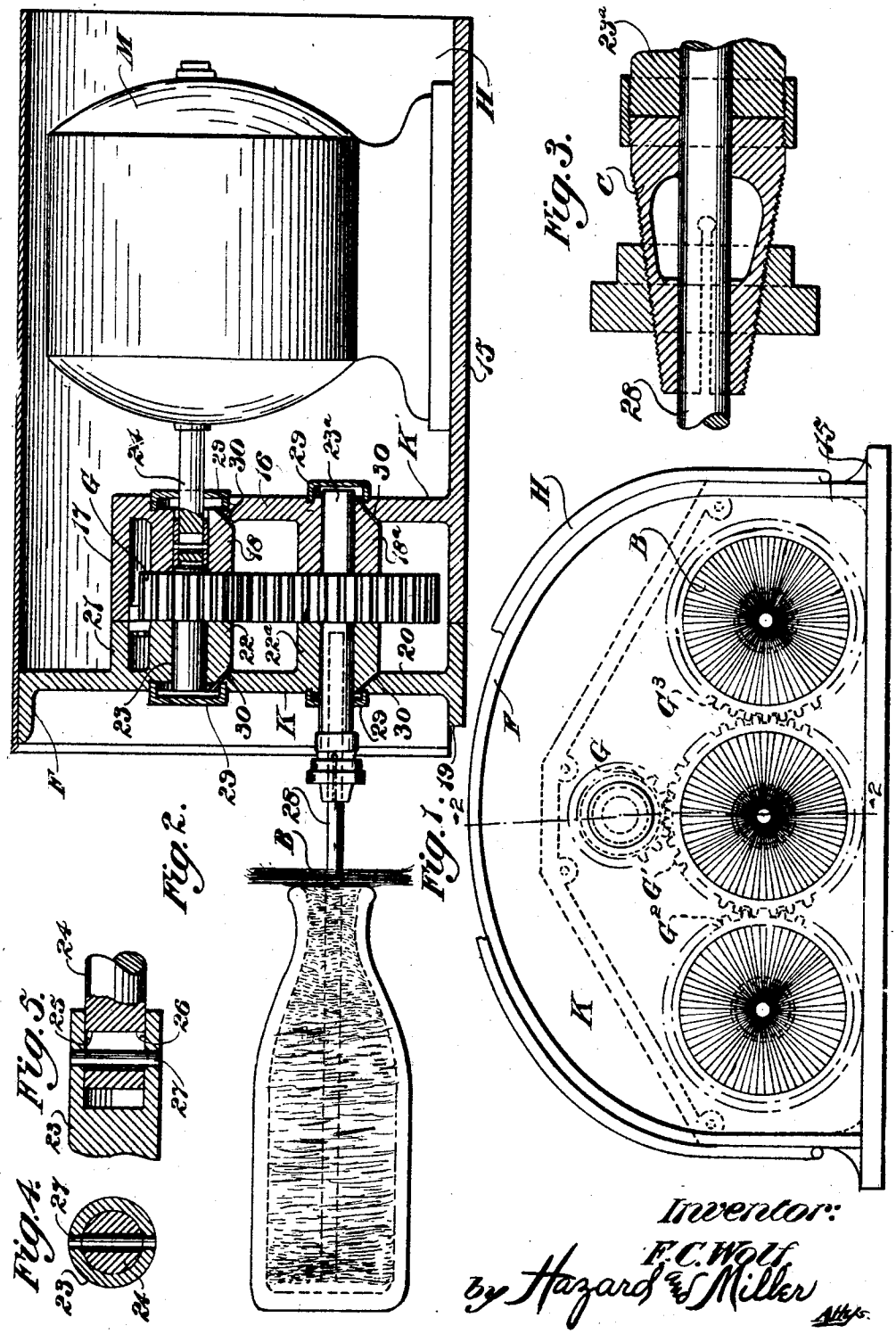
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F. C. WOLF

BOTTLE WASHING MACHINE

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UNITED STATES PATENT OFFICE.

FRANK C. WOLF, OF LOS ANGELES, CALIFORNIA.

BOTTLE-WASHING MACHINE.

Application filed February 3, 1922. Serial No. 533,865.

To all whom it may concern:

Be it known that I, FRANK C. WOLF, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

My invention relates to bottle washing machines, and a purpose of my invention is the provision of a machine of this character of extremely, simple durable and efficient construction and which operates to effect the rapid and thorough as well as simultaneous cleaning of a plurality of milk or similar bottles.

It is also a purpose of my invention to provide means for detachably associating the cleaning brushes with the driving mechanism comprised in the washing machine and means for effectively and automatically lubricating the driving mechanism.

I will describe one form of bottle washing machine embodying my invention and will then point out the novel features thereof in claims.

In the accompanying drawings,

Figure 1 is a view showing in front elevation one form of bottle washing machine embodying my invention.

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary detail view partly in section showing one form of chuck comprised in the machine shown in the preceding views.

Figs. 4 and 5 are transverse and longitudinal sectional views, respectively, of the extensible connection between the motor shaft and the driven shaft of the actuating mechanism.

Referring specifically to the drawings in which similar reference characters refer to similar parts, my invention in its present embodiment comprises two castings or supports designated generally at K and K′, with the casting K including a base portion 15 upstanding from which is a plate 16 formed at its upper end with a forwardly extending flange 17, and between its ends with sleeve bearings 18 and 18ª. The casting K includes a base portion 19 and upstanding plate 20 having a rearwardly extending flange 21 adapted to contact with the flange 17 to form a closure for the upper side of the housing formed by the two castings. Between the upper and lower ends and at the rear side of the plate 20 are sleeve bearings 22 and 22ª similar in construction to the bearings 18 and 18ª and co-operating with the latter to support shafts 23 and 23ª respectively to which gears are fixed.

The shaft 23 has fixed thereto a driving gear G, and this gear constantly meshes with a similar but larger driven gear G′ fixed to that shaft 23ª directly below the shaft 23, as clearly shown in Fig. 1. As shown in Fig. 1, three shafts 23ª are provided, with gears G² and G³ fixed to the other shafts 23ª and meshing with the gear G′. The driving gear G is adapted to be driven by any suitable means such as the electric motor M, Fig. 2, mounted in the base 15 and operatively connected to the shaft 23 by an extension of the motor shaft 24 with its other end connected to the shaft 23 by the connection shown in detail in Figs. 4 and 5. As here shown, the adjacent end of the shaft 23 is recessed as indicated at 25 to slidably receive the confronting end of the shaft 24, the latter being slotted as indicated at 26 to accommodate a pin 27 relatively small as compared to the slot to allow of the limited longitudinal movement of the shaft 24 with respect to the shaft 23. This connection obviously allows for the necessary end thrust of the motor shaft 24 while still maintaining an operative connection between the shafts 23 and 24 to drive the driving gear G.

As shown in Fig. 2, each shaft 23ª is extended at its forward end beyond the plate 20 and bored longitudinally to accommodate a brush supporting shaft 28, a chuck designated generally at C being associated with the shafts 23ª and 28 to detachably secure the shaft 28 to the shaft 23ª. Each of the chucks C is of conventional form so that a detail description of the same is thought to be unnecessary. As shown in Figs. 1 and 2, each shaft 28 supports brushes B of such a size as to be readily insertable into milk bottles and of such a contour as to effectively clean the interior of the milk bottles when the latter are applied in the manner shown in Fig. 2.

For the purpose of effectively lubricating all of the gears, the plates 16 and 20 are constructed to accommodate caps 29 which co-operate with the plates in forming compartments that communicate with the spaces between the sleeve bearings by means of

ducts 30. Within the lowermost space or that space between the bases 15 and 19 and the bearings 18^a and 22^a, a fluid lubricant is adapted to be placed so that under the action of the rotating gears G′, G^2 and G^3 this lubricant will be carried upwardly by the teeth of the gears for lubricating such gears and the gear G as well as the shafts 23 and 23^a. The lubricant which finds its way to the end portions of the shafts 23 and 23^a is deposited into the caps 29 and from there gravitates through the ducts 30 and ultimately into the lowermost space for a redistribution, as will be understood.

As shown in Figs. 1 and 2, the castings K and K′ as well as the motor M are adapted to be housed by a hood H which engages an arcuate flange F formed at the upper end of the plate 20 and designed to prevent splashing of the water or other cleaning fluid rearwardly with respect to the casting K.

From the foregoing description taken in conjunction with the accompanying drawings it is to be believed that the operation of the machine will be readily apparent, and that I have provided a machine of extremely simple, durable and efficient construction which operates to effectively clean one or more bottles simultaneously.

Although I have herein shown and described only one form of bottle washing machine embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention and the spirit and scope of the appended claims.

What I claim is:

1. A bottle washing machine comprising a pair of castings having their confronting sides formed with bearings arranged in pairs with the bearings of one pair disposed in confronting relation to each other and spaced apart from the bearings of the other pairs, a shaft journaled in each pair of bearings, gears fixed to said shafts, said gears including a driving gear and driven gears, the latter meshing with each other and the former meshing with one of the driven gears, brush supporting shafts detachably associated with the shafts of the driven gears, means for driving the shaft of the driving gear, a loose and operative connection between the motor shaft and the driving shaft to allow the necessary end thrust of the motor shaft, said connection including a recess in a driving shaft, adapted to receive the adjacent end of the motor shaft, a slot in the motor shaft, and a pin secured to the driving shaft and extending through the slot of the motor shaft, caps associated with the castings to provide lubricating compartments at or adjacent the ends of the shafts, and ducts formed in the castings for effecting communication between the interior of the caps and the spaces between the adjacent pairs of bearings.

2. A bottle washing machine comprising a pair of castings having their confronting sides formed with bearings arranged in pairs with the bearings of one pair disposed in confronting relation to each other and spaced apart from the bearings of the other pairs, a shaft journaled in each pair of bearings, gears fixed to said shafts, said gears including a driving gear and driven gears, the latter meshing with each other and the former meshing with one of the driven gears, brush supporting shafts detachably associated with the shafts of the driven gears, means for driving the shaft of the driving gear, caps associated with the castings to provide lubricating compartments at or adjacent the ends of the shafts, and ducts formed in the castings for effecting communication between the interior of the caps and the spaces between the adjacent pairs of bearings.

3. A bottle washing machine comprising a pair of castings including base portions, upstanding plate portions, flanges formed in the plate portions and secured to each other, sleeve bearings formed on the plates at corresponding points, an arcuate flange formed on one of the plates, a hood housing the castings and engaging said flange, shafts journaled in said bearings, gears fixed to said shafts, with one of said gears constituting a driving gear and the remaining gears forming driven gears, the driven gears meshing with each other and the driving gear meshing with one of the driven gears, brush supporting shafts detachably secured to the shafts for the driven gears, a motor sustained on the base of one of the castings and within said hood, and means for operatively connecting the motor shaft to the shaft for the driven gear and in such manner as to allow of the limited end thrust of the motor shaft.

4. A bottle washing machine comprising a casing having bearings, shafts journaled in said bearings, gears fixed to the shafts, brush supporting shafts carried by the first shafts, means for driving the first shafts, caps associated with the casing to provide lubricating compartments at or adjacent the ends of the first shafts, said casing being formed with a duct for effecting communication between the interior of the caps and the spaces between the adjacent pairs of bearings.

In testimony whereof I have signed my name to this specification.

FRANK C. WOLF.