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DIAL FOR TIMEPIECES

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Fig. 1

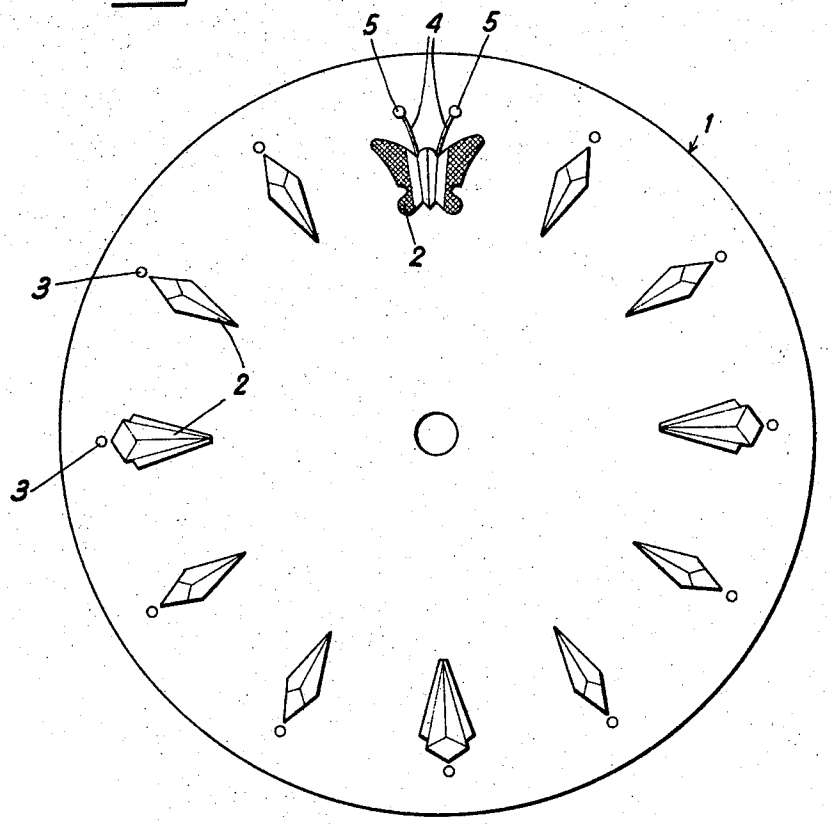
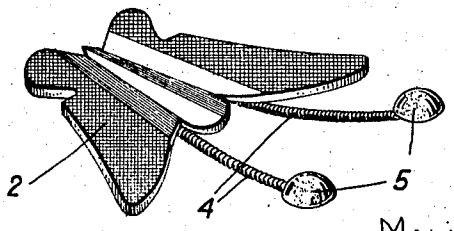


Fig. 2



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DIAL FOR TIMEPIECES

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This invention relates to dials for timepieces and in particular to dials adapted for permitting the reading of the time in darkness.

In the manufacture of dials for timepieces and in particular for wrist-watches, the aesthetic effect is most important. Thus, the dials arranged for permitting the reading of the time in darkness and which are, therefore, provided with a luminescent material, are arranged in such a manner that the greenish-yellow luminescent material will not be visible in daylight. For this purpose, very small lodgings are provided in the dial plate and the luminescent material is located in these lodgings. In order that these small points of luminescent material are clearly visible in darkness, the dial manufacturers are wont to use a luminescent material which is strongly radioactive.

To permit the reading of the time in darkness, it does, however, not suffice to provide the dial with luminous points located, for instance, opposite the hour marks; at least one luminous reference mark must still be provided to permit the convenient orientation of the dial, in particular for reading the time when one wakes up in an untoward position.

With the known dials, these reference marks generally consist of points which are more luminous than the remaining ones on the dial. There is usually only one luminous reference point on the dial which is located opposite the mark indicating twelve o'clock. Sometimes, there are, however, also four such reference points located opposite the four quarters of the dial.

Since the effective power of a light source has to be substantially increased in order that a human eye perceives a small increase of the brightness of this source, the reference points which permit the orientation of the dial must, accordingly, contain much more luminescent material than the other luminescent points of the dial. If a poorly radio-active material is used, the elements permitting the orientation of the dial must be provided with such a quantity of luminescent material that the aesthetic effect of the dial in daylight will be compromised. With a strongly radio-active luminescent material, however, the elements permitting the orientation of the dial substantially increase the risk of causing physiological disturbances to the watch wearer.

It is therefore, an object of this invention to provide a dial which can permit the reading of the time in darkness and which can, for this purpose, be conveniently oriented without having to resort to luminescent elements which can be differentiated from one another in darkness by means of their brightness.

The dial according to the invention is characterized by at least one orienting member which is movable relative to the dial, which starts moving and moves then in a visible manner on either side of a reference point of the dial every time the timepiece is brought into the field of vision for purposes of reading the time, which persists in moving during the time reading and which can be made luminous.

To confer the adequate mobility to the orienting member of the dial according to the invention, an orienting member consisting of a small mass connected to the dial by means of a resilient member which tends to keep this

mass in coincidence with said reference point of the dial can advantageously be used.

The orienting member will preferably form a part of a mark located on the dial and, more particularly, of the mark indicating twelve o'clock. Finally, it is possible to avoid any disturbance of the aesthetic effect of the dial in daylight by applying to the latter a mark such as a trademark or horal division and containing a figurative motif. With an orienting member, particularly consisting of a small mass connected to the dial by means of a resilient member, this small mass and said resilient member will advantageously constitute an integral part of the figurative motif.

Further objects of the invention will become apparent to those skilled in the art in the course of the following description.

One embodiment of the dial according to the invention is represented diagrammatically and by way of example in the accompanying drawings.

In the drawings:

FIG. 1 is a plan view of this embodiment and

FIG. 2 is a perspective view on a larger scale of one mark of the dial represented in FIG. 1.

The dial **1** represented in the drawings carries twelve horal marks **2** which consist of metal members fixed to the dial in a manner well known to those skilled in the art. The mark **2** indicating twelve o'clock is cut in the shape of a stylized butterfly. Opposite every other mark **2**, the dial **1** comprises small amounts **3** of luminescent material. This material can be applied as a drop to the upper face of the dial **1**. It can, alternatively, be let into the surface by means of either lodgings provided in this surface or bores pierced through the dial. These eleven luminous points are consequently fixed.

In order that the dial can be conveniently oriented in darkness, movable, luminous points are provided opposite the mark indicating twelve o'clock. For this purpose, two springs **4** representing the antennae of the butterfly are associated with the horal mark constituted by the latter. As shown in FIG. 2, the springs **4** are coil springs having one end fixed to the dial by passing under the corresponding mark **2**. The fixed ends of springs **4** can either be glued or soldered to mark **2**, or even merely clamped either between the latter and the dial or between mark **2** and a small plate inserted between the latter and the dial. At their free ends springs **4** carry hemispheric small masses **5** which can, for instance, be glued. The weight of these masses is chosen with respect to the specific characteristics of springs **4** in such a manner that the masses **5** will start moving as soon as the state of movement or of rest of dial **1** changes and that they will persist in moving when the dial is held immobile for purposes of, for instance, reading the time, after its having been moved, for example, in order to bring it into the field of vision for the purpose of said reading. The movement of masses **5** is an oscillation on either side of the position represented in the drawings which constitutes a reference point indicating the location of the mark "12" on the dial. Moreover, the oscillatory motion of masses **5** produced by the arm movements must, of course, also have a sufficient amplitude so that the displacements of these masses are visible.

The masses **5** can serve as carriers for luminescent material. This material can be applied to the upper surface of said masses, in particular if the latter are constituted by metal bodies. The masses **5** can also be made of plastics and the luminescent material be embedded in these masses. Finally, the masses **5** could be given the shape of shells provided with a bore in their middle and the luminescent material be located therein so as to be as little apparent as possible in daylight.

Whichever mode of application of the luminescent

material on masses 5 is resorted to, the quantity of luminescent material used can be smaller than the amounts 3, since the locating of the "12" on the dial in darkness is not ensured by the brightness of the luminescent points provided at that place, but by their mobility. The springs 4 and the masses 5, which can serve as orienting members in darkness, in no way compromise the aesthetic effect of the dial in daylight. On the contrary, these elements, which constitute an integral part of the figurative motif consisting of the mark 2 representing twelve o'clock, even have the advantage of providing a certain animation of this motif.

The horal mark comprising one of several movable orienting members could obviously also comprise a figurative motif other than that represented in the drawings, for example, another animal such as a ladybird, a bee, etc. The coil springs could also be replaced by other resilient members such as, for instance, thin blades. Instead of representing the antennae, these springs could also illustrate other animal parts, such as, for instance, the wings, the mandibles, the legs, etc.

Instead of an animal, the horal mark in question could also represent, for instance, a plant or any other object of which one part or the object in its entirety would be movable relative to the dial.

Furthermore, the dial according to the invention could comprise several marks provided with movable members (for instance, four marks located at the four quarters) instead of a single one, these marks, thereby, not all being necessarily horal divisions, but, possibly, comprising a trademark indication or any further indication usually carried by the dial and being able to serve as reference for ensuring the convenient orientation of the dial when reading the time.

In contradistinction to the last-mentioned alternative, the use of a single, movable element which is judiciously located on the dial, would obviously already suffice to permit its orientation in darkness.

It should, finally, be understood that the mobility of the orienting member provided on the dial could also be ensured by means other than a spring. This member could, thus, consist of a pendulum constituted by a mass connected to the dial by means of a thread, or by a mass enclosed in a lodging which would permit this mass to oscillate about a predetermined reference point.

Still further modifications of the sizes, shape and arrangement of parts will appear obvious to those skilled in the art, within the scope of the appended claims.

I claim:

1. In a timepiece, in combination, a dial carrying an horal division and having a reference point in a predetermined position relative to the horal division, a movable orienting member on said dial constituted by a massive receptacle for luminescent material, and resilient means connecting said orienting member to the dial and permitting this orienting member to oscillate in a visible manner on either side of said reference point.

2. In a timepiece, in combination, a dial carrying an horal division and having a reference point in a predetermined position relative to the horal division, a movable orienting member on said dial constituted by a massive receptacle for luminescent material, and resilient means connecting said orienting member to said dial, said resilient means being adapted so as to keep said member in coincidence with said reference point when the dial is at rest and so as to permit said member to oscillate on either side of said reference point upon submitting the dial to an acceleration.

3. On a dial for timepieces, an orienting member consisting of a massive receptacle for luminescent material and binding means connecting said massive receptacle to the dial so as to permit said receptacle to move by inertia in a visible manner about a reference point of the dial upon submitting the dial to an acceleration.

4. On a dial for timepieces, an orienting member consisting of a massive receptacle for luminescent material and resilient means connecting said massive receptacle to the dial so as to tend to keep said massive receptacle in coincidence with a reference point of the dial, but so as to permit said receptacle to move by inertia in a visible manner on either side of said reference point of the dial upon submitting the dial to an acceleration.

5. On a timepiece dial carrying a standard mark, an orienting member forming part of said mark and consisting of a massive receptacle for luminescent material, and binding means connecting said massive receptacle to said standard mark carried by the dial so as to permit said receptacle to move by inertia in a visible manner about a reference point of the dial upon submitting the dial to an acceleration.

6. On a timepiece dial carrying an horal division indicating twelve o'clock, an orienting member forming part of said horal division and consisting of a massive receptacle for luminescent material, and binding means connecting said massive receptacle to said horal division so as to permit said receptacle to move by inertia in a visible manner about a reference point of the dial upon submitting the dial to an acceleration.

7. On a timepiece dial carrying a fixed mark forming part of a figurative motif, an orienting member forming an integral part of said figurative motif and consisting of a massive receptacle for luminescent material, and resilient means also forming an integral part of said figurative motif and connecting said orienting member to said fixed mark so as to tend to keep said orienting member in coincidence with a reference point of the dial, but so as to permit said orienting member to move by inertia in a visible manner on either side of said reference point of the dial upon submitting the dial to an acceleration.

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