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2,701,575

COVER STRUCTURE FOR WATCH CLEANING APPARATUS

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2 Sheets-Sheet 1

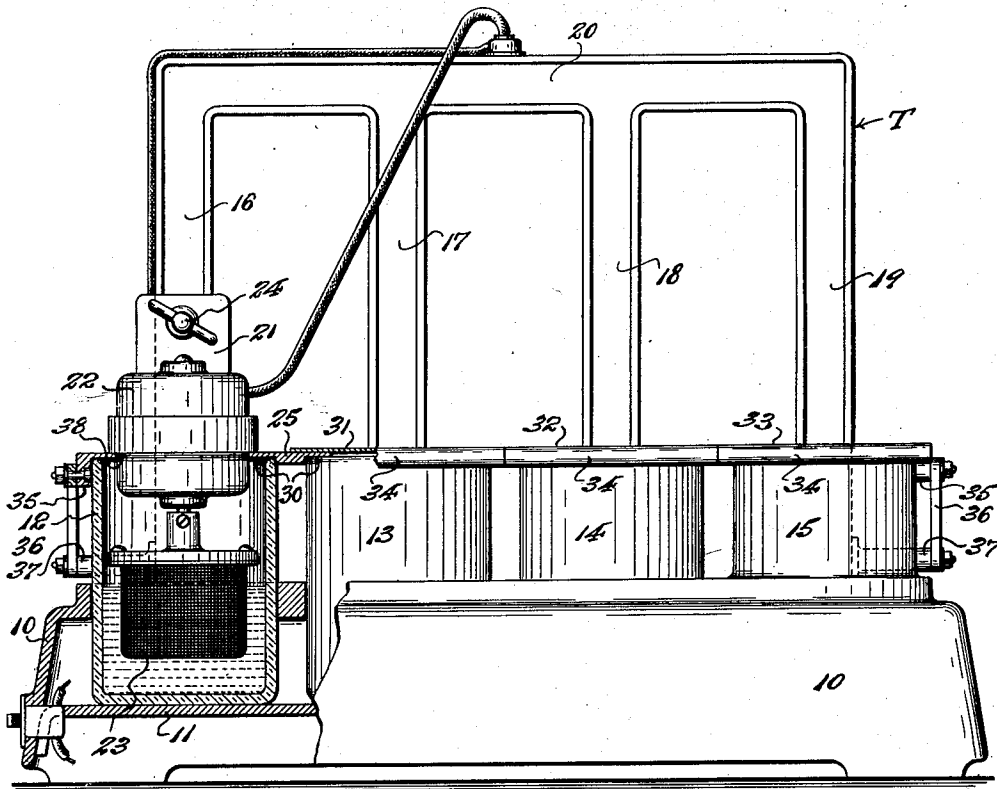


Fig. 1

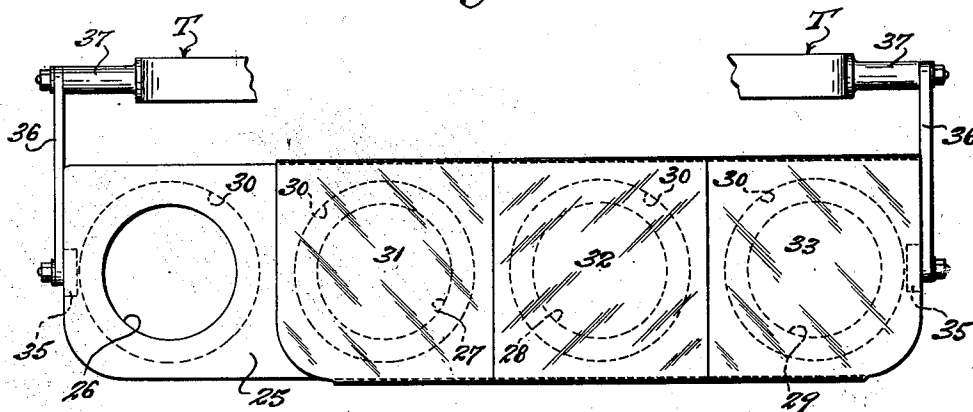


Fig. 3

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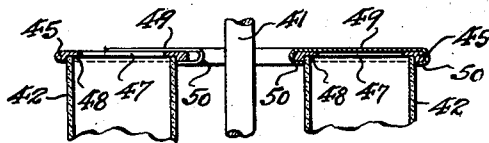
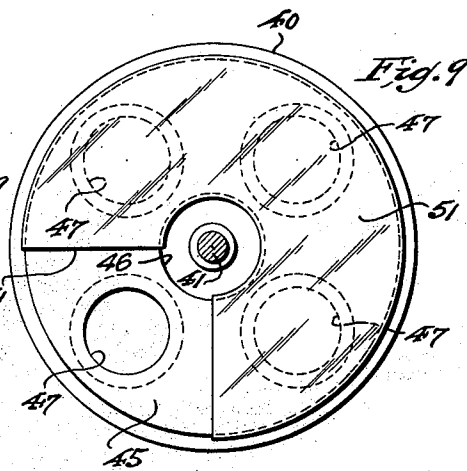
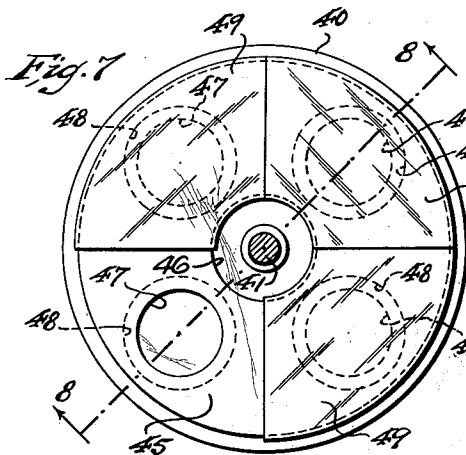
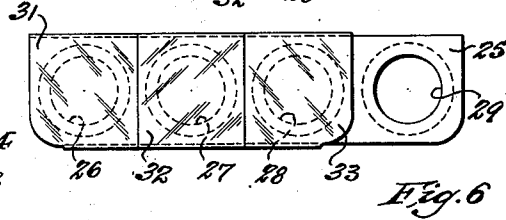
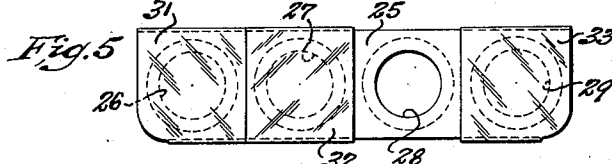
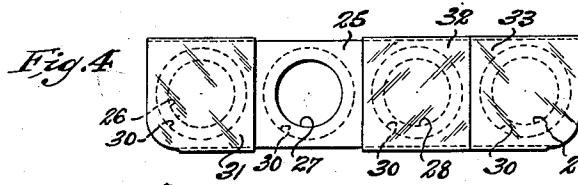
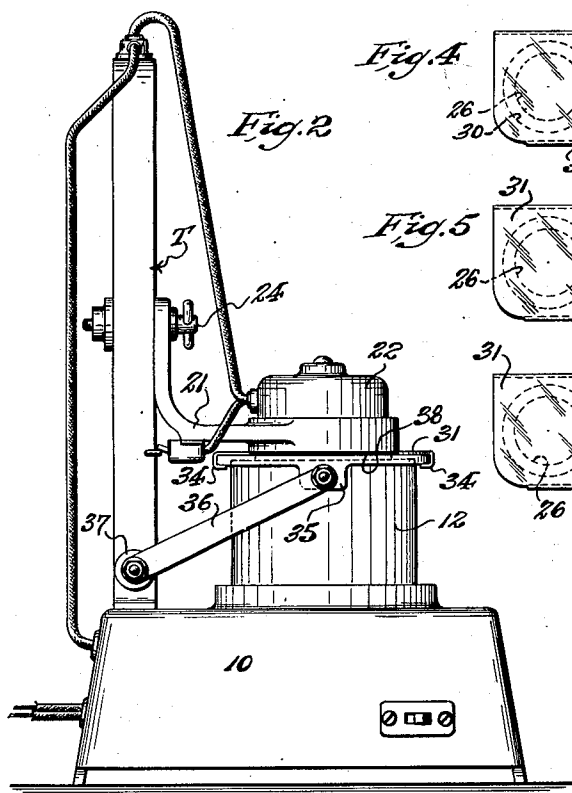
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COVER STRUCTURE FOR WATCH CLEANING APPARATUS

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2 Sheets-Sheet 2



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COVER STRUCTURE FOR WATCH CLEANING APPARATUS

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5 Claims. (Cl. 134—86)

This invention relates to improvements in apparatus for cleaning watch-works and similar mechanisms, said apparatus comprising a series of supported upwardly open compartments to provide receivers including containers for holding cleaning and rinsing fluids and a drying chamber, with means for supporting a motor driven work holding device, the latter being movable on the supporting means whereby it can be successively brought into alignment with any given selected receiver for operative introduction thereinto.

This invention has for an object to provide, in cleaning apparatus of the above stated kind, a cover structure comprising a cover plate for and common to all the receivers of the apparatus, said cover plate having spaced access openings to respectively register with the open tops of the respective receivers, and said cover structure including cover means movably supported by and upon the cover plate so as to be selectively shiftable thereon to cover all the access openings of the cover plate except that which opens into a selected receiver desired at a given time to be used. Said cover structure is arranged subject to displacement from the receivers when refilling or cleaning of the latter is desired to be undertaken.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the invention.

Illustrative embodiments of the invention are shown in the accompanying drawings, in which:

Fig. 1 is a front elevational view, in part section, of one form of watch cleaning apparatus, the receivers of which are spaced in a straight line, the apparatus being equipped with a novel cover structure for said receivers according to this invention; Fig. 2 is an end elevational view of said apparatus and said cover structure; Fig. 3 is a plan view of the cover structure with the movable cover means thereof arranged to close all but the first receiver of the apparatus; and Figs. 4, 5 and 6 are similar plan views of the cover structure, drawn on a reduced scale, and respectively showing the movable cover means as arranged to open successive receivers while closing the other receivers.

Fig. 7 is a plan view of a cover structure according to this invention as modified to serve the receivers of another form of watch cleaning apparatus in which the receivers thereof are spaced around a circular line; and Fig. 8 is a fragmentary vertical cross-sectional view of the same, taken on line 8—8 in Fig. 7.

Fig. 9 is a plan view of a further modified form of cover structure according to this invention for use in watch cleaning apparatus having its receiver spaced around a circular line.

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

Referring first to Figs. 1 to 6 inclusive of the drawings, a novel cover structure according to this invention is shown in a form adapted for use in watch cleaning apparatus of the general type and kind disclosed in my prior United States Letters Patent No. 2,416,475, dated February 25, 1947, the receivers of which are spaced in a straight line. A watch cleaning apparatus of this type ordinarily comprises a hollow elongated base 10, within the interior of which is fixed a platform 11 spaced below and parallel to its top wall. The top wall of base 10 is provided with a plurality of openings spaced in a longitudinally extending row between its ends. Upwardly open receivers 12, 13, 14 and 15 are supported by the plat-

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form 11 to respectively extend upwardly and outwardly through the respective openings of the base top wall. One end receiver 12 is adapted to contain a cleaning fluid, the intermediate receivers 13 and 14 are adapted to contain rinsing fluids, and the opposite end receiver 15 is suitably constructed to provide a drying chamber which is equipped with electrical heating means (not shown), but which is preferably of the kind shown in my afore-said prior Patent No. 2,416,475.

Affixed to the base 10, to upstand therefrom behind the containers 12, 13, 14 and 15, is a track or guideway means T, this track or guideway means is formed to provide perpendicular ways 16, 17, 18 and 19 respectively disposed parallel to the axes of the respective receivers. Said perpendicular ways communicate at their upper ends with a horizontal way 20.

Mounted upon the track or guideway means, for movement relative thereto, is a carriage bracket 21. This carriage bracket 21 supports an electric motor 22 which is adapted to operate a perforate work holding cage 23, when the latter is coupled to the dependent end of the motor armature shaft. Said carriage bracket 21 is provided with manipulatable clamp means 24, by which said carriage bracket and the motor 22 carried thereby can be locked to the track or guideway means in any selected position thereon.

A form of cover structure according to this invention, which is adapted for use in the above described type of cleaning apparatus, comprises a flat, substantially rectangular cover plate 25 of suitable thickness, the same exceeding in length and width the row of receivers carried by the base 10 of said cleaning apparatus. Said cover plate 25 may be made of any suitable material. Sheet plastic material is found to be quite satisfactory. The cover plate 25 is provided with a series of longitudinally spaced openings corresponding in number to the number of receivers with which the cleaning apparatus is provided. In the illustrative case there are four such openings 26, 27, 28 and 29 respectively axially aligned with the respective receivers 12, 13, 14 and 15, but being somewhat smaller in diameter than the internal diameters of the open top ends of said receivers. Formed in the bottom face of the cover plate, concentric to the respective openings thereof, are countersunk annular seats 30, the diameters of which correspond to the external diameters of said receivers.

Slidably mounted on the top face of the cover plate 25 are a series of movable cover panels, which, in the cover structure as adapted for use in the above described type of cleaning apparatus, comprise three in number respectively indicated by the reference characters 31, 32 and 33; there being in any event one less in number than the number of receivers with which the cleaning apparatus is provided. Any suitable means for slidably attaching said cover panels to the cover plate may be provided; illustratively as shown, such means comprises channelled flanges 34 formed in connection with the longitudinal marginal portions of each cover panel, which are adapted to slidably embrace the longitudinal marginal edge portions of said cover plate.

The cover structure, in the form and for the type of cleaning apparatus above described, is so mounted in connection with said cleaning apparatus as to be capable of being displaced from its operative assembled relation to the receivers of the latter, whereby to free said receivers for removal and replacement of such thereof as are removable, to give access to the interior of the receivers for cleansing, refilling, or for other purposes as may require free access thereto. To this end, the cover plate 25 is provided at its respective ends with dependent lugs or ears 35 to which are respectively pivotally connected the outer ends of hinged carrier arms 36. The rearward ends of said carrier arms are pivotally connected to fulcrum posts 37 which are respectively affixed to the respective sides of the track or guide means of the cleaning apparatus, for outward projection therefrom.

In the use of the above described type of cleaning apparatus, the cover plate 25 is swung down to normal covering extension over the tops of the receivers of said apparatus. The watch or other parts, to be subjected to

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the cleaning process, having been deposited in the perforate work holding cage 23, the motor 22 being in a raised position on the track or guideway means, said cage is coupled to the motor armature shaft. The motor is then moved over the track or guideway means into alignment with the first perpendicular way 16 thereof, so as to align the cage 23 with the first receiver 12 in which is contained a suitable cleaning liquid. The cover panels 31, 32 and 33 are shifted on the cover plate 25 so as to respectively close the receivers 13, 14 and 15 (see Figs. 1 and 3), thus leaving the receiver 12 open so that, upon lowering the motor through the way 16, the work holding cage 23 can be lowered through the cover plate opening 26 into receiver 12 for immersion in the cleaning liquid content thereof. The casing of the motor 22 includes an annular shoulder 38, or equivalent means, which abuts the marginal portions of the cover plate opening 26, thus supporting the motor and work holding cage in operative relation to the receiver 12, while at the same time closing the cover plate opening 26 against outward splash of cleaning fluid therefrom, when the motor is put in operation to whirl the submerged work holding cage in the cleaning fluid (see Fig. 1).

After the work has been submitted to the action of the cleaning liquid in receiver 12 for a desired period of time, the motor and work holding cage are raised away from said receiver 12 and moved over the track or guideway means into alignment with the second receiver 13, which may optionally contain a second cleaning liquid or a first rinsing liquid. This having been done, the cover panel 31 is shifted over the cover plate 25 so as to close the receiver 12 and open the receiver 13; the cover panels 32 and 33 remaining in positions closing the receivers 14 and 15 (see Fig. 4). The motor and work holding cage is then lowered into said receiver 13 and operated therein for either a further cleaning step or for rinsing.

Thereafter, in like manner, the motor and work holding cage are moved to dispose the same in operative relation to the next receiver 14, which contains rinsing liquid, and, in the meantime, the cover panel 32 is shifted to close receiver 13 and open said receiver 14 for the reception of the work holding cage; receivers 12, 13 and 15 being thereupon closed by cover panels 31, 32 and 33 (see Fig. 5).

Thereafter and similarly, the motor and work holding cage are again moved to dispose the same in operative relation to the drying chamber 15, the cover panel 33, in the meantime, being shifted to close the receiver 14 and open said drying chamber 15 for the reception of the work holding cage; receivers 12, 13 and 14 being thereupon closed by the cover panels 31, 32 and 33 (see Fig. 6).

From the above it will be obvious that the novel cover structure of this invention, with its manipulatable cover panels, provides a compact receiver covering means which is unitary with the cleaning apparatus, and which can be easily and quickly conditioned to close all but the operative receiver of the apparatus. By such novel cover structure use of separate removable cover devices for each receiver is eliminated, and risk of misplacement, loss or breakage of cover elements is avoided.

The cover structure according to this invention may be modified to adapt the same for use in watch cleaning apparatus wherein the compartments or receivers thereof are spaced around a circular line rather than a straight line; as, for example, in cleaning apparatus of this type which is disclosed in my prior United States Letters Patent No. 2,212,317, dated August 20, 1940.

Referring to Figs. 7 and 8, cleaning apparatus of the last mentioned type usually comprises a base 40 having an upstanding central column 41 around which the receivers 42 are supported in a circular row. The motor and work holding cage (not shown) is supported by the column 41 so as to be movable up and down and around the same for alignment with and movement into operative relation to selected receivers 42. One form of cover structure according to this invention, which is adapted for use in said last mentioned type of cleaning apparatus as shown in Figs. 7 and 8, comprises an annular or circular cover plate 45, having a central opening 46 to straddle the column 41 of the apparatus. Said cover plate 45 is provided with a series of openings 47 disposed for respective axial alignment with the respective receivers 42. Formed in the underside of the cover plate 45, to surround the respective openings 47 in concentric relation thereto, are countersunk annular seats 48 to receive the

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rims of the open tops of said receivers 42, when the cover plate is operatively applied thereto. Slidably mounted upon the top face of the cover plate 45 are a series of movable cover panels 49, one less in number than the number of receivers 42. The internal and external marginal portions of each cover panel 49 are preferably formed to provide channeled flanges 50 adapted to slidably embrace internal and external marginal edge portions of the cover plate 45. Any other suitable means may be provided however for slidably mounting said cover panels 49 on the cover plate 45. It will be obvious that said cover panels 49 may be relatively shifted over the cover plate 45 so as to close all but a selected receiver 42 which, in the use of the apparatus, is desired to be operative at a given stage of the cleaning process involved, substantially in the same manner as previously above described in connection with the first mentioned type of cleaning apparatus.

In Fig. 9 is shown another modified form of cover structure according to this invention which is adapted for use in connection with said second mentioned type of cleaning apparatus. In this modified form thereof, the cover structure comprises the annular or circular cover plate 45 having the circular row of openings 47 and associated countersunk seats 48 for alignment with the receivers and reception of the rims of the open tops of the latter. In this cover structure, instead of a plurality of independently shiftable cover panels as previously described, a single cover panel 51 is slidably mounted upon the cover plate 45; said single cover plate 51 being of such circular extent as to close over, in any given adjusted position thereof, all but a selected receiver desired to be operative at a given stage of the cleaning process involved.

Having now described my invention, I claim:

1. In apparatus of the kind described having a base supporting a plurality of rectilinearly spaced, upwardly open receivers, and a trackway means upstanding from said base behind said receivers for the support of a motor driven rotatable work holding cage movable upon the trackway means for operative disposition relative to any selected receiver; the combination with said apparatus of a cover structure for said receivers comprising a rectangular cover plate common to all said receivers, said cover plate having openings therein respectively aligned with the respective receivers, a series of cover panels numbering one less than the number of openings in the cover plate, and means for slidably mounting said cover panels upon the cover plate, whereby said cover panels are shiftable on the cover plate to close, in all adjusted positions thereof, all but a selected receiver desired to be operative.

2. In apparatus of the kind described having a base supporting a plurality of rectilinearly spaced, upwardly open receivers, and a trackway means upstanding from said base behind said receivers for the support of a motor driven rotatable work holding cage movable upon the trackway means for operative disposition relative to any selected receiver; the combination with said apparatus of a cover structure for said receivers comprising a rectangular cover plate common to all said receivers, said cover plate having openings therein respectively aligned with the respective receivers, a series of cover panels numbering one less than the number of openings in the cover plate, means for slidably mounting said cover panels upon the cover plate, whereby said cover panels are shiftable on the cover plate to close, in all adjusted positions thereof, all but a selected receiver desired to be operative, and means for coupling the cover plate to the apparatus subject to upswinging displacement from the receivers thereof.

3. In apparatus of the kind described having a base supporting a plurality of rectilinearly spaced, upwardly open receivers, and a trackway means upstanding from said base behind said receivers for the support of a motor driven rotatable work holding cage movable upon the trackway means for operative disposition relative to any selected receiver; the combination with said apparatus of a cover structure for said receivers comprising a rectangular cover plate common to all said receivers, said cover plate having openings therein respectively aligned with the respective receivers, said cover plate having countersunk annular seats in its bottom face respectively disposed concentric to the respective openings of the cover plate, whereby to receive the rims of the open tops of said receivers, a series of cover panels numbering one less than the number of openings in the cover plate, and means for

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slidably mounting said cover panels upon the top face of the cover plate, whereby said cover panels are shiftable on the cover plate to close, in all adjusted positions thereof, all but a selected receiver desired to be operative.

4. In apparatus of the kind described having a base supporting a plurality of rectilinearly spaced, upwardly open receivers, and a trackway means upstanding from said base behind said receivers for the support of a motor driven rotatable work holding cage movable upon the trackway means for operative disposition relative to any selected receiver; the combination with said apparatus of a cover structure for said receivers comprising a rectangular cover plate common to all said receivers, said cover plate having openings therein respectively aligned with the respective receivers, said cover plate having countersunk annular seats in its bottom face respectively disposed concentric to the respective openings of the cover plate, whereby to receive the rims of the tops of said receivers, a series of cover panels numbering one less than the number of openings in the cover plate, means for slidably mounting said cover panels upon the top face of the cover plate, whereby said cover panels are shiftable on the cover plate to close, in all adjusted positions thereof, all but a selected receiver desired to be operative, and means for coupling the cover plate to the

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apparatus subject to upswinging displacement from the receivers thereof.

5. In apparatus of the kind described having a base supporting a plurality of spaced upwardly open receivers, and means upstanding from said base for the support of a motor driven rotatable work holding cage subject to operative disposition relative to any selected receiver; the combination with said apparatus of a cover structure for said receivers comprising a cover plate common to all said receivers and having openings therein respectively aligned with the respective receivers, a series of cover panels numbering one less than the number of openings in the cover plate, and means for slidably mounting said cover panels upon the cover plate, whereby said cover panels are shiftable on the cover plate to close, in all adjusted positions thereof, all but a selected receiver desired to be operative.

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