April 8, 1930. C. H. GEERY 1,753,462

WATCH CLEANING MACHINE

Filed Oct. 20, 1928

Fig. 1.

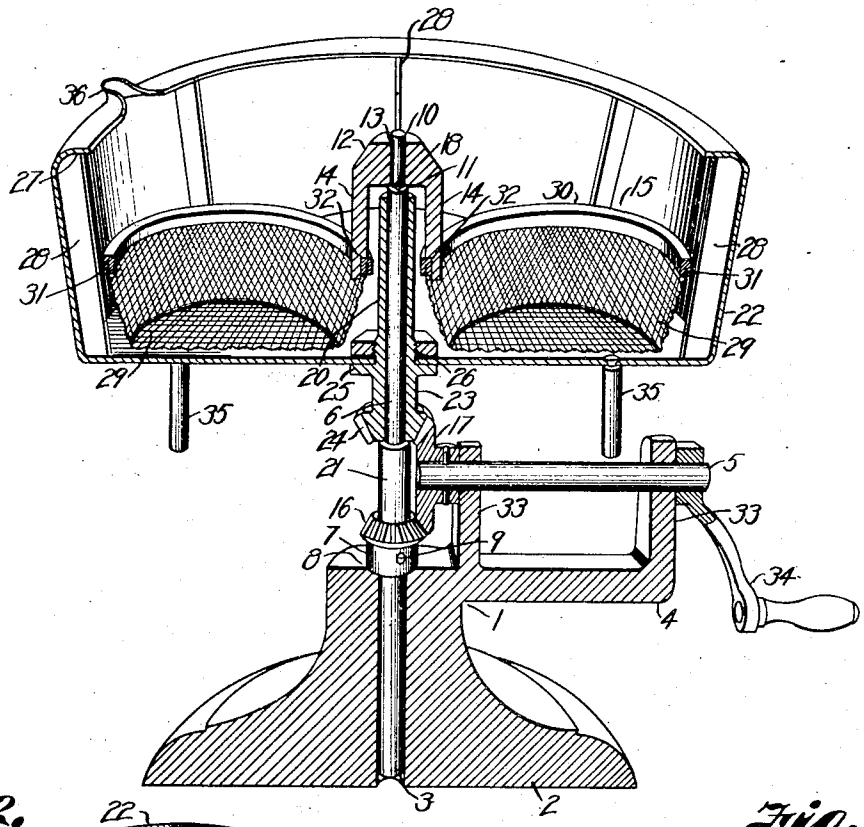


Fig. 2.

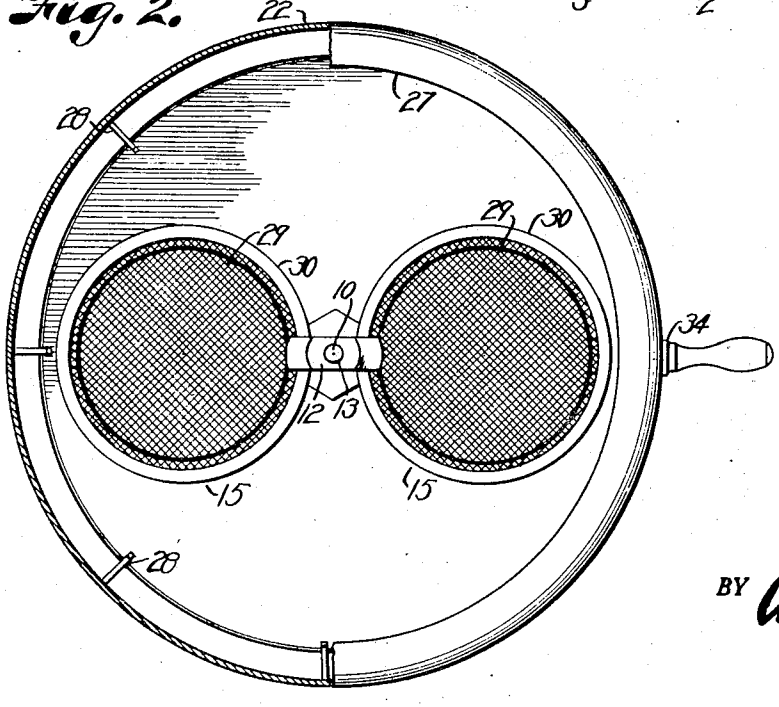
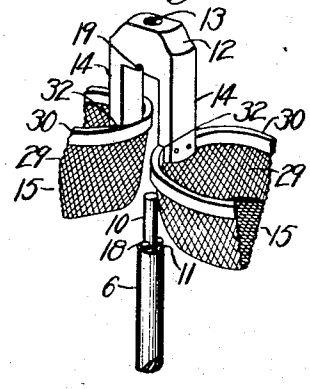


Fig. 3.



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UNITED STATES PATENT OFFICE

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WATCH-CLEANING MACHINE

Application filed October 20, 1928. Serial No. 313,871.

My invention relates to washing machines and more particularly to machines for cleansing the small parts of a watch, the principal objects of the invention being to protect the watch parts from damage and loss while being washed, to simplify the process of washing, and to effect complete cleansing.

In ordinary practice the small parts of a watch are strung on a wire and dangle in a vessel containing a solvent. They are then dried by contact with absorbent material such as sawdust. The extent of cleansing is limited because of the arrangement of the parts on the wire and the relatively small amount of agitation, and the repeated contact of parts with dislodged matter. Both the cleansing and the drying are liable to be incomplete because the parts are in close contact due to the attachment to the wire, and portions of the parts are engaged with the wire and retain dried lubricant.

Further objects of the invention therefore are to obviate the necessity for stringing the watch parts on a wire for cleansing, to support the watch parts loosely while being cleansed, to provide a relatively large amount of contact of all portions of the watch parts with the solvent, to promote extension of the period of cleansing and to simplify and render more convenient the processes of cleansing and of drying the watch parts.

In accomplishing these and other objects of the invention, I have provided improved details of structure the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a central vertical sectional view of a machine for cleansing watch parts and embodying my invention.

Fig. 2 is a plan view of the machine, part of a pan flange being broken away to disclose vertical ribs on the inner surface of the pan.

Fig. 3 is a perspective view of the upper end of a shaft, a yoke, and portions of baskets adapted for support by the yoke from the shaft, to hold the watch parts while the parts are being cleaned.

Referring in detail to the drawings:

1 designates generally a support comprising a base 2 having an axial socket opening 3 and a bracket 4 for rotatably supporting an operating shaft 5 as later described.

A vertical shaft 6 rotatably mounted in the socket 3 is supported by a collar 7 rotatable over the upper face 8 of the base and keyed to the shaft by a pin 9, the shaft having a reduced upper end 10 forming a shoulder 11 to receive and support a yoke 12 having a central opening 13 and arms 14 to which baskets 15 are attached.

A bevel gear 16 on the upper end of the collar 7 is engaged with a bevel gear 17 keyed to the shaft 5 whereby the basket-supporting shaft 6 may be rotated from the operating shaft 5. A pin 18 mounted transversely in the reduced end 10 of the shaft 6 at the shoulder 11 is receivable in a slot 19 of the yoke for keying the yoke to the shaft 6, so that the rotating shaft 6 may cause the yoke to rotate for revolving the baskets.

A sleeve 20 rotatably mounted on the shaft 6 and supported in spaced relation with the bevel gear 16 by a tubular spacer 21 mounted on the shaft 6, extends upwardly to a point adjacent the shoulder 11 for supporting a pan 22 in suitable position to receive the baskets 15 when the yoke is mounted on the upper end of the shaft 6. The lower end 23 of the sleeve comprises a spacer-like portion extending below the pan and having a bevel gear 24 at its lower end spaced from the bevel gear 16 sufficiently for engagement by the bevel gear 17 so that the operating shaft 5 may coincidently engage the gears 16 and 24 for oppositely rotating the shaft 6 and sleeve 20.

The pan is preferably supported on an annular flange or boss 25 at the upper end of the spacing portion 23 of the sleeve, and a nut may be threaded on an enlarged threaded portion 26 of the sleeve to urge the portions of the pan adjacent the opening into engagement with the boss 25 to seal the pan opening and latch the pan to the sleeve.

The wall of the pan tapers upwardly, and the upper edge is rolled or curved upwardly inwardly to provide a guard or rim 27 for restraining liquid that may be moved upwardly

over the wall upon rotation of the pan and revolution of the baskets.

Vertically extending ribs 28 are further preferably provided on the wall of the pan to cause liquid to move inwardly from the wall and prevent movement of the liquid in a film over the wall under the operation of the pan and baskets.

The baskets comprise screen bodies 29 and relatively rigid rims 30 having slots 31 to receive the upper edges of the screen bodies, and the yoke member has notches 32 on the inner faces of its arms 14 to receive the rims of the baskets whereby relatively small areas of the basket openings are obstructed by the yoke arms. The baskets have diameter suitable to the particular form and size of pan in a particular application of the invention and adapting them for movement into and out of the pan and for revolution in the pan without coming in contact with the curved guard and the internal ribs.

The horizontal operating shaft 5 is preferably mounted in upwardly extending arms 33 of the bracket 4, and is provided with a crank handle 34 for operating the device.

Legs 35 are fixed to the pan for supporting the pan when removed from the shaft 6, the legs extending beyond the end of the sleeve and the gear 24, and being adapted to clear the operating shaft 5 when the pan is rotated.

The curved rim 27 is provided with a lip or spout 36 for pouring liquid from the pan.

The sleeve 20 closes the opening 37 in the bottom 38 of the pan through which the bracket-supporting shaft 6 extends. The portion of the sleeve within the pan may be produced and attached to the pan bottom concentrically of the opening, and the gear element 24 may be provided on the pan, in any suitable manner. I prefer to form the gear and spacing member 23 as integral portions of a separate sleeve member that is secured to the pan bottom as illustrated and described; as an integral bearing member for the shaft 6.

In using a machine constructed substantially as described, the baskets are lifted from the pan by means of the yoke and placed in a convenient location to receive the parts of a watch as the parts are removed from a watch case. A suitable solvent is supplied to the pan and the baskets are again mounted on the vertical shaft, the grooved yoke engaging the retaining pin. Operation of the crank and operating shaft 5 will cause opposite rotation of the shaft 6 and the sleeve 20, whereby the baskets will move in a circular path oppositely to the rotation of the pan.

The liquid will be restrained from movement out of the pan by the inwardly extending lip and will be prevented by the vertical ribs from hugging the inner wall of the pan. The parts in the basket will be moved rapidly through the liquid so that the dirt and lubricant thereon will be efficiently dissolved and removed, the dislodged particles and suspended particles being moved centrifugally from the parts and baskets toward the wall of the pan.

When the cleansing operation has been completed, the operator will grasp the yoke and lift the baskets, and will then dry the parts. The drying operation may include emptying of the liquid from the pan and return of the baskets for centrifugally drying the parts, and may be completed by removing the baskets and depositing them on a quantity of sawdust for absorption of moisture from the parts. The sawdust may also be spread on the parts in the baskets and shaking of the baskets will thoroughly dry the parts since small particles of the dust may come in contact with every portion of each part. The used absorbent and parts may then be spread on the work table and the parts collected.

The pan may be removed for disposing of the solvent, and for mounting the baskets, and may be supported on the legs pending use.

The pan and attached sleeve may be lifted from the support, the sleeve sliding over the shaft 6, and positioned on a table, before or after the baskets have been removed, the legs supporting the pan in upright position. The pan containing the slovent may be suitably covered to check evaporation of the solvent, and will be readily accessible for mounting the baskets containing a new lot of parts. When the baskets are removed the solvent may be poured from the pan through the spout into an air tight container, and the pan then positioned on the table for ready accessibility for later use.

It is apparent therefore that I have provided means for accomplishing results not heretofore possible by use of apparatus available to the industry and novel and improved means adapted to the problems of the industry, whereby watch parts may be thoroughly and effectively cleansed with a minimum of hazard of damage to the parts, with a minimum of effort on the part of the operator, and with economy of solvent, and without necessity for touching the parts with the fingers.

What I claim and desire to secure by Letters Patent is:

1. In a device of the character described, a rotatable vertical shaft, a pan having a central opening mounted on the shaft, a basket keyed to the shaft and suspended in the pan, means supporting the shaft and the pan, and means for rotating the pan and the shaft.

2. In a device of the character described, a base, a vertical shaft rotatably mounted in the base, a pan having a central opening and rotatably mounted on the shaft, a plurality of baskets removably keyed to the shaft and

suspended in the pan, and means rotatably supported by the base for rotating the pan and the shaft.

3. A washing machine of the character described, comprising a base, a vertical shaft rotatably mounted in the base, a sleeve rotatable on the shaft, means supporting the sleeve, a pan supported from the sleeve, a basket in the pan supported from the shaft and keyed thereto, and means including a member rotatably supported by the base for rotating the sleeve and the shaft.

4. In a device of the character described, a support, a vertical shaft rotatably mounted in the support, a sleeve rotatably mounted on the shaft, a pan axially mounted on the sleeve in sealing relation therewith, a basket supported in the pan from the upper end of the shaft, and means for rotating the sleeve and the shaft in opposite directions including gears respectively mounted on the sleeve and the shaft.

5. In a device of the character described, a base, a vertical shaft rotatably mounted in the base, a gear on the shaft, a sleeve rotatably mounted on the shaft, and having a bevel gear at its lower end, a pan axially mounted on the sleeve in sealing relation therewith above said first named gear, a yoke normally mounted on the upper end of the shaft and supported therefrom, a basket fixed to the yoke and suspended in the pan, means for keying the yoke to the shaft, and means for rotating the sleeve and the shaft in opposite directions including a gear engaging the sleeve gear and the shaft gear and an operating shaft supported by the base.

6. In a device of the character described, a base, a vertical shaft rotatably mounted on the base, a sleeve rotatably mounted on the shaft, a pan axially mounted on the sleeve intermediately of its ends and in sealing relation therewith, a basket supported in the pan from the upper end of the shaft, and means for rotating the sleeve and the shaft in opposite directions including gears on the sleeve and the shaft and an operating gear rotatably supported by the base.

In testimony whereof I affix my signature.

CHARLES H. GEERY.