July 23, 1940. C. L. BOGGS 2,208,659

CLEANING DEVICE

Filed Aug. 8, 1936 2 Sheets-Sheet 1

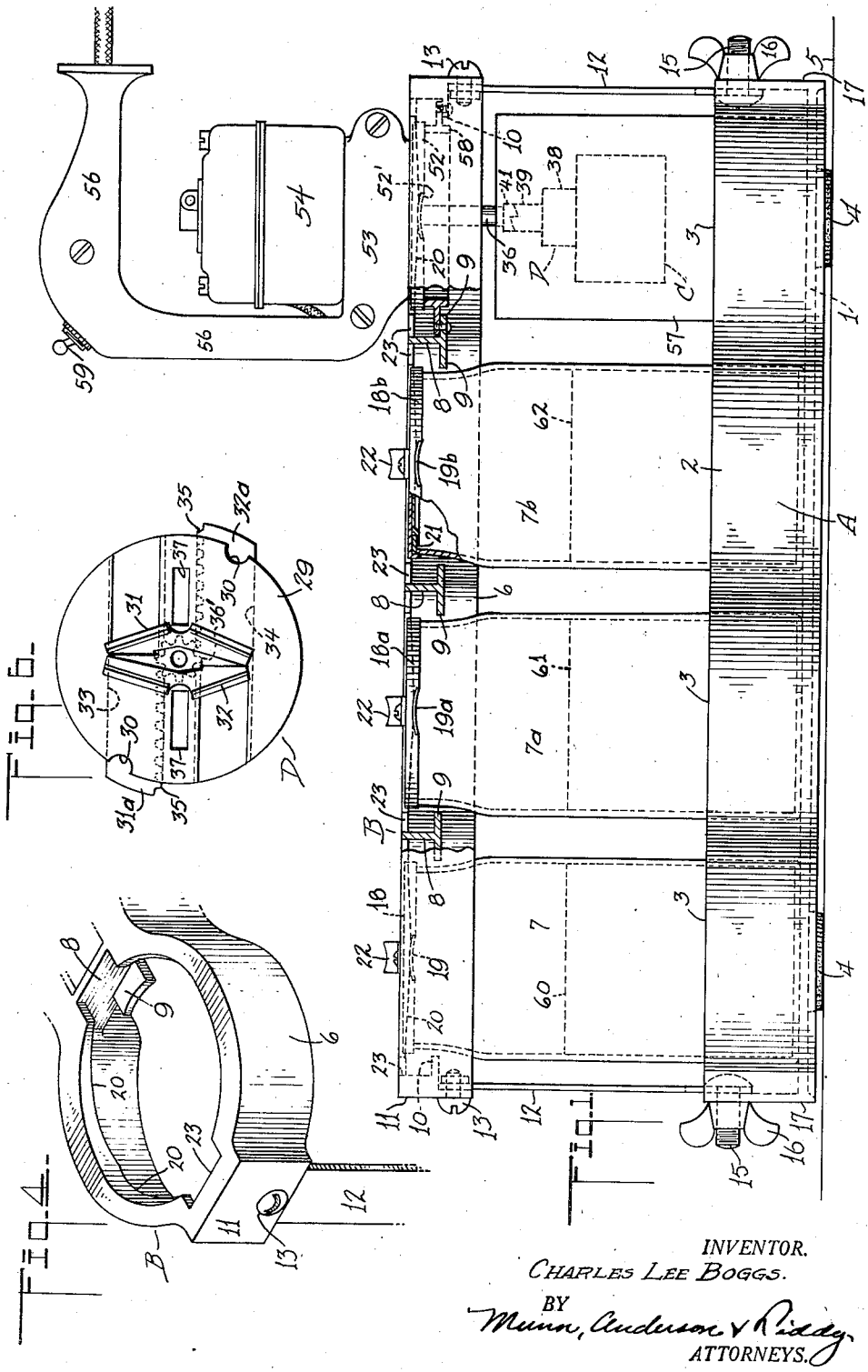


Fig. 1

Fig. 5

Fig. 4

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CLEANING DEVICE

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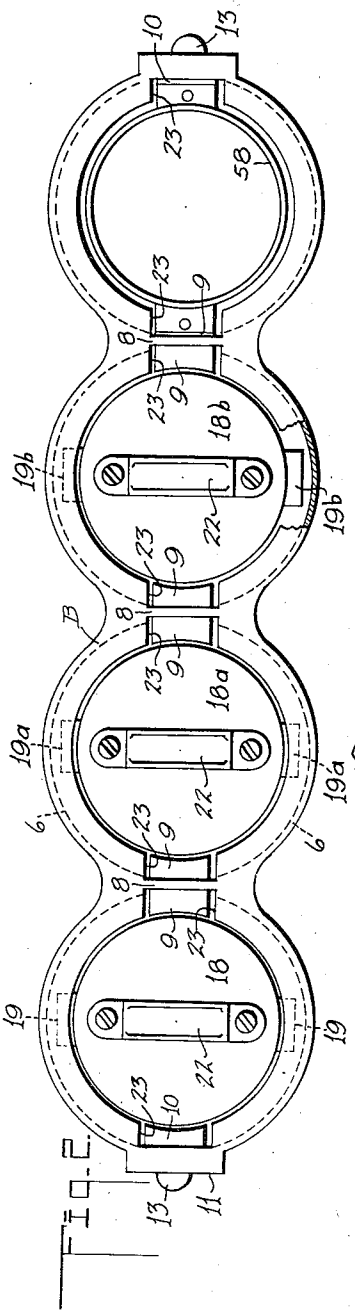


FIG. 2

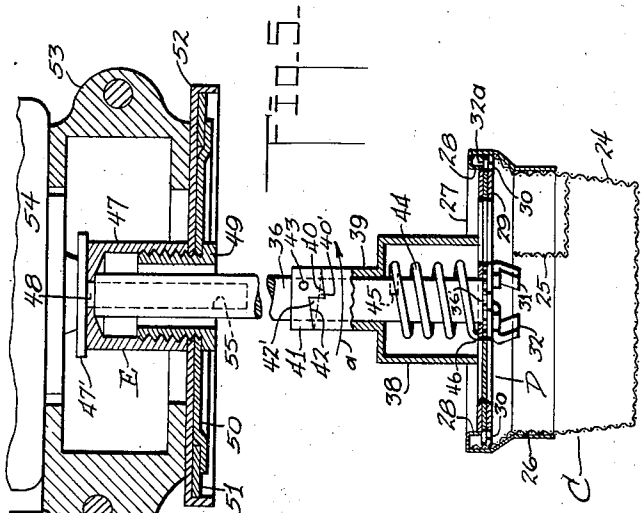


FIG. 5

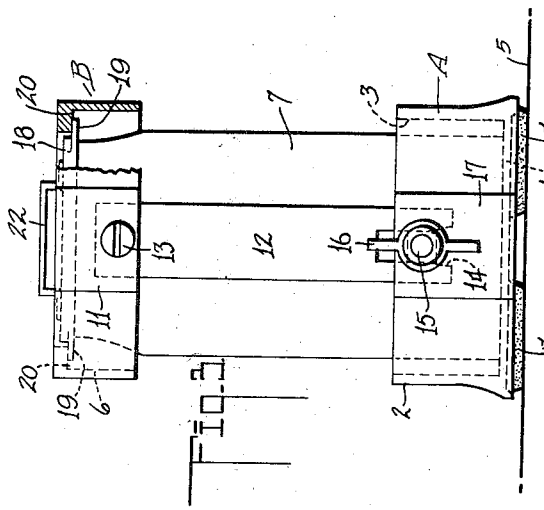


FIG. 3

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Patented July 23, 1940

2,208,659

UNITED STATES PATENT OFFICE

2,208,659

CLEANING DEVICE

Charles Lee Boggs, San Francisco, Calif.

Application August 8, 1936, Serial No. 94,968

6 Claims. (Cl. 141—1)

My invention relates to improvements in cleaning devices, and it consists of the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide an improvement over the form of the invention shown in the patent of Charles Lee Boggs and Carl E. Lang, on a Cleaning device, No. 2,054,515, issued September 15, 1936. In the patented device there is shown a stand for supporting three jars, one of which contains a cleaning fluid and the other two contain a rinsing fluid. A basket for carrying watch parts or other articles to be cleaned is shown in the patent, as being connected to a motor shaft. The motor carries a cover member that cooperates with a clamping device carried by the stand for removably clamping the cover to any one of the desired containers or jars. When the operator desired to dry the parts after the rinsing operation the motor was inverted for disposing the basket above the jar or container.

In the present form of the invention I show four jars or containers placed in a stand. Three of these jars perform the same function as the three set forth in the patent. The fourth jar or container is preferably of less height than the others and constitutes a drying compartment. The basket is placed in this jar and is rotated by the motor for drying the articles within the basket.

In the patented device there is shown separate clamping means for each jar, these clamping means cooperating with the cover carried by the motor for securing the cover to the jar or container. In the present form of the invention I show a stand consisting of a casting formed with four recesses for receiving the four jars. A second casting is designed to overlie the jars and is adjustably secured to the first casting. The adjustment is such that the second casting may be moved vertically toward or away from the first casting or base, and can be rocked slightly about a horizontal and longitudinal axis also. The second casting carries cam portions designed to engage with projections which in turn are carried by a cover supported by the motor. This cover is designed to close and seal any one of the three jars containing fluid. The second casting contains novel means for supporting the cover when the basket is placed in the drying jar.

The basket itself is changed slightly from the form shown in the patent and the jaws for either gripping the basket or the watch mechanism also are altered slightly. The means for holding the jaws in extended position has been changed.

During the operation of the device a portion of the liquid has a tendency to move upwardly along the motor shaft. I provide a novel packing where the shaft enters the motor, and this packing prevents the liquid from gaining access to the interior of the motor.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which

Figure 1 is a side elevation of the device, portions being shown in section;

Figure 2 is a top plan view of the device with the motor removed;

Figure 3 is an end elevation of Figure 2;

Figure 4 is an isometric view of a portion of the device;

Figure 5 is an enlarged sectional view showing the basket and the packing for the motor shaft; and

Figure 6 is a bottom plan view of the watch or basket-gripping jaws and associate parts.

In carrying out my invention I provide a stand indicated generally at A. This stand is in the form of a casting and has a bottom plate 1 with a flange 2 extending upwardly from the marginal edge of the plate. The flange 2 is curved to form container-receiving receptacles indicated generally at 3, and the bottom plate 1 has its marginal edge similarly curved. Pads 4 are secured to the bottom plate and support the stand A above a supporting surface 5.

The top or cover casting indicated generally at B is provided with downwardly extending flanges 6 that are curved for receiving the tops of the jars or containers indicated generally at 7, see Figures 1 and 4. A partition 8 is disposed between each curved portion of the flange 6, and this partition carries inwardly extending projections 9. A projection 10 similar to one of the projections 8 extends inwardly from the end wall portion 11 of the flange 6.

The casting B is adjustably secured to the casting A by means of uprights 12. Figure 3 shows the top of the upright 12 secured to the end wall 11 by means of a bolt 13 or other suitable fastening means. The lower end of the upright 12 is bifurcated at 14 and straddles a bolt 15. A wing nut 16 clamps the lower end of the

upright 12 to the end wall 17 of the casting A in the desired position.

It will be seen from this construction that the casting B can be raised or lowered with respect to the casting A and held in adjusted position by the bolts 15. It is also possible to rock the casting B about the bolts 13 as a pivot if desired, for a purpose hereinafter described.

The casting B is provided with three bottle or jar-receiving compartments as already stated, and since all three of these are identical in construction a description of one will suffice. In Figure 1 I show the jars 7, 7a and 7b closed by the covers 18, 18a and 18b. These covers carry outwardly extending projections 19, 19a and 19b that are designed to yieldingly engage with cam surfaces 20, formed in the casting B, see Figure 4. Each cover also is provided with a gasket 21 and a handle 22. The casting B has recesses 23 for receiving the projections 19, 19a and 19b.

It should be noted at this point that the tops of the jars are centered by contacting with the inner cylindrical surfaces of the cams 20 and the inner curved edges of the webs 9 and 10. This permits the covers 18 to be quickly centered above the jars. Each cover is moved downwardly when its projections 19 are aligned with the recesses 23, and then the cover is rotated through an arc of 90° by means of the handle 22. The projections 19 will ride beneath the cam surfaces 20, and this will force the cover down upon the jar, whereupon the gasket 21 will form a liquid-tight seal with the upper edge of the jar.

I will now describe the basket and the motor with its connections for rotating the basket. In Figure 5 I show the basket generally at C. This basket has a bottom and side wall formed from a wire mesh indicated at 24. A compartment 25 is formed in the basket and the bottom and side wall of this compartment also are constructed from a wire mesh material. The top of the basket is encircled by a metal band 26 of the shape shown. The upper edge 27 of this band is struck inwardly at two diametrically opposite points for providing projections 28.

In Figures 5 and 6 I show a basket-gripping member indicated generally at D. This member is in the form of a disc 29 of a diameter large enough to be snugly received in the top of the basket C. The periphery of the disc has recesses 30 for receiving the inwardly extending projections 28 of the basket. The disc carries two jaws 31 and 32 and these jaws have shanks 31a and 32a slidable in bores 33 and 34 formed in the disc 29. One edge of each shank 31a and 32a is provided with ratchet teeth 35, and these teeth mesh with a central pinion 36' mounted within the top and bottom walls of the disc 29. The pinion is made fast to a shaft 36, see Figure 5. It will be seen that a rotation of the shaft 36 with respect to the disc 29 will rotate the pinion 36' for moving the jaws 31 and 32 toward or away from each other. When the jaws are moved away from each other the shanks 31a and 32a uncover the recesses 30. This will permit the disc 29 to be placed at the top of the basket and the recesses 30 will receive the projections 28. Novel means now to be described will move the jaws 31 and 32 toward each other, and this will cause the ends of the shanks 31a and 32a to move beneath the projections 28 and lock the disc 29 to the basket.

Figure 6 shows the disc 29 provided with openings 37 to allow the free passage of fluid therethrough.

The means for urging the jaws 31 and 32 toward each other and for locking the jaws in any desired position is illustrated in Figure 5. A cap 38 is rotatably mounted on the shaft 36 and carries a sleeve 39 that has a cam outer edge 40. A collar 41 with a cooperating cam edge 42 is secured to the shaft 36 by means of a pin 43 or other suitable fastening means. A spring 44 is mounted within the cap 38 and has one end secured to the shaft 36 at 45, while its other end is secured to the disc 29 at 46.

It will be seen from this construction that a rotation of the cap 38 in the direction indicated by the arrow a in Figure 5 will cause the shoulder 42' of the sleeve 39 to engage with the shoulder 40' of the collar 41 for rotating the collar and the shaft 36 in the same direction. The disc 29 is held against rotation during this movement, and therefore the pinion 36' will move the jaws 31 and 32 away from each other and retract the shanks 31a and 32a. This will free the shanks from the projections 28 and permit the disc 29 to be removed from the basket.

When it is desired to use the jaws 31 and 32 for gripping a watch movement, not shown, instead of the basket, the cap 38 is rotated in the direction of the arrow a with one hand while the disc 29 is held against rotation by the other hand. The rotation is continued until the jaws 31 and 32 are extended sufficiently to receive the watch movement. The shaft 36 is then held against rotation with the palm and last two fingers gripping the shaft, and the disc 29 is held against rotation by the thumb and first two fingers of the same hand gripping the disc. The other hand is now used for placing the watch movement between the opened jaws 31 and 32. The cap is then freed and the spring 44 will rotate the shaft 36 and pinion 36' for urging the jaws 31 and 32 into clamping relation with the watch movement. The jaws can be clamped in position after they have engaged the watch movement, and this clamping action is accomplished by turning the housing 38 in a direction opposite to the arrow a in Figure 5. This will cause the cam edge 40 to move along the cam edge 42 and to drive the housing 38 against the disc 29 for frictionally engaging with the disc. The friction is such as to prevent the accidental releasing of the jaws from the watch movement.

In Figures 1 and 5 I show the shaft 36 entering a packing indicated generally at E. This packing comprises an inverted cup-shaped member 47 mounted on a motor shaft 48. A nipple 49 is threaded into the cup-shaped member 47 and clamps a retainer 50 against the gasket 51. The gasket in turn is mounted in a cover 52 that is secured to a casting 53 which supports a motor 54. The shaft 36 enters the nipple 49 and is spaced from the wall thereof. The shaft 36 also is provided with a bore 55 for receiving the motor shaft 48. The two shafts 36 and 48 are connected together to rotate as a unit. The cover 52 is of the same size and shape as the covers 18, 18a and 18b, and may take the place of any one of these covers. A portion of the liquid when rotated by the basket C will have a tendency to move upwardly on the shaft 36 in the form of foam. This foam upon entering the nipple 49 will be changed into a liquid, and this liquid will gravitate along the outer surface of the shaft 36. In this way the packing E prevents the liquid from gaining access to the motor 54. A washer 47' is mounted at the top of the member 47 and prevents any liquid entering the motor

regardless of the motor's position. This washer revolves with the shaft **48**.

In Figure 1 I show the casting **53** provided with a handle **56**, and this handle extends over the motor **54**. The handle may be rotated for moving the lugs **52'** in the cover **52** beneath the cam edges **20** for securing the cover to one of the jars. When the basket C is placed in the drying jar **57** the cover **52** will rest on a ring **58** that is supported by the inwardly extending portions **9** and **10** of the casting B. The cover **52** in this instance does not close the jar **57**, and therefore air is free to enter and leave the jar during the drying operation.

A switch **59** is mounted in the handle **56** and this switch is protected so that any spark is confined within the handle **56**. This is to prevent any fire from accidentally taking place due to fumes rising from the cleaning fluid. The motor **54** is an induction motor, and this also obviates any fire hazard due to the sparking.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

If an entire watch mechanism is to be cleaned the basket is dispensed with and the jaws **31** and **32** grip the watch and secure it to the disc **29**. The cover **18** now is removed and the watch mechanism is inserted in the jar **7**. It should be noted that the axis of the motor and the watch mechanism is eccentric to the axis of the jar **7** in the same manner as set forth in the copending application. The handle **56** connected to the motor is rotated through an arc of 90° and this will cause the lugs **52'** to cam beneath the cams **20** and to seal the cover **52** on the jar **7**. The motor is now started by closing the switch **59** and the watch mechanism will be rotated in a cleaning fluid **60** disposed within the jar. The rotation of the watch mechanism will cause the fluid to rotate and the vortex of the fluid will coincide with the axis of the jar. This will dispose the mechanism eccentric to the vortex with a result that the parts to be cleaned will be immersed in the liquid frequently enough to prevent oxidation.

When the basket is connected to the motor and placed within the jar, the rotation of the basket will create a vacuum along the axis of the basket which will draw the fluid into the basket. This fluid will be thrown out through the side wall of the basket by centrifugal force. This fluid in moving through the basket cleans the watch parts. It should be noted that the center line through the basket affords an unobstructed path for the fluid.

After the parts have been cleaned the necessary length of time, the handle **56** is rotated for removing the cover **52** from the jar **7** and then the watch mechanism or basket also can be removed from the jar. The basket is now inserted in the jar **7***a* after the cover **18***a* has been removed. The cover **52** is locked to the jar **7***a* in the manner already described. The basket C is disposed eccentrically to the jar **7***a* and a rotation of the basket caused by the motor **54** will rinse the parts in the rinsing fluid **61** disposed in the jar. A second rinsing fluid **62** is disposed in the jar **7***b*, and the basket is replaced in the jar **7***b* after the rinsing operation in the jar **7***a*.

The parts are now ready to be dried and the basket is placed in the jar **57**. The cover **52** is clamped to the ring **58** and then the motor **54** is connected to the source of current by the switch **59** for rotating the basket. When the parts are dried the basket may be removed from the jar **57** and then may be disconnected from the disc **29**. The cleaned and dried watch parts within the basket are now ready to be placed back in the watch mechanism.

By mounting the casting B on bolts **13** it is possible to rock the entire casting to accommodate the covers **18**, **18***a* and **18***b* and also the cover **52** with the jar tops. Better sealing results and this prevents leakage during the operation of the device. As already stated the casting B may be adjusted vertically to accommodate bottles or jars of different lengths or heights. The packing E provides a novel manner for sealing the motor against the entrance of foam. The foam is broken down before it reaches the top of the cup-shaped member **47**. The handle **56** not only moves the motor from place to place, but also is used for rotating the cover **52** through a 90° angle when locking the cover in place to a jar or removing it therefrom.

The jaw locking device D is simplified so that the basket C may be quickly attached to or removed from the disc **29**. The purpose of the small jar **57** is to catch the liquid thrown off by the basket during the drying operation. The basket is provided with a small compartment **25** for receiving the small watch parts. The bigger parts may be placed in the bottom of the basket and these are centered with respect to the axis of the basket so that during a rotation of the basket a less vibrating effect will result.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. In combination, a stand for holding a plurality of receptacles in a single line, independently adjustable uprights disposed at the ends of the stand, a cover-retaining member rockably secured to the tops of the uprights to permit the member to rock slightly about a longitudinal axis, and receptacle covers placed over the receptacles and yieldingly engaging with the retaining member so as to be held in place, said member being rockable about its longitudinal axis for aiding in sealing the covers.

2. A cleaning device comprising a stand for holding a plurality of receptacles, a retaining member extending across the tops of the receptacles, covers for the receptacles and engaging with the retaining member, a drying receptacle for the stand of less height than the others, an article-rotating member carrying a cover for removable connection with the first-named receptacles, and a ring carried by the retaining member for supporting the last-named cover for disposing the article-rotating member in the drying receptacle.

3. A cleaning device comprising a stand for holding a receptacle, a retaining member extending across the top of the receptacle, means for adjustably connecting the member with the stand, cam portions carried by the member and a cover for the receptacle and carrying lugs rideable under the cam portions for sealing the cover to the receptacle, said member being rockable for aiding in sealing the cover.

4. A cleaning device comprising a stand for holding a plurality of receptacles in line, a single retaining member extending across the tops of all of the receptacles and being pivotally secured at its ends to the stand, covers for the re-

ceptacles, and carrying projections, and arcuate cam portions carried by the retaining member for engaging with the projections when the covers are rotated for sealing the covers to the receptacles.

5. A cleaning device comprising a stand for holding a plurality of receptacles, a retaining member extending across the tops of the receptacles, covers for the receptacles and carrying projections, cam portions carried by the retaining member for engaging with the projections when the covers are rotated for sealing the covers to the receptacles, and a drying receptacle for the stand of less height than the others, an article rotating member carrying a cover for removable connection with the first named receptacles, and a ring carried by the retaining member for supporting the last named cover for disposing the article rotating member in the drying receptacle.

6. A cleaning device comprising a stand for holding a plurality of receptacles, a retaining member extending across the tops of the receptacles, means for adjustably connecting the member with the stand, cam portions carried by the member, covers for the receptacles and carrying lugs rideable beneath the cam portions for sealing the covers to the receptacles, said member being rockable about its longitudinal axis for aiding in sealing the covers.

CHARLES LEE BOGGS.