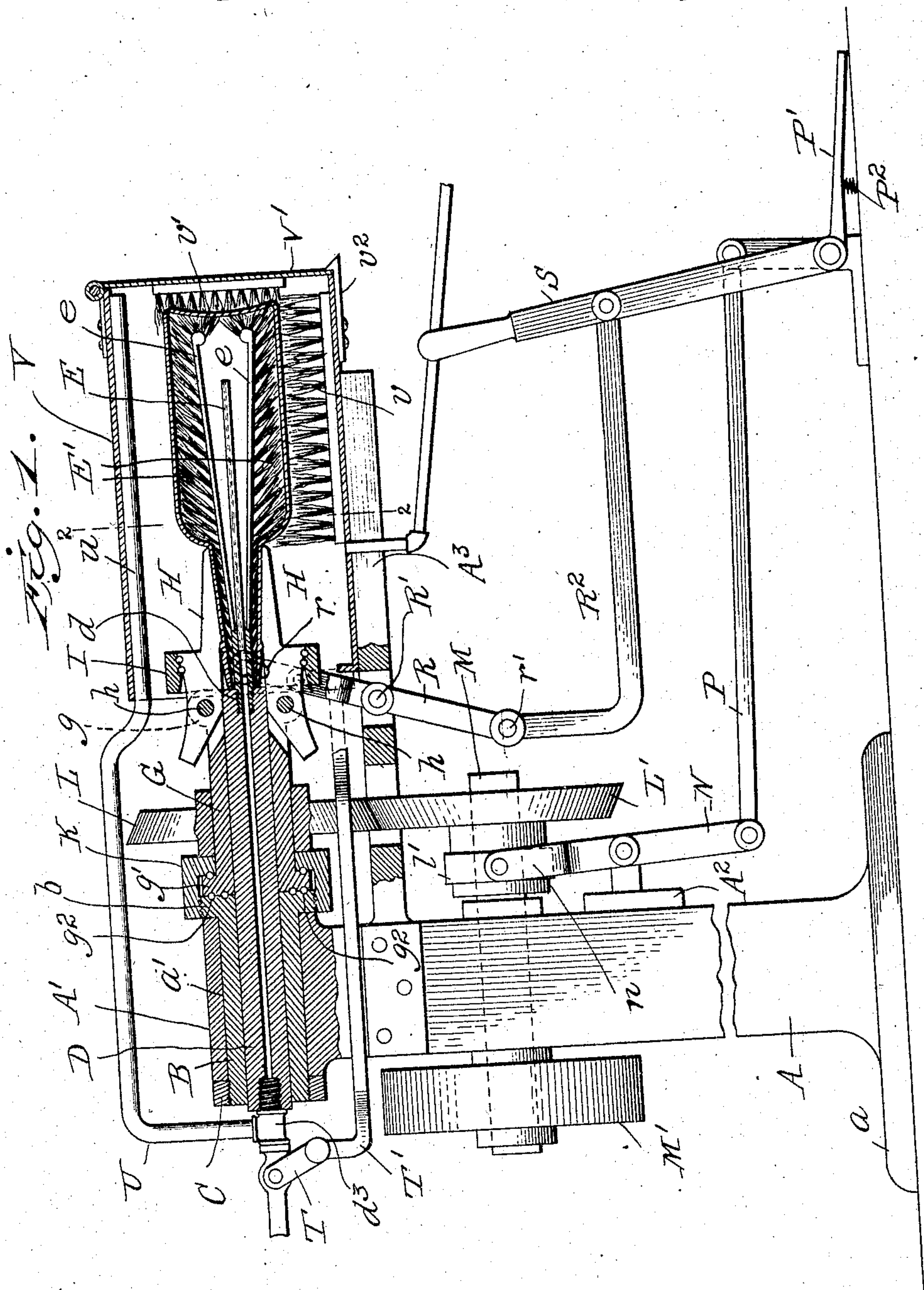


No. 786,747.

A. FORBES.
BOTTLE WASHING MACHINE.
APPLICATION FILED JULY 15, 1904.

PATENTED APR. 4, 1905.

2 SHEETS—SHEET 1.



Witnesses
Edwin L. Jewell
Emily E. Marks.

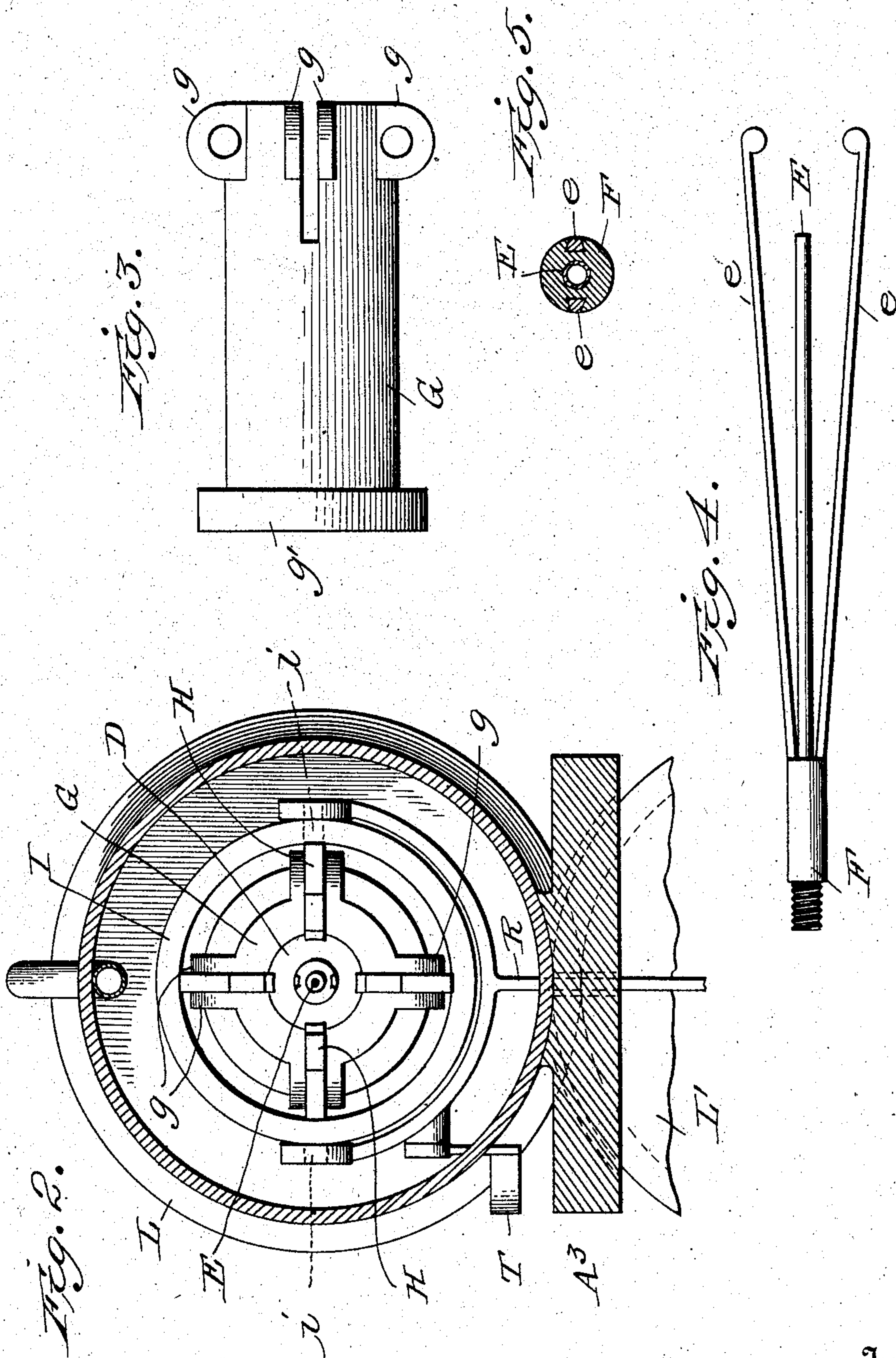
Inventor
Andrew Forbes
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UNITED STATES PATENT OFFICE.

ANDREW FORBES, OF PHILADELPHIA, PENNSYLVANIA.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 786,747, dated April 4, 1905.

Application filed July 15, 1904. Serial No. 216,672.

To all whom it may concern:

Be it known that I, ANDREW FORBES, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a full, clear, and exact specification.

This invention relates to power-machines for washing bottles, jars, cans, and the like, and particularly to that class of such machines in which the brushes are held stationary and the bottle or other article is rotated in contact with such fixed brushes.

One object of the invention is to adapt the machine to different sizes or shapes of bottles.

Another object is to avoid the expense and annoyance of swivel-joints in the water-tube.

With these and other objects in view the invention consists in the construction of the machine, which will now be described in detail, and the novel features and combinations set forth in the claims at the close of this specification.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a machine embodying my invention. Fig. 2 is a sectional view taken on the line 2 2 of Fig. 1, the bottle and brush being removed. Fig. 3 is a plan view of the revoluble sleeve removed. Fig. 4 is a detail view of the plug carrying the brush and nozzle removed, and Fig. 5 is a cross-section of said plug.

A suitable standard or column A is provided at its lower end with a broad base *a* to afford stability to the machine and terminates at its upper end in a head A', recessed at *a'* to receive a flanged sleeve or bushing B, secured therein in any suitable way—as, for instance, by the nut C, as shown. Seated immovably in the bushing B is a hollow shaft D, the forward end of which is extended some distance beyond the flanged end *b* of the bushing B and is provided with a water-discharge nozzle E, designed to discharge or spray water into the bottle or other vessel to be washed. As the machine is designed for cleaning long or short bottles or jars and it is desirable that the nozzle E should be of a length best adapted to the particular size of bottles handled, I

prefer to provide a number of such nozzles of different sizes either in length or diameter, or both, and provided at the end with a screw-plug F, fitting a threaded socket *d* in the end of the shaft.

The surface of the shaft D exterior to the head A' and bushing B is turned to a true cylinder and constitutes a spindle upon which is mounted to rotate a sleeve G. This sleeve is at its outer end provided with perforated lugs *g*, arranged in pairs, and between each pair a clamp member H is pivoted on a pin *h*, passing through the lugs and clamp member, the several clamp members being shaped interiorly at their outer ends to fit the mouth of a bottle or jar and forming jointly a bottle-clamp to grip a bottle firmly, so that it will rotate with the sleeve. The outer surfaces of the clamp members are curved inward or concaved, as shown, and are encircled by a slide-ring I, adapted to be moved longitudinally on the clamps past the center or pivot *h* thereof, thus serving to contract or distend the shaped jaws of the clamp.

To prevent longitudinal movement of the sleeve G on its shaft D, it is provided at its inner end with a flange *g'*, which is embraced by a coupling-nut K, the outer end of which is threaded to engage the threaded periphery of the flange *b* of the bushing B, and to insure absence of friction between the flange *g'* and coupling-nut and the flanges *g'* and *b* I interpose antifriction-balls *g''*, as indicated.

The sleeve G and its adjuncts, it will be seen from the foregoing, are designed to be removed from the shaft or spindle D by unscrewing the coupling-nut K from the flange *b* of the bushing B and slipping said sleeve and adjuncts off of the end of the spindle. This is of great advantage, as one machine may be adapted thereby to washing either bottles or wide-mouth jars, such as milk-jars, it only being necessary to substitute for one size or style of sleeve and bottle-clamp another of the size needed for a particular size bottle or jar.

The nozzle E is surrounded by brushes E', as shown, to contact with the inner surface of the bottle as the latter is rotated. These brushes are preferably constructed of bristles firmly secured to outwardly-diverging spring-

arms e , secured at their inner ends to the screw-plug F by dovetail-joints and screws or pins or in other suitable ways, it being essential, however, that the spring-arms of the brush or brushes be given full freedom from the plug F to their free ends, so that they may be readily inserted in the bottle-mouth and will then spring outward, causing the bristles to contact with the interior surface of the bottle. These spring-arms e , armed with bristles, are preferably detachably secured to the screw-plug F in order that they may be replaced by others should an arm break or the bristles wear.

Keyed to the sleeve G is a friction-wheel L, positioned for frictional driven contact with a friction-wheel L', mounted on a shaft M, journaled in suitable bearings carried by the standard A and provided with a pulley M', by which it is driven continuously from a suitable source of power.

Projecting from the standard at a point below the shaft M is a bracket A², to which is fulcrumed a lever N, the upper end of which is provided with a yoke n , engaging trunnions on a collar L', mounted on the hub of the friction-disk L' in such manner that the hub will rotate within it, the lower end of the lever being united by connecting-rod P to a foot-treadle P', as shown, the arrangement being such that the depression of the foot-treadle will cause the engagement of the friction-wheels L L', and thus cause the rotation of the sleeve G; but upon release of said treadle the friction-wheels will again be freed from driving contact, thus causing rotary motion to said sleeve to cease. In practice I prefer to support the treadle by a spring P², so that force must be exerted to bring the friction-disks into driving contact.

The ring I embracing the bottle-clamp is provided with trunnions i , which engage slots r in the upper end of a lever R, fulcrumed at R' on a bracket A³ of the machine-frame, the lower end of the lever being connected by a pivot-pin r' with one end of a connecting-rod R², the other end of which is pivoted on a hand-lever S, as shown. From this construction it will be apparent that movement of the hand-lever in one direction or the other will shift the ring I to one side or the other of the fulcrums of the bottle-clamp members, thus serving to contract the clamp-jaws to grasp a bottle or to distend them to release the same.

The nozzle E constitutes the continuation of a water passage or duct formed by the interior bore of the shaft D. The opposite end of the shaft is connected by a suitable fitting d^3 with a valved water-supply pipe, (to supply either hot or cold water,) the valve thereof being united by link T and connecting-rod T' with the lever R, controlling the bottle-clamp, the purpose being that the valve will be turned to close the water-supply when the jaws of the

bottle-clamp are distended and opened to permit the flow of water when the jaws of the clamp have been contracted to grasp a bottle.

Between the valve of the water-pipe and the end of shaft D another water-pipe, U, is connected, its other end terminating in a perforated length u , serving to spray water on the exterior surface of the bottle.

The bottle-clamp and spray-nozzles are located within a closed casing V, armed at its sides and bottom with brushes v to contact with the exterior surfaces of a rotating bottle, the end being closed when in operation by a door V', which is provided with a brush v' to scour the bottom of the bottle. The door may be retained in a closed position by the spring-hook v^2 , as shown, or by other suitable means.

The bottom of the casing V is provided at its inner end with a flange or upturned portion to prevent the water from running over the operating parts of the machine and is also provided with a drip-pipe or opening, to which may be connected a pipe or tube to carry off the water.

While but a single nozzle and set of brushes have been described, it is my purpose to group a number of them side by side or otherwise conveniently located to the end that one or a number of attendants may be operating the several nozzles, &c., in different stages of the bottle-cleansing operation.

In operation the brush will be grasped and compressed, a bottle passed over it and into contact with the exterior brushes. The hand-lever S will then be shifted to cause the bottle-clamp to grasp the mouth and neck of the bottle and at the same time and by the same movement of the lever the valve of the water-fitting will be turned to cause the water to flow to the nozzles. By now depressing the treadle P' the friction-wheels are forced into driving contact, thus causing the rotation of the sleeve G and the bottle-clamp and bottle which it carries.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a bottle-washer of the class described, the combination of a bottle-clamp, a valved water-supply, and means to simultaneously operate the bottle-clamp and the valve controlling the water-supply.

2. In a bottle-washer of the class described, the combination of a rotatable bottle-clamp, a valved water-supply, and means to simultaneously operate the bottle-clamp and actuate the valve controlling the water-supply.

3. In a bottle-washer of the class described, the combination of a fixed hollow shaft or spindle provided at its end with a nozzle and brush, a revoluble sleeve mounted on the shaft and provided at its end with a bottle-clamp, a valved water-pipe connected with the shaft

or spindle remote from the nozzle, and means to simultaneously operate the bottle-clamp and the valve of the water-pipe.

4. In a bottle-washer of the class described, the combination of a fixed hollow shaft provided with pipe connections, a revoluble sleeve detachably mounted on the shaft and provided with a bottle-clamp, substantially as described.

5. In a bottle-washer of the class described the combination of a fixed hollow shaft provided at one end with a nozzle and brush and at the other end with a valved fitting, a revoluble sleeve detachably mounted on the shaft and provided with a bottle-clamp.

6. In a bottle-washer of the class described, the combination of a fixed hollow shaft supported on a standard and connected at its ends with a valved fitting and a brush and nozzle, a revoluble sleeve mounted on the shaft and provided at its end with a bottle-clamp, a friction-wheel keyed to the sleeve, a shaft journaled in bearings on the standard and provided at one end with a fixed pulley and at the other end with a friction-wheel splined to but longitudinally shiftable thereon, and means to shift said friction-wheel to throw it into and out of driving contact with the friction-wheel of the sleeve.

7. In a bottle-washer of the class described, the combination of a support or standard having a recessed head, a flanged bushing clamped rigidly within said recess, a hollow shaft rigidly secured at one end in the bushing and connected at one end with a water-fitting and at the opposite end with a brush and nozzle, a flanged sleeve revolubly mounted on the fixed shaft between the bushing and brush and nozzle and provided with a bottle-clamp, and a coupling-nut engaging the flanges of the bushing and sleeve to detachably secure the latter on the shaft.

8. In a bottle-washer of the class described, the combination of a fixed hollow shaft provided at one end with a water-fitting and at the other end with a threaded socket, a screw-plug adapted to said socket and provided with a nozzle, and brush, and a revoluble sleeve mounted on the shaft and provided with a bottle-clamp.

9. In a bottle-washer of the class described, the combination of a fixed hollow shaft provided at one end with a water-fitting and at

the other end with a threaded socket, a screw-plug adapted to said socket and provided with a nozzle and brush, a revoluble sleeve detachably mounted on the shaft and provided with a bottle-clamp.

10. In a bottle-washer of the class described, the combination of a bottle-clamp, a valved water-supply, a ring surrounding the clamp and means for operating said ring for opening or closing the clamp and simultaneously opening or closing the valve controlling the water-supply.

11. In a bottle-washer of the class described, the combination of a rotatable bottle-clamp, a valved water-supply, a ring surrounding the clamp and means for operating said ring for opening or closing the clamp and simultaneously opening or closing the valve controlling the water-supply.

12. In a bottle-washer of the class described, the combination of a hollow fixed shaft provided with a water-supply, a revoluble sleeve detachably mounted on the shaft and provided with a bottle-clamp, means for operating the revoluble sleeve and means for simultaneously operating the bottle-clamp and valve controlling the water-supply.

13. In a bottle-washer of the class described, the combination of a fixed hollow shaft provided at one end with a nozzle and brush and at the other end with a water-supply, a revoluble sleeve detachably mounted on the shaft and provided with a bottle-clamp, and means for distributing water on the outside of the article to be cleansed.

14. In a bottle-washer of the class described, the combination of a fixed hollow shaft provided at one end with a nozzle and brush and at the other end with a water-supply, a revoluble sleeve detachably mounted on the shaft and provided with a bottle-clamp, means for distributing water on the outer surface of the article to be cleansed and a casing provided with means for scouring said outer surface, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW FORBES.

Witnesses:

BENJAMIN B. HOUGH,
CHAS. E. RIORDON.