

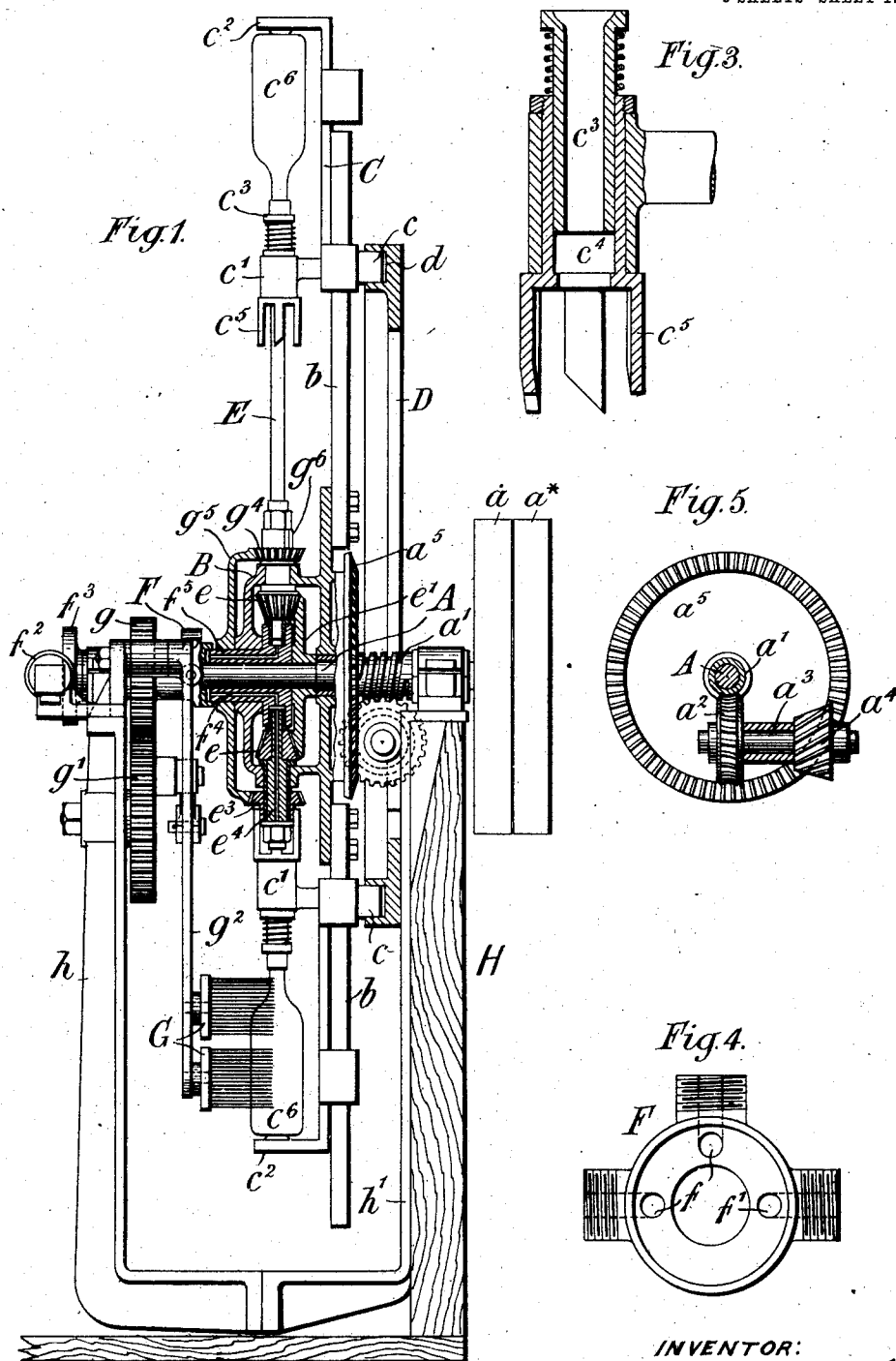
No. 854,172.

PATENTED MAY 21, 1907.

R. G. NASH.
MACHINE FOR WASHING BOTTLES AND THE LIKE.

APPLICATION FILED FEB. 13, 1905.

3 SHEETS—SHEET 1.



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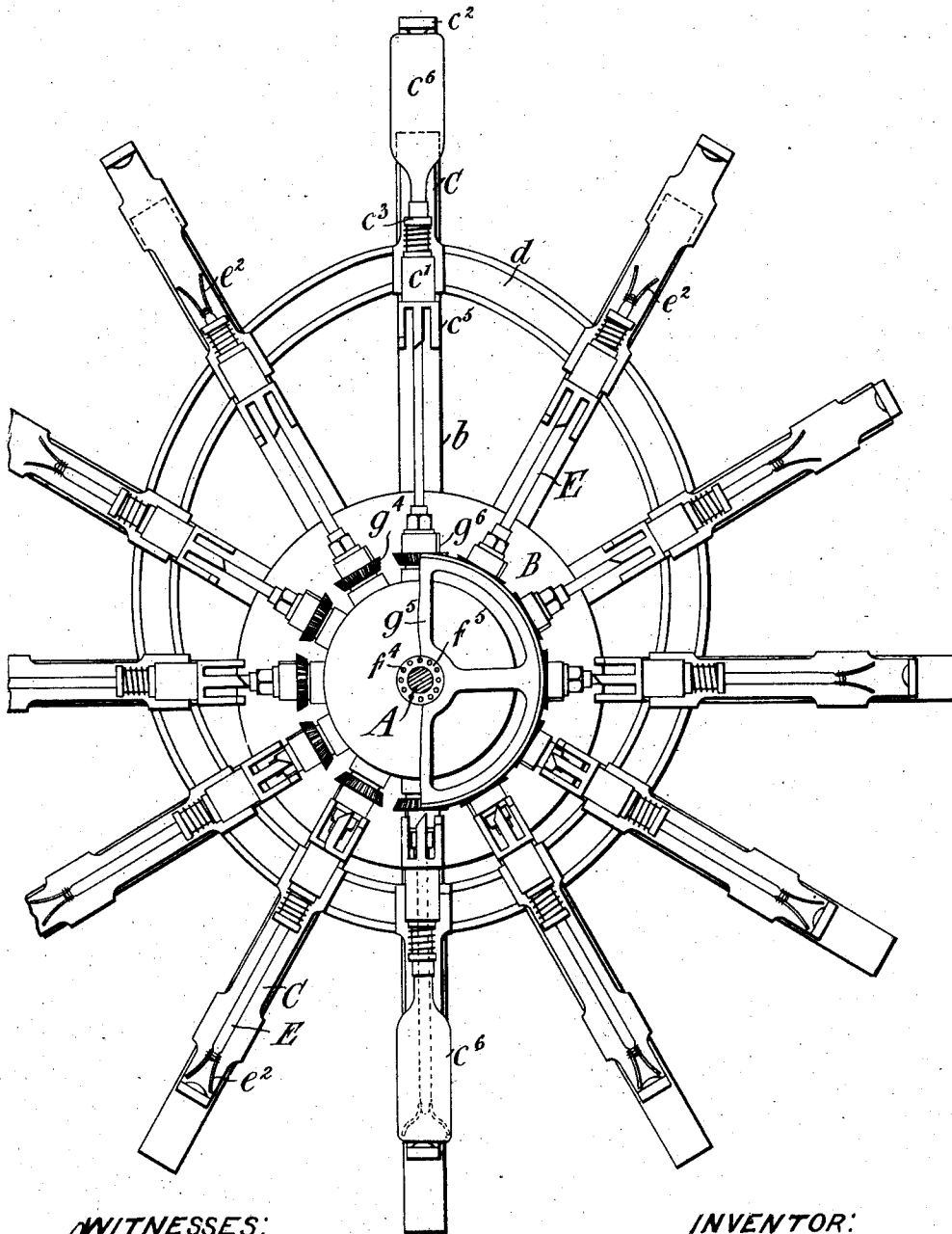
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 6.

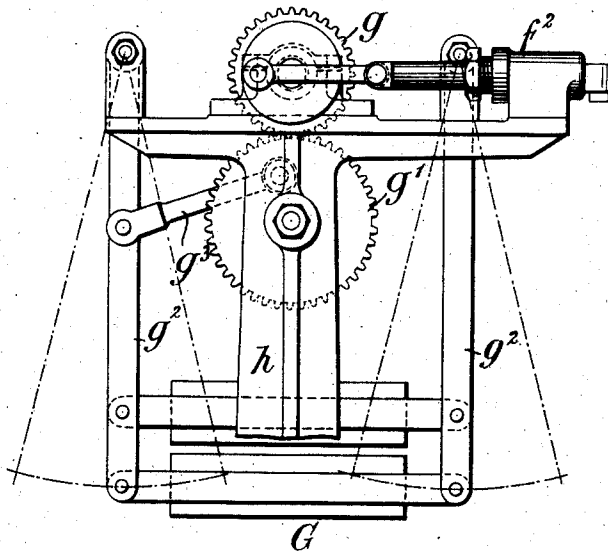
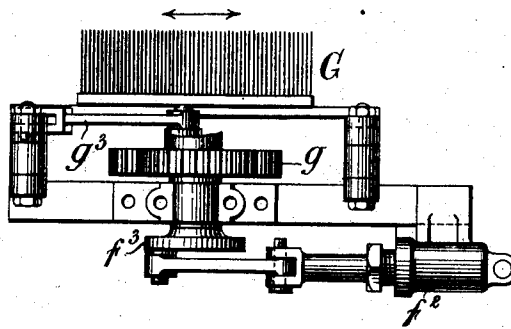


Fig. 7.



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RICHARD GRAINGER NASH, OF LUCAN, NEAR DUBLIN, IRELAND.

MACHINE FOR WASHING BOTTLES AND THE LIKE.

No. 854,172.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed February 13, 1905. Serial No. 245,510.

To all whom it may concern:

Be it known that I, RICHARD GRAINGER NASH, of Finnstown House, Lucan, near Dublin, Ireland, a subject of the King of Great Britain and Ireland, have invented certain new and useful Improvements in Machines for Washing Bottles and the Like, of which the following is a specification.

This invention relates to machines for washing bottles, crocks, gallipots, plates and other articles of a like nature; my object being to thoroughly cleanse such vessels, both internally and externally, and to treat several simultaneously the operation being of a continuous character.

In the accompanying drawings, which illustrate a washing machine embodying my improvements, Figure 1 is a vertical section of the machine and Fig. 2 a face view of the radial arms. Figs. 3 and 4 are respectively a vertical section of the socket for the mouth of the bottle, and a face view of the water supply valve, both to an enlarged scale. Fig. 5 is a detail view of the driving mechanism, while Figs. 6 and 7 illustrate respectively in side elevation and plan the means for cleansing the exterior of the articles.

In constructing apparatus adapted for carrying out my invention, I mount, upon a main driving shaft A a hub B provided with radially arranged arms *b*; and on each arm is mounted a carrier C, adapted for the reception of the bottle or other article to be cleansed and arranged to slide on the said arms.

A disk D formed with a cam-groove *d* in which a pin or roller *c* projecting from each carrier C engages, serves to move each carrier in succession toward the axis of the machine and subsequently in the opposite direction, so as to remove the bottle from an internal brush hereinafter described. Under such circumstances the cam-groove may be formed and the cam set in such a manner as to prolong the action of the internal brush at the full depth of the bottle.

The carriers C are provided with socket *c'* and an arm *c''* adapted to suit the article to be cleansed, as for example the bottle *c''*, and to hold the same in position while it is rotated upon its axis as hereinafter described. The socket *c'* for the mouth of the bottle is preferably constructed as shown in Fig. 3, wherein a spring-supported member *c''* adapted to engage the mouth of the bottle is free to slide in a sleeve *c''* formed with projections *c'''* where-

by the sleeve *c''* together with the member *c'''* may be rotated.

Co-axial with each carrier is a tube E perforated at its extremity and furnished with bristles or rubbers *e''* for the purpose of scouring the interior of the bottle. Each tube E is secured to the spindle *e''* of a bevel pinion *e* mounted in the hub B, and each bevel pinion meshes with a bevel-wheel *e'* keyed on the main shaft A of the machine whereby the tubes E are rotated. Each tube is in communication with a water supply nozzle F by way of passages *e'''* formed axially in the bevel pinions *e* and passages *f''* in a rotary valve *f'''* freely mounted on the shaft A. The one extremity of the spindle *e''* engages in the rotary valve while the opposite end is supported in the hub B which latter during its rotation rotates the valve *f'''*. The nozzle F is furnished with ports *f''* for water and a port *f'''* for air and as the valve *f'''* rotates each passage *f''* is brought alternately into communication with these ports. Air is supplied under pressure by means of a pump *f'''* driven from a disk *f'''* mounted on the main shaft A, while the water is supplied in the ordinary manner. The position of the ports in the nozzle F are so arranged that, as the valve *f'''* is rotated, water is first admitted to the tube E then air to discharge the water after cleansing then a further supply of water to rinse out the article.

For the purpose of cleaning the exterior of the bottle I key to the main shaft A a toothed wheel *g* in mesh with another wheel *g'* mounted on a bracket *h*. From this bracket is suspended by means of links *g''* a pair of brushes G which are oscillated by means of a rod *g'''* connecting the wheel *g'* with the suspending link *g''*. The bristles of the brushes project into the path of the bottles and bear against the latter, which are rotated while in contact with the brushes. The rotation of the bottle is effected by a bevel pinion *g''* sleeved on the spindle *e''* of the bevel wheel *e'* and in mesh with a stationary bevel wheel *g'''*; a projection *g'''* being formed on the bevel pinion *g''* with which the projections *c'''* on the carrier C engage when the latter is at about its nearest position toward the axis of the machine.

The cleaning apparatus is mounted upon brackets *h h'* attached to one of the side walls of a tank H containing water into which the bottles dip in the course of their journey round the axis of the machine.

The main-shaft A is provided with fast and

loose pulleys a^* , while the radial arms b are driven by means of a "worm" a' keyed to the main-shaft and gearing with a wheel a^2 , which latter is keyed to a counter-shaft a^3 driving
 5 by means of a bevel pinion a^4 a toothed wheel a^5 mounted on the hub B. The gearing is so proportioned that the rotation of the radial arms is greatly reduced in relation to the speed of the main-shaft.

10 The operation of washing a bottle, for example, is as follows:—As each bottle-carrier C arrives in its highest position, a bottle is inserted therein; and, as the rotation of the entire series of radially arranged bottle-carriers
 15 continues, the bottle gradually dips into the tank, is rotated on its own axis by the bevel gearing g^4 g^5 and is at the same time moved longitudinally upon the internal brush or scarifier, through which the internal washing
 20 water is introduced. Upon the bottle reaching its lowest position, the internal brush becomes inserted to the depth of the bottle and while in this position the action of the brush is prolonged on the bottom of the bottle, the
 25 cam-groove being so formed for this purpose; but as the movement proceeds the bottle is gradually withdrawn from the brush. Simultaneously with the operation of cleaning the interior of the bottle, the exterior thereof
 30 is subjected to the scarifying effect of the brushes G, the bottles being meanwhile bathed both externally and internally.

Instead of furnishing the internal brush with bristles in the ordinary manner, it may
 35 be furnished with two or more strips of rubber as shown, and as such a brush is rapidly rotated the centrifugal force opens out the strips the latter being thereby brought into intimate and rubbing contact with the internal
 40 surface of the bottle.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A bottle-washing machine comprising a rotatable hub furnished with radial arms a
 45 bottle-carrier reciprocally mounted on each of said arms, a cam supporting said bottle-carriers and reciprocating them on the radial arms, rotatable water-spray nozzles co-axial with said bottle-carriers and furnished with

rubbers over which the bottles are passed, 50 means for rotating said hub and radial arms, and means for rotating said water-spray nozzles.

2. A bottle-washing machine comprising a rotating hub furnished with radial arms, a
 55 bottle-carrier reciprocally mounted on each of said arms, a cam supporting said carriers and reciprocating them on the radial arms, a socket rotatably mounted in each bottle-carrier and holding the mouth of the bottle, 60 means for rotating said socket, a brush suspended in the path of the bottle, and means for oscillating the brush against the exterior of the bottle.

3. In a machine for washing bottles, the 65 combination, with a tank and a rotating water-spray nozzle furnished with rubbers, of a bottle-carrier mounted to slide to and fro in the axial direction of the bottle and provided with a spring-supported socket for holding
 70 the mouth of the bottle, and means for imparting a rotative movement to said bottle.

4. In a machine for washing bottles, the combination, with a rotatable hub furnished with radial arms and a bottle-carrier reciprocally mounted on each of said arms, of a rotary valve, water-spray-nozzles mounted on
 75 said valve co-axial with said bottle-carriers, and a water-and-air supply nozzle; the said valve, while rotating, admitting water and
 80 air alternately to each of said water-spray-nozzles successively from said water-and-air supply nozzle.

5. In a machine for washing bottles and other articles of a like nature, the combination, with a series of reciprocally-mounted
 85 bottle-carriers, and water-spray-nozzles mounted co-axially therewith, of an air-pump for supplying air under pressure to the bottles, substantially as and for the purpose set
 90 forth.

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

RICHARD GRAINGER NASH.

Witnesses:

JAMES O'NEILL,
 W. L. COTTER.