

July 28, 1959

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2,896,649

APPARATUS FOR CLEANING BY ULTRA-SONIC VIBRATIONS

Filed Nov. 19, 1957

FIG-1

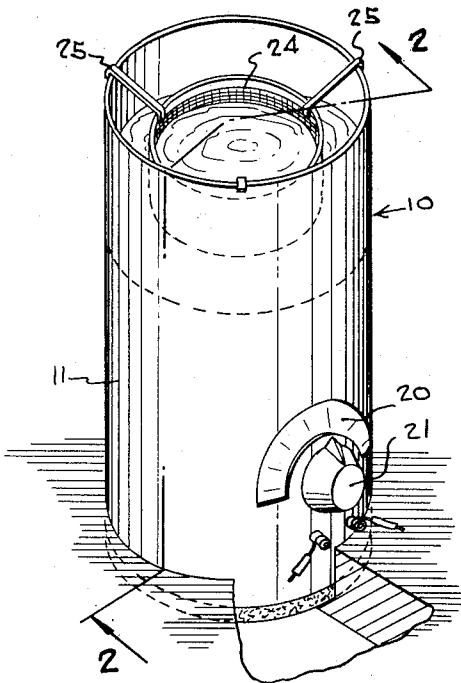


FIG-2

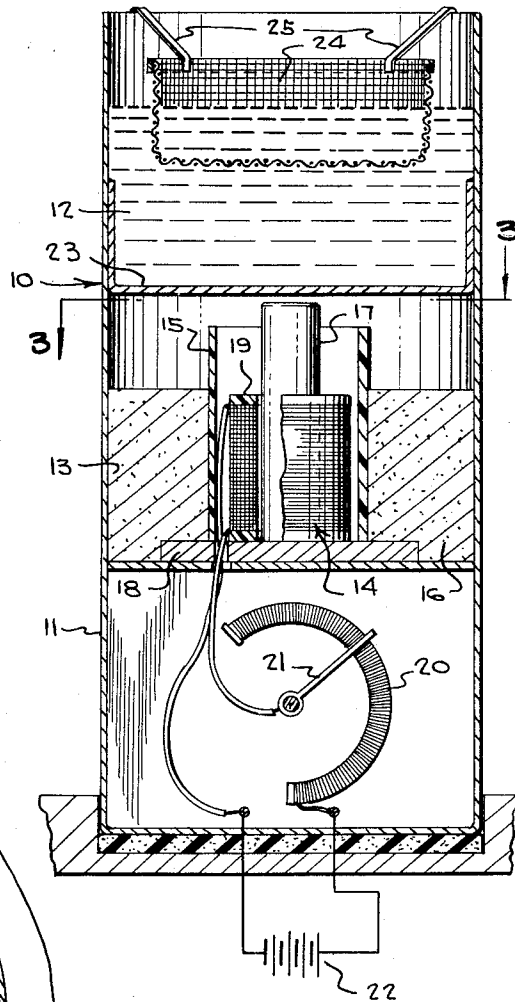
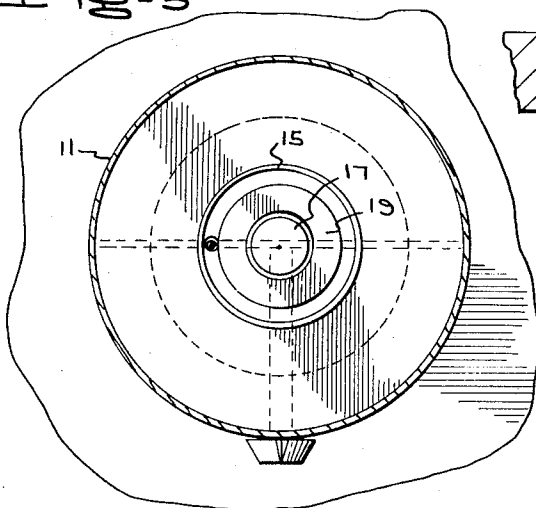


FIG-3



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APPARATUS FOR CLEANING BY ULTRA-SONIC VIBRATIONS

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Application November 19, 1957, Serial No. 697,471

1 Claim. (Cl. 134—184)

This invention relates to an apparatus for cleaning of material through the production of ultra-sonic vibrations, and it consists in the constructions, arrangements and combinations herein described and claimed.

The cardinal object of the invention is the provision of an apparatus for removing foreign matter from various objects and particularly from horological instruments and parts thereof, by the employment of ultra-sonic vibrations which are transmitted to a body of cleaning detergent in which the parts to be cleaned are submerged, said ultra-sonic vibrations having the ability to loosen and move foreign particles from the surfaces of the parts.

More specifically, it is an object of the invention to provide an apparatus of simple construction, of few parts, embodying a single control member in the production of ultrasonic vibrations to a cleaning liquid in the loosening and removal of foreign matter in horological instruments.

Additional objects, advantages and features of invention will be apparent from the following description considered in conjunction with the accompanying drawing, wherein:

Figure 1 is a perspective view of the apparatus,

Figure 2 is a vertical section through the apparatus taken on the line 2—2 of Figure 1, and

Figure 3 is a cross section on the line 3—3 of Figure 2.

There is illustrated a cleaning apparatus generally indicated by the reference character 10 which comprises a metallic housing 11 of any suitable shape and dimensions. The open top of the housing 11 has a receptacle 12 positioned therein for reception of approximately eight ounces of a liquid cleaning solution, although this will vary according to the size of the apparatus and the material worked upon.

Intermediate of the height of the housing 11, a compartment 13 is formed for support of a pulsating unit 14 as will be described.

The compartment 13 includes a shield member 15 which terminates above a body of plaster of Paris 16 which affords protection to the unit 14, while the plaster of Paris provides weight for stability to the housing.

The pulsating unit 14 comprises a core 17 of soft

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iron supported upon a brass filler ring 18 which is preferably embedded in the plaster of Paris. A suitable coil 19 is wound upon the core 17. In a practical embodiment of the invention, the unit 14 was a 115 v., 50–60 cycle, one end of the coil 19 being electrically connected to one terminal of a rheostat 20, the other end of the coil being connected to the control arm 21, while the rheostat was electrically connected to a source of alternating current 22.

The core 17 of the pulsating unit 14 terminates approximately one-sixteenth of an inch below the bottom wall 23 of the receptacle 12 to form an air gap with said wall. Since the device will ordinarily be used at a work bench, I preferably support the apparatus upon a sponge rubber pad as clearly shown in Figure 1.

In use, a fine mesh basket 24 for reception of the articles to be cleaned is suspended from the upper edge of the receptacle 12 by means of arms 25, the articles being submerged in the cleaning fluid. When the control arm 21 of the rheostat is adjusted to energize the coil 19, ultra-sonic vibrations will be produced in the cleaning fluid due to electrical impulses produced through the gap 26, and thus, these vibrations in the cleaning fluid cleanses the parts in the basket. It will be understood that control of the ultra-sonic vibrations is effected through variable setting of the rheostat.

While I have shown and described a preferred form of the apparatus, this is by way of illustration only and I consider as my own, all such modifications in construction as fairly fall within the scope of the appended claim.

I claim:

In a device of the character described comprising a housing having an open top, a metallic receptacle fixed in said housing for reception of a cleaning fluid, a material receiving basket suspended from said housing for submergence in the cleaning fluid in said receptacle, a chamber within the housing beneath said receptacle, said chamber having a filling of plaster of Paris and a vertically disposed open shield, a brass filler ring embedded within the plaster of Paris, a pulsating unit mounted upon said filler ring and extended upwardly through said open shield, said pulsating unit having an iron core and a coil winding, the upper end of said core terminating closely adjacent the bottom wall of said receptacle, a rheostat mounted in said housing in electrical circuit with the coil of said pulsating unit, and said rheostat being in electrical circuit with a source of alternating current.

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