

(No Model.)

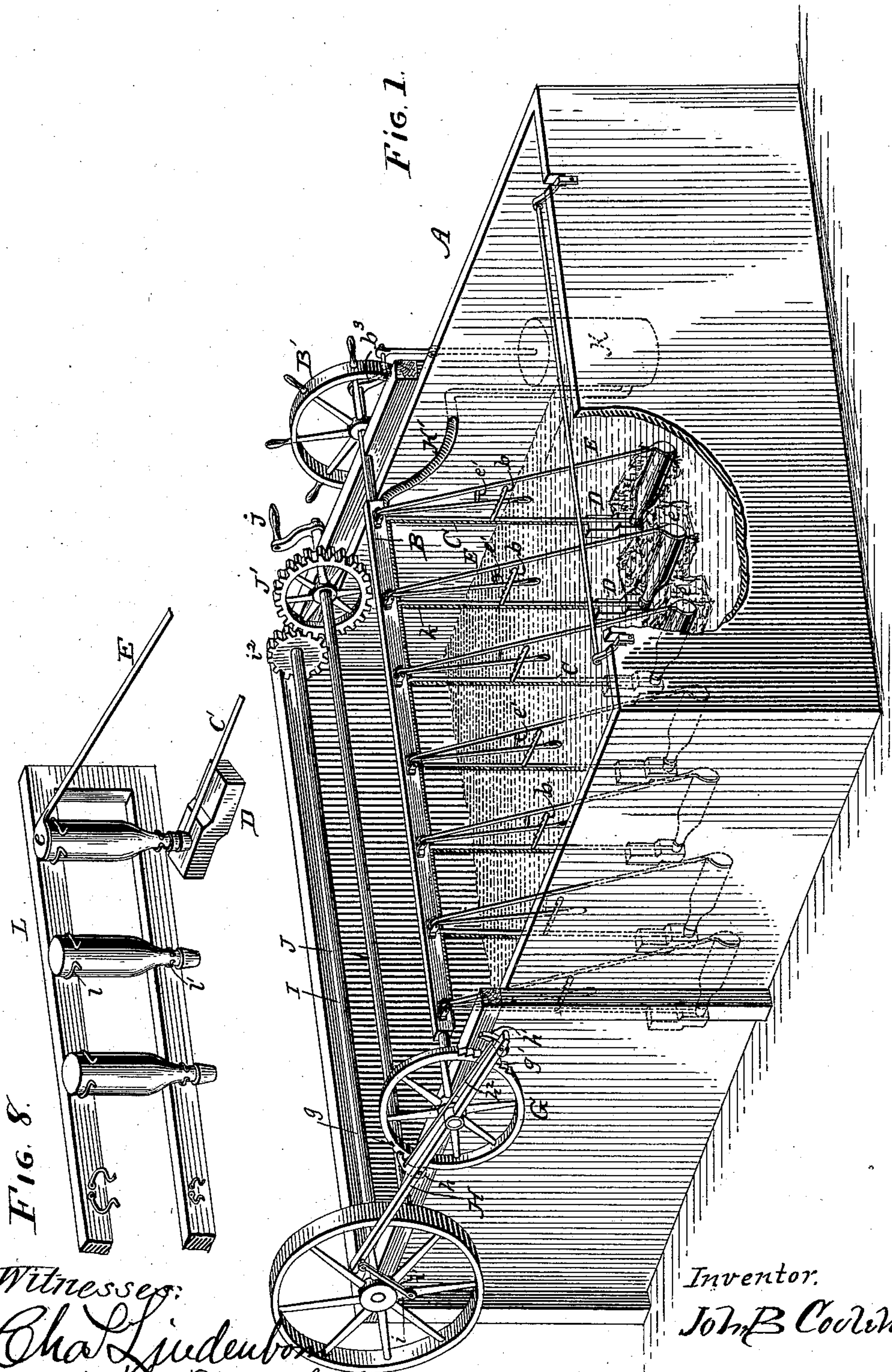
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J. B. COOLEHAN.

BOTTLE WASHER.

No. 372,205.

Patented Oct. 25, 1887.



Witnesses:
Chas. L. J. J. J.
Michael B. Coolahan

Inventor.
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(No Model.)

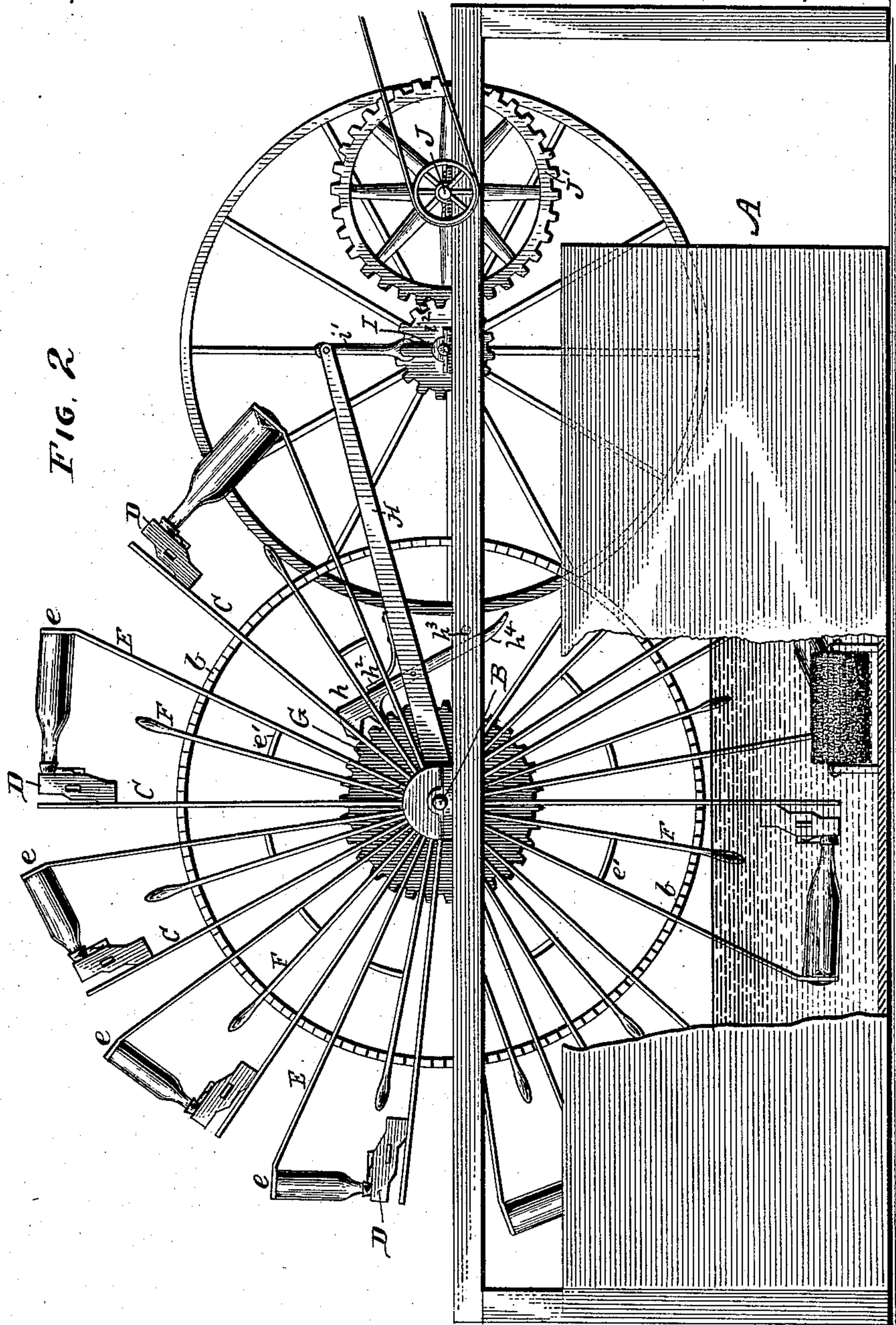
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BOTTLE WASHER.

No. 372,205.

Patented Oct. 25, 1887.



Witnesses
Charles Lindenberg
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(No Model.)

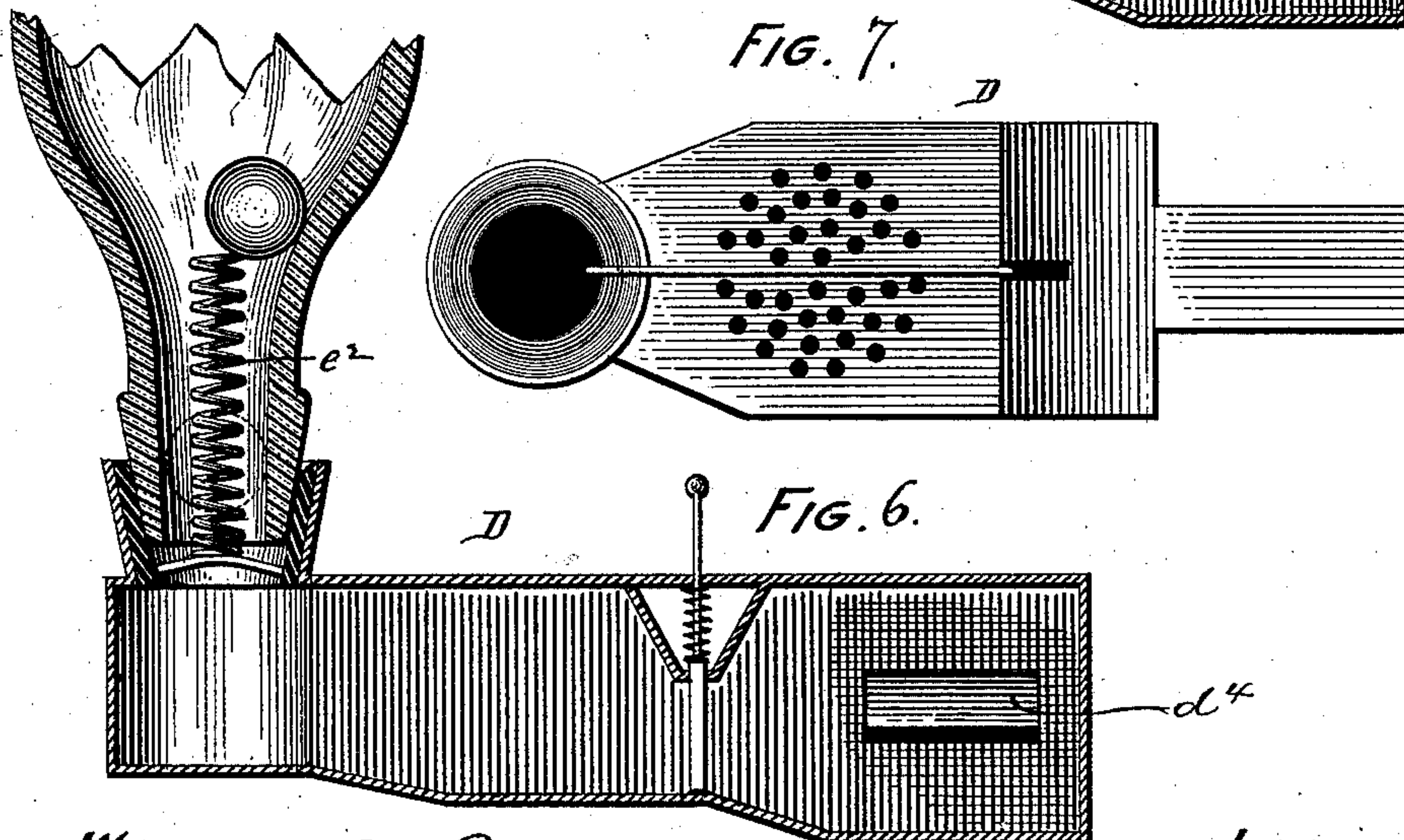
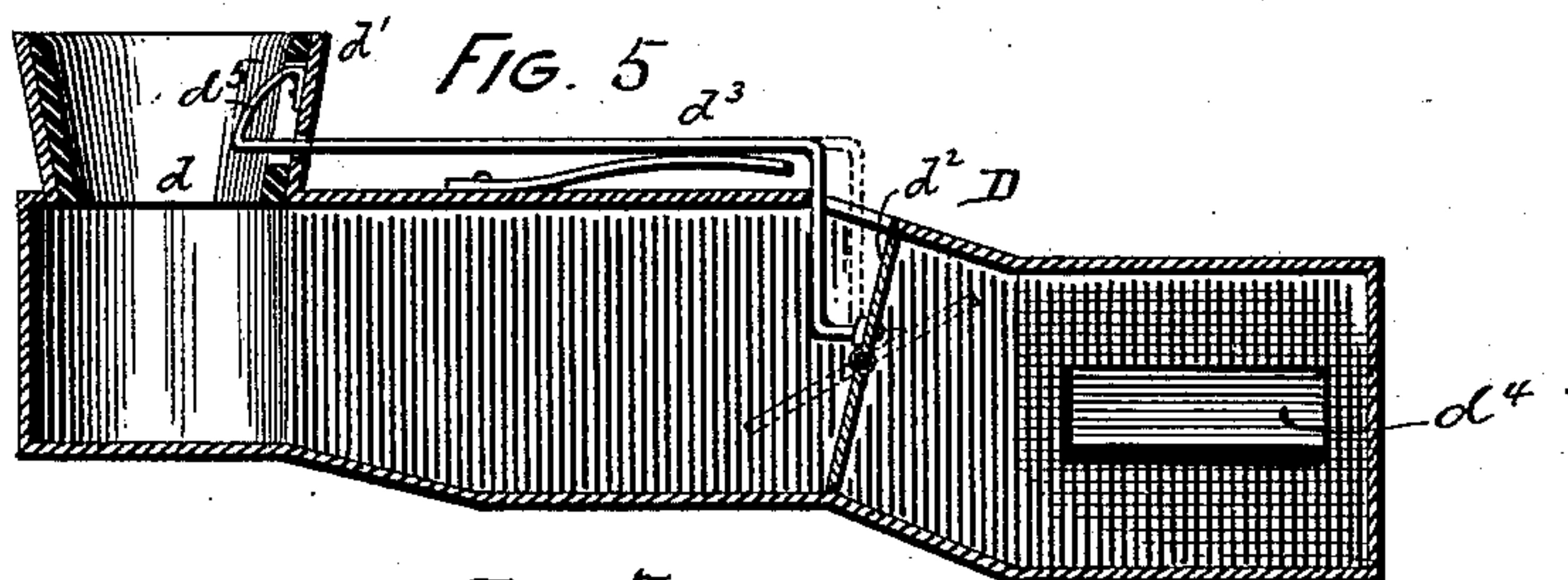
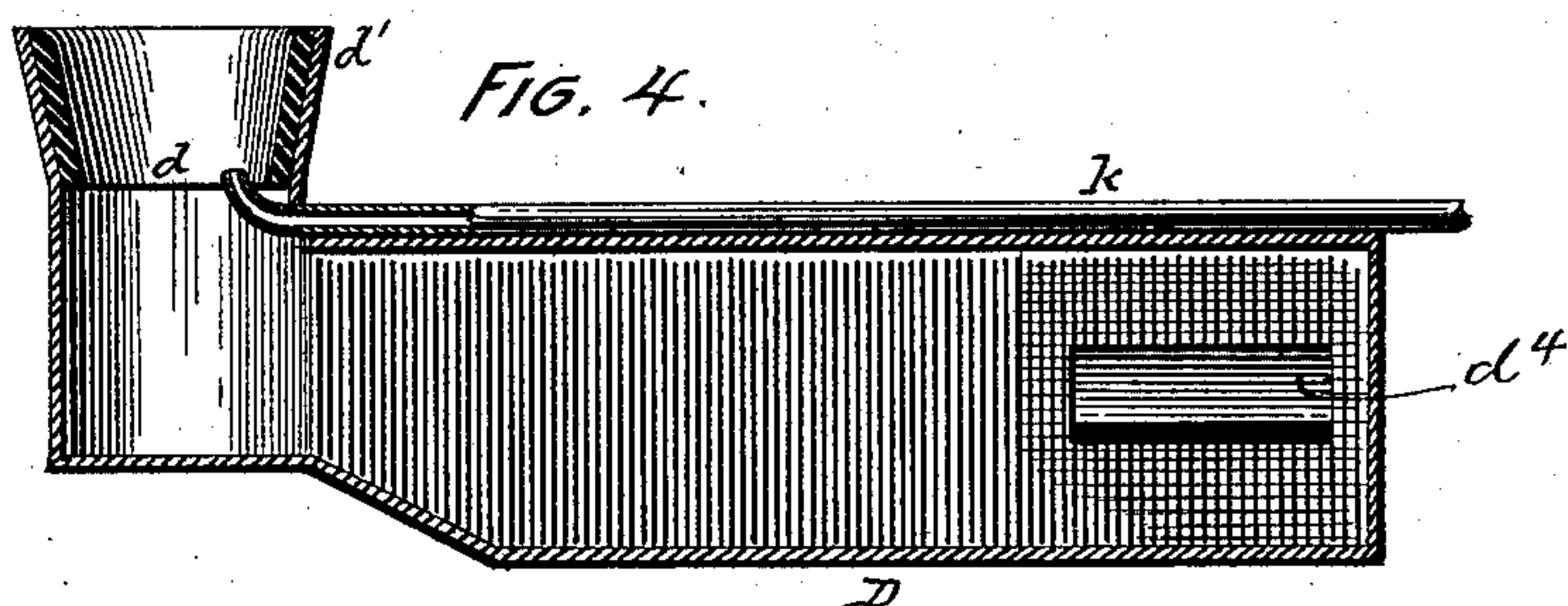
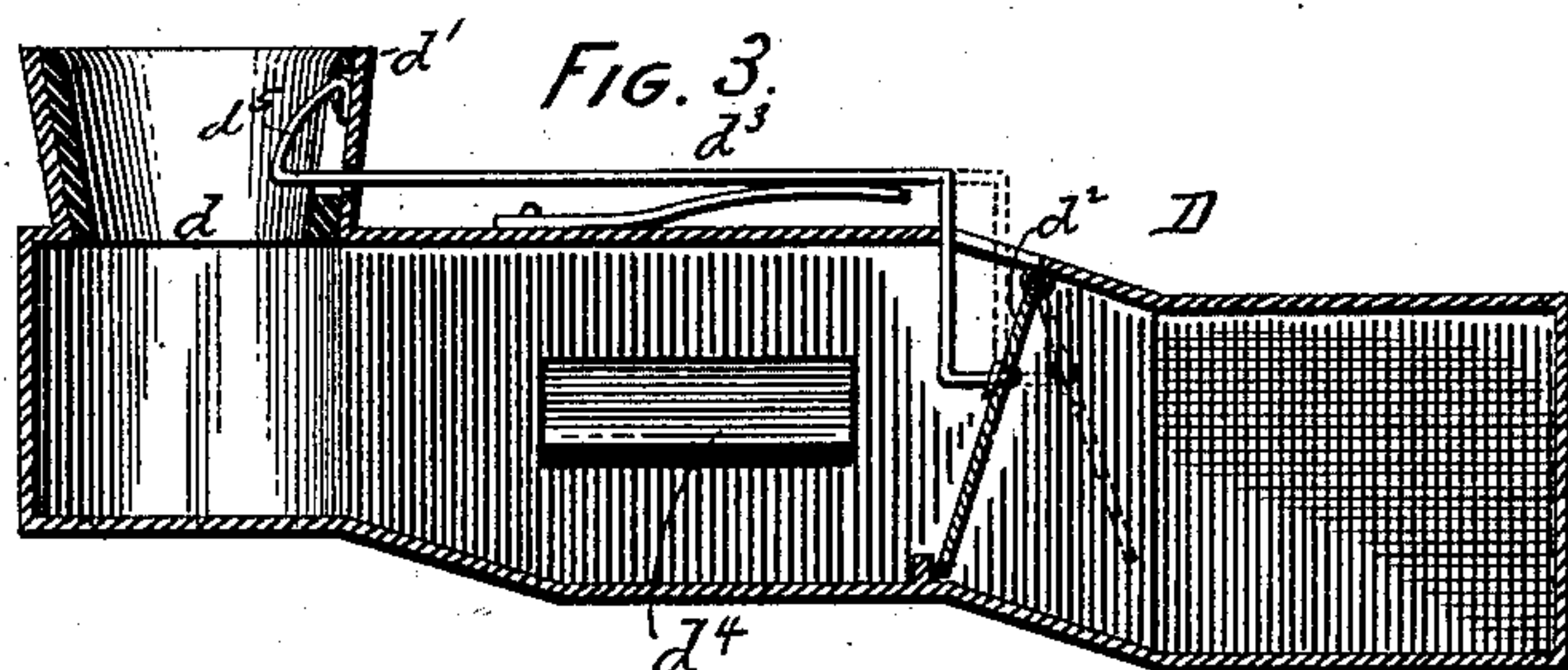
3 Sheets—Sheet 3.

J. B. COOLEHAN.

BOTTLE WASHER.

No. 372,205.

Patented Oct. 25, 1887.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN B. COOLEHAN, OF ANNAPOLIS, MARYLAND.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 372,205, dated October 25, 1887.

Application filed April 22, 1887. Serial No. 235,796. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. COOLEHAN, a citizen of the United States, residing at Annapolis, in the county of Anne Arundel and State of Maryland, have invented certain new and useful Improvements in Bottle-Washers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is well known that bottles can be more easily and effectually cleaned by the use of shot and water (with or without the use of chemicals or solvents) than by almost any other means. A violent shaking of the bottle, however, is necessary, and when this is done by hand the operation is laborious and tiresome.

The object of my invention is to produce a machine in which shot may be employed as the cleansing agent; and to this end the invention consists, essentially, in a combined shot-chamber and holder for the bottle mounted upon or attached to an arm of an oscillating shaft, by the oscillation of which the holder and bottle are rapidly and violently moved back and forth in a chamber or trough containing water; also, in the means employed for imparting this backward and forward movement, and in the means for washing and cleaning the outside of the bottle simultaneously with the cleaning of the inside.

Figure 1 of the accompanying drawings is a perspective view of the preferred form of my apparatus. Fig. 2 is a side elevation of a modification. Figs. 3, 4, 5, 6 are longitudinal sections of different constructions of combined shot-chambers and bottle-holders. Fig. 7 is a face view of one form of shot-chamber, and Fig. 8 is a view of a bottle-holder by the use of which the bottles may be conveniently applied to and removed from the machine.

I will first describe the preferred form of my machine, illustrated in Fig. 1 of the drawings.

A designates a tank or trough to contain water in which the bottles are to be washed, and B an oscillating shaft journaled in a frame above the tank A. The shaft B has a series of arms, C, to the ends of which are attached boxes or shot-chambers D. These boxes are adapted to contain the shot used in cleaning

the bottles, and they are provided at their outer ends with laterally-opening mouths to receive the necks of the bottles. The shaft B also carries a series of arms, E, corresponding with the arms C, and standing in the same radial plane, the ends of which carry pads or cups *e*, to fit into or over the bottoms of the bottles. The arms E are connected by links *e'* with levers F, which are also arranged on the shaft B, and which are adapted to be engaged with and held by toothed racks *b*, which project at right angles from and in the same radial plane with the arms C. The arms C, with their boxes or shot-chambers D, and the arms E, with their pads or cups *e*, thus form clamps which are operated by the levers F to clamp and hold between them the bottles to be washed.

Near the end of shaft B is a wheel, G, which has cog-teeth *g* on one side, and diametrically opposite the cog-teeth a series of ratchet-teeth, *g'*. A lever, H, which is loosely fulcrumed on the extreme end of the shaft outside of the wheel G, carries a dog, *h*, and a pawl, *h'*, the former to engage with the cog-teeth and the latter with the ratchet-teeth. The dog and pawl are both pivoted to the lever and stand in opposite directions. They are connected by a coupling-rod, *h²*, and are so arranged that when one is in engagement the other is out. The dog is for the purpose of oscillating the shaft and the pawl for the purpose of rotating the same to raise the arms C E and the bottles carried thereby out of the trough or tank A. The dog *h* has a square tooth which engages with the cog-teeth on the wheel G, and while in engagement operates the latter in both directions, oscillating the wheel and its shaft and vibrating the arms C E, whereby the bottles are moved back and forth in the trough. When the dog is disengaged and the pawl *h'* thrown into engagement with the ratchet-teeth *g'*, each vibration of the lever carries the pawl into engagement with a new tooth, and the wheel and shaft are thus gradually rotated and the arms and bottles raised out of the tank or trough.

I is a shaft, also journaled in the frame of the machine and running parallel to the shaft B. A crank, *i*, on the end of shaft I is connected with the end of lever H by a coupling rod or pitman, *i'*, whereby the lever is vi-

brated to oscillate the shaft B when the dog *h* is in engagement with the cog-teeth *g*, or rotated to lift the arms and bottles out of the trough when the pawl *h'* is in engagement with the ratchet-teeth *g'*.

Intermediately between the shafts B and I is a shaft, J, also turning in bearings in the frame, which carries a cog-wheel, J', that meshes with a pinion, *i'*, on shaft I. The shaft J is the driving-shaft, to which power is applied through a crank, *j*, to drive the machine.

In the bottom of the tank or trough A are a series of brushes, through which the bottles pass back and forth, and which clean the latter exteriorly.

The combined shot-chambers and holders D are oblong boxes, which are attached at one end to the arms C, and have laterally-opening mouths *d* at their opposite ends, to receive the necks of the bottles to be cleaned. These mouths have tubular extensions *d'*, which are lined with soft rubber or other suitable packing to protect the necks of the bottles and to form a close joint with the latter.

d'' designates valves within the boxes, by which the latter are divided into two compartments. The drawings show different forms of valves. That shown in Fig. 3 is hinged at the top, and is opened to the position indicated in dotted lines by a push-bar, *d'''*, which projects into the extension *d'* of the mouth of the box, being attached thereto by its bent end *d''*, which forms a spring to hold the valve normally closed. The bar *d'''* is pressed back and the valve opened by the neck of the bottle when the latter is placed in the machine. The valve shown in Fig. 5 is hung centrally, and is also opened by a push-bar, *d'''*. Fig. 6 shows a spring-seated slide-valve with a stem projecting through the wall of the box, which is operated by hand. The shot are contained in the closed end of the box, which I denominate the "shot-chamber," and are retained therein by the closed valves till the bottles are placed in the machine, when the valves are opened, as above explained.

The bottles are put into and taken from the machine while the arms and boxes are in a horizontal position. At this time the shot are in the shot-chamber. When the bottles are placed in position, the valves are opened, and as soon as the bottles are lowered into the tank the shot run forward and enter the bottle through the mouth *d*. When the arms are again brought to a horizontal position, the shot run back into the boxes, and by the inclined bottoms are returned to the shot-chambers, where they are confined by the closing of the valves as soon as the bottles are removed, and are retained there till other bottles are applied.

The valves are not absolutely necessary in the machine above described, and may, if preferred, be omitted. In such case the box will be made as represented in Fig. 4.

The boxes D are formed with openings *d'* in

their sides, through which water is admitted from the tank A. Inclined wings are placed over these openings to catch and direct the water through the openings as the boxes move through the same. Fig. 7 shows openings in the face of the box, through which water is admitted. These take the place of the side openings above described.

When bottles with interior glass stoppers are to be cleaned, I provide the mouths of the boxes with coiled-wire springs *e'*, which enter the necks of the bottles and press the glass stoppers back, as represented in Fig. 6, to allow the shot and water to enter and leave the bottle.

K designates a force-pump, (see dotted lines, Fig. 1,) the rod of which is connected with and operated by a crank, *b'*, on the end of shaft B.

K' is a pipe leading from the pump to and extending along the shaft B, and having branch pipes *k*, which extend along the arms C and into the boxes D, as shown in Fig. 4, to convey water into the latter from the pump when the machine is in operation. When the pump is used, the openings *d'* for admitting water into the boxes from the tank may be omitted.

B' is a hand-wheel on shaft B, by which the latter may be turned to raise and lower the bottles independently of the pawl-and-ratchet mechanism above described.

L (see Fig. 8) is a holder provided with spring-clips *l l'*, to hold the bodies and necks of the bottles, as represented in Fig. 8, the said clips being spaced to correspond with the arms C E on the shaft B. The bottles to be placed in the machine are first put into the holder by hand. The latter is then placed on the tank in position to bring the bottles between the boxes D and pads or cups *e*, when they are clamped in place and the holder L is removed. After the bottles have been washed the holder is again pressed against them to cause them to be grasped by the clips *l l'*, when they are unclamped from the machine and removed, with the holder L, to be replaced by others in the same manner.

The holder L is simply a convenience for placing the bottles in and removing them from the machine in series. They may be placed and removed by hand, if preferred.

In the modification of my machine illustrated in Fig. 2 of the drawings the arms C E and the levers F are arranged radially on the shaft B, which has an intermittently rotating and oscillatory movement imparted by the following mechanism:

J is the driving-shaft, to which power is applied in the usual manner, a band-pulley being shown instead of the crank *j*, as above described. The cog-wheel J' on this shaft engages with the pinion *i'* on the crank-shaft I, the latter being connected by the pitman *i''* with the lever H, which is loosely fulcrumed on the shaft B. The lever H carries a dog, *h*, which engages a cog-wheel, G, on shaft B, the said dog being pressed forward by a spring,

h^2 , into engagement with the cogs of wheel G. The operation of this machine is as follows: Power being applied to the shaft J, the wheel J', which meshes with the pinion i^2 , drives the crank-shaft i , whereby the lever H is vibrated. Now, as the lever H is vibrated upward, the dog h , which is engagement with the cog-wheel G, gives a forward impulse to the arms C E. As the lever approaches its highest position, the dog h is released from the cog-wheel G by its arm h^4 coming in contact with a pin, h^3 , which projects from the frame of the machine. When the dog is released, the momentum of the parts carries the arms and bottles forward. Then, when the crank i has passed its center and begins to draw the lever H down, the dog is released from the pin h^3 , and is pressed into engagement with other teeth on the wheel G, thus reversing the movement of the wheel and carrying it back until the lever reaches the lowest point. When the lever has passed its lowest point, the movement is again reversed, the wheel is again turned forward, and the operation above described is repeated. The downward and upward movement of the lever H thus effects an oscillatory movement of the shaft B, while the repeated upward movements of the lever effect an intermittently-rotating movement of the same, by which the arms and bottles are carried forward step by step till they successively reach the position where the bottles are removed from the machine and are replaced by others.

Having thus described my invention, I claim as new—

1. In a bottle-washing machine, the combination, with the oscillating shaft B and its vibrating arms C, of the boxes or shot-chambers D, affixed to the outer ends of said arms, and having laterally-opening mouths d , to receive the necks of the bottles to be washed, and clamping-arms E, for clamping the bottles to said boxes, substantially as and for the purpose described.

2. In a bottle-washing machine, the combination of an oscillating shaft, B, provided with arms C, to the ends of which are affixed shot-chambers or boxes D, with clamping-arms E, for clamping the bottles to said boxes, and with a wheel, G, having ratchet and cog teeth, of the driving-shaft J and the driven shaft I, the said shafts I and J geared together, as shown and described, and a lever, H, loosely fulcrumed on the end of shaft B and provided with dog h and pawl h' , said dog and pawl connected and moving together, whereby they may be alternately thrown into and out of engagement with said wheel, the end of said lever being connected with a crank on the shaft I, as shown and described.

3. In a bottle-washing machine, the combination, with the oscillating shaft B, its arms C, carrying shot-boxes and holders D, and the clamping-arms E, of a force-pump the rod of which is connected with and operated by a crank, b , on the shaft, and a pipe, K', leading from the pump and having branches k leading into the boxes, whereby the latter are supplied with water from the pump by the operation of the machine, substantially as and for the purpose described.

4. The combined shot-boxes and holders for bottle-washing machines herein shown and described, having laterally-opening mouths to receive the necks of the bottles to be washed, and interior pivoted valves which divide the interior of the box into two chambers, and push-rods which project into the mouths of the holders and are adapted to be pressed back by the necks of the bottles against the valves to open the latter, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. COOLEHAN.

Witnesses:

CHARLES LUEDENBORA,
 MICHAEL B. COOLAHAN.