(No Model.) 2 Sheets—Sheet 1.

K. HOFMANN.

BOTTLE WASHING MACHINE.

No. 258,579. Patented May 30, 1882.

Fig. 1.

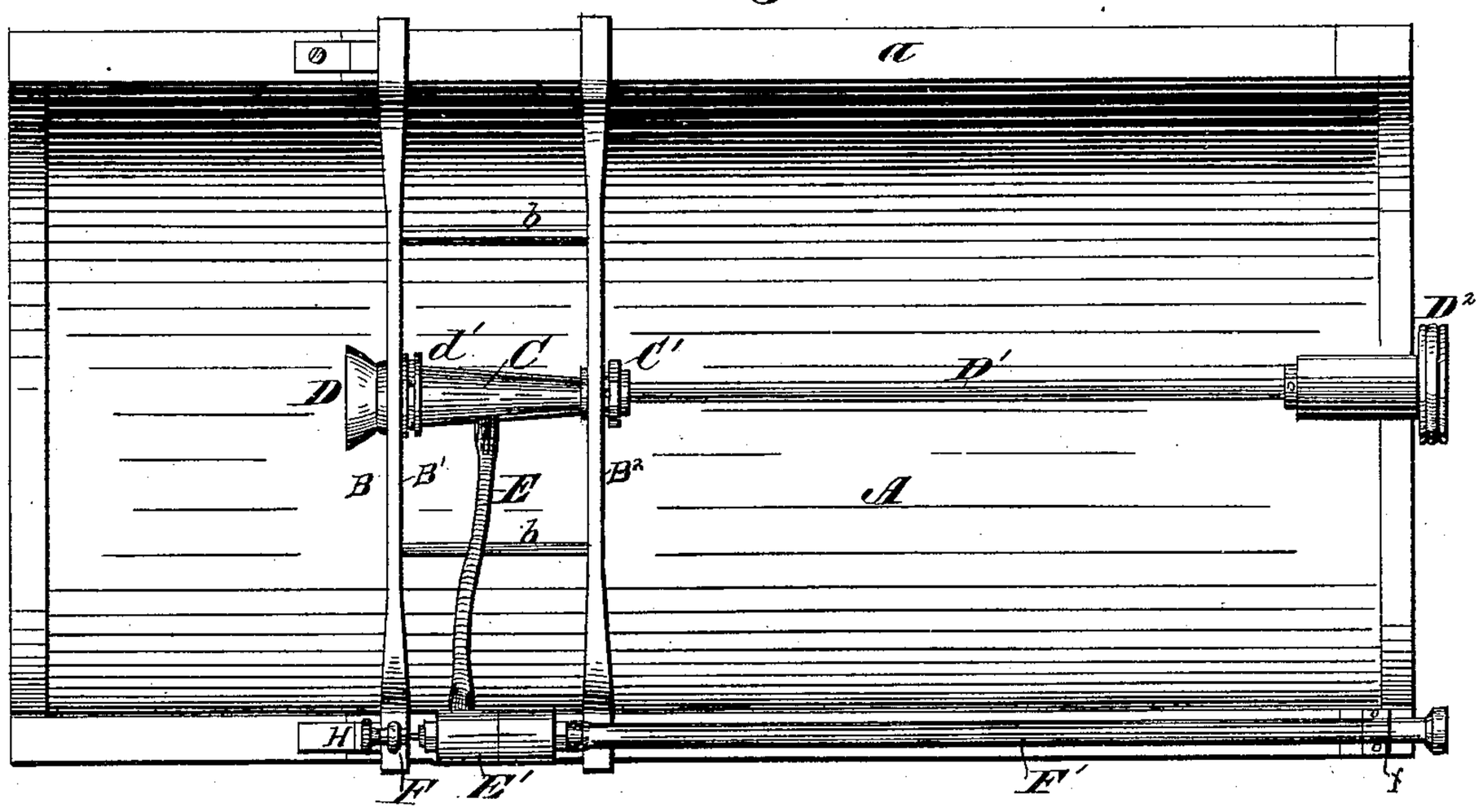


Fig. 3.

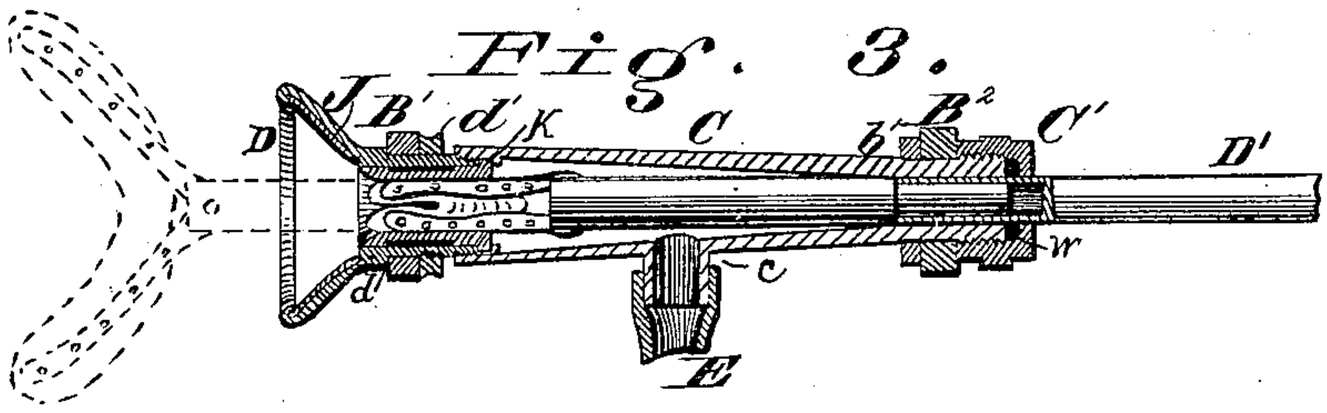
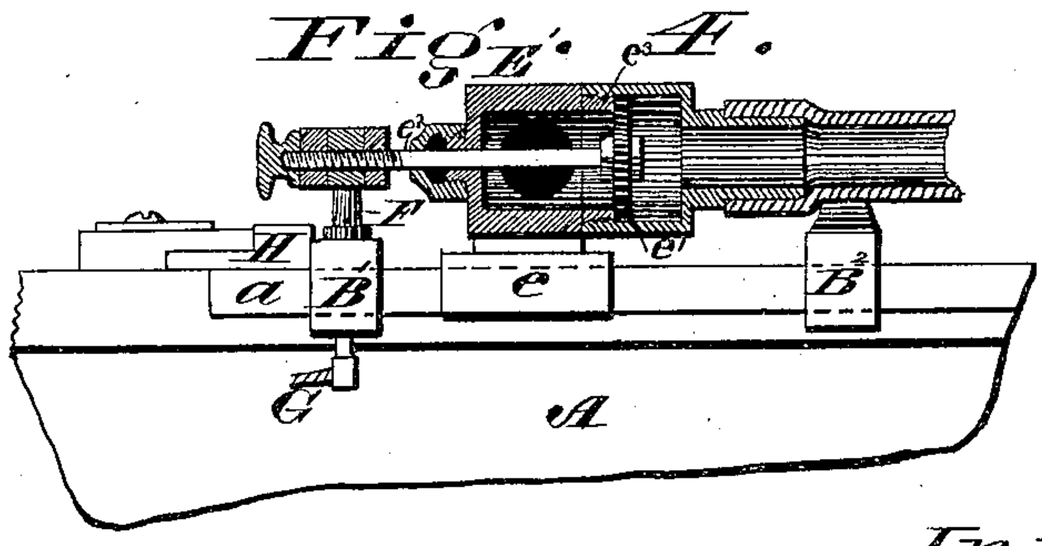


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

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BOTTLE WASHING MACHINE.

No. 258,579. Patented May 30, 1882.

Fig. 2.

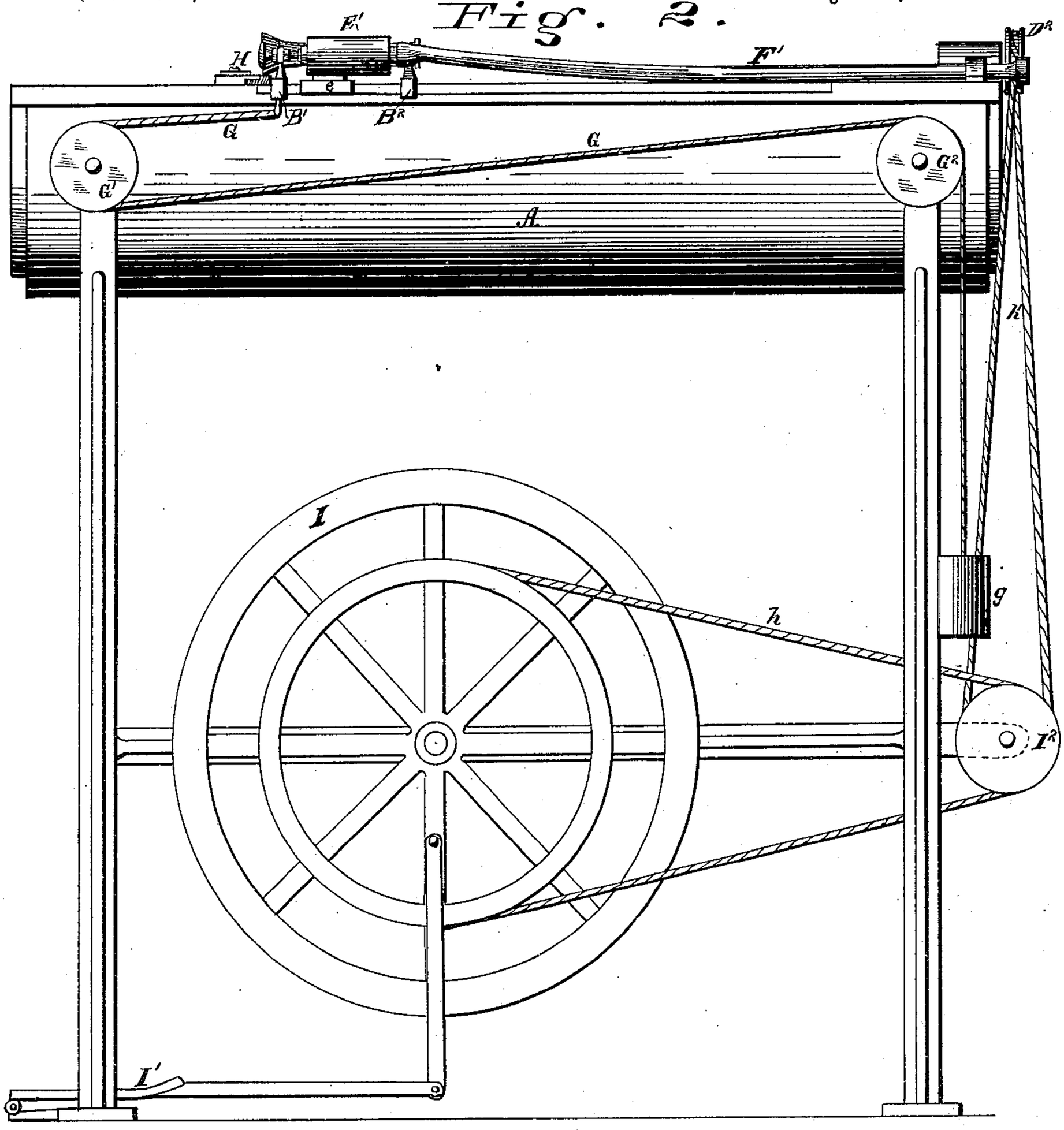
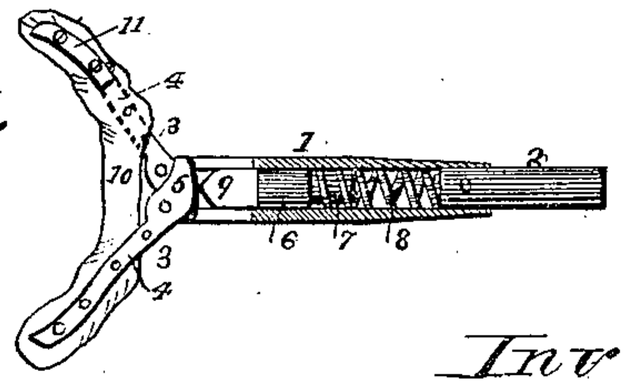


Fig. 5.



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E. R. Hill.
J. Wm. Strahli.

Inventor.
Konrad Hofmann
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UNITED STATES PATENT OFFICE.

KONRAD HOFMANN, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO ALBERT V. FUHRMANN, OF BELLEVIEW, KENTUCKY.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 258,579, dated May 30, 1882.

Application filed May 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, KONRAD HOFMANN, of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Machines for Washing Bottles, of which the following is a specification.

My invention relates to that class of bottle-washing machines the purpose of which is to wash the interior of wine or similar bottles, and in which a revolving brush or scraper is employed in connection with water to more effectually cleanse the bottle; and one feature of my invention consists in the provision of a simple and effective machine for causing the brush or scraper to revolve.

Another feature consists in the provision of novel and useful means for automatically controlling the flow of water into the bottle.

Another feature of my invention consists in a new and novel form of scraper to be used in connection with the first feature of my invention.

The nature of the various features of my invention will be apparent from the drawings and following description.

Figure 1 of the drawings is a plan view of my machine. Fig. 2 is a side elevation of same. Fig. 3 is a horizontal section through a detached portion. Fig. 4 is a side elevation, partly in section, of a detached portion, showing the interior of the valve which regulates the flow of water into the bottle. Fig. 5 is a central longitudinal section through the cleaning device.

A is a basin or trough, which is supported by appropriate legs, A′. On the top edge of this basin are secured suitable slideways or guides, (here shown of one form, as indicated by *a*,) to which the frame B is connected in such a manner as to be capable of a backward and forward sliding motion. This frame B consists of the two cross-pieces B′ B², which are connected by the cross-rods *b*, and which rest and slide on the ways *a*, the ends of each of these cross-pieces being so formed as to extend downwardly past the outer edges of the ways *a* and hook under the same, thus holding the frame B in position on the ways.

Between the cross-pieces B′ B² is secured the hollow cone C, through which water is introduced into the bottle. Into the forward end of this cone C is screwed the neck of the funnel D, which neck first passes through the cross-piece B′ until the shoulder *b* comes in contact with the front face of the cross-piece B′. A jam-nut, *d*′, is screwed on the neck of the funnel until it comes in contact with the rear face of the cross-piece B′, thus holding the funnel D, and through it the front end of the cone C, in position. The rear end of the cone C passes through the cross-piece B², a flange, *b*′, on said cone resting against the front face of said cross-piece, the end of the cone passing far enough beyond the rear face of the cross-piece B² to admit of the box-nut C′ being screwed onto said end. Through this nut C′ and into the cone C passes one end of the shaft D′, the end of said shaft being provided with a socket, into which the shank of the brush or scraper to be used in cleaning the bottle is to be inserted.

Inside of the nut C′, and surrounding the shaft D′, is placed a suitable packing material, as W, to prevent the water from passing out of the rear end of the cone C. The cone C is provided with an inlet-plug, *c*, to which is attached one end of the flexible tube E, the other end of said tube being attached to the valve-box E′. This valve-box is attached to a slide, *e*, which slides on one of the slideways *a* between the ends of the cross-pieces B′ B². The valve *e*′ on the inside of the valve-box E′ is attached to the rod *e*², which latter is attached to the post F, which is connected to one end of the cross-piece B′. When the valve *e*′ is closed so as not to permit the passage of water it rests against the valve-seat *e*³, and when it is open it moves away from this seat, permitting the water to pass through and out of the valve-box E′.

To the end of the valve-box E′ opposite to the rod *e*² is attached one end of the flexible tube F′, the other end of said tube being connected with the water-supply pipe. Near the end of the basin A the tube F′ is clasped and held by a clip, *f*, which is attached to the basin, the purpose of which will be hereinafter explained. To each end of the frame B is attached one end of a cord, G, each of which

cords passes around pulleys G′ and G², the free ends of said cords being provided with weights *g*, the tendency of which weights is to constantly keep the frame B at the forward end of the basin A. These weights preferably move up and down in a box or tube, which prevents them from swinging around as they otherwise might do.

Near the forward end of the basin A are the stops H, against which the frame B strikes when it is at the forward end of the basin, as shown in Fig. 1.

The shaft D′ is caused to revolve by any suitable mechanism, either by steam-power or by foot-power. In the present instance the latter power is employed, a band and fly-wheel, I, being employed, which is operated by a treadle, I′. A belt, *h*, passes around this band-wheel and around the small pulley I², and from this pulley another band, *h*′, passes to the pulley D², which is attached to the end of the shaft D′, and by this combination of pulleys and bands I am enabled to produce a very rapid revolution of the shaft D′.

It will be obvious that any description of brush or scraper which is intended to be introduced and revolved in the interior of a bottle may be employed with my machine; but the preferable form of device which I employ is that shown in my drawings, and which forms one feature of my invention. This consists of a hollow casing, 1, one end of which is provided with a shank, 2, to fit into the socket in the end of the shaft D′. To the other end of the casing the two levers 3 are pivoted. These levers consist of the outer long arms, 4, and the beveled short arms 5.

Inside of the casing 1 is the sliding plunger 6, one end of which is provided with an extension, 7, which is surrounded by the spiral spring 8. The other end of the plunger 6 is provided with the beveled extremity 9, which extremity is kept constantly against the beveled short arms 5 of the levers 3, and the tendency of this plunger 6 and spring 8 is therefore to keep the long arms 4 constantly spread, as shown in Fig. 5.

To the arms 4 is secured a strip, 10, preferably of felt or other soft material, the latter being secured to said arms by a suitable clamping device. In the present instance the strip is secured between the arms 4 and short clamping-plate 11, one of which is screwed to each arm 4, as shown in Fig. 5, each end of the felt strip being thus clamped between the arms 4 and the said clamping-plate. This strip of felt projects beyond the sides and ends of the arms 4, as shown in Fig. 5, so that the felt shall come in contact with all parts of the interior of the bottle.

When the frame B is in the position shown in Fig. 1 the cleaning device is entirely within the cone C, as shown in Fig. 3. A ring or loose bushing, K, is placed within the neck of the funnel D, which bushing is capable of turning freely within said neck. When the cleaning device is within the cone C the arms 4 are within the bushing K, as shown, and as this cleaning device is caused to revolve the bushing revolves with it, and the arms 4, or the felt thereon, are not subjected to any wear while the cleaning device is in this position.

The operation of my invention as above described is as follows: Supposing the shank of the cleaning device to have been inserted in the socket in the end of the shaft D′, when the machine is at rest the frame B is in the position shown in Fig. 1, and this cleaning device will be within the cone C, as shown in Fig. 3. The shaft D′ is started in rotation. The operator takes a bottle to be cleaned, places the mouth in the funnel D, and pushes the frame B toward the rear end of the basin A, and as he does so the cleaning device enters the bottle, and the arms 4 are caused to expand by the construction herein shown and caused to rub the interior of the bottle. As soon as the frame B is moved toward the rear end of the basin A the valve *e*′ is moved away from the valve-seat *e*³, as the valve-box E′ is held stationary, partly by friction of the slide *e* on the way *a* and partly by the flexible tube F′, one end of the latter being attached to the basin by the clip *f*, until the post F or its connections come in contact with the valve-box E′, when the latter is moved along with the frame B. As soon as the valve *e*′ leaves the valve-seat *e*³ water flows through the valve-box E′, and from thence through the tube E, cone C, and into the bottle. The funnel D is preferably provided with an elastic lining, J, which serves as a packing, to prevent the water from escaping between the mouth of the bottle and the funnel, and thus all the water which flows through the cone C enters the bottle being cleaned. When the bottle has been sufficiently washed the frame B is allowed to slide toward the forward end of the basin, the weights *g* causing it so to move, the mouth of the bottle, however, being still kept in the funnel D. When the frame B starts toward the forward end of the basin the slide *e*, by means of friction on the way *a*, causes the valve-box E′ to remain stationary until the valve *e*′ comes in contact with the valve-seat *e*³, when the valve-box moves along with the frame B. As soon as the valve *e*′ comes in contact with the valve-seat *e*³ the water ceases to flow through the valve-box.

It will thus be seen that while the frame B is moving toward the rear end of the basin A, and while the bottle is being washed, water is permitted to flow into the bottle, and that when the bottle has been sufficiently washed and the frame B starts toward the front end of the basin A the valve is automatically closed, and further entrance of water is prevented. When the frame B has reached the front end of the basin the cone C again incloses the cleaning device and the bottle is removed, and another bottle is taken by the operator, and the above-described movements are repeated.

From the above description it will be seen that water is caused to flow into the bottle at the proper time, and that the flow of water is automatically arrested when the bottle has been cleansed and is to be removed.

It will also be seen from the description of the cleaning device that by its use every portion of the interior of the bottle may be reached and any adhering dirt be scraped off.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In a bottle-washing machine, the hollow cone C and funnel D, the latter consisting of an enlarged portion lined by an elastic lining, J, and a neck, which latter is screwed into the end of the cone C and the loose bushing or sleeve K, in combination with a revolving brush or scraper and a device for automatically supplying water to the interior of the bottle, substantially as and for the purposes specified.

2. The combination of the cone C, constructed substantially as described, and the valve-box E′, connected to said cone by the pipe E, said valve-box being attached to the slide *e*, which slides on the way *a*, and having in its interior the valve-seat e^3 and valve *e′*, the latter being attached to the rod e^2, supported by the post F on the frame B, substantially as and for the purposes specified.

3. The combination of the frame B, sliding on ways *a*, and provided with post F, the valve-box E′, having in its interior the valve-seat e^3 and valve *e′*, the latter being attached to rod e^2 and supported by said post F, and the supply-pipe F′, substantially as and for the purposes specified.

4. In combination with the cone C, funnel D, and loose bushing K, and means for automatically supplying water to said cone C, a revolving cleaning device consisting of a hollow casing, 1, provided with the two levers 3, pivoted to one end of said casing and adapted to be separated by the spring 8 contained within said casing, substantially as and for the purposes specified.

5. The herein-described cleaning device, consisting of the hollow casing 1, provided with shank 2 and levers 3, the latter being pivoted to one end of the casing and provided with flexible strip 10, said levers being caused to separate by the spring 8 and sliding plunger 6, substantially as and for the purposes specified.

6. The combination of the casing 1, the arms 4, pivoted to said casing, and the felt strips 10, secured to said arms by means of the clamping-plate 11, and a suitable spring and plunger to cause said arms to separate when in the bottle, substantially as described.

7. The combination of the cleaning-device holder and the valve-box E′, connected thereto by a suitable conduit, said valve-box being attached to the slide *e*, which slides on the way *a*, and having in its interior the valve-seat e^3 and valve *e′*, and connecting and operating mechanism for enabling the latter to automatically supply water to the cleaning device, all substantially as and for the purposes specified.

KONRAD HOFMANN.

Witnesses:
WM. E. JONES,
E. R. HILL.