Nov. 6, 1951 H. MARMOR 2,574,048

ANIMATED TIME-PIECE

Filed Nov. 3, 1948

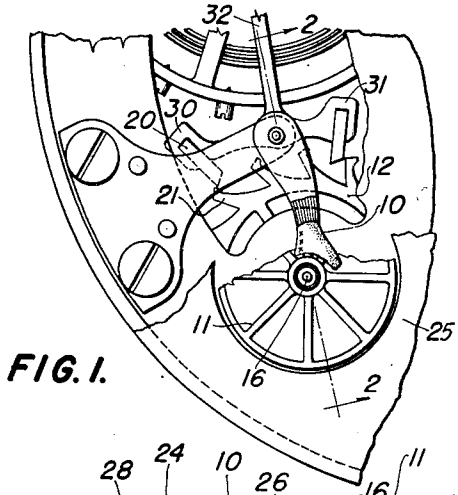


FIG. 1.

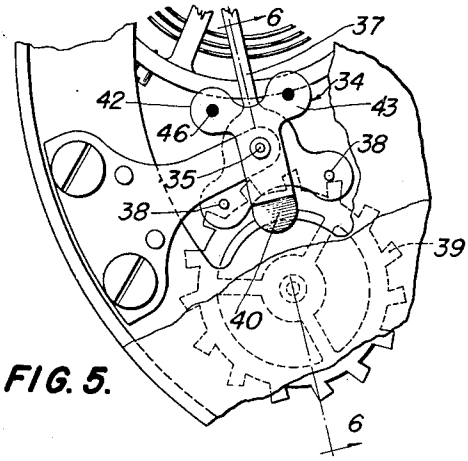


FIG. 5.

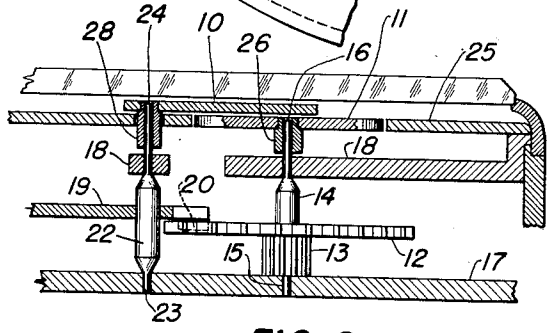


FIG. 2.

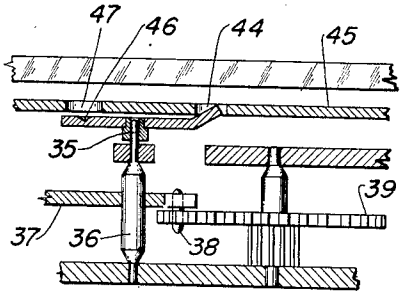


FIG. 6.

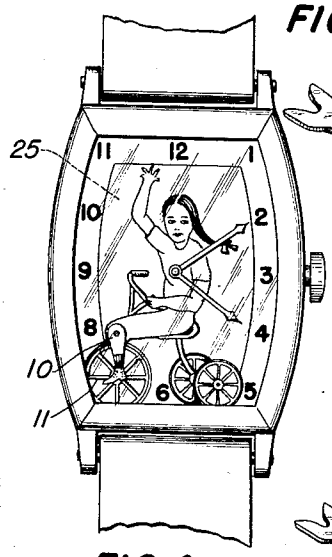


FIG. 4.

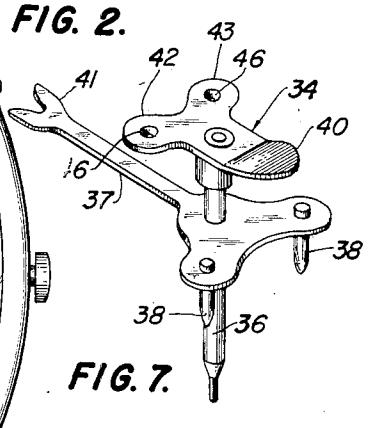


FIG. 7.

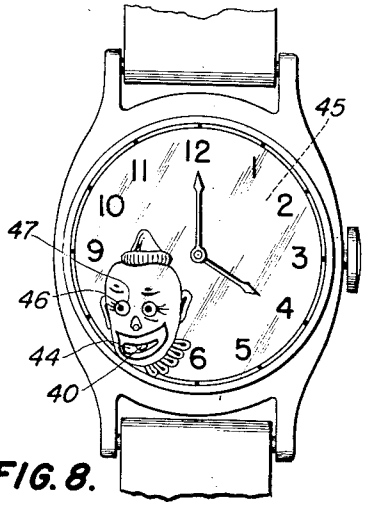


FIG. 8.

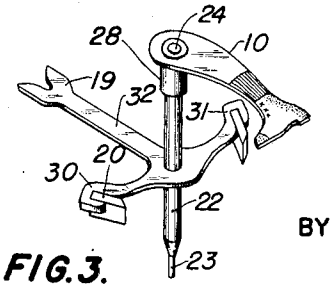


FIG. 3.

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Patented Nov. 6, 1951

2,574,048

UNITED STATES PATENT OFFICE

2,574,048

ANIMATED TIMEPIECE

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Application November 3, 1948, Serial No. 58,100

5 Claims. (Cl. 58—127)

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This invention relates to animated time instruments—more particularly to watches and clocks having pictorial animated portions associated with the dial thereof.

In most previous attempts to obtain animated effects, an undue burden was generally placed upon the movements of the time-piece by virtue of the construction, weight or positioning of the animated components. There has accordingly been an interference with the proper action or time-keeping properties of the device. This shortcoming has been particularly manifest in watches, as distinguished from clocks, since even very slightly animated movements have, with conventional animating mechanisms, necessitated an undesirable draining of power. And in larger clocks, there has also generally been considerable interference with the proper functioning of the time-keeping mechanism when conventional animation-producing components were used, particularly where relatively large animated movements were desired.

It is accordingly primarily within the contemplation of my invention to eliminate the aforesaid shortcomings in devices of the above-mentioned category by providing means to produce attractive animated effects without affecting the normal operation of the time-piece, whereby the invention will be conveniently adaptable for use with delicate watch movements, or with more rugged clock movements where comparatively large animated motions are to be employed.

It is also an object of my invention, in a preferred form thereof, to employ the conventional escapements of watches or clocks to obtain both rotary and oscillatory animated motions, either separately or combinatively. And in the last-mentioned aspect of my invention, it is an object to obtain a coordinated interplay of movements visible at the dial, whereby various animated effects employing two coactive elements may be obtained.

It is a further object of my invention to enable the conventional mechanisms of a watch or clock to be employed without alteration, whereby it will be necessary merely to add certain slightly modified components to produce animated effects.

It is still a further object of my invention to improve the balance of a time-piece mechanism by employing an animated component which will also serve as a counterpoise to the conventionally unbalanced pallet. More specifically, in modern mechanical time-pieces, the pallet is generally constructed with a single long tail flanked at one end thereof by two short arms. According

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to a preferred form of my invention, an animated component is provided which not only serves its intended animating function, but also serves to give symmetry and balance to the pallet by being disposed oppositely to the tail, thereby bringing the center of gravity of the pallet to the region of the pallet arbor.

It is also within the contemplation of my invention to render it adaptable for use with various types of escapements, including jewelled detached lever escapements, cylinder escapements, etc., as well as with any model of mechanical or electrical watch or clock which utilizes an escapement for time-keeping. And it is also within my contemplation to employ animated components or "riders" that may be disposed either below the plane of the dial, in the plane thereof, or thereabove.

Other objects, features and advantages will appear from the drawing and the description hereinafter given.

Referring to the drawings:

Figure 1 is a fragmentary plan view of a watch, looking towards the dial, showing the main combination of components constituting my invention, parts being broken away for clarity.

Figure 2 is a fragmentary section of Fig. 1 taken along line 2—2.

Figure 3 is a perspective view of the assembly of the pallet and the oscillatory rider of Figs. 1 and 2.

Figure 4 is a plan view of a watch mounted on a strap, showing the appearance of the face of the dial and the animated components according to the structure of Figs. 1 to 3.

Figure 5 is a view like Fig. 1 but showing a modified form of my invention, wherein only the oscillatory component is employed.

Figure 6 is a fragmentary section of Fig. 5 taken along line 6—6.

Figure 7 is a perspective view of the assembly of the pallet and oscillatory rider of Figs. 5 and 6, and

Figure 8 is a plan view of a watch showing the dial and animated component according to the structure of Figs. 5 to 7.

In the form of my invention illustrated in Figs. 1 to 4, a construction is shown wherein there are two animator components, to wit, the oscillatory legs 10 and the intermittently rotatable wheel 11. As will more clearly hereinafter appear, the leg 10 of the illustrated tricycle rider moves in coactive relation to the wheel 10, creating the illusion that the wheel is being actuated by the leg, the cyclic relation being deter-

mined by the operation of the mechanisms to which components 10 and 11 are attached.

The watch illustrated contains a conventional escape wheel 12 with pinion 13 and arbor 14 containing rear and front extension shafts 15 and 16, respectively, rotatably mounted upon rear bridge 17 and front wall 18, respectively. In operative engagement with the escape wheel 12 is the pallet 19, the jewels 20 being engageable with the teeth 21 of the wheel. The pallet is supported upon the arbor 22 which has rear and front extension shafts 23 and 24, respectively, rotatably mounted on bridge 17 and front wall 18. The escape wheel and pallet are substantially like conventional watch elements, except for one important difference, to wit, the front shaft extensions 16 and 24 are elongated to the region of the dial 25 so as to be in engagement with animator riders.

More specifically, the shaft extension 16 of the escape wheel 12 has force-fitted thereover the tube 26 axially secured to the rotary rider 11, shown as a wheel. And the shaft extension 24 of the pallet arbor 22 is similarly secured to the tube 28 which is secured to the oscillatory rider 10 shown in the form of a leg. It will be observed that in the form illustrated, the rider 11 is in the plane of the dial 25, whereas the rider 10 is disposed in front of the dial.

It is important to observe that the pallet 19 is of the unbalanced type containing two arms 30 and 31 flanking the tail member 32 extending away from the escape wheel. This type of pallet is now commonly employed, and is in effect a compromise over the previously used form having a counter-balancing element disposed oppositely with respect to the tail. In other words, in order to simplify the construction, this counter-balancing element is now eliminated in conventional time-pieces, the unbalance of the pallet being partially offset by more carefully designed and balanced watch elements. In the present invention, however, the rider 10 is deliberately disposed oppositely with respect to tail member 32, as clearly shown in Fig. 3, thereby serving as a counterpoise and thus eliminating the disadvantages of an unbalanced pallet. It therefore serves not only as a reciprocating animator element, but also as a counter-balancing element. And it is important to observe that this counter-balancing element is simply and conveniently mounted upon a pallet of commonplace and conventional construction except that the arbor terminals are somewhat extended. Furthermore, the said counter-balancing rider is completely clear of and remotely positioned with respect to the escape wheel 12, in contradistinction to the old form of balanced pallet where the counter-balancing component was necessarily placed close to the escape wheel.

The wheel rider 11, being directly connected to the escape wheel 12, will have an intermittent rotary movement, and its motion will bear a constant cyclic relation to that of the oscillatory rider or leg 10, inasmuch as the pallet to which the rider 10 is attached is cooperatively associated with the escape wheel.

It is of course obvious that instead of a wheel and leg, the dial can, in accordance with this invention, contain a great variety of combinations of two coactive riders, whereby innumerable coordinated animated effects may be obtained with one rotary and one oscillatory animator element.

Since the riders 10 and 11 are mounted at the axes of rotation of the pallet and escape wheel, they require a minimum of power for actuation. The circular configuration of the disc 11, which is the preferred shape of the escape wheel rider, together with the counterpoised position of the pallet rider 10, serve to permit either small or relatively large animating movements, without disturbing the normal operation of the time-piece mechanisms, even in the case of delicate watch movements.

In the modification shown in Figs. 5 to 8, the rotary element attached to the escape wheel is dispensed with, and only an oscillatory rider 34 is employed. This is mounted on the elongated shaft extension 35 of the pallet arbor 36 carrying the pallet 37 the pins 38 of which are engageable with the conventional escape wheel 39. The said rider 34, in the particular form thereof shown, consists of one arm 40 oppositely disposed with respect to tail 41 of the pallet 37, and two oppositely disposed arms 42 and 43. Arm 40 is shaped and colored like a tongue, and is bent forwardly to extend into the opening 44 representing the clown's mouth on the dial 45, the rest of rider 34 being behind the dial. The two arms 42 and 43 have eye portions 46 painted thereon, these being disposed directly behind the two openings 47 in the dal.

It is apparent that the conventional oscillatory movement of the pallet will cause a corresponding movement of the rider 34, thereby producing the animated effect of moving eyes and tongue of the clown depicted on the face of the dial. And this is accomplished without changing the conventional construction of a watch mechanism except for the single expedient of using a pallet arbor with a somewhat extended forward shaft terminal. No undue load or unbalancing effect is imposed on the mechanism, due to the symmetrical mounting of rider 34 at the axis of the pallet 37.

In the above description, the invention has been disclosed merely by way of example and in preferred manner; but obviously many variations and modifications may be made therein which will still be comprised within its spirit. It is to be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except insofar as such limitations are specified in the appended claims.

I claim:

1. In a time-piece mechanism of the class described having an escape wheel and coactively associated therewith an unbalanced pallet of the type comprising a tail component and two oppositely disposed arms flanking one end thereof, a dial, a rotatably supported escape wheel arbor, a rotatably supported pallet arbor, each of said arbors containing a forwardly disposed terminal portion extending to the region of the dial, a rotatable animator rider fixedly mounted on the said terminal portion of the escape wheel arbor, and an oscillatory animator rider fixedly mounted on the said terminal portion of the pallet arbor, whereby the first-mentioned rider will be actuated rotatably and intermittently, and the second-mentioned rider will be actuated in oscillatory motion and in cyclic relation to the said first-mentioned rider.

2. In a time-piece mechanism of the class described having an escape wheel and pallet coactively associated therewith, the combination according to claim 1, the oscillatory rider being an elongated member and disposed substantially diametrically opposite the said tail of the pallet.

3. In a time-piece mechanism of the class described having an escape wheel and pallet coactively associated therewith, the combination according to claim 1, the rotatable rider being a disc axially mounted on the said terminal of the escape wheel arbor, to produce a balanced effect.

4. In a time-piece mechanism of the class described having an escape wheel and pallet coactively associated therewith, the combination according to claim 1, the oscillatory rider being an elongated member and disposed substantially diametrically opposite the said tail of the pallet, and the rotatable rider being a disc axially mounted on the said terminal of the escape wheel arbor.

5. In a time-piece mechanism of the class described having an escape wheel and coactively associated therewith an unbalanced pallet comprising a tail component and two oppositely disposed arms flanking one end thereof, a dial, a rotatably supported escape wheel arbor, a rotatably supported pallet arbor, the said pallet arbor containing a forwardly disposed terminal portion extending to the region of the dial, and an oscillatory animator rider fixedly mounted on the said terminal portion of the pallet arbor and disposed

adjacent the dial and having a portion positioned oppositely with respect to the tail of the pallet, the oscillatory rider being elongated and mounted eccentrically on the pallet arbor terminal and being disposed substantially diametrically opposite the said tail of the pallet.

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