Jan. 22, 1963 D. E. SALGADO 3,074,773

WATCH PARTS HANDLING APPARATUS

Filed Oct. 7, 1960

FIG_9

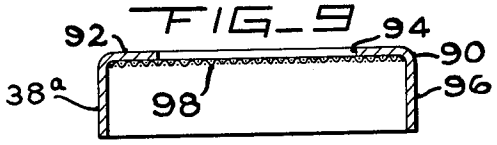

FIG_1

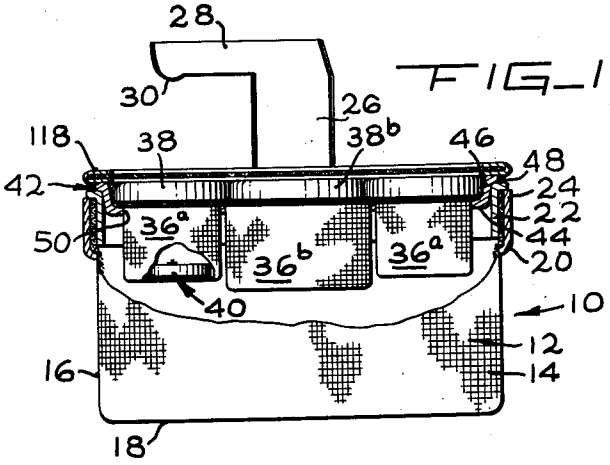

FIG_2

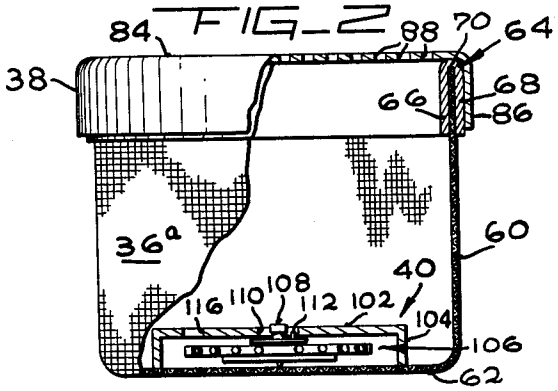

FIG_4

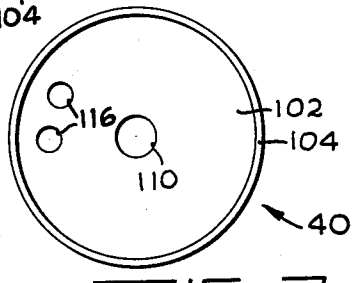

FIG_3

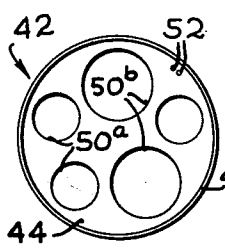

FIG_5

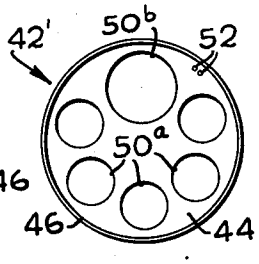

FIG_6

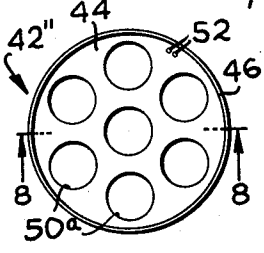

FIG_7

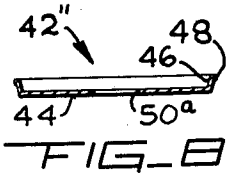

FIG_8

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WATCH PARTS HANDLING APPARATUS

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This invention relates to machines for cleaning watch and clock parts, and more particularly to the receptacles, or baskets, used to contain time-piece parts to be cleaned by machines of this type.

A watch part cleaning machine in common use is disclosed in United States Patent No. 1,907,366. It includes a tank adapted to contain a quantity of cleaning fluid, a support member to which a basket containing watch or clock parts to be cleaned is removably attachable and which is vertically reciprocable to immerse the basket to its contents within the fluid in the tank and thereafter to raise the basket out of the fluid, and a drive mechanism for agitating the basket according to a predetermined operating cycle both while immersed within and while lifted out of the fluid. The parts-receiving basket of this well known cleaning machine is equipped with a wire mesh plate, or partition, receivable within or upon the top of the basket and having therein a plurality of depressions, each of which may be used to receive certain parts, or, in some cases, all of the smaller parts, of a watch or other time-piece individual to that depression. The basket is likewise equipped with a foraminous cover receivable upon the wire mesh plate to retain in each of the several depressions the time-piece parts that have been placed therein.

In the commercial use of this equipment, however, it has been found that the depressions and cover plate cannot be depended upon to retain in each depression the part or parts that have been placed therein, and that the agitation to which the basket is subjected is apt to cause intermingling of the parts within two or more depressions. This, of course, materially complicates the reassembly of the several watches parts of which have been simultaneously cleaned during a single operating cycle of the machine, because of the machine's failure to preserve the segregation of the respective parts according to which they were placed within the depressions.

It is an object of the present invention, therefore, to provide an improved time-piece part receiving receptacle for a watch or clock cleaning machine.

Another object of the invention is to provide an improved watch part receiving plate for a watch cleaning machine basket of the character described.

Another object is to provide an accessory for a watch part cleaning machine having improved means for receiving and dependably maintaining segregation of the respective parts of a plurality of time-pieces during agitation of parts within and after withdrawal from a bath of cleaning fluid.

The invention possesses other objects and features of advantage, some of which, with those enumerated, will be set forth in the following description of an exemplary embodiment of the invention illustrated in the drawings accompanying and forming a part of this specification.

Referring to the drawings:

FIGURE 1 is a side elevation of a basket in common use in a commercially available watch and clock part cleaning machine, parts being broken away to reveal the parts-receiving and segregating receptacles, mounting plate therefor, and balance wheel assembly guard of the present invention in operable relation within the basket.

FIGURE 2 is an enlarged side elevation of one of the parts-receiving receptacles of FIG. 1, partly broken away to reveal therewithin a conventional balance wheel assembly and a balance wheel assembly guard plate of the invention.

FIGURE 3 is a plan of the balance wheel assembly guard plate of FIG. 2.

FIGURE 4 is a side elevation, partly broken away and shown in section, of the guard plate of FIGS. 2 and 3.

FIGURES 5, 6, and 7 are plan views, respectively, of three different forms of the cleaning receptacle mounting plate of the invention.

FIGURE 8 is a section along line 8—8 of FIG. 7.

FIGURE 9 is a diametrical section showing an alternative form of cover for the receptacle of FIG. 2.

FIGURE 1 illustrates the time-piece part cleaning machine accessories of the present invention operably arranged within a cleaning machine basket 10 of known design. The basket 10 includes a body portion 12 of wire mesh screen 14 and consisting of a substantially cylindrical side wall 16 and a bottom 18. The top of the basket 10 is open, the upper edge of the side wall 16 being reinforced by a rigid rim 20 comprising inner and outer rings, or short cylindrical sleeves 22 and 24, respectively, between which the upper edge of the cylindrical side wall 16 is rigidly and permanently clamped. A plurality of prongs 26 (one shown) rigid with and projecting upward from the rim 20 and each including a laterally projecting arm 28 with a downwardly projecting knob 30 on its distal end, provide quickly operable means for attaching the basket 10 to, and releasing the basket from, the supporting and agitating mechanism of the watch part cleaning machine (not shown) of which is is a standard part.

The accessories which the present invention contemplates using in conjunction with the cleaning machine basket 10 include a plurality of small receptacles 36*a* and 36*b* of different sizes, each equipped with a tightly fitting but removable cover 38, a balance wheel assembly guard plate 40 receivable within each of the receptacles 36*a* and 36*b* and an adapter plate 42 for releasably but rigidly mounting a selected group of the receptacles 36*a*, 36*b*, within the basket 10.

The adapter plate 42 is a simple disc 44 (FIG. 1) of suitable sheet metal, preferably non-ferrous, having an upstanding peripheral rim 46 and an annular flange 48 projecting radially outward from the upper edge of the rim 46. The parts are so proportioned relatively to the basket 10 that the rim 46 will slip easily into the open top of the basket 10 to seat the flange 48 upon the upper edge of the basket, as shown in FIG. 1. Thus seated, the flange 48 supports the plate 42 within the basket 10 with the disc portion 46 thereof parallel to the bottom 18 of the basket 10 and spaced only a short distance below the top of the latter. This leaves the major part of the basket's interior unencumbered.

A plurality of circular holes 50 are provided in the disc portion 44 of the adapted plate 42 arranged according to any of several alternative arrangements, as shown in FIGS. 5, 6, and 7, respectively. FIG. 5 shows an adapter plate 42 with three small holes 50*a* and two larger holes 50*b*, FIG. 6 shows an adapter plate 42' with five of the small holes 50*a* and but one of the larger holes 50*b*, while the adapter plate 42'' of FIG. 7 has seven of the smaller holes 50*a* only.

Each of the adapter plates 42, 42' and 42'' is also provided with two closely spaced holes 52 adjacent the rim 46 thereof. These holes 52 are much smaller than the holes 50*a* and afford convenience in placing the adapter plate into, and in removing it from, the basket 10 since they permit facile handling of the plate with a standard pair of watchmaker's tweezers (not shown) in a manner well known in the watchmaker's trade.

Although in the form of the invention chosen for illustration and description herein there but two sizes 50*a*

and 50*b* of holes provided in the adapter plate 42 (the adapter plate hereinafter will be referred to by the reference character 42 for convenience, with the understanding that the plate of any one of FIGS. 1, 5, 6, or 7 is intended unless specifically stated otherwise).

According to the present invention, the parts-receiving receptacles are provided in a number of different sizes corresponding to the number of sizes of holes 50*a*, 50*b* in the adapter plate 42—in the particular form of the invention shown, therefore, two sizes of receptacles 36*a* and 36*b*, respectively, are provided. One of the smaller receptacles 36*a* is receivable within each of the smaller adapter plate holes 50*a*, while a larger receptacle 36*b* is receivable within each larger adapter plate hole 50*b*. Whereas the different sizes of receptacles are in all essential respects the same, except for the matter of dimensions, it will suffice for the purposes of the present disclosure to describe one of the smaller receptacles 36*a*.

The receptacle 36*a* (FIG. 2) comprises a substantially cylindrical side wall 60 and a bottom 62 integral therewith, both of foraminous, preferably non-corrosive wire mesh screen. Stainless steel has been found to be well suited as the type of material to use for the fabrication of these receptacles. The upper edge of the side wall 60 is reinforced by a rim 64, likewise advantageously fabricated of stainless steel, although other materials are likewise satisfactory. The rim 64 is of annular form corresponding to the top edge of the cylindrical wall 60, and is of U-shaped cross section, consisting of inner and outer cylindrical flanges or sleeves 66 and 68, respectively, integrally interconnected by a bight portion 70. The upper edge of the cylindrical side wall 60 is permanently clamped between the inner and outer flanges 66 and 68, respectively, of the rim, and may be soldered, brazed, bonded, or otherwise fastened thereto, although such fastening is not required if the material of which the rim is made is sufficiently heavy to permit the necessary security of engagement to be attained by clamping only.

Whereas the outside diameter of the side wall of the receptacle 36*a* is slightly smaller than the diameter of the adapter plate hole 50*a* intended to receive it, the outside diameter of the rim 64 is slightly larger than the associated hole 50*a*. Hence the receptacle 36*a* is adapted for mounting upon the plate 42 by sliding the receptacle, bottom first, into and through the hole 50*a* until the lower edge of the outer flange 68 of the rim 64 engages the upper surface of the plate. Thus, the rim 64 supports the receptacle 36*a* from the plate, with the major part of the receptacle 36*a* depending therefrom into the basket 10, as illustrated in FIG. 1.

Each receptacle 36*a*, 36*b* is provided with a lid or cover 38, as hereinbefore mentioned. In one form it comprises a top wall 84 and a cylindrical flange 86 depending from the periphery thereof. The cover 38 is advantageously fabricated of sheet metal, e.g., stainless steel stamped to the desired form to provide the peripheral flange 86, in which case the top wall 84 of the cover is provided with a large number of small holes 88, as by drilling.

Alternatively, the form of cover shown at 38*a* in FIG. 9 can be adopted. It comprises a rim 90 with a flat, annular top portion 92 having a central opening 94, and a cylindrical flange 96 depending from its outer periphery. A disc 98 of wire mesh screen, likewise advantageously made of stainless steel, is fitted within the flange 96 against the under surface of the top 92, where it may be suitably fastened by suitable bonding if necessary to insure permanency of retention of the disc 98 within the cover 32*a* extending across the opening 94 thereof.

In either case, the parts are so proportioned that the peripheral flange 86 or 96 fits tightly but removably upon the outer surface of the rim 64 of the associated receptacles 36*a*, as shown in FIG. 2, to releasably retain the cover 32 or 32*a* upon the associated receptacle 36*a* in closing relation thereto, thus to assure retention of one or more time-piece parts within the receptacle 36*a* throughout the duration of an operational cycle of the cleaning machine (not shown) in or on which the receptacle is mounted.

FIGS. 3 and 4 illustrate one of the hereinabove mentioned balance wheel guard plates 40, and FIG. 2 shows the manner of its intended use. It comprises a simple metal disc 102 and a peripheral flange 104 projecting to one side thereof. Its outside diameter is materially less than the inside diameter of the parts receptacle 36*a* or 36*b* intended to receive it, and its peripheral flange 104 is of such length that it supports the disc 102 thereof upon the bottom wall 62 of the basket at a sufficient height thereabove to accommodate a standard escapement movement balance wheel assembly 106 therebetween, with the upper end of the balance wheel shaft 108 projecting into a central hole 110 of the disc 102, as shown in FIG. 2. The eccentric pin 112 conventionally provided on the balance wheel assembly 106 can also be accommodated within the central hole 110. A pair of small, closely spaced tweezer point receiving holes 116 provided in the disc 102 adjacent its outer edge facilitates manipulation of the guard plate 40.

The small parts of one watch movement can readily be placed within each of the foraminous receptacles 36*a*, 36*b*. The smaller receptacles 36*a* conveniently receive all of the small parts of a wrist watch, whereas one of the larger receptacles 36*b* may be employed to receive the small parts of a pocket watch.

In placing the small parts of a movement within one of the receptacles, the user should first place the escapement movement balance wheel assembly 106 on the bottom 62 of the receptacle, and then place a guard plate 40 of the appropriate size into the receptacle, with the flange 104 projecting downward from the disc portion 102 to rest upon the bottom 62 and encircling the assembly 106, and with an end of the shaft 108 within the hole 110, or the shaft 108 and pin 114 therein, if the side of the assembly having the pin 114 is uppermost. The remaining small parts of the watch movement should then be put loosely into the receptacle above the guard plate 40 and the appropriate cover 32 or 32*a* slipped onto the top of the receptacle, after which the receptacle is slipped into an adapter plate hole 50*a* or 50*b* of the appropriate size, in the selected adapter plate 42, 42', or 42'' as circumstances require.

Thus the small parts of several watch movements can be simultaneously accommodated within the basket 10, the maximum number corresponding to the number of receptacles available and the number of holes 50*a* and 50*b* in the particular adapter plate 42 being used.

The larger parts of the watch movements whose small small parts are placed within the several receptacles 36*a* and 36*b* can usually be placed within the basket 10 in the space that will not be occupied by the adapter plate 42 and the several receptacles 36*a* and 36*b*.

One of the covers 118 commonly supplied with watch part cleaning machines of the above identified type, should then be placed upon the adaptor plate 42. This cover 38 is of foraminous material and thus permits free circulation of the cleaning fluid therethrough while effectively preventing displacement of the receptacles 36*a*, 36*b*, and their covers 38 and 38*a* during an operating cycle of the cleaning machine (not shown).

The filled or partly filled basket 10 may then be mounted in or on the cleaning machine (not shown) which then may be opertaed through its operating cycle with perfect assurance that the small parts of each of the several watch movements being simultaneously cleaned will remain properly segregated from each other.

While a particular embodiment of the watch parts cleaning machine accessories of the present invention have been shown and described, it is to be understood that the scope of the invention is not limited thereto, but is to be determined by the proper interpretation of the following claims.

I claim:

1. For use with a machine for cleaning time-piece parts, said machine including an open-topped basket of foraminous material adapted for immersion and agitation within a bath of cleaning fluid, apparatus for containing parts of a plurality of time-pieces in respectively segregated relation, comprising an adapter plate having a plurality of apertures therein and removably receivable upon the open top of said basket in covering relation thereto and a parts-receiving receptacle removably receivable in each of said apertures of said adapter plate, each of said receptacles including a wire mesh body portion adapted to project through the associated aperture and downward from the adapter plate into the basket, a sheet metal rim of annular form and including a bight portion and inner and outer substantially cylindrical flanges interconnected by the bight portion, the upper edge of each body portion being clamped between said flanges of the associated rim to secure the rim to the basket, the outside diameter of said rim of each of said receptacles being greater than the diameter of the associated adapter plate aperture and engageable with the upper surface of the adapter plate to support the associated receptacle from the adapter plate, and a cover for each of said receptacles tightly and removably fitted to said rim thereof.

2. For use with a machine for cleaning time-piece parts, said machine including an open-topped basket of foraminous material adapted for immersion and agitation within a bath of cleaning fluid, apparatus for containing parts of a plurality of time-pieces in respectively segregated relation, comprising an adapter plate having a plurality of apertures therein and removably receivable upon the open top of said basket in covering relation thereto and a parts-receiving receptacle removably receivable in each of said apertures of said adapter plate, each of said receptacles including a wire mesh body portion adapted to project through the associated aperture and downward from the adapter plate into the basket, and a sheet metal rim of annular form and including a bight portion and inner and outer substantially cylindrical flanges interconnected by the bight portion, the upper edge of each body portion being clamped between said flanges of the associated rim to secure the rim to the basket, the outside diameter of said rim of each of said receptacles being greater than the diameter of the associated adapter plate aperture and engageable with the upper surface of the adapter plate to support the associated receptacle from the adapter plate.

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