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SOUNDPROOF CLOCK

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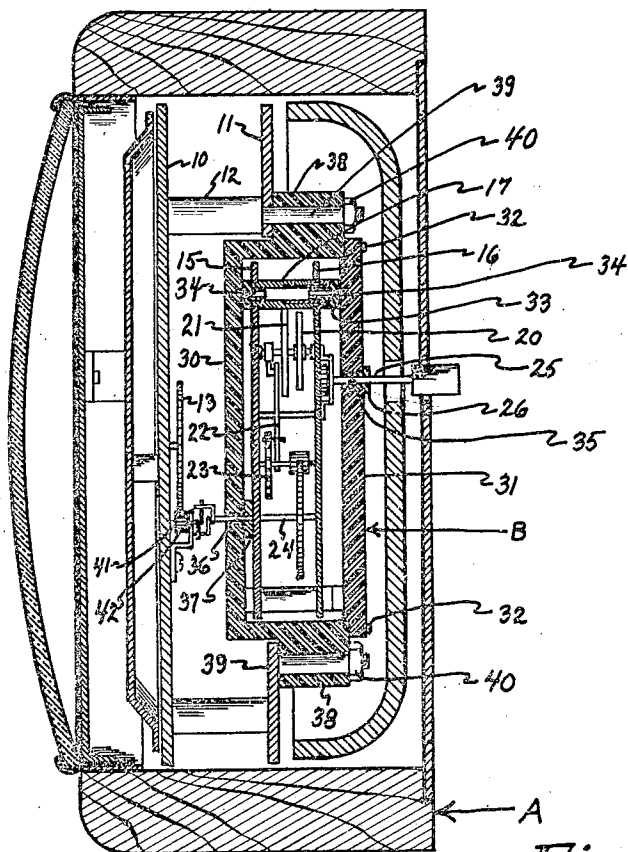


Fig. 1

Fig. 3

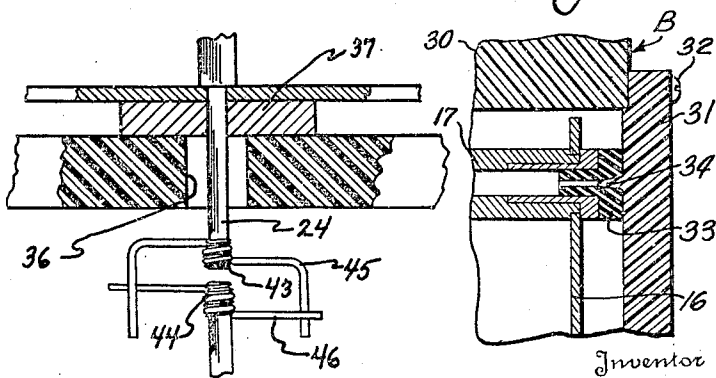


Fig. 2

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SOUNDPROOF CLOCK

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1 Claim. (Cl. 58—53)

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This invention relates to clocks and more particularly to means for rendering inaudible the sound of operation of the escapement mechanism.

An object of the invention is to provide a simple, effective and inexpensive means whereby the sound of operation of clocks, and in particular inexpensive clocks, may be rendered silent to the ear.

A further object is to provide a simple and easily assembled means for enclosing the escapement of a clock and mounting the same in such manner as to render the ticking thereof inaudible.

Another object is to provide an improved arrangement wherein the escapement mechanism is mounted, in a sound insulating manner, within a box formed of plastic which is transparent so as to permit operators assembling the clock, or repair men, to see inside and determine how the escapement mechanism is functioning.

A still further aim of the invention is to provide an improved, simplified, relatively noiseless, and easily assembled universal coupling between an extended shaft of the escapement mechanism and a shaft aligned therewith.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the feature of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claim.

In the drawings—

Figure 1 is a central cross sectional view of a clock incorporating my invention, some of the clock works being omitted in the interest of clarity; and

Fig. 2 is a detail view of the coupling between the escapement works and the remainder of the clock works.

Figure 3 is a fragmentary, enlarged view of part of mechanism by which a supplemental frame is supported within a sound-proof casing comprising part of the present invention.

Referring to the drawings in detail, A designates a casing of a clock which may be of any suitable construction. Mounted within the casing is a main frame comprising generally a front plate 10, a rear plate 11, and pillars 12 securing the plates in spaced relation. Mounted within the main frame are the usual or conventional main spring and gear train leading to the hands, none of which is shown in detail except a driven gear 13.

The escapement mechanism of the clock is the

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source of the objectionable noise which it is the object of the present invention to render inaudible. In accordance with the present invention, the escapement mechanism is mounted on a supplemental frame secured in a sound insulating manner within a box or casing B of sound deadening material, such as a plastic. The plastic is preferably transparent or clear so as to facilitate assembly and repair of the escapement mechanism and to permit inspection thereof in order to determine whether it is functioning properly.

The supplemental frame comprises generally a front plate 15 and a rear plate 16 maintained in spaced relation by pillars 17. The escapement mechanism is conventionally shown as being of the usual type, shown, in the present illustrative drawings, as having a hair spring 20, balance wheel 21, pallet 22, escapement wheel 23, and a drive shaft 24 geared to the shaft to which the escapement wheel is fixed. The escapement also has the usual regulator shaft 25. The box or casing B, which, as stated, is preferably formed of clear plastic, has a chambered body portion 30 and a cover 31 removably secured thereto as by means of screws 32. The escapement frame is supported by the box in such manner that the sound of the escapement is not conducted through the supporting means to the walls of the box. More particularly, the pillars 17 of the escapement frame are hollow so as to receive, in the opposite ends thereof, tubes or bushings 33 formed of soft rubber or similar material. These tubes extend beyond the ends of the pillars and receive tapered projections or pins 34 provided on the inner faces of the body portion 30 and the cover 31 of the box. The regulator shaft 25 extends through a small opening 35 in the cover and is provided with a rubber grommet 26 to prevent the egress of sound through opening 35. The drive shaft 24 extends through a small opening 36 in the wall of the body portion 30 of the box. A rubber washer 37 loosely fits about the shaft 24 so as to prevent sound from passing through the opening 36.

The escapement assembly is supported on the main frame of the clock. As shown, the rear plate 11 has an opening into which the body portion of the box B extends. The box has, at its upper and lower ends, lugs or flanges 38 through which extend bolts 39 projecting rearwardly from the main frame. The bolts are provided with nuts 40 which clamp the lugs 38 to the rear plate 11.

Furthermore, in accordance with the present

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invention, I provide an improved, simplified universal coupling between the drive shaft 24 of the escapement mechanism and a shaft 41 carrying the fourth pinion 42, the latter pinion meshing with the gear 13. The adjacent aligned ends of the shafts 24 and 41 are provided with screw threads or spiral grooves 43 and 44, respectively, and screwed onto these threaded portions are wires 45 and 46, respectively. The wires, at their central portions, are spirally wound for screwing them onto the threaded portions of the shafts, and the ends of the wire 45 are turned downwardly so as to project across the radially extending arms of the wire 46. With this arrangement, the couplings may be very cheaply made, and the parts readily assembled and disassembled.

The construction, as hereinabove described, renders the noise of operation of the clock inaudible. None of the metal parts of the escapement assembly touch the box and the rubber tubing or bushings, being of effective sound deadening material, will not conduct the sound of the escapement to the walls of the box. Enclosure of the regulator staff in the rubber grommet serves to keep this metal part from engagement with the box. The clearance hole for the shaft extending out of the escapement unit is of minimum size and further precaution against the outlet of sound from the box is taken by supplying the shaft with the rubber washer 37. The coupling means between the escapement and the main clock works is very simple and is so constructed that the escapement works may be removed from the box with little difficulty, simply by unscrewing the yoke at the end of the escapement shaft. The wires from which the coupling means are constructed are light and conduct no appreciable sound. By making the box of a clear plastic, the sound deadening effect of this type of material is obtained and furthermore, operation of the clock can be observed. By completely enclosing the escapement unit, the evaporation of oil is avoided and entry of dust or damage during handling of the clock is prevented. My invention is simple of manufacture, and extremely inexpensive to produce and assemble and renders the movements of even the cheapest clock inaudible to the human ear.

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As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claim is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

In a clock, a main frame for supporting the driving train, a supplemental frame comprising a pair of spaced plates and hollow pillars therebetween and at the opposite ends of which said plates are connected, an escapement mechanism supported between said plates, a substantially soundproof casing housing said supplemental frame and the escapement mechanism carried thereby, inwardly projecting pins on the opposed inner walls of said casing, and soft bushings in the pillars and extending beyond the ends thereof and into which said pins extend whereby said supplemental frame is supported by the box in a sound-nonconducting manner.

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