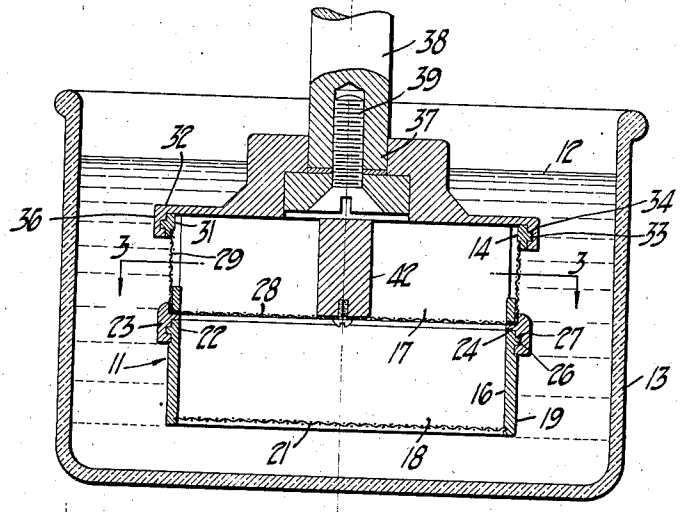
Dec. 23, 1941. W. S. TURNER 2,267,580

WATCH CLEANER

Filed Feb. 11, 1939

FIG. 1



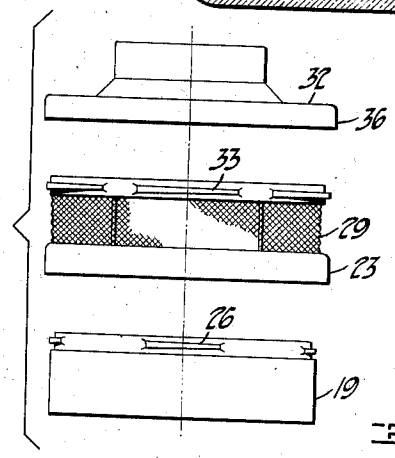


FIG. 2

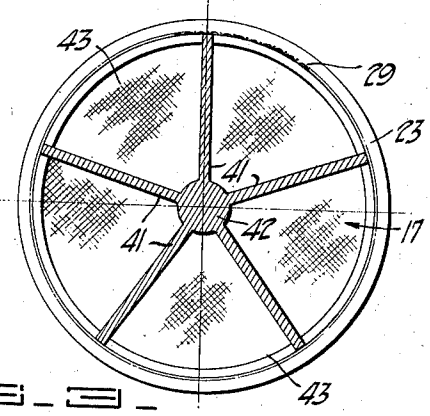


FIG. 3

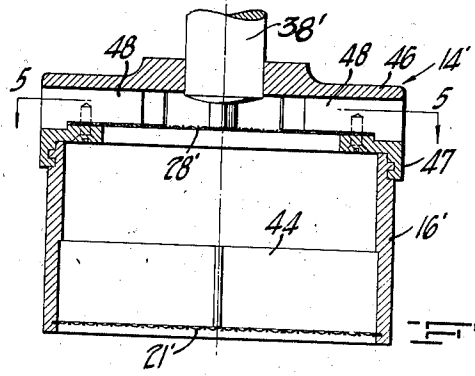


FIG. 4

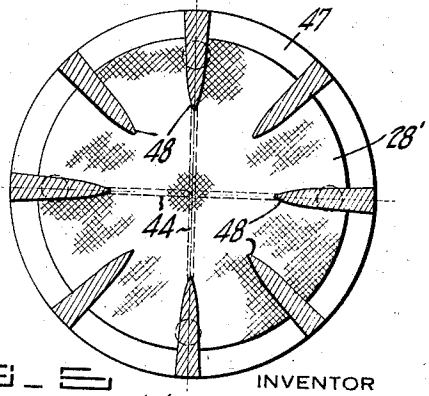


FIG. 5

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Patented Dec. 23, 1941 2,267,580

UNITED STATES PATENT OFFICE

2,267,580

WATCH CLEANER

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Application February 11, 1939, Serial No. 255,892

5 Claims. (Cl. 141—1)

The invention relates to cleaners for watches, jewelry and the like, of the type including a rotary basket or container in which a watch movement or watch or watch parts, etc. may be placed for rotation in a bath of cleaning fluid.

An object of the invention is to provide a watch cleaner of the character described wherein a positively induced flow of cleaning fluid is produced completely and uniformly throughout the entire interior of the parts container, whereby the fluid is caused to pass over and around and through each and every part placed in the container, regardless of its position in the container.

Another object of the invention is to provide a watch cleaner of the character above wherein the parts are properly supported in segregated position in the container and held in position while subjected to a relatively high speed of rotation and to the traversing flow of a substantial body of cleaning fluid.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

Figure 1 is a vertical sectional view of a watch cleaner constructed in accordance with the present invention.

Figure 2 is a side elevation of the several parts of the watch cleaner shown in detached position.

Figure 3 is a cross-sectional view of the watch cleaner taken substantially on the plane of line 3—3 of Figure 1.

Figure 4 is a vertical sectional view of a watch cleaner showing a modified form of construction.

Figure 5 is a cross-sectional view of the form of the invention illustrated in Figure 4 and is taken substantially on the plane of line 5—5 of Figure 4.

The watch cleaner of the present invention consists briefly in a container adapted for submersion in a bath of cleaning fluid and for rotation at a relatively high speed therein and formed with a perforate wall traversing the axis of rotation of the container, and centrifugal pump means carried by the container in axially spaced relation to the aforementioned perforate wall operable upon rotation with the container to draw fluid through the wall and uniformly and completely through the interior of the container.

With reference more particularly to the accompanying drawing, the cleaner of the present invention therein depicted comprises a member 11 which is adapted for submersion and rotation in a bath 12 of cleaning fluid, as contained in a suitable jar or container 13. Desirably, some suitable means is provided in the jar for preventing the liquid from whirling therein during rotation of the member in the bath. The member 11 is of generally cylindrical form and is composed of upper and lower sections 14 and 16 which as here shown, are provided with aligned and communicated interior chambers 17 and 18 respectively. The lower section 16 is formed with a circumscribing side wall 19 and a perforate bottom 21, here in the form of a screen mounted across the open lower end of the wall 19. The upper end 22 of the lower section is preferably left open and is detachably secured to the lower end portion 23 of the upper section by fitting of the upper extremity 22 of the lower section firmly against a shoulder 24 on the portion 23, so as to seal the sections in engagement and to provide a smooth continuous closure at the top of the lower section preventing any small parts contained therein from lodging between the connected sections.

The detachable connection between the sections is here provided by a plurality of circumferentially spaced radially extending lugs 26 on the upper outer surface of the wall 19, and which are received in circumferential lug engaging slots 27 provided in the base portion 23 of the section 14, which base portion as here shown, surrounds and embraces the upper end extremity of the wall 19. The lugs and guides are so spaced circumferentially as to enable a quick and ready attachment of the sections by engaging the sections longitudinally to align the lugs and guides and then rotating the sections relative to each other so as to engage the lugs and guides. Preferably, the lugs or the guides are slightly tapered so as to cause a firm wedged engagement of the same to hold the sections in attached position. As here shown, both the lugs and guides are slightly tapered for this purpose.

The base portion 23 of the upper section is here formed as a ring across the top of which is supported a perforate bottom for the section here in the form of a screen 28. Also the side wall 29 of the upper section is perforated and is here shown formed of a screen supported be-

tween the base 23 and an elevated ring 31 adjacent the top of the section. A cover plate 32 is mounted across the top of the upper section and supported on the ring 31 by means of a bayonet connection including circumferentially spaced lugs 33 on the ring member and guides 34 on a circumscribing depending part 36 of the cover substantially similar to the lugs 26 and guides 27 above described. Means for rotating the device may be conveniently attached to the cover plate 32 and as here shown, the latter is provided with an axial recess 37 in which is fitted one end of a drive shaft 38, and which is held fixed therein by means of a screw 39.

As an important feature of the present invention I incorporate in the device a centrifugal pump means which is operable upon rotation of the device in the fluid bath to produce a positive flow of fluid completely and uniformly through the interior chambers of the device. Such pump means has been here incorporated in the upper chamber 17 and is formed of a plurality of radially extending blades 41 which extend outwardly from a center hub portion 42 to the circumscribing screen 29. Preferably, the blades also extend for the full vertical height of the section between the screen 28 and the under-side of the cover plate 32, so as to divide the upper chamber into a plurality of circumferentially spaced compartments 43 which are adapted for receipt of the smaller watch parts to be cleaned. It will be understood that upon rotation of the device, the blades 41 will cause a centrifugal movement of fluid outwardly through the compartments and will draw such fluid upwardly through the lower compartment 18 by way of the perforate walls 21 and 28. Due to the fact that the fluid is confined to a vertical flow through the interior of the lower chamber 18 by reason of the imperforate side wall 19, there is a full and uniform passage of fluid through the lower chamber thereby contacting every part mounted therein, regardless of its location in the chamber. Preferably, in using the device, the larger watch parts are mounted in the lower chamber 18 and some of the parts will substantially fill the width of the chamber, so that the fluid is caused to pass across such parts and through openings therein in finding its way up to the upper chamber. Also in order to cause the fluid to flow through the full vertical height of the compartments 43, I extend the imperforate base 23 above the screen to occupy a substantial part of the vertical dimension of the compartments, whereby the fluid is forced upwardly in the compartments to the screen 29.

A modified form of the invention has been illustrated in Figure 4, wherein the lower section 16' of the device is made somewhat larger in vertical dimension than in the first embodiment and is provided in the base thereof with a spider 44 for dividing the lower chamber into a plurality of compartments 45 for carrying the smaller watch parts. The upper section 14' of this embodiment is formed of upper plate 46 and annulus 47, which are attached respectively to a drive shaft 38' and to the upper end of the lower section 16' in the manner described in connection with the preferred embodiment. Screens 21' and 28' mounted across the lower end of the section 16' and across the lower end of the upper section 14' serve to enclose the chamber in the lower section. In this form of the invention a plurality of vanes 48 are mounted between the members 46 and 47 and extend radially with respect to the central axis of rotation of the device, so as to cause upon rotation of the device drawing of cleaning fluid upwardly through the chamber in the lower compartment, and discharge of such fluid outwardly between the members 46 and 47. In this form of the invention, as in the preferred embodiment, the fluid flow is positively induced and the fluid is drawn uniformly and completely through the interior of the parts chamber, so as to thoroughly clean the parts mounted therein, regardless of their position in the chamber.

As will be readily evident, the cleaner of my invention may be used for drying the watch parts by operating the same in dry or heated air after the cleaner is removed from the cleansing fluid.

I claim:

1. A cleaner of the character described comprising, a casing providing a cylindrical interior chamber adapted for mounting in a bath of cleaning fluid with the axis of said chamber vertical and having substantially imperforate side walls and a perforate bottom, means for rotating said casing about said axis, an imperforate top spaced above the upper end of said side wall and secured to said wall for rotation therewith and a plurality of radial vanes carried by said casing between said upper end of said casing and said top and in communication with said chamber and adapted on rotation with said casing to draw fluid through said bottom and through the interior of said chamber.

2. A cleaner of the character described comprising, a hollow cylindrical member adapted for submersion in a bath of cleaning fluid with its axis in a vertical position and having open upper and lower ends, a screen covering the bottom of said member, a second member detachably secured to the upper end of said first member and having an open bottom and an imperforate cover portion and a perforate side wall, a screen covering the bottom of said second member, and a plurality of radial vanes carried by said second member between the bottom and cover portion thereof and operable upon rotation to draw fluid upwardly through said first member and to discharge the same through said perforate wall.

3. A cleaner of the character described comprising, a member adapted for submersion in a bath of cleaning fluid and for high speed rotation therein and including, upper and lower hollow cylindrical sections, said lower section having a perforate bottom and an open top, said upper section having a cover portion and a perforate bottom and a perforate side wall, a plurality of circumferentially spaced laterally extending lugs adjacent the upper end of said lower section, said upper section having a ring portion adapted to surround said lugs and formed with portions for engaging said lugs for holding said sections in attached position, means for rotating said member, and centrifugal pump means carried by said upper section and operable upon rotation of said member to draw said fluid upwardly through said lower section and to discharge the same outwardly through said perforate wall under said cover portion.

4. A cleaner of the character described comprising, a member adapted for submersion in a bath of cleaning fluid and including lower and upper hollow cylindrical sections detachably secured together, said lower section having a perforate bottom, said upper section having a perforate bottom forming a cover for said lower section and having a perforate circumscribing

side wall, means engaging said upper section to rotate said member, and a plurality of vertically and radially extending blades in said upper section extending for substantially the full height and radius of said upper section to divide the latter into a plurality of circumferentially spaced compartments and operable upon rotation to draw fluid up through said lower section and force the same radially through said compartments.

5. A cleaner of the character described comprising, a member adapted for submersion in a bath of cleaning fluid and including upper and lower hollow cylindrical sections, said lower section having a cylindrical side wall and being open at the upper and lower ends thereof, a screen covering said lower end, said upper section comprising a pair of spaced walls, the lower of said walls being annular, and a screen covering the lower of said walls and forming a cover for said lower section, means for detachably securing said sections together, means engaging said upper section for rotating said member, and a plurality of blades carried between said upper and lower walls of said upper section and extending radially of the axis of rotation to draw said fluid up through the lower section and to discharge said fluid radially from said upper section.

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