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(54) **A TIMEPIECE**

(57) A timepiece comprising: a base layer, which has first time information presented thereon; a hand which is rotatable with respect to the base layer about a connection point, the hand having a first portion which extends away from the connection point in a first direction, and a second portion which extends away from the connection point in a second, different direction; a second layer which

is mounted for rotational motion with respect to the base layer, the second layer having second time information presented thereon; and a drive mechanism which is operable to drive rotation of the second layer with respect to the base layer such that a desired part of the second time information presented on the second layer is aligned with the second portion of the hand.

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Description

Description of Invention

[0001] This invention relates to timepieces.

[0002] The standard movement for an analogue watch or clock involves a generally circular face, with an hour hand which is rotationally mounted with respect to the face, and rotates once with respect to the face every twelve hours. In addition, a minute hand is rotationally mounted with respect to the face, about the same or substantially the same axis as the hour hand, and rotates once with respect to the face each hour.

[0003] A second hand, which rotates once each minute with respect to the face, may optionally also be provided.

[0004] This design has been used in one form or another since the 17th century, and persists today in most analogue watches and clocks.

[0005] It is an object of the invention to provide an alternative movement for a watch or clock.

[0006] Accordingly, one aspect of the present invention provides a timepiece comprising: a base layer, which has first time information presented thereon; a hand which is rotatable with respect to the base layer about a connection point, the hand having a first portion which extends away from the connection point in a first direction, and a second portion which extends away from the connection point in a second, different direction; a second layer which is mounted for rotational motion with respect to the base layer, the second layer having second time information presented thereon; and a drive mechanism which is operable to drive rotation of the second layer with respect to the base layer such that a desired part of the second time information presented on the second layer is aligned with the second portion of the hand.

[0007] Advantageously, the second direction is exactly or substantially opposite to the first direction.

[0008] Preferably, the first time information comprises hour time information.

[0009] Conveniently, the hand rotates with respect to the base layer exactly or substantially once every 12 hours.

[0010] Advantageously, the second time information comprises minute information.

[0011] Preferably the hand is mounted on a first spindle for rotation with respect to the base layer, and wherein the second layer is mounted for rotation with respect to the base layer on a second spindle which is coaxial or substantially coaxial with respect to the first spindle.

[0012] Conveniently, at least a portion of the second layer which overlies the first time information is formed to be transparent or substantially transparent, or is formed to comprise one or more voids or cut-outs in the second layer.

[0013] Advantageously, substantially the entirety of the second layer is formed to be transparent or substantially transparent, apart from the second time information.

[0014] Preferably, the timepiece further comprises an

intermediate layer, which is positioned between the base layer and the second layer and is driven to rotate with respect to the base layer.

[0015] Conveniently, the hand is provided as part of the intermediate layer.

[0016] Advantageously, the hand is separate from the intermediate layer.

[0017] Preferably, the hand and the intermediate layer are driven to rotate such that the second portion of the hand is aligned or substantially aligned with the same part of the intermediate layer.

[0018] Conveniently, the intermediate layer comprises a first region which overlies a part of the first time information, wherein the first region is opaque or substantially opaque.

[0019] Advantageously, the intermediate layer comprises a second region, wherein the second time information overlies the second region, and wherein the second region is opaque or substantially opaque.

[0020] Preferably, the intermediate layer is mounted for rotation about a rotation point, and the intermediate layer defines a portion which extends radially partially, but not fully, around the rotation point, and wherein the first or second region lie within the portion.

[0021] Conveniently, both the first and second regions are within the portion.

[0022] Advantageously, apart from the hand, outside the portion, the second intermediate layer is formed to be transparent or substantially transparent, or is formed to comprise one or more voids or cut-outs in the intermediate layer.

[0023] Preferably, apart from the hand, the intermediate layer only or substantially only comprises the portion.

[0024] Conveniently the timepiece further comprises a second hand.

[0025] Advantageously, the timepiece is a watch.

[0026] In order that present invention may be more readily understood, embodiments thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is an exploded view of components of a timepiece embodying the invention;

Figure 2 shows a view of the components shown in figure 1, when assembled to form a face of the timepiece;

Figure 3 shows a first watch embodying the invention;

Figure 4 shows an intermediate layer of the first watch;

Figure 5 shows a second watch embodying the invention; and

Figure 6 shows an intermediate layer of the second

watch.

[0027] With reference firstly to figure 1, an exploded view is shown of components of a watch embodying the present invention. While watches are shown in the figures, it should be understood that the principles disclosed herein may equally apply to a clock or any other suitable timepiece.

[0028] Figure 1 shows a base layer 1, which forms a dial of the watch. In this example the base layer 1 comprises a generally circular disc, having an outer edge 2. The base layer 1 may be continuous, in that the disc presents an unbroken upper surface 3. However, this is not essential and parts of the base layer 1 may be transparent (e.g. openworked) to allow parts of the mechanical movement below to be seen. The base layer 1 is preferably planar or substantially planar, although this need not be the case. For aesthetic purposes, for instance, it may be preferable for the base layer to have a concave or dished cross-sectional shape.

[0029] As used in this document, the term "disc" should not be interpreted as requiring strict adherence to a mathematical definition of a disc, but may encompass shapes which are elliptical, and/or have a cross-sectional shape which is not planar across at least some of the diameter.

[0030] On its upper surface 3, the base layer 1 has an outer circumferential zone 4, which is defined adjacent or close to the outer edge 2. The outer circumferential zone 4 may be defined between the outer edge 2 and an inner circle 5, which is preferably concentric with the outer edge 2.

[0031] The upper surface of the outer circumferential zone 4 preferably does not have time information printed or otherwise displayed thereon. The outer circumferential zone 4 may have patterning or decoration thereon, but is preferably of a single colour.

[0032] Within the outer circumferential zone 4, first time information 6 is displayed in an inner circumferential zone 23. The inner circumferential zone 23 preferably comprises an annular or substantially annular region, which is within, and preferably adjacent to, the outer circumferential zone 4.

[0033] Preferably, the first time information 6 comprises a series of numbers or other symbols which denote hours. In the example shown the first time information 6 comprises numbers between 1 and 12, regularly spaced apart, as is conventional. However, the first time information 6 can take any suitable form, for instance Roman numerals, dots or any other markings, which may or may not include alphanumeric symbols, to indicate the passage of hours. Preferably the first time information 6 comprises markings which represent a twelve hour period.

[0034] Embodiments of the present invention have a preferred colour scheme, comprising two contrasting colours. While this is not essential, the use of a colour scheme of this type will make the timepiece relatively easy to read.

[0035] The two colours are preferably contrasting in

that the two colours are easy to distinguish from one another when seen together by a human observer. It is not necessary that the contrasting colours are opposite or complementary colours. Any suitable combination of colours which can be sufficiently distinguished by a user may be employed in connection with the present invention.

[0036] In the example explained herein, the two colours used will be black and white. Here black is used as the first colour, and white is used as the second colour. The skilled person will realise that these colours could be reversed, however.

[0037] The upper surface 3 of the base layer 1 is preferably formed to be of the first colour (i.e. black, in this example). This may be achieved by forming the base layer 1 from a material which is of the first colour, or by painting or otherwise colouring at least the upper surface 3 of the base layer 1 to be of the first colour.

[0038] The second time information 6 is preferably presented in the second colour (white, in this example).

[0039] The base layer 1 has a central aperture 7, through which a spindle (described in greater detail below) may pass. The aperture 7 is preferably positioned at the centre of the base layer 1, although this need not be the case.

[0040] In preferred embodiments of the invention the base layer 1 is mounted fixedly with respect to the timepiece, and does not rotate with respect to the timepiece itself.

[0041] Figure 1 also shows an intermediate layer 8. The intermediate layer 8 is preferably of the same size and shape as the base layer 1.

[0042] The majority of the intermediate layer 8 is formed from a transparent or substantially transparent material, such as plastic or glass. The intermediate layer 8 has a central aperture 9, which is preferably aligned with the central aperture 7 of the base layer 1, on which the intermediate layer 8 may be mounted for rotation on a suitable spindle.

[0043] A sector 10 is defined on the intermediate layer 8. In preferred embodiments, the sector 10 occupies approximately one third of the intermediate layer 8, although this is not essential.

[0044] Within the sector 10, in an outer circumferential zone 11, the intermediate layer 8 is opaque or substantially opaque. The outer circumferential zone 11 of the intermediate layer 8 is also preferably of the second colour (white, in this example).

[0045] The thickness and/or positioning of the outer circumferential zone 11 of the intermediate layer 8 preferably matches exactly or substantially the thickness of the outer circumferential zone 4 of the base layer 1.

[0046] Further, within the sector 10, in an inner circumferential zone 12 which is immediately within the outer circumferential zone 11, the intermediate layer 8 is opaque or substantially opaque, and is preferably of the first colour (in this example, black).

[0047] The inner circumferential zone 12 is preferably

of at least a thickness such that it will cover, when the base layer and intermediate layers 1, 8 are aligned, the first time information 6 which is immediately thereunder.

[0048] The inner circumferential zone 12 may be only as wide as is required to cover the first time information 6. However, in other embodiments it may have a thickness greater than this. In some embodiments, the inner circumferential zone 12 may extend all the way to the central aperture 9.

[0049] Outside the sector 10, the intermediate layer 8 is preferably consistently transparent or substantially transparent. However, it is also envisaged that some of the remaining parts of the intermediate layer 8 may have patterns or other markings formed thereon, and this is not excluded from the scope of the invention.

[0050] A hand 17 is also provided as part of the intermediate layer 8. The hand 17 may take the form of a physical element, which is fixed to the intermediate layer 8, or the hand 17 may be formed integrally with the intermediate layer 8, for instance as a thickened part thereof. As a further possibility the hand 17 may be marked or drawn onto the intermediate layer 8.

[0051] Importantly, the hand 17 comprises a single element, which preferably does not have any parts which move with respect to other parts thereof. The hand 17 may be formed from one or more components, and need not comprise a single piece of a material.

[0052] In the example shown the hand 17 passes through the mounting point 9 of the intermediate layer 8. If the hand 17 comprises a component which is separate from the material of the intermediate layer 8, the hand 17 may be mounted to a spindle, which is preferably mounted centrally or substantially with respect to the intermediate layer 8.

[0053] In the example shown in the figures, the hand 17 comprises a first portion 19, which extends radially outwardly away from the mounting point 9. The hand 17 also comprises a second portion 20, which also extends radially outwardly away from the mounting point 9.

[0054] Preferably, the first and second portions 19, 20 are aligned or substantially aligned with one another, so that the two portions 19, 20 of the hand 17 form a linear, straight or substantially straight element.

[0055] In the example shown the first portion 19 is relatively short, and the second portion 20 is relatively long, as will be discussed in more detail below.

[0056] In the example shown, the hand 17 is arranged with respect to the intermediate layer 8 such that the second portion 20 of the hand lies within the sector 10 of the intermediate layer. More preferably, the second portion 20 of the hand 17 lies at, or substantially, at, the centre of the sector 10, i.e. if the sector extends over 120°, the second portion 20 of the hand 17 lies at the midpoint of this sweep, set at 60° from each of the edges of the sector 10.

[0057] In this example the second portion 19 of the hand 17 points in the opposite direction to the first portion 20, i.e. generally away from the sector 10.

[0058] Figure 1 also shows a top layer 13. The top layer 13 once again preferably comprises a disc, and is preferably of the same or substantially the same size and shape as the base layer and intermediate layer 1, 8. The top layer 13 once again preferably has a central aperture 14 formed there through, on which the top layer 13 may be mounted on a suitable spindle for rotation.

[0059] The top layer 13 is preferably formed from a transparent or substantially transparent material, for instance plastic or glass.

[0060] In an outer circumferential zone 15 of the top layer 13, second time information 16 is presented. The second time information 16 preferably takes the form of opaque (or otherwise readily visible) markings which are formed on the transparent or substantially transparent material of the upper layer 13. These markings could be formed by the addition of a paint or dye, or alternatively by features of the transparent or substantially transparent material itself, such as raised features or grooves, if these will be readily visible.

[0061] The second time information 16 preferably comprises symbols which represent the passage of minutes. In the example shown, the second time information 16 comprises numbers from 5 to 60, presented in increments of 5. However, once again the second time information may comprise Roman numerals, dots, or any other suitable symbols.

[0062] The second time information 16 is preferably presented in the first colour (black, in this example).

[0063] In use of the invention, the base, middle and top layers 1, 8, 13 will be closely stacked together, with one or more spindles (not shown) passing therethrough.

[0064] The operation of the watch will now be described in greater detail.

[0065] As discussed above the base layer 1 preferably remains fixed or substantially fixed in place with respect to the main body of the timepiece. In the example of a watch, the base layer 1 will preferably be fixed in place in relation to the body and strap of the watch.

[0066] The first portion 19 of the hand 17 functions as an hour hand. The intermediate layer 8, and therefore the hand 17, is preferably driven to rotate with respect to the base layer 1 every 12 hours, in the same manner as a normal hour hand.

[0067] As can be seen most clearly in Figure 2, the length of the first portion 19 of the hand 17 is preferably such that a distal end 21 thereof reaches, or almost reaches, the first time information 6 which is presented on the upper surface 3 of the base layer 1. The first portion 19 therefore indicates hour information readily and clearly to a user.

[0068] Because the first and second portions 19, 20 of the hand 17 are fixed in relation to one another, the second portion 20 of the hand 17 is constrained to move around the face in a manner that is linked with the motion of the first portion 19 - i.e. (in this example) moving around the face once every 12 hours, and pointing to the opposite side of the face from the part to which the first portion 19

points.

[0069] The top layer 13 is arranged to rotate with respect to the base layer 1. The rotation of the intermediate and top layers 8, 13 occurs at different rates, and this may be achieved in any suitable way. In preferred embodiments, the rotation of these two layers 8, 13 is driven by the same drive component (e.g. shaft or cog), but with a different transmission to give rise to different rates of rotation.

[0070] The rotation of the top layer 13 is preferably such that the distal end 22 of the second portion 20 of the hand 17 points to a number (or other symbol, as discussed above) which represents the correct number of minutes past the hour.

[0071] In preferred embodiments of the invention, the top layer 13 is driven to rotate with respect to the base layer 1 at exactly, or approximately, 390°/hour. The top layer 13 must rotate more quickly than the intermediate layer 8, because when moving from (say) ten past a first hour to ten past a second, subsequent hour, the second portion 20 of the hand 17 must have performed a full rotation with respect to the base layer 1, plus an additional 30° to account for the fact that the hand 17 will have moved around the face by one hour (i.e. one twelfth of a further rotation, or 30°).

[0072] The second portion 20 of the hand 17 therefore functions as a minute hand.

[0073] Within the sector 10, the inner circumferential zone 12 of the intermediate layer 8 covers a portion of the first time information 6. This means that, in the vicinity of the distal end 22 of the second portion 20 of the hand, only the second time information 16 is visible. As mentioned above, the sector 10 may occupy around a third of the intermediate layer. However, as long as the inner circumferential zone 12 covers the hour number/symbol nearest to the second portion 20 of the hand 17, the sector 10 may have any width, and may even cover most of the first time information 6.

[0074] Figure 2 shows a top view of the face of a watch embodying the invention, with the base, intermediate and top layers 1, 8, 13 arranged for rotation with respect to one another.

[0075] In the position shown in figure 2, the time indicated by the watch is around ten past ten. The first portion 19 of the hand 17, which acts as an hour hand, points to a position which is slight past the number 10 of the first time information 6, which is displayed on the base layer 1.

[0076] The number 10, as well as some numbers immediately surrounding this number, are visible through a transparent part of the intermediate layer 8.

[0077] These numbers are also visible through the transparent material of the top layer 13. As discussed above, the second time information 16 which is presented on the top layer 13 is provided in an outer circumferential zone 15, which does not overlap with the circumferential region in which the first time information 6 is presented on the base layer 1.

[0078] The number of the first time information 6 to

which the first portion 19 of the hand 17 is pointing is therefore clearly visible to a user of the watch.

[0079] The inner circumferential zone 12 of the intermediate layer 8 is, as discussed above, opaque or substantially opaque. This inner circumferential zone 12 is preferably radially aligned with the first time information 6. In the region of the sector 10 of the intermediate layer 8, therefore, the inner circumferential zone 12 thereof covers the first time information 6. As can be seen in figure 2, the numerals 7 to 1 (inclusive) of the first time information 6 can be seen, but the numerals 2 to 6 (inclusive) are covered and obscured by the inner circumferential zone 12 of the intermediate layer 8.

[0080] As can also be seen in figure 2, the top layer 13 is rotated with respect to the base layer 1 so that the numeral 10 is substantially aligned with the distal end 22 of the second portion 20 of the hand 17, which functions as a minute hand.

[0081] The second time information 16, which is presented on the top layer 13 in the first colour (black, in this example) is easily visible because it is positioned above the outer circumferential zone 11 of the sector 10 of the intermediate layer 8, which is of the second colour (white, in this example). This contrast will allow the second time information 16 to be seen easily by a user of the watch.

[0082] In regions of the face which are outside the sector 10, the second time information 16 will be much less readily visible. This is because the second time information 16 will be above the outer circumferential region 4 of the base layer 1, which is of the first colour. Since the second time information 16 and the outer circumferential region 4 of the base layer 1 are both of the first colour, this will make the second time information 16 difficult to read or see in normal use. In this example, outside the sector 10 the second time information 16 will comprise black numerals or other symbols above a black background. A user of the watch may be able to see these symbols in use of the watch, and it is not essential that they are completely hidden or invisible. However, this arrangement of colours ensures that, outside the sector 10, the second time information 16 is much less visible or prominent.

[0083] The overall effect of this, as can be seen in figure 2, is that outside the sector 10, the watch face comprises numbers (i.e. the first time information 6) representing hours, and the first portion 19 of the hand 17 acts as an hour hand in the usual manner, pointing to the numerals in the conventional manner. Within the sector 10, the second portion 20 of the hand 17, which functions as a minute hand, points to numbers which represent the minutes past the hour (i.e. the second time information). A user of the watch can therefore clearly see from a glance that the time is around 10 past 10.

[0084] It should be noted that, in the example shown in the figures, the numerals representing the hours (i.e. the first time information 6) are presented so that each numeral is oriented so that the lower end thereof points directly towards the centre of the face. Thus, when

viewed in the usual orientation, the numeral 12 is the right way up, but the numeral 6 is upside down. Because of the rotation of the top layer 13, which carries the second time information 16 representing the minutes, the numerals of the second time information 16 are likely also to be oriented in this manner.

[0085] Some watches will have numerals presented on the face such that, when the face is viewed in the normal orientation, all of the numerals are the right way up. However, for the first time information 6 presented on timepieces embodying the present invention, this is not preferred.

[0086] Figure 3 shows a watch 18 embodying the invention. The watch 18 has layers which are constructed as discussed above, aside from the intermediate layer. Figure 4 shows an alternative intermediate layer 24, as used in the watch 18. Unlike the intermediate layer 8 shown in figures 1 and 2, the alternative intermediate layer 24 does not comprise a full disc.

[0087] The alternative intermediate layer 24 comprises a pair of arms 25 which extend radially away from a mounting region 26, which includes the central aperture 9, through which a spindle will pass to mount the intermediate layer 24 for rotation. The arms 25 are (in the example shown) radially spaced apart from each other by around 120°, although this need not be the case.

[0088] At their distal ends 27, the arms are connected by an arcuate strip 28, which comprises the outer circumferential zone 11 and the inner circumferential zone 12 of the intermediate layer 24.

[0089] The hand 17 is also formed as part of the alternative intermediate layer 24. The second portion 20 of the hand 17 extends radially away from the mounting region 16, exactly or approximately mid-way between the two arms 25. The second portion 20 of the hand extends, in this example, to a point which lies at or near the boundary between the inner and outer circumferential zones 11, 12.

[0090] The first portion 19 of the hand 17 extends radially away from the mounting zone 26 in the opposite direction to the second portion 20 thereof. As in the examples discussed above, the first portion 19 of the hand 17 is shorter than the second portion 20 of the hand 17.

[0091] In between the arms 25 and the first and second portions 19, 20 of the hand 17, however, the alternative intermediate layer 24 comprises cut-out portions.

[0092] Returning to figure 3, the watch 18 involves a housing 29 which surrounds the face, and a body which contains the drive mechanism to propel rotation of the intermediate and top layers 8, 13, and the second hand, if one is provided. In preferred embodiments, the watch is a mechanical watch, in which the components are driven by energy which is stored on a mainspring through winding. However, in other embodiments the components may be driven by one or more batteries, or in any other suitable way. The watch 18 comprises a knob 30, which may be used to wind the watch, and may also be used to adjust the time displayed by the watch 18, and

optionally further to control other functions of the watch 18, such as a date function.

[0093] The watch 18 further comprises a strap 31, as is known in the art. A front window 35 covers the base, intermediate and top layers 13, to protect these components from damage. The front window may be formed from any suitable material, such as sapphire crystal.

[0094] In the example shown in figure 3, the watch has a second hand 32. In any of the embodiments of this invention, a second hand may optionally also be provided. It is preferred that the second hand 32 operates as in a conventional watch, i.e. performing one revolution per minute with respect to the watch face, with a zero or start position being aligned with the numeral 12 of the first time information 6. In the example shown in figure 3, an outer timing ring 33 is provided, fixed to the watch housing 29, such that it surrounds the visible parts of the base, intermediate and top layers 1, 8, 13. The timing ring 33 has markings 34 presented thereon to allow the movement of the second hand 32 to be monitored. In the example shown in figure 3, the timing ring 33 has 60 equally-spaced markings 34, with each fifth marking 34 being more prominent than the others. It should be understood, however, that any suitable markings may be presented to allow the progress of the second hand 32 to be tracked.

[0095] The embodiments discussed above involve an intermediate layer, which obscures a part of the first time information, and also provides additional contrast in a sector of the face, so that the second time information can be seen more easily. However, the intermediate layer may take several different forms.

[0096] The inner circumferential zone 12 may not be fully opaque, or in other examples may be omitted entirely. This will mean that the first time information 6 is not, or is not fully, covered or obscured in the region of the second portion 20 of the hand 17. However, it is envisaged that this may not have too great an effect on the ability of a user to read the part of the second time information 16 that is indicated by the second portion 20 of the hand 17.

[0097] The outer circumferential zone 11 of the intermediate layer 8 may also be omitted in examples of the invention. This means that no additional contrast will be provided to allow a user to read the second time information 16. However, in such examples, it is envisaged that the outer circumferential zone 4 of the base layer 1 may be of a colour which contrasts with the colour of the second time information 16. This will mean that the second time information 16 can be read easily by a user around the circumference of the face.

[0098] In some embodiments, the intermediate layer 8 may be omitted entirely. In such embodiments the face of the watch may comprise the base and top layers 1, 13 and the hand 17, which is provided as a separate component and not attached to or integrated with a layer. The first portion 19 of the hand 17 will point to the first time information 6, and the second portion 20 of the hand 17

will point to the second time information 16. With suitable colouring of the various components, it is envisaged that the time will be easy to read in these embodiments, and that the watch face will have a stylish and dynamic presentation, with two full circles of numbers present on the face at all times.

[0099] In examples where no intermediate layer is provided, the hand 17 may be positioned either between the base layer 1 and the top layer 13 (i.e. in the same position as the intermediate layer), or may be positioned above the top layer 13, which will provide a different effect.

[0100] Where an intermediate layer is provided, it need not comprise a full disc, or other shape corresponding fully or approximately to the shape of the base layer 1 and/or the top layer 13. For instance, as shown in figure 4, the intermediate layer may comprise only the sector 10 in which the intermediate layer 8 shown in the examples has the inner and outer circumferential zones 11, 12. It is preferred that the intermediate layer comprises a full disc, or other shape which is exactly or approximately balanced around its central aperture 9, as this will assist with the balance and positioning of the intermediate layer. However, this is not essential.

[0101] In some embodiments, the colouring of the first and second portions 19, 20 of the hand 17 may help to indicate which time information that portion of the hand 17 is intended to indicate, in use. For instance, in an example described above, the first time information is presented in white, and the second time information is presented in black. In this example, the first portion 19 of the hand 17, or at least a part of the first portion 19 that aligns with or lies near to the first time information in use, may be of the same or substantially the same colour as the first time information, i.e. white. Similarly, the second portion 20 of the hand 17, or at least a part of the second portion 20 that aligns with or lies near to the second time information in use, may be of the same or substantially the same colour as the second time information, i.e. black.

[0102] This may also be true of examples where the intermediate layer is not present.

[0103] In the examples discussed above, the top layer 13 is formed from a transparent or substantially transparent material. However, it is not essential that the entirety of the top layer 13 is transparent. It is important that the region of the top layer 13 that overlies the first time information 6 is transparent, so that the first time information 6 can be seen through the top layer 13. However, other regions of the top layer 13 may be opaque. For instance, the outer circumferential zone 15 of the top layer 13, on which the second time information 16 is presented, may be opaque.

[0104] In general, any region of a layer which is referred to as being transparent or substantially transparent may fully or partly comprise voids or cut-out portions.

[0105] Figure 5 shows a further example of a watch 36 embodying the invention. The features of this watch 36 are generally similar to those of the watch 18 shown in

figure 3, except for the configuration of the intermediate and top layers.

[0106] The intermediate layer 37 for this example is shown in isolation in figure 6. Like the intermediate layer 24 shown in figure 4, in this example the intermediate layer 36 has a mounting region 26, with arms 25 radiating outwardly therefrom, spaced apart by around 120°. Extending between the distal ends 27 of the arms 25 is an outer circumferential zone 11. In the example shown in figure 5, this outer circumferential zone 11 is white.

[0107] In this example the intermediate layer 37 does not have an inner circumferential zone.

[0108] An arcuate strip 38 extends between the arms 25, extending from a location part-way along the length of each arm 25. A window 39 is defined between the outer circumferential zone 11 and the arcuate strip 38.

[0109] Once again a hand 17 is formed as part of the intermediate layer 37. The first portion 19 of the hand 17 extends from the mounting region 26, in a direction which is exactly or approximately mid-way between the arms 25, and (in the example shown) terminates on or shortly past the arcuate strip 38.

[0110] The second portion 20 of the hand 17 extends in the opposite direction to the first portion 19, and is longer than the first portion. Once again, the regions between the arms 25 and the second portion 20 of the hand 17 comprise cut-outs.

[0111] Returning to figure 5, the upper layer 13 has numbers (i.e. the second time information) formed thereon in white.

[0112] As can be seen from figure 5, the first time information 6 is aligned with the window 39 formed between the outer circumferential zone 11 and arcuate strip 38 of the intermediate layer 37. The first portion 19 of the hand 17 therefore acts as an hour hand, as before, and points to the first time information in a clear fashion.

[0113] The arcuate strip 38 serves to define a window through which the first time information 6 can be seen, but the arcuate strip 38 is not essential and can be omitted in other embodiments.

[0114] In the region of the first portion 19 of the hand 17, the outer circumferential zone 11 lies exactly or substantially under the second time information (i.e. numbers representing minutes) which is presented on the top layer 13. Since both the outer circumferential zone 11 and the second time information are the same colour (white, in this example), this reduces the prominence of the second time information in this region, thereby reducing the chance of distraction from the first time information.

[0115] The distal end of the second portion 20 of the hand 17 again acts as a minute hand, pointing to the second time information 16 presented on the top layer 13.

[0116] The skilled reader will understand that the arrangements shown in the figures are examples of many different possibilities that may be used.

[0117] In the examples discussed above, where an intermediate layer is provided, the hand is formed as part of the intermediate layer. However, it is also envisaged

that an intermediate layer and a hand may be provided as separate components, which are not directly connected to each other. In such examples, it is envisaged that the hand and the intermediate layer will be driven to rotate at the same, or substantially the same, rate with respect to the base layer. In such embodiments, the intermediate layer may be positioned underneath the top layer, and the hand may be positioned above the top layer. However, many other configurations are possible.

[0118] The examples shown above relate to watches or other timepieces in which the hour hand performs one full rotation with respect to the face in 12 hours. This is the most common type of timepiece, and it is envisaged that most embodiments of the invention will be of this kind. Nevertheless, other kinds of timepieces are available, for instance in which the hour hand rotates once in 24 hours, and the skilled reader will readily understand how the invention may be adapted for use with such timepieces.

[0119] In the discussion above, the intermediate layer, hand and top layer are driven to rotate by one or more spindles which are located generally centrally with respect to the face of the timepiece. However, the invention is not limited to this, and the layers and hand may be driven to rotate in any suitable manner. For instance, either (or both) of the intermediate or top layers could be driven by a wheel train, which is located outside the layer and engages with teeth on an outer diameter of the layer. The skilled reader will appreciate that many different types of drive mechanism and transmission are possible.

[0120] In the above examples, the first and second portions 19, 20 of the hand 17 point in opposite or substantially opposite directions. However, this is not essential. In other embodiments the first and second portions 19, 20 of the hand 17 may be set at a different angle with respect to each other. For instance, the second portion 20 of the hand could be set at 120° or 90° with respect to the first portion 19. The skilled reader will appreciate how the top layer may be driven in such embodiments, so that the second portion of the hand points to the correct number of minutes.

[0121] It will be understood that the embodiments of the invention provide a stylish and unusual face for a watch or other timepiece, that presents information simply and in a form which is easy to read quickly.

[0122] When used in this specification and the claims, the term "comprises" and "comprising" and variations thereof mean that specified features, steps or integers and included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

[0123] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilized for realising the invention in diverse

forms thereof.

Claims

1. A timepiece comprising:

a base layer, which has first time information presented thereon;
a hand which is rotatable with respect to the base layer about a connection point, the hand having a first portion which extends away from the connection point in a first direction, and a second portion which extends away from the connection point in a second, different direction;
a second layer which is mounted for rotational motion with respect to the base layer, the second layer having second time information presented thereon; and
a drive mechanism which is operable to drive rotation of the second layer with respect to the base layer such that a desired part of the second time information presented on the second layer is aligned with the second portion of the hand.

2. A timepiece according to claim 1, wherein the second direction is exactly or substantially opposite to the first direction.

3. A timepiece according to claim 1 or 2, wherein the first time information comprises hour time information.

4. A timepiece according to any preceding claim, wherein the second time information comprises minute information.

5. A timepiece according to any preceding claim, wherein the hand is mounted on a first spindle for rotation with respect to the base layer, and wherein the second layer is mounted for rotation with respect to the base layer on a second spindle which is coaxial or substantially coaxial with respect to the first spindle.

6. A timepiece according to any preceding claim, wherein at least a portion of the second layer which overlies the first time information is formed to be transparent or substantially transparent, or is formed to comprise one or more voids or cut-outs in the second layer.

7. A timepiece according to any preceding claim further comprising an intermediate layer, which is positioned between the base layer and the second layer and is driven to rotate with respect to the base layer.

8. A timepiece according to claim 7, wherein the hand

is provided as part of the intermediate layer.

9. A timepiece according to claim 7, wherein the hand is separate from the intermediate layer. 5
10. A timepiece according to any one of claims 7 to 9, wherein the intermediate layer comprises a first region which overlies a part of the first time information, wherein the first region is opaque or substantially opaque. 10
11. A timepiece according to any one of claims 7 to 10, wherein the intermediate layer comprises a second region, wherein the second time information overlies the second region, and wherein the second region is opaque or substantially opaque. 15
12. A timepiece according to claim 10 or 11, wherein the intermediate layer is mounted for rotation about a rotation point, and the intermediate layer defines a portion which extends radially partially, but not fully, around the rotation point, and wherein the first or second region lie within the portion. 20
13. A timepiece according to claim 14, when dependent upon claims 10 and 11, wherein both the first and second regions are within the portion. 25
14. A timepiece according to claim 12 or 13 wherein, apart from the hand, outside the portion, the second intermediate layer is formed to be transparent or substantially transparent, or is formed to comprise one or more voids or cut-outs in the intermediate layer. 30
15. A timepiece according to any preceding claim, further comprising a second hand. 35

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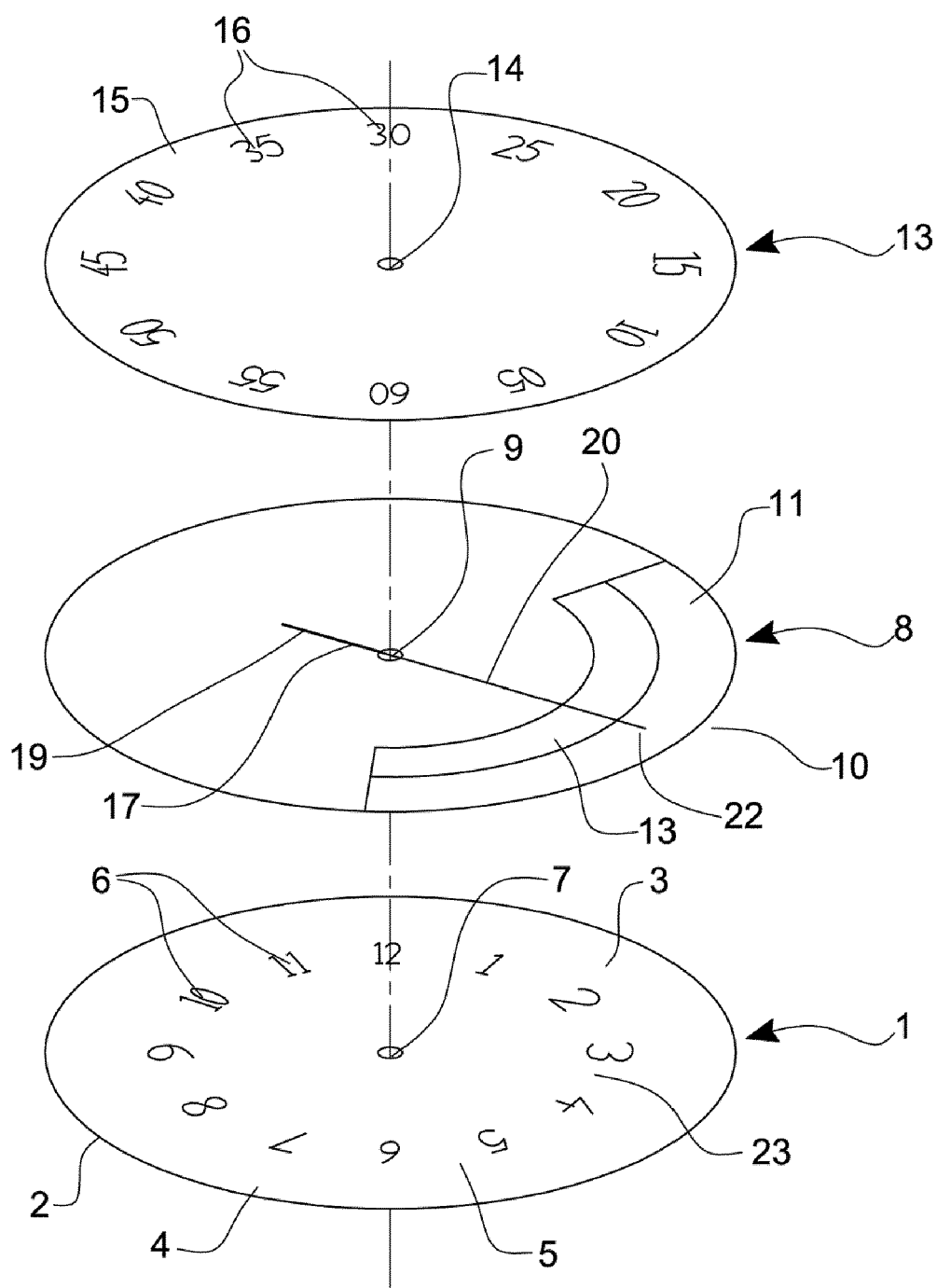
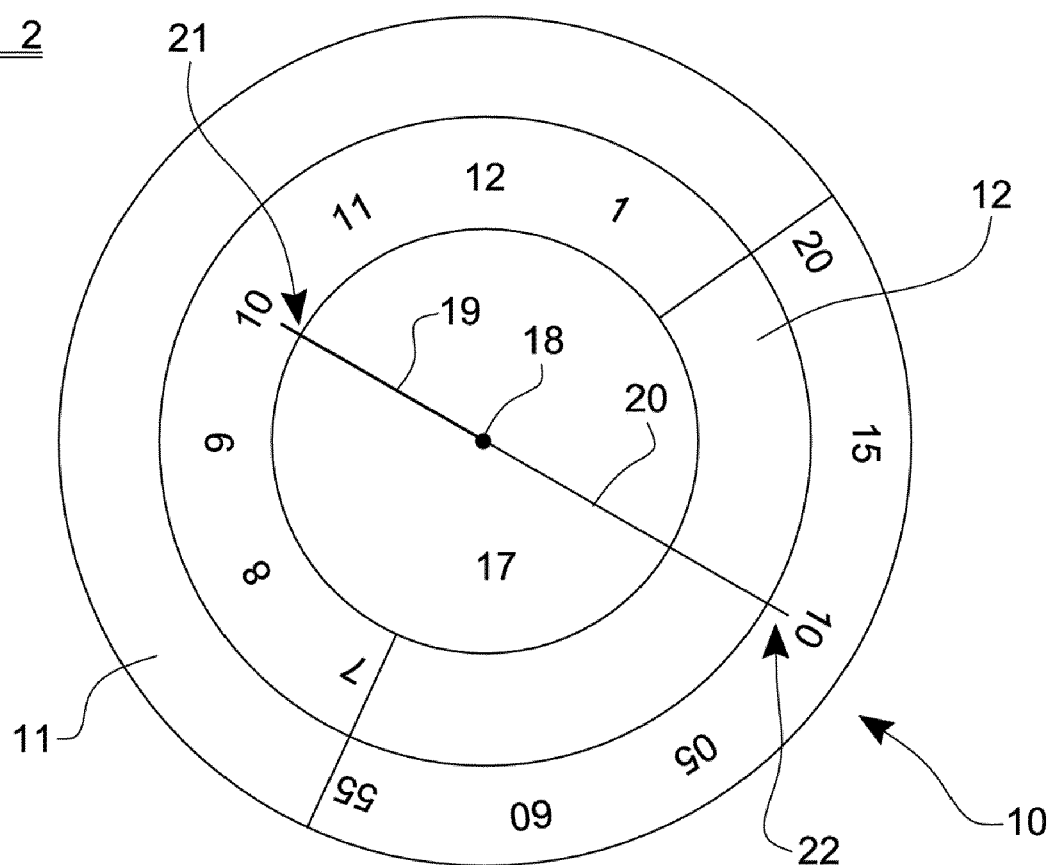
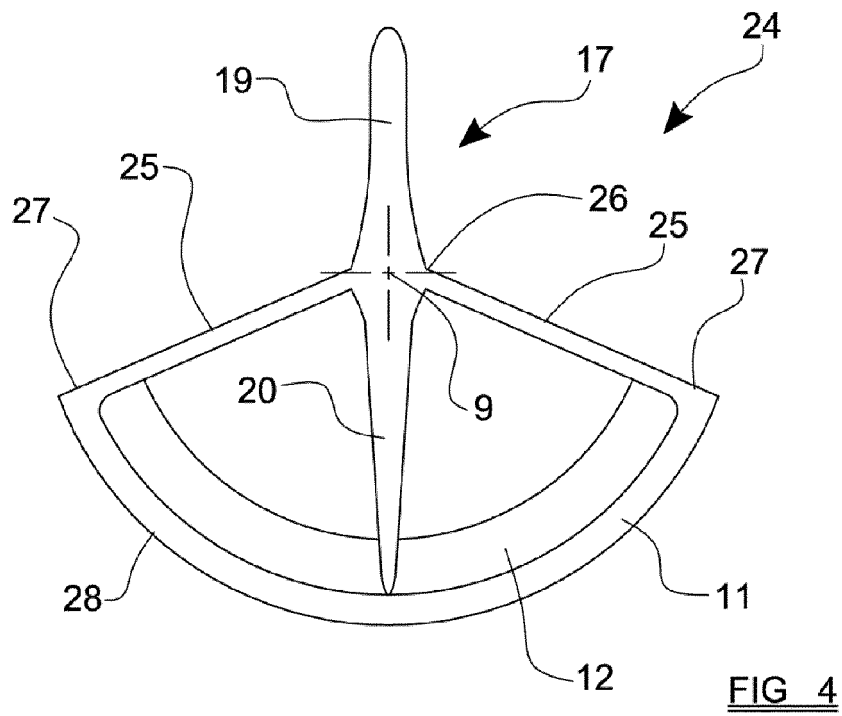
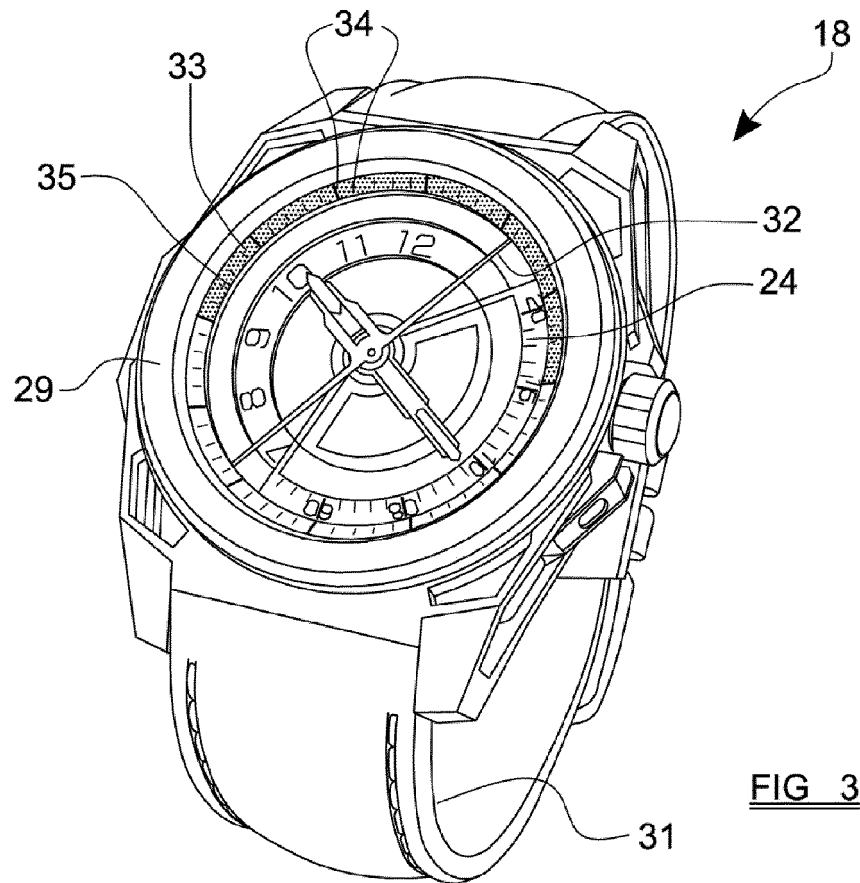
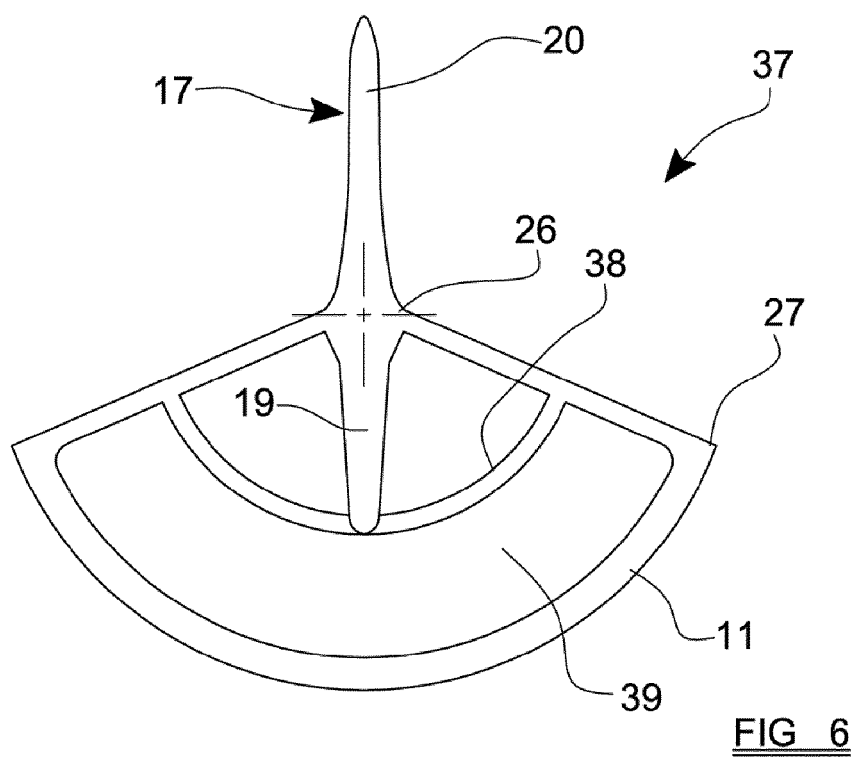
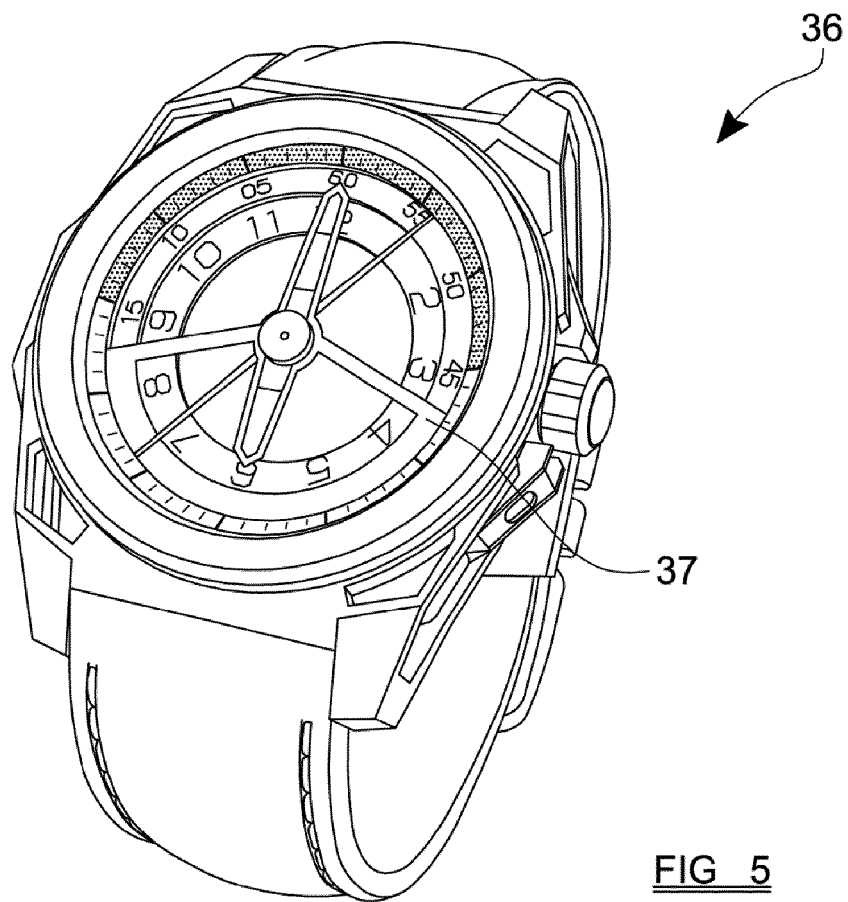


FIG. 1

FIG 2









EUROPEAN SEARCH REPORT

Application Number
EP 20 21 6699

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			G04B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 May 2021	Examiner Lupo, Angelo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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