March 13, 1934. O. F. DECK 1,951,010

AIRPLANE CLOCK SETTING MECHANISM

Filed June 7, 1932

Fig. 1.

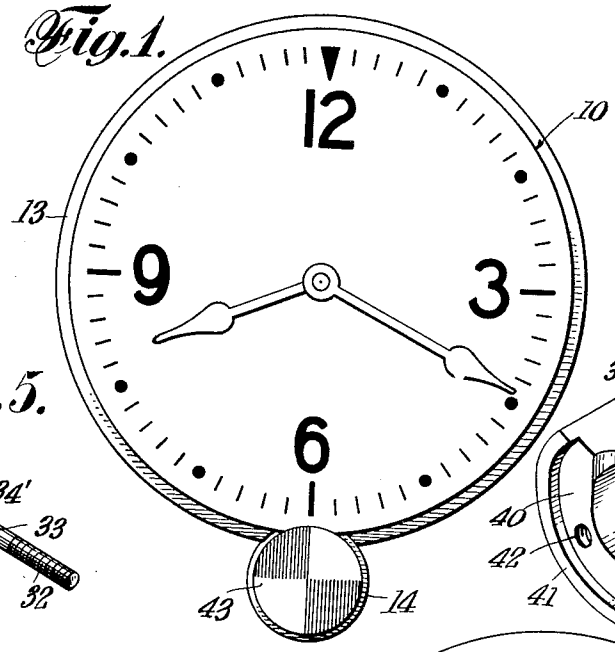


Fig. 5.

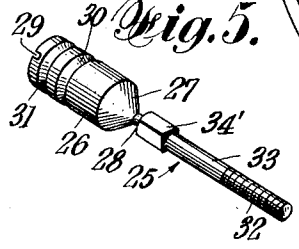


Fig. 6.

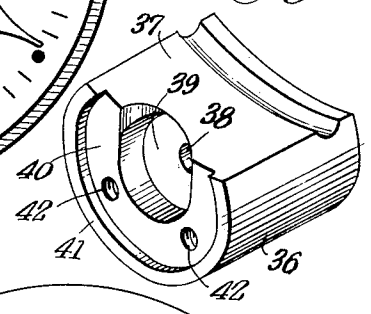


Fig. 2.

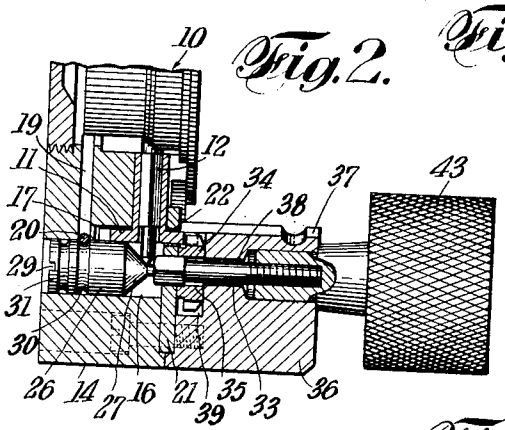


Fig. 4.

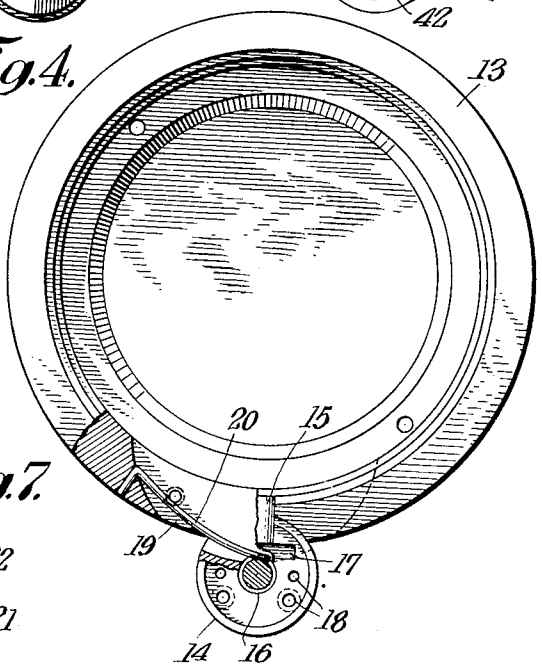


Fig. 7.

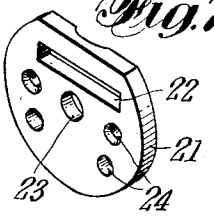


Fig. 3.

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UNITED STATES PATENT OFFICE

1,951,010

AIRPLANE CLOCK-SETTING MECHANISM

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Application June 7, 1932, Serial No. 615,856

15 Claims. (Cl. 58—63)

My present invention relates to a case for watches, clocks, and the like, and more particularly, to a case which is adapted to permit the winding of a watch, clock, or like instrument having a vertical winding stem, to be wound or set from a horizontal position.

In the existing type of watches or like instruments, especially those used on instrument boards or motor vehicles, airplanes and the like, it has been found that where the instrument contains a vertical winding stem there is difficulty in reaching the stem and in winding the instrument. Therefore, in instruments used for this purpose, it has been heretofore necessary slightly to modify the mechanism of the instrument itself so that it will permit of a horizontal winding or setting. The main object of the present invention is to provide a case for holding an instrument containing the usual and conventional vertical winding means, whereby the change from a vertical to a horizontal drive on the winding stem is accomplished without changing the mechanism of the watch or other instrument.

In the illustrative embodiment shown herein, an aviation clock is shown having the usual vertical winding and setting means. However, I wish it to be distinctly understood that this embodiment is shown for purposes of illustration only. It will be noted from the description of the present invention that the cases of the present invention are simple in construction, easy and economical to fabricate and assemble, and admirably adapted to perform their intended functions. Other objects and advantages of the devices of the present invention will, in part, be pointed out in detail hereinafter and will, in part, be obvious to those skilled in the art to which the present invention relates.

Referring to the drawing illustrating the present invention:

Fig. 1 is a plan view of the watch casing assembled.

Fig. 2 is a sectional view of the horizontal winding mechanism in a winding position, and

Fig. 3 is a like view in a setting position.

Fig. 4 is a plan view, partly in section of the unassembled casing.

Fig. 5 is a plan view of the horizontal winding stem.

Figs. 6 and 7 are detail views.

Referring more in detail to the illustrative embodiments of the present invention, the numeral 10 generally designates a conventional clock adapted for attachment to the instrument board of an airplane, automobile or like vehicle. The conventional winding stem is replaced by a gear 11 adapted to operate the winding stem 12 in such manner that the gear 11 will permit the stem 12 to be depressed for setting the hands of the instrument, but will continue operating the stem 12 either in a raised or depressed position.

A case 13, adapted to hold the instrument 10, is provided with an auxiliary rounded tubular portion 14, preferably of the same material as the case 13, both preferably of a heavy dust-proof, rustless material, such as brass. The portion 14 extends from the bottom of the case 13 up to a point slightly below the upper rim thereof. A groove 15 connects the case 13 with a central bore 16 running through the middle of the portion 14. Between the bore 16 and case 13 is a slot 17 extending parallel with the bore 16 approximately two-thirds of the way through the portion 14. The portion 14 is also provided with holes 18 for screwing the various parts together. Another slot 19 extends through the side of the case 13 and half way through the portion 14, communicating with the central bore 16 of the portion 14. Screwed into this slot 19 is a spring member 20 resiliently extending through the slot 19 into the bore 16.

The clock 10 is placed into the case 13 in such manner that the gear 11 will fit into the slot 17 and the depressible stem 12 will extend into the bore 16. A plate 21 is adapted to fit into and cover the portion 14. It contains a slot 22 through which the gear 11 extends, a hole 23 communicating with the central bore 16 and holes 24 communicating with the holes 18 of the portion 14. The plate 21 is also flattened on one side to permit its fitting past the clock 10. In this position the gear 11 extends slightly beyond the surface of the plate 21.

I now provide a winding stem or rod 25 adapted to fit into the bore 16. The stem 25 contains a thick portion 26 extending for about one-third of its length and tapering as at 27, the tapered portion meeting the narrow portion 28 extending for the other two-thirds of its length. The stem 25 is placed into the groove 16 in such manner that the thicker portion is at the back of the auxiliary portion 14 and the narrow portion extends through the bore 16 and hole 23 of the plate 21. The thicker portion of the stem 25 contains a groove 29 on the end thereof for holding a screw driver or like instrument. It is also provided with two grooves 30 and 31 running around the thicker portion, the groove 29 being substantially in the central part of the thicker portion, and the groove 30 being midway between

the groove 29 and the end of the rod 25. The narrow portion of the stem 25 contains a threaded portion 32 at the narrow end thereof, a round portion 33, and a square portion 34 at the base of the tapered portion 27.

When the stem 25 is placed into the groove 16, the spring 20 will extend into the groove 30 and hold it in place, preventing it from falling out. A gear 34 having a square hole 35 is placed over the stem 25 in such manner that the teeth of the gear will enmesh with the teeth of the gear 11, and the hole 35 will slide over the square portion 24 of the stem 25.

To hold the various parts of the apparatus in place I now provide a member 36 substantially similar to the member 14 except that it is flattened at one side, such as at 37, to permit a clear sight of the clock dial. The member 36 contains a hole 38, a central depressed portion 39, an intermediate depressed portion 40 and an outer rim 41. These portions are stepped upwardly from the center, the central depressed portion surrounding the hole 38, being the furthest depressed, the intermediate depressed portion surrounding the central depressed portion being only partly depressed, and the outer rim extending above the other two portions. The central depressed portion 39 is grooved to communicate with the flat portion 37. The member 36 is placed over the previously described parts, the stem 25 extending through the hole 38. The member 36 also contains holes 42 communicating with holes 13 and 24. A series of screws are now placed through holes 42, 24 and 18, holding the inner mechanism together.

A knurled knob 43 is placed through the hole 38 in the member 36 and screwed onto the threaded portion 32 of the stem or rod 25.

This completes the description of the clock case of the present invention and although its operation can be clearly ascertained from such description a brief résumé herewith follows:

Assuming the various parts of the case of the present invention to be assembled as previously described, and assuming that the stem 25 is in the position shown in Fig. 1 of the drawing, the groove 30 being in contact with the spring 20 and the stem 12 of the clock 10 being in an undepressed position at the base of the tapered portion 27 of the stem 25, the rotation of the knob 43 will now cause the stem 25 to turn the gear 34, gear 11 and to wind the clock 10.

When it is desired to set the hands of the clock 10, the knob 43 is pulled outwardly until the groove 31 on the stem 25 snaps into position with the spring 20. In moving forward, the tapered portion of the stem 25 will depress the stem 12, causing the hands of the clock 10 to come into operative contact with the stem 12. Rotation of the knob 43 will now cause the hands of the clock 10 to rotate and permit them to be set by the operator. After the watch is set, the knob 43 is snapped back into a position where the groove 30 returns into contact with the spring 20 which is the normal running position of the watch.

This completes the description of the mode of assembly and mode of operation of the clock case of the present invention. It will be seen from such description that the case of the present invention is simple in construction, easy and economical to fabricate and assemble, and admirably adapted to perform its intended functions.

It will be noted that the member 36 tightly covers the various parts of the mechanism in such a manner that it is dust-proof and waterproof. The case and clock can be easily placed into another bakelite case 44 for mounting on the instrument board of an airplane or other similar vehicle.

Other objects and advantages of the clock cases of the present invention will readily occur to those skilled in the art to which the present invention relates.

What I claim as my invention is:

1. Setting and winding means for a clock having a vertical stem, comprising, means, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said first named means, and means associated with said second named means for rotating the stem when the latter is in its setting or winding positions.

2. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

3. Setting and winding means for a clock having a vertical stem, comprising, a conical cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

4. Setting and winding means for a clock having a vertical stem, comprising, means, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said first named means, and a gear train associated with said second named means for rotating the stem when the latter is in its setting or winding positions.

5. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam and a gear train associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

6. Setting and winding means for a clock having a vertical stem, comprising, a conical cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam and a gear train associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

7. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, means cooperable with said cam for retaining the same in its adjusted positions, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

8. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means cooperable with said cam for horizontally reciprocating the same, friction means cooperable with said cam for retaining said cam in its adjusted positions, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

9. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, spring means cooperable with said cam for retaining the same in its adjusted positions, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

10. Setting and winding means for a clock having a vertical stem, comprising, a conical cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, means cooperable with said cam for retaining the same in its adjusted positions, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

11. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, means cooperable with said cam for retaining the same in its adjusted positions, and a gear train associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

12. Setting and winding means for a clock having a vertical stem, comprising, a conical cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, means cooperable with said cam for retaining the same in its adjusted positions, and a gear train associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

13. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, friction means cooperable with said cam for retaining the same in its adjusted positions, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

14. Setting and winding means for a clock having a vertical stem, comprising, a conical cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, friction means cooperable with said cam for retaining the same in its adjusted positions, and means associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

15. Setting and winding means for a clock having a vertical stem, comprising, a cam, cooperable with the vertical stem of the clock for vertically reciprocating the same into setting and winding positions, means for horizontally reciprocating said cam, friction means cooperable with said cam for retaining the same in its adjusted positions, and a gear train associated with said first named means for rotating the stem when the latter is in its setting or winding positions.

OTTO F. DECK.