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I. FRIEDMAN ET AL
APPARATUS FOR CLEANING WATCHES

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2 Sheets-Sheet 1

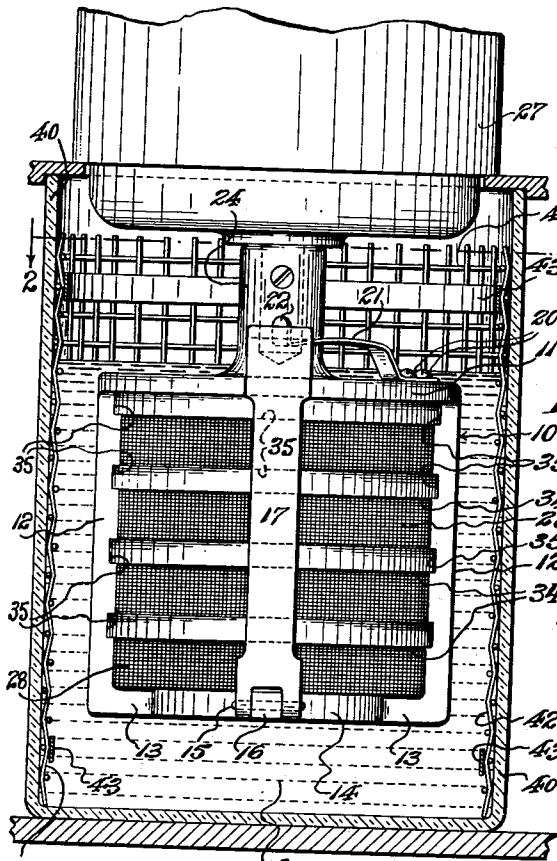


Fig. 1

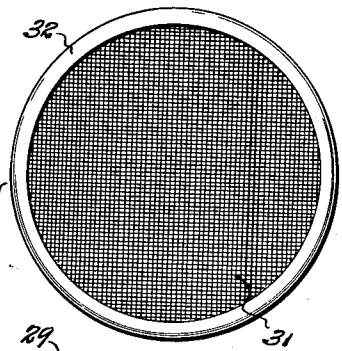


Fig. 5

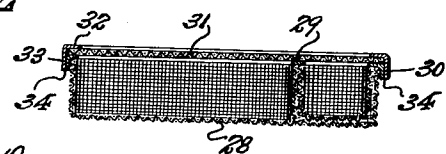
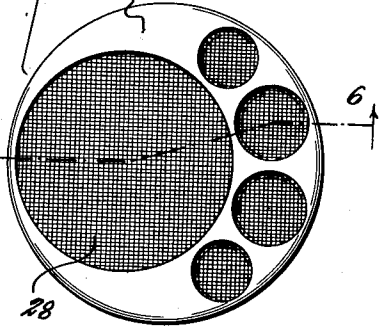


Fig. 6

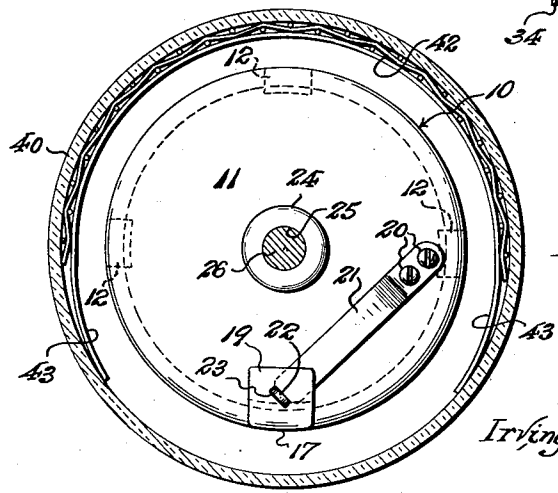


Fig. 2

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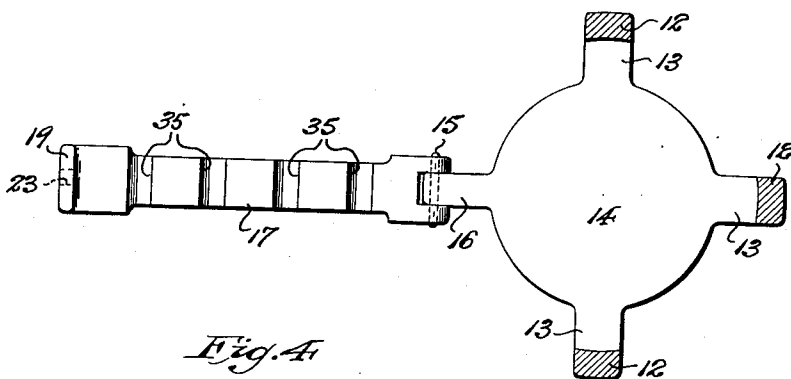
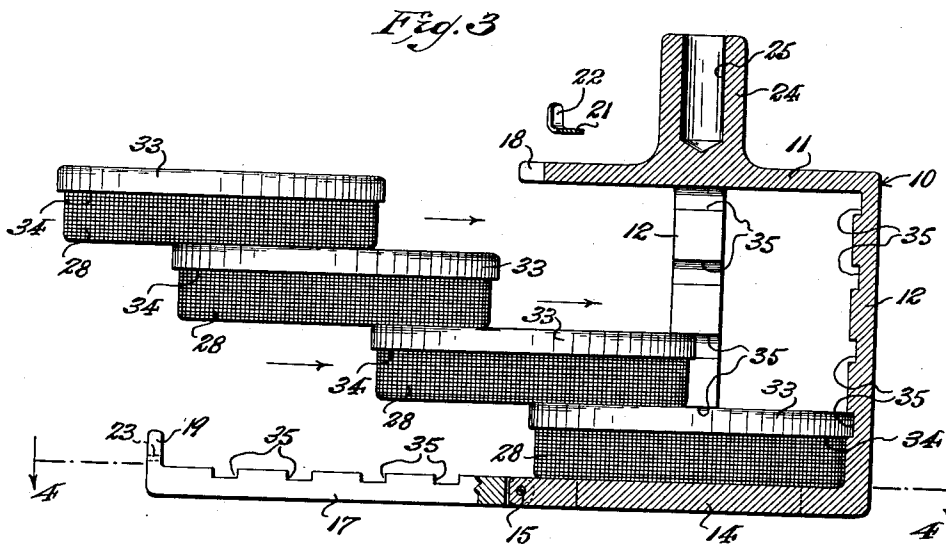
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APPARATUS FOR CLEANING WATCHES

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1 Claim. (Cl. 134—140)

This invention relates to improvements in watch cleaning and like apparatus of the kind wherein perforate means to contain the watch works or other mechanisms or parts to be cleaned can be submerged in a cleansing fluid and whirled about therein for cleaning effect.

The invention has for an object to provide improved means for submerging and whirling about in a cleansing fluid mechanisms, devices or parts to be cleaned, said means being of variable content capacity; and to this end the invention provides a novel construction of whirlable holder for detachably supporting one or a plurality of separate perforate receptacles or baskets in which the mechanisms or parts to be cleaned can be deposited, said holder including means for locking the entered receptacles or baskets into the holder in operative assembled supported relation thereto, so as to whirl therewith when the holder is submerged and rotated in a body of cleansing fluid.

Another object of the invention is to provide in combination with a receiver, which contains the body of cleansing fluid in which the holder with the supported receptacles or baskets is to be submerged and rotated, an internal baffle means adapted to so cooperate with the rotated holder as to check and reduce centrifugal force imparted to the cleansing fluid by rotation of said holder, whereby to prevent splashing overflow of the agitated cleansing fluid from the receiver during the cleansing operation.

Other objects and advantages of the invention will appear as the following specific description thereof is read in connection with the accompanying drawings, in which:

Fig. 1 is a fragmentary view of watch cleaning apparatus showing in vertical section a receiver containing a treating fluid, and the whirlable work holder and its contained work enclosing perforate receptacles or baskets submerged in the treating fluid, ready to be rotated therein by a suitable driving means, such e. g. as an electric motor to the shaft of which said holder is detachably coupled; and Fig. 2 is a horizontal sectional view of the same, taken on line 2—2 in Fig. 1.

Fig. 3 is a vertical sectional view of the work holder in open condition, ready for insertion or removal therefrom of one or more perforate receptacles or baskets in which work to be cleaned is deposited; and Fig. 4 is a horizontal sectional view thereof, taken on line 4—4 in Fig. 3.

Fig. 5 is a plan view of a work confining perforate receptacle or basket which is receivable by the holder, the cover member thereof being shown removed therefrom; and Fig. 6 is a vertical cross sectional view of said perforate receptacle or basket taken on line 6—6 in Fig. 5, but with the cover member applied thereto for closure thereof.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Watch cleaning apparatus of the type to which the instant invention relates is usually provided with a plurality of upwardly open receivers, one or more of which is adapted to contain a body or bath of cleansing fluid, and other or others of which to contain rinsing fluid. In apparatus of such type, perforate work supporting means is provided which is adapted to be rotated when submerged in a treating fluid contained in a selected receiver, thus whirling the work in contact with the treating fluid, whereby to effect desired cleaning of the work.

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The improved means for supporting the work subject to submersion in and whirling movement through a selected treating fluid, according to this invention, includes a holder adapted to detachably support one or more perforate receptacles or baskets which enclose the work to be treated. Said holder is generally indicated by the reference character 10, and is in the form of an open frame or cage within the interior of which work enclosing receptacles or baskets can be removably entered and secured. The holder frame or cage 10 comprises a top plate 11, and dependent from marginal portions of the top plate 11, so as to form the fixed sides and back of the holder frame or cage, are perpendicular frame bars 12. Preferably these frame bars 12 are provided, in inward radial extension from their lower ends, with angular arms 13 which support the bottom plate 14 of the holder frame or cage; said bottom plate being thus of reduced diameter as compared with the top plate 11. The described arrangement of the frame bars 12, as extending between the top and bottom plates 11 and 14, provides the holder frame or cage with an open front.

Pivotally connected at 15 with an arm 16 which projects outwardly from the front margin of the bottom plate 14 is a gate bar 17. This gate bar 17 exceeds in length the height of the holder frame or cage, so that, when the same is upswung across the open front of the holder frame or cage, the upper end thereof will be received in a recess or notch 18 with which the front marginal portion of the top plate 11 is provided, thus disposing said gate bar in closing relation to the open front of the holder frame or cage.

Means is provided for releasably securing the gate bar 17 in closing relation to the holder frame or cage. One form of means for this purpose comprises an angular extension or tongue 19 which projects inwardly from the free end of said gate bar 17, so as to overhang the top plate 11 of the holder frame or cage. Mounted on the top plate 11, with its butt end affixed thereto, as by fastening screws 20, is a depressible spring latch member 21, the free end of which terminates in an upstanding latch piece 22. Formed in the extension or tongue 19 of the gate bar 17 is a latch piece receiving opening or slot 23. Engagement of the latch piece 22 in said opening or slot locks the gate bar in its holder frame or cage closing position. To release the gate bar for down swinging movement, whereby to open the front of the holder frame or cage, the operator merely depresses the latch member 21 so as to withdraw the latch piece 22 from the opening or slot 23 of the gate bar extension or tongue 19.

The top plate 11 of the holder frame or cage is provided with an upstanding axial hub 24 having a socket 25 to receive a power shaft 26, such as the armature shaft of an electric driving motor 27. The frame or cage is detachably coupled to the power shaft 26, whereby the latter is operative to impart rotative movement to the former about its vertical axis, when in use for a cleaning operation.

Perforate receptacles or baskets to enclose the work desired to be cleaned are provided for introduction within the holder frame or cage 10. Each such receptacle or basket comprises a body section 28 formed from perforate material, and preferably from woven wire mesh. The body section 28 may be suitably interiorly divided to provide a plurality of compartments of various sizes respectively for the reception of watch-works, watch parts, or other work desired to be subjected to a cleaning operation. Said body section 28 is closed by a top wall 29 produced from sheet metal or other suitable sheet material, and provided with openings conformable to the internal compartments of said body section, whereby to give access thereto. Said top wall 29 is provided around its periphery with a dependent marginal flange 30 which telescopes over and is fixedly secured to the upper marginal portions of the side walls of the body section 28. The compartment access openings of the top wall 29 of body section 28 are normally closed by a removable cover member. The body 31 of this cover member is formed from perforate material, and preferably from woven wire mesh. Affixed to the marginal portions of the cover member body 31 is an annular binding 32 having a de-

pendent flange 33 extending from its external periphery. When the cover member is applied to the body section 23 in closing relation thereto, the cover member flange 33 telescopes over the top wall flange 30 of the body section, so as to form therewith an annular, externally projecting shoulder 34 around the top of the closed receptacle or basket.

The internal diameter of the holder frame or cage 10 conforms substantially to the external diameter of a receptacle or basket, but the depth or height of the interior of the holder frame or cage is several times that of the height of a closed receptacle or basket. By reason of this one or a plurality of receptacles or baskets may be entered in and enclosed within the holder frame or cage, according to the amount of work desired to be treated by the cleaning apparatus at any given time.

To individually hold each receptacle or basket against displacement from a desired position thereof, when entered in and enclosed within the holder frame or cage in operative assembled relation thereto, each frame bar 12 and the gate bar 17 of the holder frame or cage is provided with transverse recesses 35 corresponding in height to the height of the above described annular shoulder 34 with which each receptacle or basket is provided. Said recesses 35 are relatively spaced along the inner faces of the respective frame and gate bars at distances corresponding to the heights of the closed receptacles or baskets.

The work to be cleaned is deposited in the receptacles or baskets and the latter then closed by application of the cover members thereto. To condition the holder frame or cage for the reception of the work charged receptacles or baskets, the gate bar 17 is released and swung down out of normal closing relation to the front of the holder frame or cage (see Figs. 3 and 4), thus opening the latter to reception of the receptacles or baskets. Each receptacle or basket is inserted through the open front of the holder frame or cage with the annular shoulder 34 thereof aligned with selected recesses 35, so that said shoulder 34 will enter and be embraced by said recesses when the receptacle or basket is fully entered in the holder frame or cage interior. After the number of receptacles or baskets to be used have been thus assembled within the holder frame or cage, the gate bar 17 is closed and latched. When the gate bar 17 is closed its recesses 35 will also engage and embrace the shoulders 34 of the entered receptacles or baskets. It will be obvious that, by reason of the seating of the shoulders 34 in said recesses 35, each receptacle or basket is individually held against perpendicular shift or displacement from its deposited position independently of its fellows; and, when the gate bar 17 is closed and latched, is also held against lateral shift and outward displacement. It will be understood therefore that one or a plurality of receptacles or baskets up to the total capacity of the holder frame or cage may be operatively assembled in the latter, according to the amount of work to be accommodated during a given use of the cleaning apparatus. When the holder frame or cage is loaded, the same is coupled to the power transmission shaft 26, ready to be submerged and rotated in a treating fluid.

In Fig. 1 is shown an upwardly open receiver 40 of a cleaning apparatus, said receiver containing a body of treating fluid 41 into which the loaded holder frame or cage is lowered to submerge the work enclosing receptacles or baskets in said fluid, so that, upon rotation of the loaded holder frame or cage, the work in the receptacles or baskets will be whirled about in the fluid for cleaning effect. The rotative movement of the loaded holder frame or cage tends to induce a swirling agitation of the fluid which develops considerable centrifugal force, and thereby, unless said force is checked or counteracted,

tends to cause undesirable out splashing overflow of fluid from the receiver.

It is a further object of this invention to provide means adapted to check or counteract such centrifugal force and resultant out splashing overflow of fluid from the receiver. To this end, a baffling liner 42, which preferably comprises a woven wire body of substantial mesh size, is mounted contiguous to the internal surface of the receiver side walls. Said baffling liner 42 may be dimensioned to overlie all or a selected amount of the side wall area of the receiver, but, preferably, is sized to cover approximately one-half of the circumferential extent of said wall area from top to bottom of the receiver. To hold the baffling liner 42 in place, the same is provided with transverse resilient retainer bands 43 made of spring steel or the like; said bands to be affixed to the baffling liner respectively adjacent the top and bottom portions thereof. Expansion of said retainer bands 43 presses and holds the baffling liner in place against the receiver wall surface. When swirling fluid contacts the rough contours of the baffling liner 42, the latter opposes the direction of swirling flow of the fluid, and thus obstructs and checks centrifugal build up of flow momentum, with the consequence that tendency of the fluid to unduly rise and overflow the receiver is prevented.

Having now described our invention, we claim:

A machine for the purposes described comprising an upwardly open receiver to contain a treating fluid, a rotatable work holder axially movable into and out of said receiver, a motor for rotating the work holder, said work holder comprising a holder frame formed by a top plate, a bottom plate and perpendicular frame bars unitary with and respectively extending between opposite side and back margins of said top and bottom plates, said top plate having an axial socket hub upstanding from the top plate for coupling the holder frame to the shaft of said motor, a gate bar pivotally connected with the front margin of the bottom plate of said holder frame, the free end of said gate bar and said top plate of the holder frame having cooperative means to releasably hold the gate bar in upswung closed relation to the interior of the holder frame, a plurality of work enclosing wire mesh baskets supported one above the other within the holder frame, so as to be retained therein by the closed gate bar but to be outwardly withdrawable through the front of the holder frame when the gate bar is released and downswung to open position, each work enclosing basket comprising an upwardly open body section and a removable cover member to close said body section, the cover member having a peripheral portion formed to provide, in conjunction with the top marginal portions of the body section, an annular shoulder to project exteriorly of the sides of said body section, and wherein at least the frame bars at opposite sides of the holder frame are provided across their inner faces with vertically spaced endwise open recesses to receive and embrace said annular shoulders, whereby to individually support each basket within the holder frame.

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