

No. 854,173.

PATENTED MAY 21, 1907.

R. G. NASH.
MACHINE FOR WASHING BOTTLES.

APPLICATION FILED MAY 14, 1906.

4 SHEETS—SHEET 1.

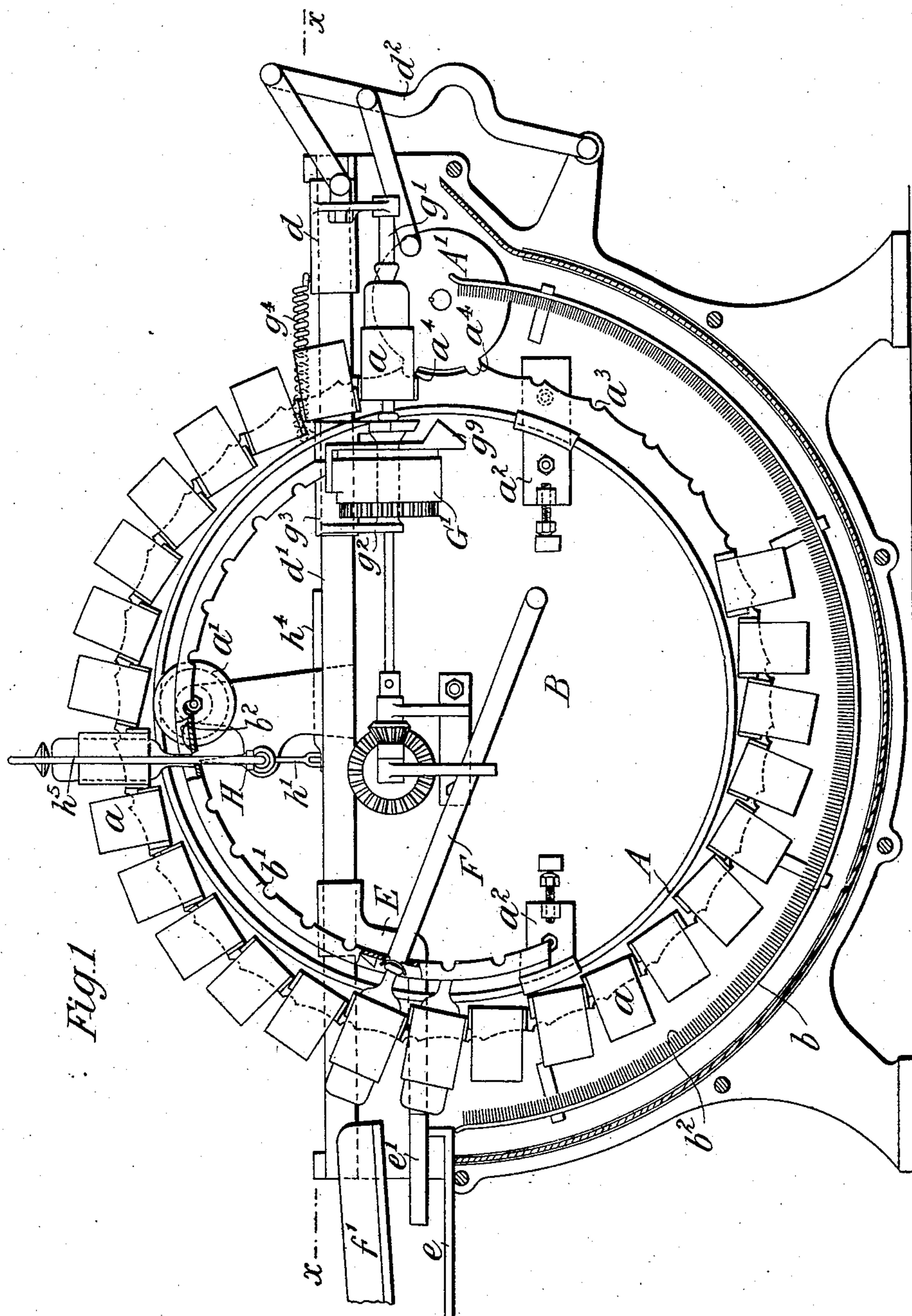


Fig. 1

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Inventor:
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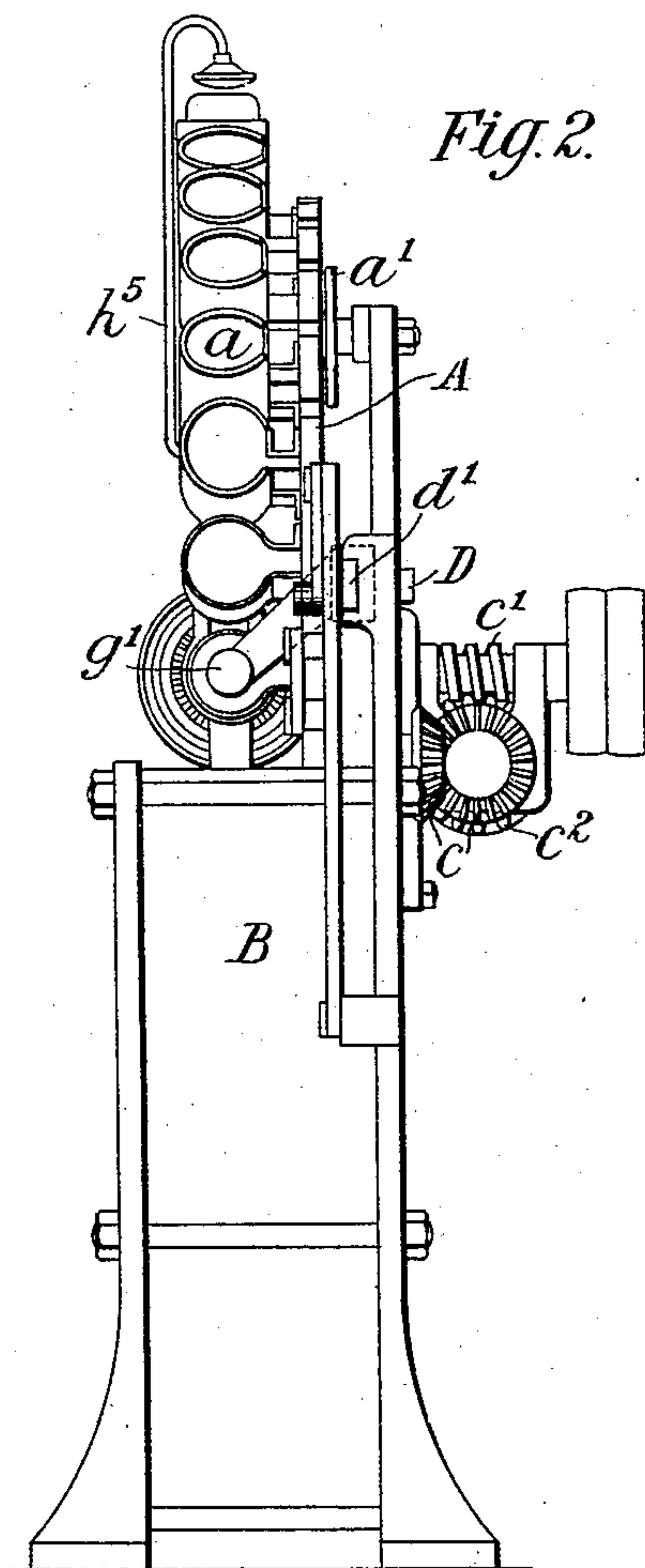
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4 SHEETS—SHEET 2.



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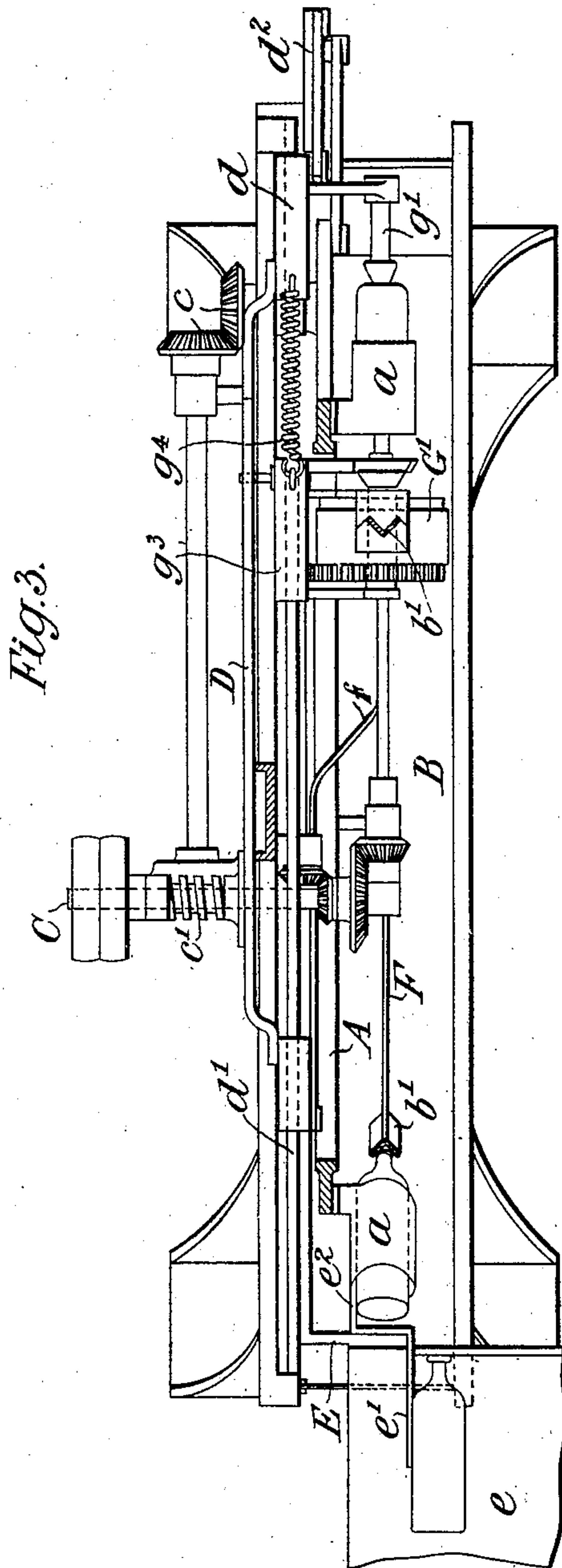
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 7.

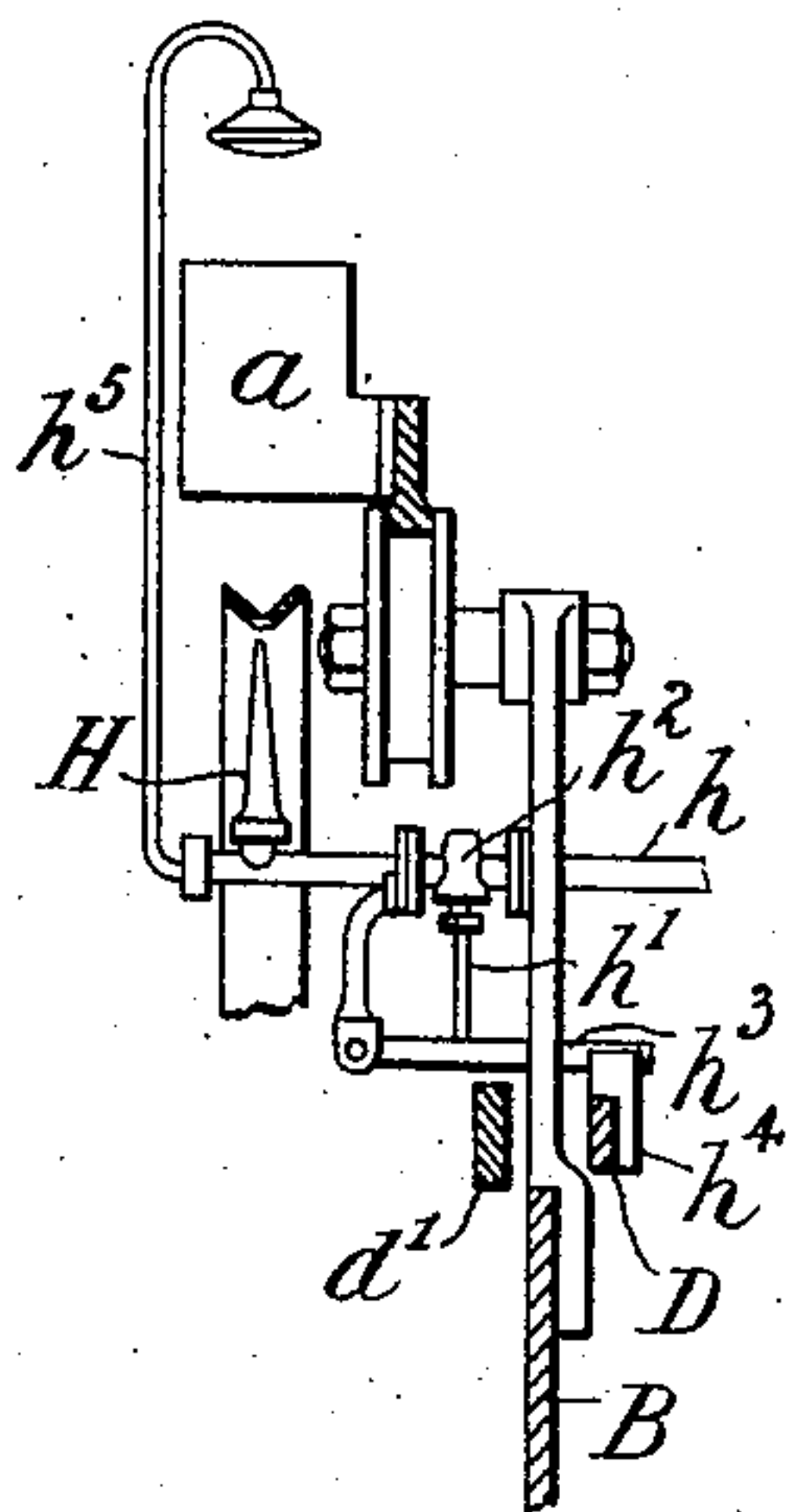


Fig. 4.

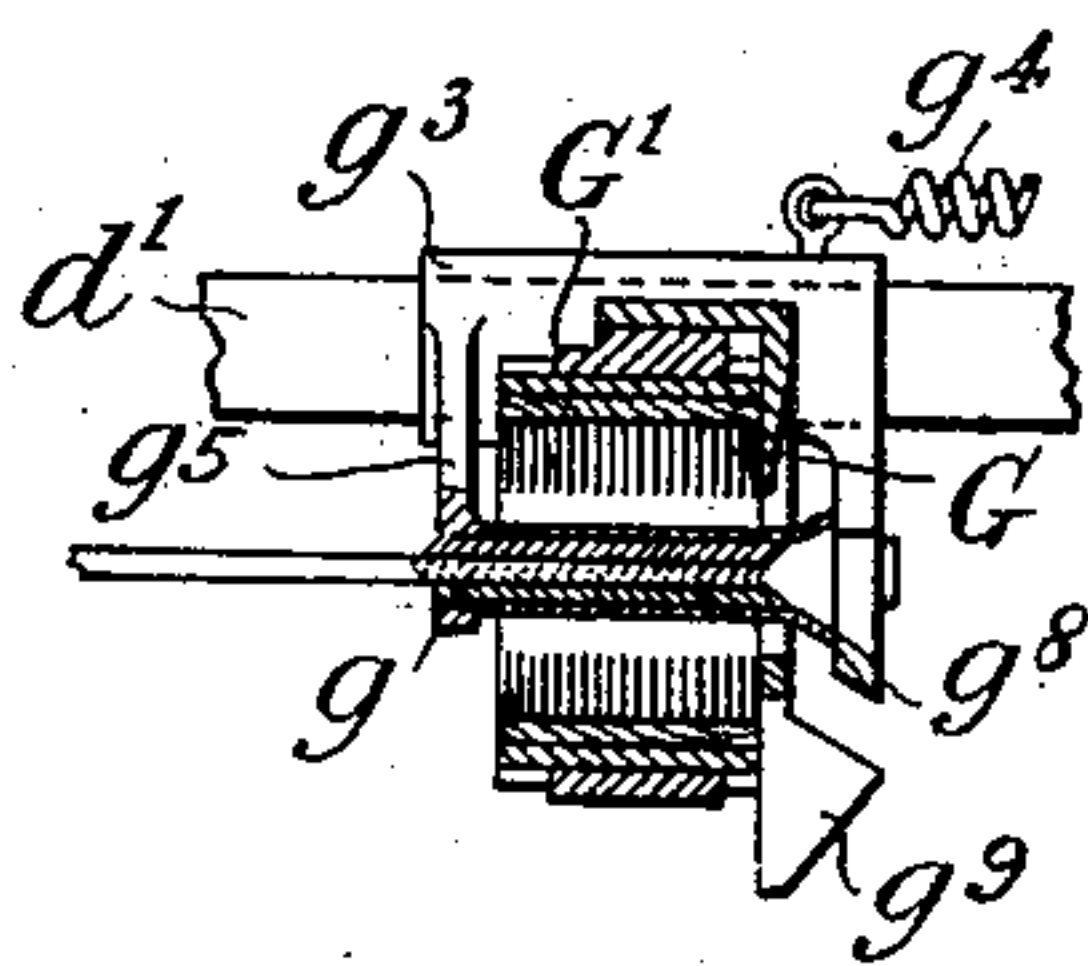


Fig. 5.

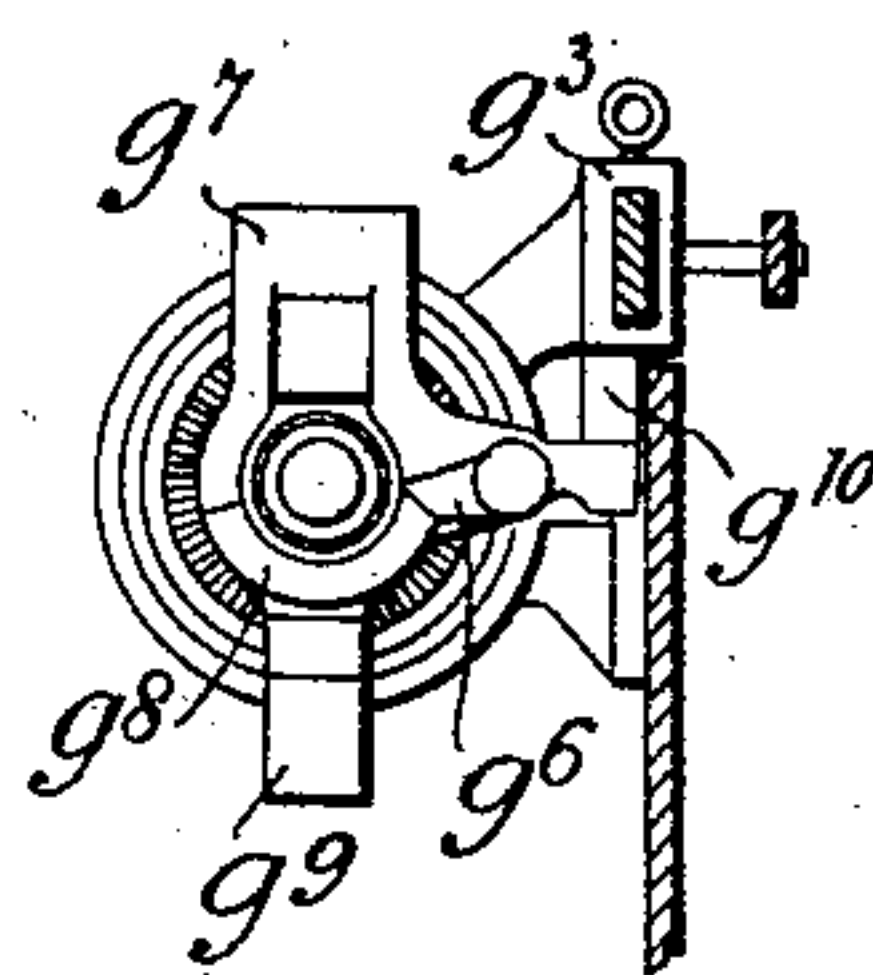


Fig. 6.

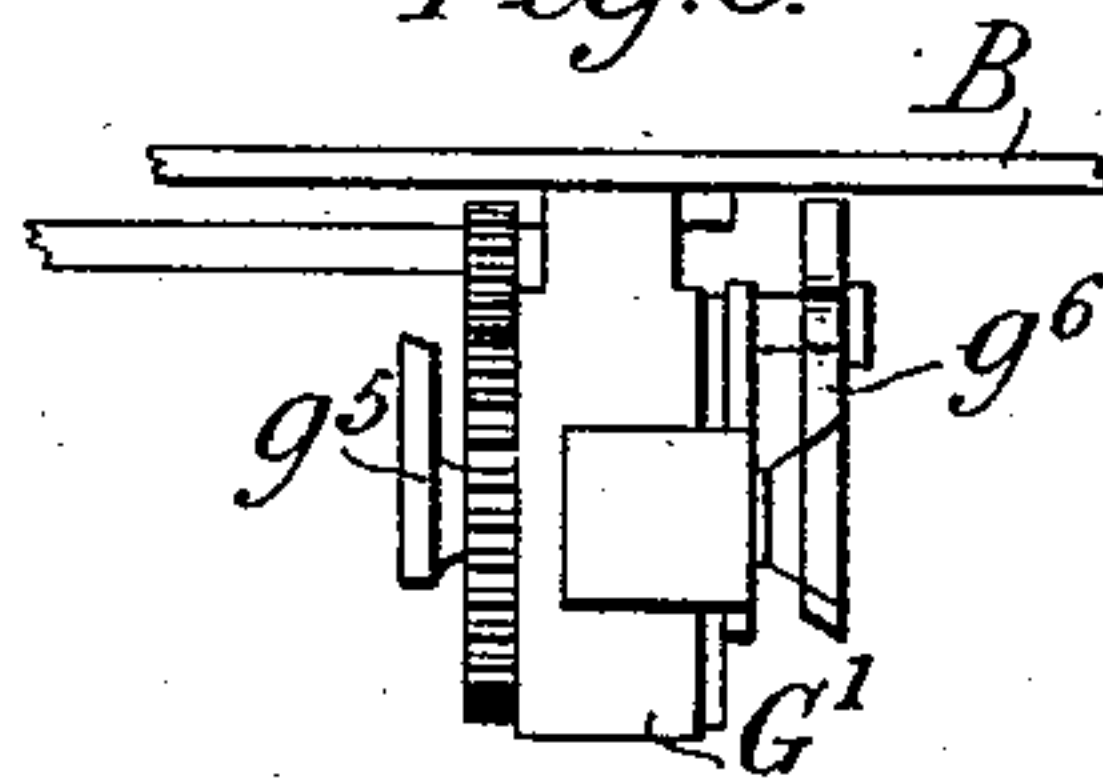
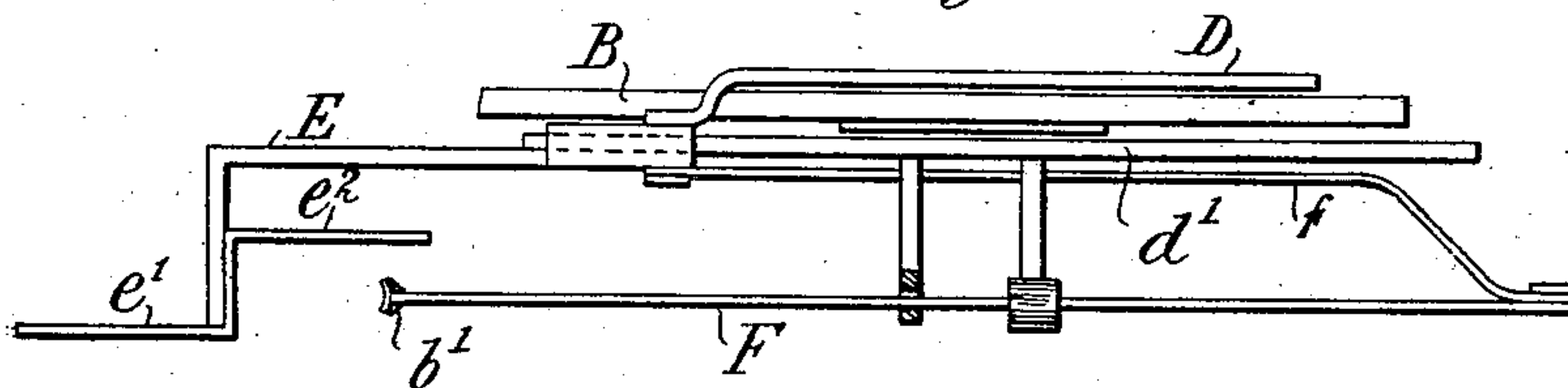


Fig. 8.



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UNITED STATES PATENT OFFICE.

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

MACHINE FOR WASHING BOTTLES.

No. 854,173.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed May 14, 1906. Serial No. 316,704.

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, Crocks, and the Like, of which the following is a specification.

This invention relates to machines adapted for the simultaneous washing and thorough cleansing of a number of bottles, crocks or the like, both internally and externally, the action of the various parts instrumental in the several operations being automatic.

In the accompanying drawings, which illustrate a washing machine constructed according to my invention, Figure 1 is a face view of the apparatus, Fig. 2 a side elevation and Fig. 3 a horizontal section on the line $x-x$ in Fig. 1. Figs. 4, 5 and 6 illustrate respectively in vertical section, face view and plan, the means for cleaning the interior and exterior of the bottle. Fig. 7 illustrates in side elevation the means for rinsing the bottle, while Fig. 8 is a plan of the means for feeding the bottle to its carrier and finally ejecting it therefrom.

In carrying out my invention as applied, by way of example, to the cleansing of bottles, I mount a series of bottle-carriers a upon a ring A supported upon a roller a' and brackets a^2 a^2 mounted upon the tank B. The periphery of the ring A is formed with a series of notches a^3 adapted to be engaged by projections a^4 a^4 formed upon the periphery of a disk A', which is driven from the main shaft C of the machine by suitable gearing such as the bevel wheels c c driven by the worm c' and worm-wheel c^2 . The disk A' gears with the ring A in such a manner that the projections thereon successively engage the notches in the ring and intermittently rotate the latter.

The disk A' which rotates the ring A also serves to operate means for feeding the bottles to be cleansed to the carriers, and means for discharging them from the carriers, subsequently to the cleansing operation. For this purpose, I employ a horizontally disposed arm D connected at its one end to a slide d , mounted on a guide bar d' and connected to a pivotally mounted lever d^2 reciprocated by the disk A', while its opposite end is furnished with means for feeding the bottles to the machine and for ejecting them after being cleansed. For feeding the bot-

tles to the machine, the extremity of the arm D is provided with a crank E arranged above an inclined chute e and supported by the guide bar d' . The dirty bottles are carried upon the chute, preferably on their side, and are normally supported by one arm e' of the crank; but as the arm D is moved forward, as the result of vibratory movement imparted to the lever d^2 , the leading bottle of the row is disengaged from the crank-arm e' and rolls or slides into position opposite its carrier where it is supported by an arm e^2 projecting laterally from the crank E. During the return movement of the horizontal arm D, the crank engages the bottom of the bottle and pushes it into its carrier. For ejecting the bottle after being cleansed, a plunger F arranged co-axially with the bottle may be connected to the horizontal arm D by means of the rod f , so that, during the forward movement of the latter, the plunger F will eject the bottle from the carrier on to a chute f' .

Each bottle, while in its carrier, is free to move in an axial direction; and during the first part of its journey round the axis of the ring, the bottom of the bottle is supported upon a platform b within the tank B; while during the remainder of its journey, the neck is supported upon a hoop b' angular in cross-section, the bottle being supported between the sides of the angle.

The bottles, during the first half of their journey round the axis of the ring A, pass through the water in the tank B. While immersed in the water, the bottom of the bottle may be cleaned by means of a brush b^2 mounted upon the platform b . After each bottle has traversed about 180° it arrives opposite a set of brushes G, g , (see Fig. 4) which are revolved, within a casing G' by suitable gearing, from the main shaft C, and which are adapted for cleaning both the interior and the exterior of the bottle. When the bottle is in this position, a plunger g' , mounted on the slide d connected to the horizontal arm D engages the bottom of the bottle, and, during the forward movement of the arm, pushes the bottle through the carrier a into engagement with a bell-crank g^2 , mounted on a slide g^3 , which is connected to the slide d by a spring g^4 . By means of this spring the bottle is firmly held as it passes over the internal brush g and through the external brush G and while undergoing the brushing operation.

The arm g^5 of the bell-crank is hollow and formed with a bell-mouth which serves to cen-

ter the bottle; the latter being guided to the arm by a lever g^6 pivotally mounted on a frame g^7 supported upon the casing G' . For the purpose of guiding bottles of unequal diameter, one arm (g^8) of the lever g^6 is curved longitudinally, while in cross-section one of its sides is formed at such an angle as to be in the same plane as the surface of the bell-mouth. The frame g^7 is formed with a projection g^9 which serves, as the ring A rotates, to guard against the necks of the bottles fouling the under side of the lever g^6 . While the bottle is passing to the brushes G g , the lever g^6 , one arm of which is held by a projection g^{10} formed on the slide g^3 , is released from the neck of the bottle, thus permitting the free passage of the body of the bottle. On the return movement of the slide g^3 the projection g^{10} re-engages the lever g^6 and raises it into operative position, as shown in Fig. 5.

The bottle, having been scarified by the revolving brushes, is returned to the carrier by means of the spring-controlled slide g^3 ready for the next operation, which consists in rinsing the bottles. For this purpose, I provide a nozzle H mounted on the frame of the tank and in communication with a suitable water supply h . This nozzle is so disposed as to be co-axial with the mouth of the bottle when the latter has moved to an approximately vertical position. When the bottle is co-axial with the nozzle, it may operate a lever in connection with the spindle h' of a water-supply valve h^2 and admit water to the bottle; and when the bottle moves away from the nozzle, the supply of water is cut off. But I prefer to operate the water-supply valve h^2 by a lever h^3 which is supported upon a cam h^4 mounted upon the horizontal arm D. As this arm is reciprocated, the spindle h' opens the valve h^2 and admits a jet of water into the bottle. At the same time water may be sprayed over the bottle by way of the pipe h^5 . To insure bottles of varying sizes being placed co-axial with the nozzle H, the ring b' is provided with a projection b^2 formed with a convex surface over which the mouth of the bottle rides and slides into position. The bottle having been rinsed, its circumferential journey around the axis of the machine is completed, during which period it may be dried or sterilized. It ultimately arrives in position opposite the plunger F, by means of which it is ejected from the carrier in the manner previously described.

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

1. In a bottle-washing machine, the combination, with a ring furnished with a series of bottle-carriers, of means for pushing the bottles out of their carriers internal and external revolving brushes mounted in stationary bearings and adapted to receive said

bottles, and means for returning the bottles to their carriers, arranged or operating substantially as herein described.

2. In a bottle-washing machine, the combination, with a ring, furnished with a series of bottle-carriers, of a scarifier a reciprocable arm provided with means for supplying each carrier successively with a bottle with means for introducing the bottle to said scarifier, whereby it is cleansed both internally and externally, and with means for finally ejecting the bottle from its carrier, substantially as set forth.

3. In a bottle-washing machine, the combination, with a ring furnished with a series of bottle-carriers, of a brush for cleaning the interior of the bottle of a pair of slides connected by a spring, a pusher carried by one slide and adapted to engage with the bottoms of the bottles, and a hollow arm carried by the other slide, such arm surrounding the said brush and being provided with a bell-mouth, suitable for engaging with the mouth of the bottle, substantially as herein described.

4. In a bottle - washing machine of the general character herein referred to, the combination, with the bottle-carrier, of a reciprocating arm furnished with a crank and a chute, arranged beneath said crank and serving to support the bottles to be cleansed, substantially as set forth.

5. In a bottle washing machine, the combination, with a ring furnished with a series of bottle carriers and a disk for intermittently rotating said ring, of a chute for receiving the cleansed bottles, an arm reciprocated by said disk and a plunger mounted upon said arm, whereby, upon the carriers successively arriving opposite the chute, the bottles are ejected, substantially as set forth.

6. In a bottle - washing machine of the general character herein referred to, the combination, with concentric external and internal rotary brushes, of a reciprocating arm, furnished with a plunger adapted to engage the bottom of the bottle, and a slide connected by a spring to said arm, the plunger and the slide serving to support the bottle while being cleansed by the said brushes, substantially as set forth.

7. In a bottle - washing machine of the general character herein referred to, the combination, with concentric external and internal rotary brushes and with a slide which serves to support the mouth of the bottle, of means for guiding the mouth of the bottle to the slide, substantially as described.

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

RICHARD GRAINGER NASII.

Witnesses:

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C. J. ASHDOWN.