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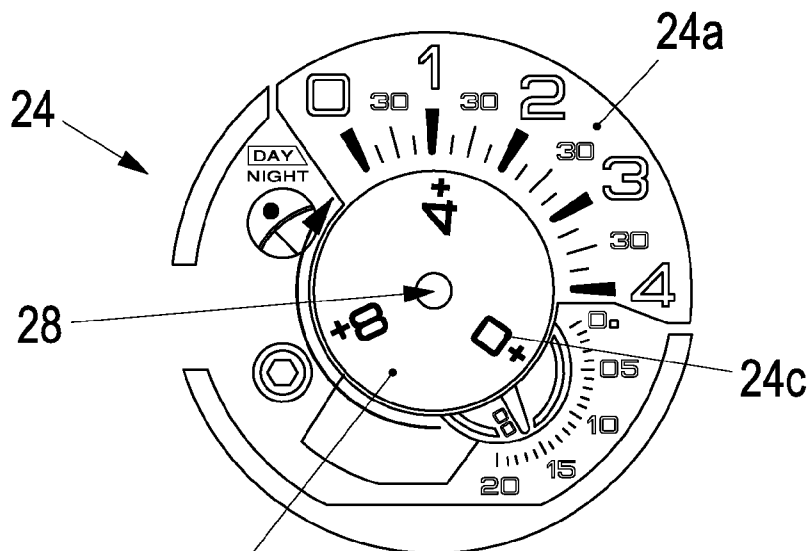


Fig. 3

(57) Abstract: The invention relates to a method for indicating a time using at least one moving part (24b) and a related fixed scale (24a), whereby said at least one moving part (24b) moves relative to said related fixed scale (24a), and whereby said indicated time results from the actual position of said at least one moving part (24b) relative to said related fixed scale (24a). More freedom for the arrangement of different time indicating means on a time piece or watch is achieved by making said indicated time the sum of a base time, which is determined by the actual position of said moving part (24b) alone, and an additional time, which is determined by the position of said moving part (24b) in relation to said related fixed scale (24a).



METHOD FOR INDICATING A TIME AND WATCH FOR CONDUCTING SAID METHOD

5 BACKGROUND OF THE INVENTION

The present invention relates to time-pieces. It refers to a method for indicating a time according to the preamble of claim 1. It further refers to a watch for conducting said method.

PRIOR ART

10 Analog time pieces usually use hour, minute and perhaps second hands, which rotate about a respective axis and indicate the time on a respective circular, linear time scale, which concentrically surrounds the axis.

In the past proposals have been made to replace on or all of the hands by rotating disks. some of these proposals are explained below.

15 Document **US2202581** discloses in combination with a clock having hour, minute and second time computing shafts; a time indicating mechanism, comprising, a time dial having outer and inner time zones each provided with time denoting indicia, an hour indicating disk fixed to said hour computing shaft and provided with a transparent portion overlying said inner zone and an opaque portion having a transparent section and overlying
20 said outer zone, a transparent minute indicating disk fixed to said minute computing shaft and overlying said inner zone, and a transparent second indicating disk fixed to said

second computing shaft and overlying said inner zone, each of said disks having indicia coasting with said time denoting indicia and said section for indicating time on said dial in hours, minutes and seconds.

Document **US4945522** discloses a time indicator for a clock or watch that has a watch
5 plate and at least two time-indicating elements that are at least partially superimposed over one another and are driven by centrally and coaxially disposed drive elements. The time-indicating elements are formed by disks or dials that are of the same or different sizes, rotate about centrally disposed shafts, and are disposed in different planes. To indicate time, the dials are provided with openings, indicators, or colors that cover or opti-
10 cally suppress all other information that at any given time is not necessary for reading off that time.

Document **US5751663** discloses a timepiece that uses disks having sharp zones of contrast of visual design density to indicate time intervals when the sharp zone of contrast is aligned with time interval indicator markings or traditional time indicator positions on a
15 non-rotatable frame. The disks of the chronograph are continuously graduated in visual design density from an area of greatest density to an area of least density to form a sharp zone or line of contrast. The disks are located so that when the sharp zone or line of contrast is aligned with the time indicator markings or positions on the frame, thus displaying the time in an accurate fashion that is easily and quickly discernable even for individuals
20 that are poor sighted. In addition, the timepiece presents such a strikingly novel design that it makes an aesthetic statement that is desirable for use by individuals with no sight problems.

However, all proposals made so far combine rotating disks with fully circular scales that substantially limit the flexibility in arranging the various time indicating means in a time

piece. Especially for wrist watches there is a desire to replace the fully circular scales of the time indicating means so that new and useful arrangements of the hour, minute and second indicating means are possible.

SUMMARY OF THE INVENTION

5 It is therefore an object of the invention, to teach a method for indicating a time, which at least partially waives the use of fully circular time scales in order to achieve more freedom for the arrangement of the different time indicating means on a time piece or watch.

It is another object of the invention to provide a watch for conducting said method.

A method according to the invention for indicating a time uses at least one moving part
10 and a related fixed scale, whereby said at least one moving part moves relative to said related fixed scale, and whereby said indicated time results from the actual position of said at least one moving part relative to said related fixed scale. The indicated time is the sum of a base time, which is determined by the actual position of said moving part alone, and an additional time, which is determined by the position of said moving part in rela-
15 tion to said related fixed scale.

According to an embodiment of the invention said moving part is a rotating element, said fixed scale comprises a section of a ring concentrically surrounding said element, and a plurality of indicator marks are provided on said rotating element for determining said additional time on said related fixed scale.

20 A rotating element normally rotates with a constant velocity of rotation, that said indicator marks are equally distributed on the circumference of said rotating element, and that said related fixed scale is a linear scale. In a preferred embodiment said element rotates

with a rotation velocity of one rotation per 12 hours. The rotating element normally comprises $n+1$ ($n=1, 2, 3, \dots$) indicator marks, said fixed scale extends over an angle of the arc of $360^\circ/(n+1)$, and said fixed scale is subdivided into at least $12/(n+1)$ equal arc sections. Preferably, $n=2$.

- 5 Alternatively or in addition a element rotates with a velocity of rotation of one rotation per minute. Specifically, in this case, said rotating element comprises $n+1$ ($n=1, 2, 3, \dots$) indicator marks equally distributed around the circumference of said rotating element, said fixed scale extends over an angle of the arc of $360^\circ/(n+1)$, and said fixed scale is subdivided into at least $60/(n+1)$ equal arc sections. Preferably, $n=2$ in this case.
- 10 In an embodiment, two rotating elements with two respective related fixed scales are provided, whereby the first of said two rotating elements rotates with a rotation velocity of one rotation per 12 hours, the second of said two rotating elements rotates with a rotation velocity of one rotation per minute, the first of said rotating elements comprises three indicator marks, said fixed scale related to said first of said rotating elements ex-
- 15 tends over an angle of the arc of 120° , said fixed scale related to said first of said rotating elements is subdivided into at least four equal arc sections, the second of said rotating elements comprises three indicator marks, said fixed scale related to said second of said rotating elements extends over an angle of the arc of 120° , and said fixed scale related to said second of said rotating elements is subdivided into twenty equal arc sections.
- 20 The at least four arc sections of said fixed scale related to said first of said rotating elements are each subdivided into four equal sections to indicate quarters of an hour.

An additional minute hand with a related minute scale may be provided, whereby said minute hand rotates with a velocity of rotation of one rotation per hour around a central

axis, and whereby said related minute scale extends over a full circle concentric to said central axis.

An additional day/night indicator may be provided, which divides a day into two equal parts and indicates, which part of the day is the actual part.

- 5 If appropriate, said day/night indicator comprises a rotating circular indicator disk with a day-time sector of a first colour and a night-time sector of a second colour, which indicator disk rotates with a velocity of rotation of one rotation per 24 hours, and that a fixed indicator mark is provided at the outer circumference of said indicator disk to indicate, which of said two sectors is the actual sector.
- 10 A watch according to the invention normally comprises a watchcase enclosing a movement with a central axis for driving a plurality of different time indication means, which time indication means are visible from the outside through a watch glass that closes said watchcase on its upper side, whereby said plurality of different time indication means comprises at least a first time indication means for indicating the hours of a day, and a
- 15 second time indication means for indicating the minutes of an hour, whereby said first time indicating means comprises a moving part, which moves relative to a related fixed scale. The moving part preferably is a rotating element, which is driven by said movement with a constant velocity of rotation of one rotation per 12 hours, that said related fixed scale comprises a section of a ring concentrically surrounding said element, that a plural-
- 20 ity of $n+1$ ($n=1, 2, 3, 5$) indicator marks for co-operating with said related fixed scale are equally distributed on the circumference of said rotating element, that said related fixed scale is a linear scale, that said fixed scale extends over an angle of the arc of $360^\circ/(n+1)$, and that said fixed scale is subdivided into at least $12/(n+1)$ equal arc sections. Specifically, $n=2$.

The second time indication means may comprise a minute hand and a related minute scale, whereby said minute hand rotates with a velocity of rotation of one rotation per hour around said central axis, and whereby said related minute scale extends over a full circle concentric to said central axis.

- 5 If appropriate a third time indication means is provided for indicating the seconds of a minute, whereby said third time indicating means comprises a moving part, which moves relative to a related fixed scale, said moving part being a rotating element, which is driven by said movement with a constant velocity of rotation of one rotation per minute, that said related fixed scale comprises a section of a ring concentrically surrounding said ele-
10 ment, that a plurality of $n+1$ ($n=1, 2, 3, 5$) indicator marks for co-operating with said related fixed scale are equally distributed on the circumference of said rotating element, that said related fixed scale is a linear scale, that said fixed scale extends over an angle of the arc of $360^\circ/(n+1)$, and that said fixed scale is subdivided into at least $60/(n+1)$ equal arc sections. In this case, again $n=2$ is preferred.
- 15 Furthermore an additional day/night indicator may be provided, which divides a day into two equal parts and indicates, which part of the day is the actual part. The day/night indicator may comprise a rotating circular indicator disk with a day-time sector of a first colour and a night-time sector of a second colour, which indicator disk rotates with a velocity of rotation of one rotation per 24 hours, and that a fixed indicator mark is pro-
20 vided at the outer circumference of said indicator disk to indicate, which of said two sectors is the actual sector. Specifically, said watch is a wrist watch.

It is to be understood that both the foregoing general description and the following detailed description present embodiments, and are intended to provide an overview or framework for understanding the nature and character of the disclosure. The accompa-

nying drawings are included to provide a further understanding, and are incorporated into and constitute a part of this specification. The drawings illustrate various embodiments, and together with the description serve to explain the principles and operation of the concepts disclosed.

5 **BRIEF DESCRIPTION OF THE DRAWINGS**

- Fig. 1 shows in an exploded view a general configuration of a wrist watch for implementing the present invention;
- Fig. 2 shows the various time indicating means according to an embodiment of the invention in a wrist watch as shown in Fig. 1;
- 10 Fig. 3 shows details of the hour indicating means according to an embodiment of the invention;
- Fig. 4 shows details of the minute indicating means according to an embodiment of the invention;
- Fig. 5 shows details of the second indicating means according to an embodiment of
15 the invention;
- Fig. 6 shows details of the day/night indicating means according to an embodiment of the invention;
- Fig. 7 shows different positions of the day/night indicating means according to Fig. 6; and

Fig. 8 shows the positions of the various time indicating means according to Fig. 2 for a specified a.m. time (Fig. 8(a)) and a specified p.m. time (Fig. 8(b)).

DETAILED DESCRIPTION OF DIFFERENT EMBODIMENTS OF THE INVENTION

Although the present invention may be applied to time pieces other than wrist watches, it is preferably used in wrist watches.

An example of a suitable wrist watch is shown in **Fig. 1** in an exploded view.

The wrist watch 10 of **Fig. 1** comprises a (standardized) movement 17, such as ♦, which is enclosed by a watchcase 19. On its lower side, watchcase 19 is closed by a (flat) bottom 22, which is fixed to watchcase 19 using a first sealing 21 and four fastening screws 29. A watchband (not shown in **Fig. 1**) may be fastened to watchcase 19 with respective mounting pins 18. A crown 20, which is mechanically connected to the movement 17, is provided for adjusting the positions of the various time indicating means. On its upper side, the watchcase 19 is closed by a frame 13 that is fastened to the watchcase 19 using a second sealing 14, and a watch glass 11, which is fastened to the frame 13 using a third sealing 12. Between the movement 17 and the watch glass 11 there is an arrangement of a ring 16 and a driving mechanism 15, which is used to drive a day/night indicator (23 in **Fig. 2**; **Fig. 6**). It should be noted that the watch case can have a different embodiment.

Fig. 2 shows an embodiment of various time indicating means on clock face 10a according to an embodiment of the invention being incorporated in a wrist watch as shown in **Fig. 1**. These time indicating means comprise a (central) hour indicator 24, a (central) minute hand 25 with a corresponding fully circular and concentric minute scale 26, an

off-centre seconds indicator 27, and an off-centre day/night indicator 23. Hour indicator 24 and minute hand 25 are driven by the movement 17 through a central axis 28.

The arrangement and function of the hour indicator 24 are shown in detail in **Fig. 3**. Hour indicator 24 comprises a (central) hour disk 24b, which rotates with a constant velocity of rotation of one rotation per twelve hours in clockwise direction (see arrow in **Fig. 3**). A corresponding fixed scale 24a comprises a 120° section of a ring concentrically surrounding hour disk 24b. Three indicator marks 24c are equally distributed at the circumference of hour disk 24b in steps of 120°. Indicator marks 24c have the form of a "+"-sign and are capable of being differentiated by assigned numbers "0", "4" and "8". Thus, there is a "0"-indicator, a "4"-indicator and an "8" indicator 24c.

Corresponding fixed scale 24a is equally divided into 4 (one hour) sections 0-1, 1-2, 2-3 and 3-4. Each of these one-hour sections is subdivided into four equal subsections, whereby each of said subsections represents a quarter of an hour. The half-hour positions are marked with number "30". With this configuration the actual hour-time is a combination of a first time given by the general position of the central hour disk 24b, and a second time given by the specific position of the hour disk 24b relative to hour scale 24a. When for example hour disk 24b is in the position shown in **Fig. 3**, the first time is four hours, as long as the "4"-indicator remains in the 120°-section of the hour scale 24a. When the "4"-indicator leaves this sector, the subsequent "8"-indicator at the same time enters the sector and the first time switches from four hours to 8 hours, and so on.

The second time is determined by the exact position of "+"-sign of the "0"-, "4"- or "8"-indicator with respect to hour scale 24a. In the example shown in **Fig. 3**, the second time is one hour and a quarter of an hour, so that the hour time indicated in **Fig. 3** is five hours and 15 minutes or 5:15.

In the embodiment shown in **Fig. 2** and **Fig. 3**, the hour indicator 24 comprises an hour disk 24b with three indicator marks 24c, while the hour scale 24a has four sections 0-4. This is one of a plurality of possible arrangements. Another possible arrangement would be to use an hour disk with four indicator marks (0, 3, 6, 9) and a 90° hour scale with three sections 0-3. In general, it is reasonable that hour disk 24b may comprise $n+1$ ($n=1, 2, 3, 5$) indicator marks 24c, while hour scale 24a extends over an angle of the arc of $360^\circ/(n+1)$, and is subdivided into at least $12/(n+1)$ equal arc sections. Although $n=4$ would be another option, the resulting scales were not easily readable.

The indicating means of **Fig. 3** comprise a seconds indicator 27 that works according to the same principles, for indicating the seconds of time. Seconds indicator 27 comprises a (central) seconds disk 27b (see **Fig. 5**), which rotates with a constant velocity of rotation of one rotation per minute in clockwise direction (see arrow in **Fig. 5**). A corresponding fixed seconds scale 27a comprises a 120° section of a ring concentrically surrounding seconds disk 27b. Three indicator marks 27c are equally distributed at the circumference of seconds disk 27b in steps of 120°. Indicator marks 27c have the form of a radial fingers and are capable of being differentiated by assigned numbers "00", "+20" and "+40". Thus, there is a "0"-indicator, a "20"-indicator and an "40" indicator 27c.

Corresponding fixed seconds scale 27a is equally divided into 20 (one second) sections 0-20. With this configuration the actual second-time is a combination of a first time given by the general position of the central seconds disk 27b, and a second time given by the specific position of the seconds disk 27b relative to seconds scale 27a. When for example seconds disk 27b is in the position shown in **Fig. 5**, the first time is zero seconds, as long as the "00"-indicator remains in the 120°-section of seconds scale 27a. When the "00"-indicator leaves this sector, the subsequent "+20"-indicator at the same time enters the sector and the first time switches from zero seconds to 20 seconds, and so on.

The second time is determined by the exact position of seconds indicator 27c with respect to seconds scale 27a. In the example shown in **Fig. 5**, the second time is 16 seconds, so that the overall second time indicated in **Fig. 5** is $0+16=16$ seconds.

In the embodiment shown in **Fig. 5**, the seconds indicator 27 comprises a seconds disk 5 27b with three indicator marks 27c, while the corresponding seconds scale 27a has twenty sections 0-20. This is one of a plurality of possible arrangements. Another possible arrangement would be to use a seconds disk with four indicator marks (0, +15, +30, +45) and a 90° seconds scale with fifteen sections 0-15. In general, it is reasonable that seconds disk 27b may comprise $n+1$ ($n=1, 2, 3, 5$) indicator marks 27c, while seconds 10 scale 27a extends over an angle of the arc of $360^\circ/(n+1)$, and is subdivided into at least $60/(n+1)$ equal arc sections. Although $n=4$ would be another option, the resulting scales were not easily readable.

As has been said already, the minutes are indicated by a(central) minute hand 25, which moves with constant velocity of one rotation per hour along a fully circular and linear 15 minute scale 26. The resulting clock face is shown in **Fig. 4**.

Fig. 3 makes clear that the hour indication of wrist watch 10 comprises a 12-hour cycle only. In order to indicate, whether the indicated hour time is a.m. or p.m., an additional off-centre day/night indicator 23 is provided. As **Fig. 6** shows in detail, day/night indicator 23 comprises an indicator disk 23b, which rotates with a constant velocity of one rotation per 24 hours. One half of indicator disk 23b is provided with a first colour (black in 20 the example shown), while the other half is provided with a second, different colour (white in the example shown). Through a circular opening 23e a near-edge sector of rotating indicator disk 23d can be seen so that the transition between the white half and the black half, which takes place every 12 hours (or half day) is clearly visible from out-

side. A fixed indicator point 23a arranged in circular opening 23e helps to visually fix the transition.

It is clear that the movements of indicator disk 23d and hour disk 24b are synchronized such that for example the transition between black to white sector takes place when hour indicator 24 indicates a time of 6 o'clock. **Fig. 7(a)-(d)** shows various position of day/night indicator 23, wherein **Fig. 7(a)** relates to a time around 17:00, **Fig. 7(b)** relates to a time around 19:00, **Fig. 7(c)** could be between around 22:00 and 2:00, **Fig. 7(d)** relates to a time around 5:00, and **Fig. 7(e)** relates to a time between around 10:00 and 14:00.

Finally, **Fig. 8** shows two examples of indicates times, whereby **Fig. 8(a)** relates to an a.m. time of 5:32:26, while **Fig. 8(b)** relates to a p.m. time of 13:15:13.

LIST OF REFERENCE NUMERALS

	10	wrist watch
	10a	clock face
	11	watch glass
5	12,14,21	sealing
	13	frame
	15	driving mechanism (day/night indicator)
	16	ring
	17	movement
10	18	mounting pin (watchband)
	19	watchcase
	20	crown
	21	sealing
	22	bottom
15	23	day/night indicator
	23a	indicator point (fixed)
	23b	indicator disk
	23c	day-time sector (e.g. white)
	23d	night-time sector (e.g. black)
20	23e	circular opening
	24	hour indicator
	24a	hour scale (fixed)
	24b	hour disk
	24c	indicator mark

	25	minute hand
	26	minute scale
	27	seconds indicator
	27a	seconds scale
5	27b	seconds disk
	27c	indicator mark
	28	central axis
	29	Screw

CLAIMS

1. Method for indicating time using at least one moving part (24b; 27b) and a related fixed scale (24a; 27a), whereby

5 a. said at least one moving part (24b; 27b) moves relative to said related fixed scale (24a; 27a), and whereby

b. said indicated time results from the actual position of said at least one moving part (24b; 27b) relative to said related fixed scale (24a; 27a),

characterized in that

10 c. said indicated time is the sum of a base time, which is determined by the actual position of said moving part (24b; 27b) alone, and an additional time, which is determined by the position of said moving part (24b; 27b) in relation to said related fixed scale (24a; 27a).

15 2. Method as claimed in Claim 1, **characterized in that** said moving part (24b; 27b) is a rotating element, that said fixed scale (24a; 27a) comprises a section of a ring concentrically surrounding said element, and that a plurality of indicator marks (24c, 27c) are provided on said rotating element (24b; 27b) for determining said additional time on said related fixed scale (24a; 27a).

20 3. Method as claimed in Claim 2, **characterized in that** said rotating element (24b; 27b) rotates with a constant velocity of rotation, that said indicator marks (24c,

27c) are equally distributed on the circumference of said rotating element (24b; 27b), and that said related fixed scale (24a; 27a) is a linear scale.

4. Method as claimed in Claim 3, **characterized in that** said element (24b; 27b) rotates with a rotation velocity of one rotation per 12 hours.
- 5 5. Method as claimed in Claim 4, **characterized in that** said rotating element (24b) comprises $n+1$ ($n=1, 2, 3, 5$) indicator marks (24c), that said fixed scale (24a) extends over an angle of the arc of $360^\circ/(n+1)$, and that said fixed scale (24a) is subdivided into at least $12/(n+1)$ equal arc sections.
6. Method as claimed in Claim 4, **characterized in that** $n=2$.
- 10 7. Method as claimed in Claim 3, **characterized in that** said element (27b) rotates with a velocity of rotation of one rotation per minute.
8. Method as claimed in Claim 7, **characterized in that** said rotating element (27b) comprises $n+1$ ($n=1, 2, 3, 5$) indicator marks (27c) equally distributed around the circumference of said rotating element (27b), that said fixed scale (27a) extends
15 over an angle of the arc of $360^\circ/(n+1)$, and that said fixed scale (27a) is subdivided into at least $60/(n+1)$ equal arc sections.
9. Method as claimed in Claim 8, **characterized in that** $n=2$.
- 20 10. Method as claimed in Claim 3, **characterized in that** two rotating elements (24b; 27b) with two respective related fixed scales (24a; 27a) are provided, that the first (24b) of said two rotating elements (24b; 27b) rotates with a rotation velocity of

one rotation per 12 hours, that the second (27b) of said two rotating elements (24b; 27b) rotates with a rotation velocity of one rotation per minute, that the first (24b) of said rotating elements (24b, 27b) comprises three indicator marks (24c), that said fixed scale (24a) related to said first (24b) of said rotating elements (24b, 27b) extends over an angle of the arc of 120°, that said fixed scale (24a) related to said first (24b) of said rotating elements (24b, 27b) is subdivided into at least four equal arc sections, that the second (27b) of said rotating elements (24b, 27b) comprises three indicator marks (27c), that said fixed scale (27a) related to said second (27b) of said rotating elements (24b, 27b) extends over an angle of the arc of 120°, and that said fixed scale (27a) related to said second (27b) of said rotating elements (24b, 27b) is subdivided into twenty equal arc sections.

11. Method as claimed in Claim 10, **characterized in that** said at least four arc sections of said fixed scale (24a) related to said first (24b) of said rotating elements (24b, 27b) are each subdivided into four equal sections to indicate quarters of an hour.
12. Method as claimed in Claim 10, **characterized in that** an additional minute hand (25) with a related minute scale (26) is provided, whereby said minute hand (25) rotates with a velocity of rotation of one rotation per hour around a central axis (28), and whereby said related minute scale (26) extends over a full circle concentric to said central axis.
13. Method as claimed in one of the Claims 10 to 12, **characterized in that** an additional day/night indicator (23) is provided, which divides a day into two equal parts and indicates, which part of the day is the actual part.

14. Method as claimed in Claim 13, **characterized in that** said day/night indicator (23) comprises a rotating circular indicator disk (23b) with a day-time sector (23c) of a first colour and a night-time sector (23d) of a second colour, which indicator disk rotates with a velocity of rotation of one rotation per 24 hours, and that a fixed indicator mark (23a) is provided at the outer circumference of said indicator disk (23b) to indicate, which of said two sectors (23c, 23d) is the actual sector.
15. Watch (10) for conducting the method according to one of the Claims 1 to 14, **comprising** a watchcase (19) enclosing a movement (17) with a central axis (28) for driving a plurality of different time indication means (23, 24, 25, 27), which time indication means (23, 24, 25, 27) are visible from the outside through a watch glass (11) that closes said watchcase (19) on its upper side, whereby said plurality of different time indication means (23, 24, 25, 27) comprises at least a first time indication means (24, 24a-c) for indicating the hours of a day, and a second time indication means (25, 26) for indicating the minutes of an hour, whereby said first time indicating means (24, 24a-c) comprises a moving part (24b), which moves relative to a related fixed scale (24a), characterized in that said moving part (24b) is a rotating element, which is driven by said movement (17) with a constant velocity of rotation of one rotation per 12 hours, that said related fixed scale (24a) comprises a section of a ring concentrically surrounding said element (24b), that a plurality of $n+1$ ($n=1, 2, 3, \dots$) indicator marks (24c) for co-operating with said related fixed scale (24a) are equally distributed on the circumference of said rotating element (24b), that said related fixed scale (24a) is a linear scale, that said fixed scale (24a) extends over an angle of the arc of $360^\circ/(n+1)$, and that said fixed scale (24a) is subdivided into at least $12/(n+1)$ equal arc sections.
16. Watch as claimed in Claim 15, **characterized in that** $n=2$.

17. Watch as claimed in Claim 15, **characterized in that** said second time indication means (25, 26) comprises a minute hand (25) and a related minute scale (26), whereby said minute hand (25) rotates with a velocity of rotation of one rotation per hour around said central axis (28), and whereby said related minute scale (26) extends over a full circle concentric to said central axis (28).
18. Watch as claimed in Claim 15, **characterized in that** a third time indication means (27, 27a-c) is provided for indicating the seconds of a minute, whereby said third time indicating means (27, 27a-c) comprises a moving part (27b), which moves relative to a related fixed scale (27a), said moving part (27b) being a rotating element, which is driven by said movement (17) with a constant velocity of rotation of one rotation per minute, that said related fixed scale (27a) comprises a section of a ring concentrically surrounding said element (27b), that a plurality of $n+1$ ($n=1, 2, 3, \dots$) indicator marks (27c) for co-operating with said related fixed scale (27a) are equally distributed on the circumference of said rotating element (27b), that said related fixed scale (27a) is a linear scale, that said fixed scale (27a) extends over an angle of the arc of $360^\circ/(n+1)$, and that said fixed scale (27a) is subdivided into at least $12/(n+1)$ equal arc sections.
19. Watch as claimed in Claim 18, **characterized in that** $n=2$.
20. Watch as claimed in Claim 15, **characterized in that** an additional day/night indicator (23) is provided, which divides a day into two equal parts and indicates, which part of the day is the actual part.
21. Watch as claimed in Claim 20, **characterized in that** said day/night indicator (23) comprises a rotating circular indicator disk (23b) with a day-time sector (23c) of a

first colour and a night-time sector (23d) of a second colour, which indicator disk rotates with a velocity of rotation of one rotation per 24 hours, and that a fixed indicator mark (23a) is provided at the outer circumference of said indicator disk (23b) to indicate, which of said two sectors (23c, 23d) is the actual sector.

- 5 **22.** Watch as claimed in Claim 15, **characterized in that** said watch (10) is a wrist watch.

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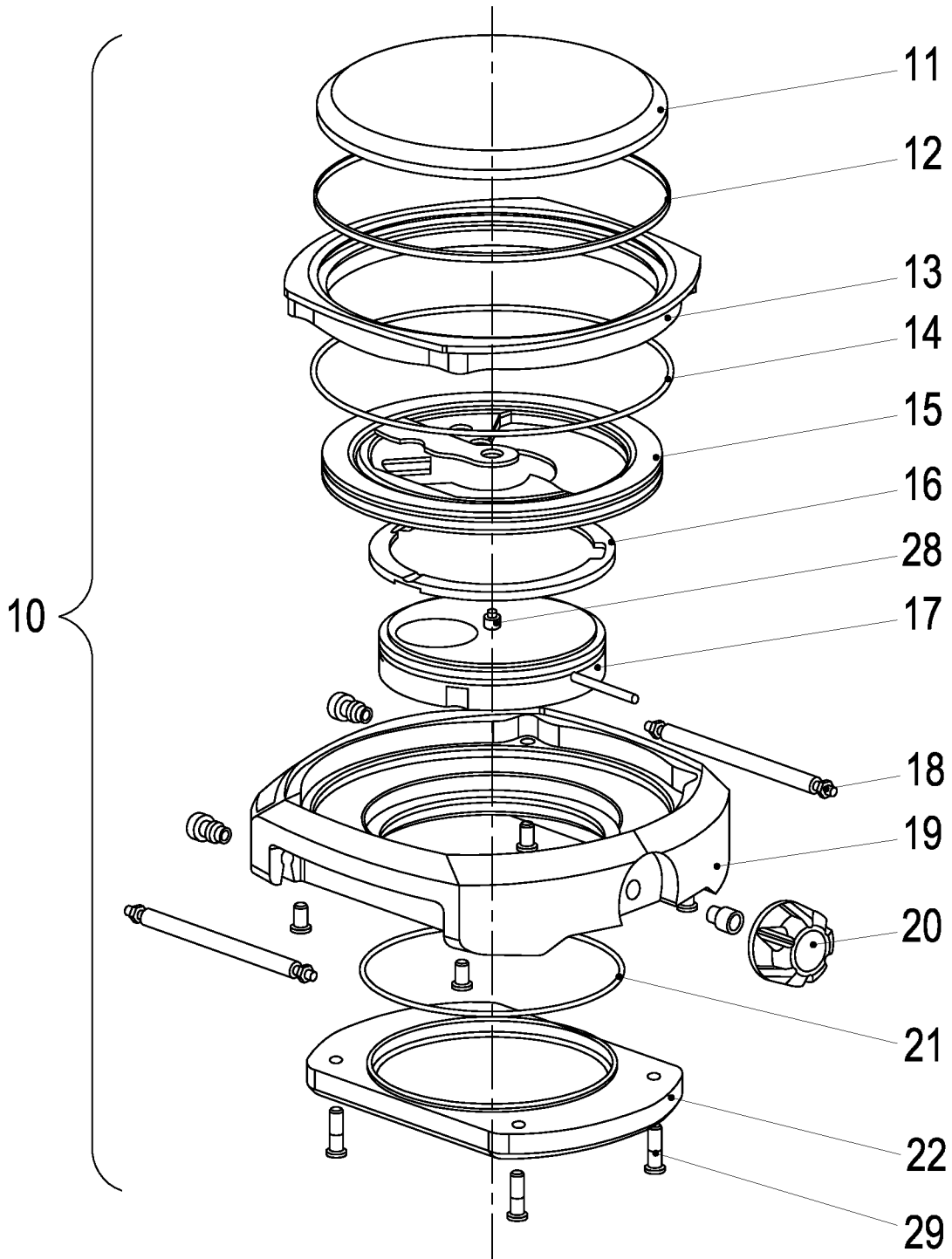


Fig. 1

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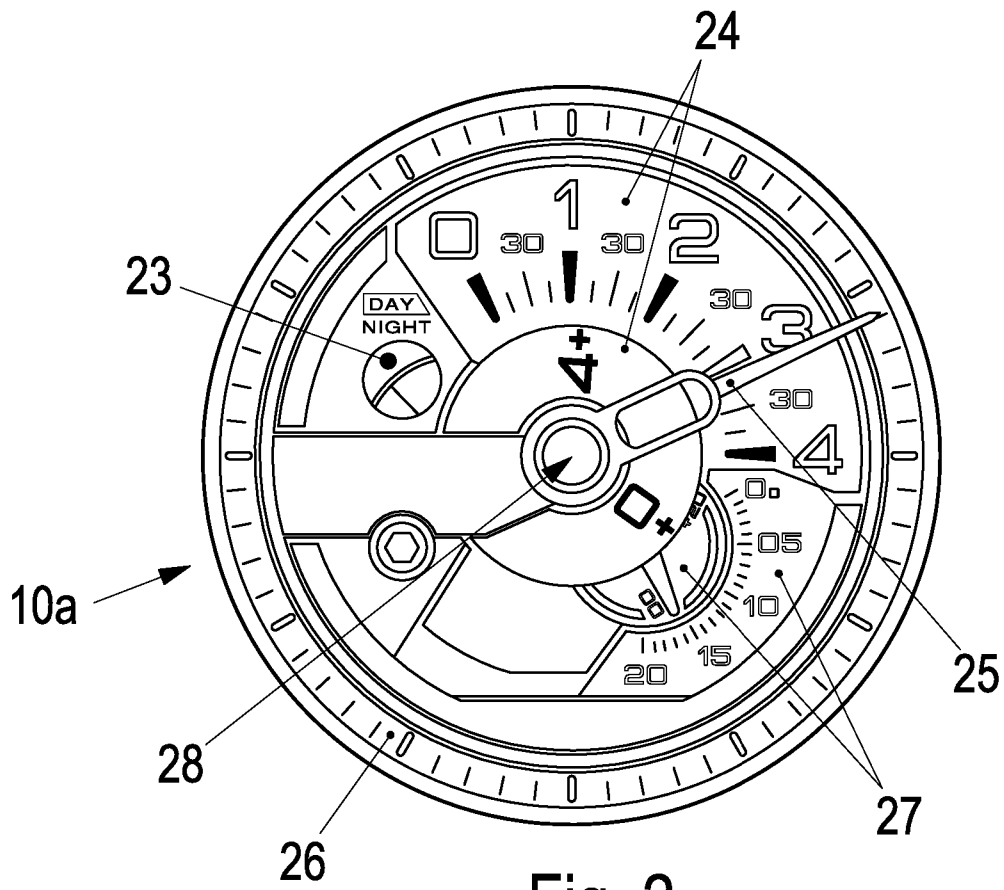


Fig. 2

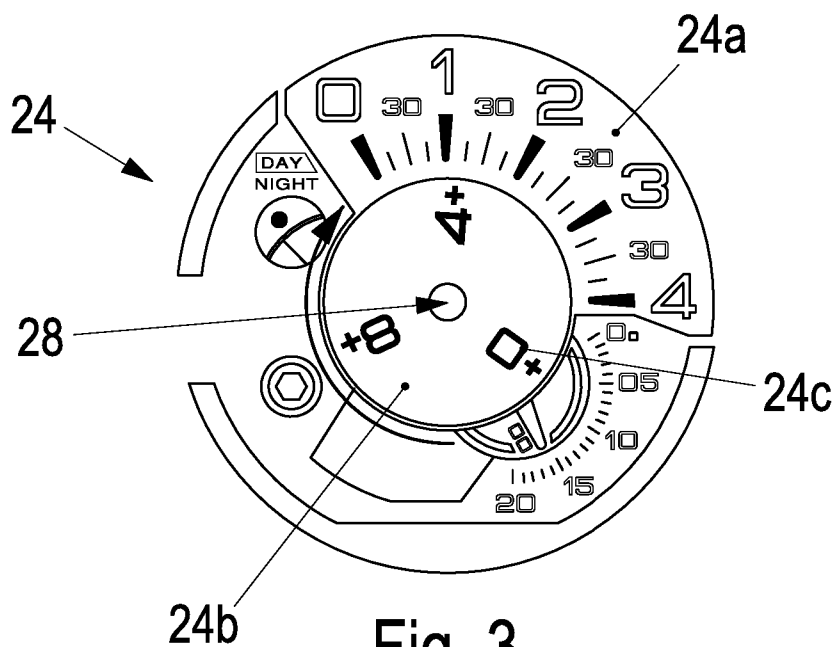


Fig. 3

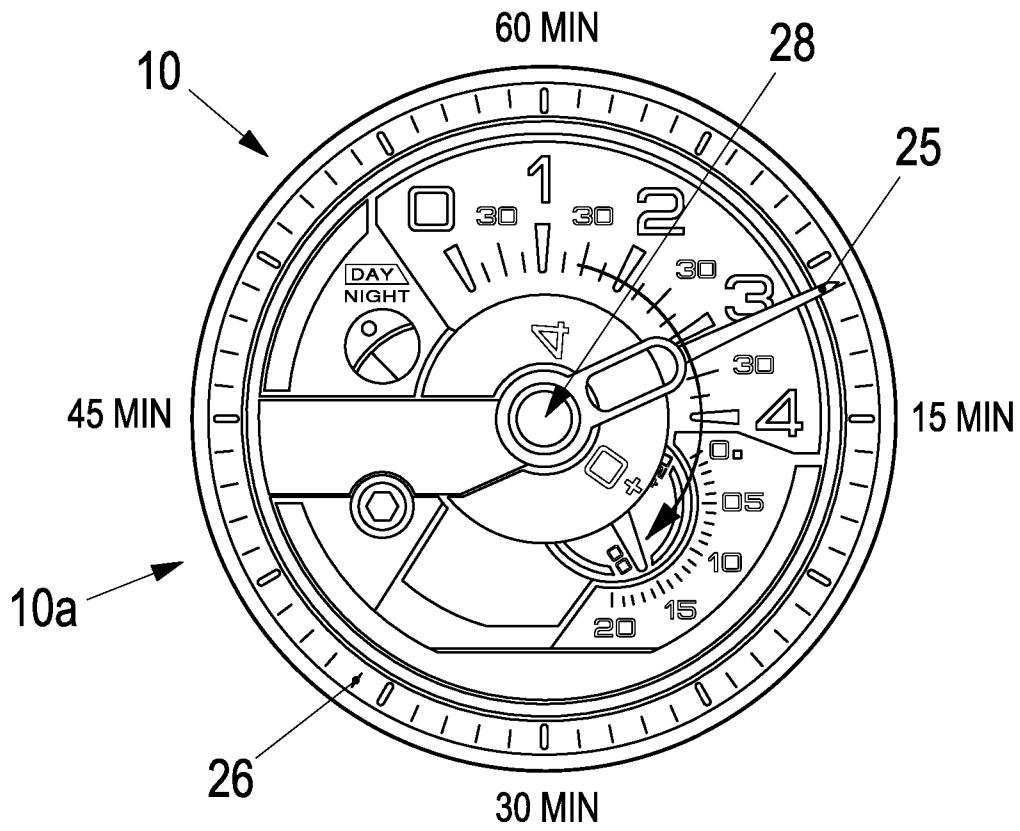


Fig. 4

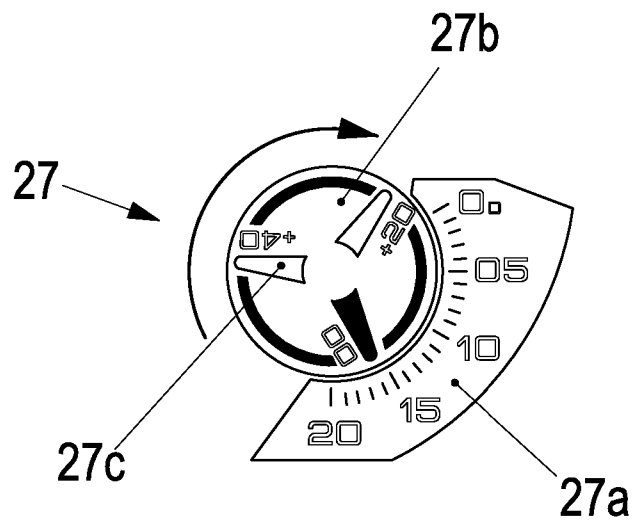


Fig. 5

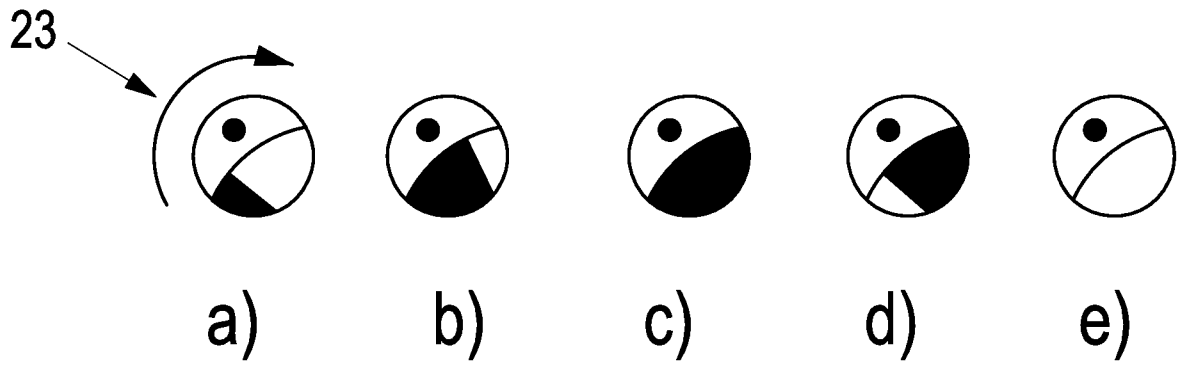
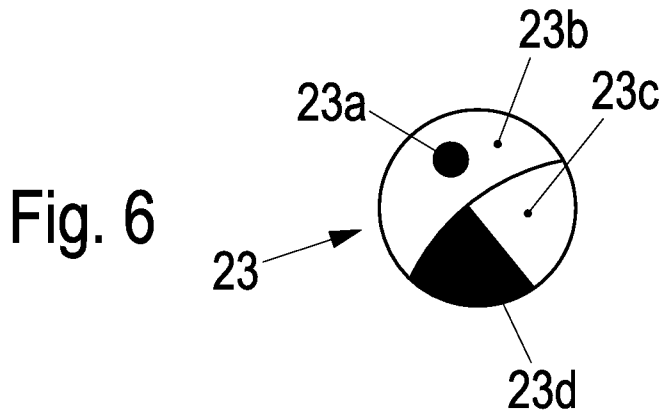


Fig. 7

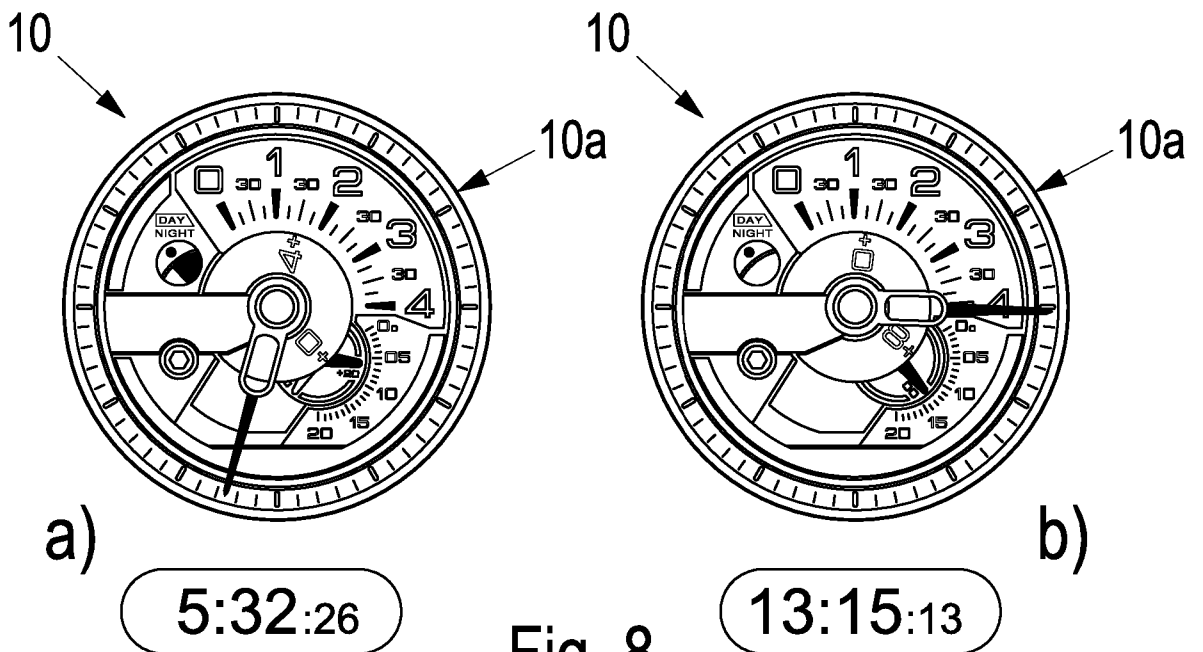


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/066638

A. CLASSIFICATION OF SUBJECT MATTER
INV. G04C17/00 G04B19/04 G04B19/20
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G04C G04B
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	CH 701 830 B1 (CYRUS WATCHES RL SA [CH]) 31 March 2011 (2011-03-31) paragraph [0005] - paragraph [0017] figures -----	1,15,17, 18,20-22 2-14,16, 19
X A	FR 2 195 805 A1 (ITALORA SPA [IT]) 8 March 1974 (1974-03-08) page 3, line 1 - page 4; figures -----	1,15 2-14, 16-22
A	US 4 006 588 A (MCMAHON ROBERT J ET AL) 8 February 1977 (1977-02-08) column 2, line 4 - line 46; figures -----	1-22

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 24 November 2016	Date of mailing of the international search report 02/12/2016
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Savage, John
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/066638

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
CH 701830	B1	31-03-2011	CH 701830 B1	31-03-2011
			WO 2011113846 A2	22-09-2011

FR 2195805	A1	08-03-1974	NONE	

US 4006588	A	08-02-1977	NONE	
