

March 28, 1961

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2,976,672

TIMEPIECE WITH DATE INDICATOR

Filed Sept. 24, 1956

FIG. 1

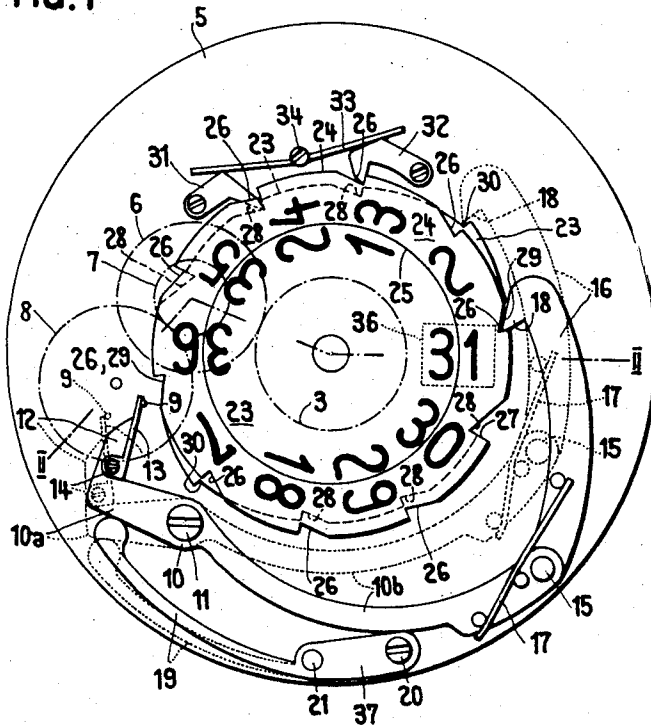
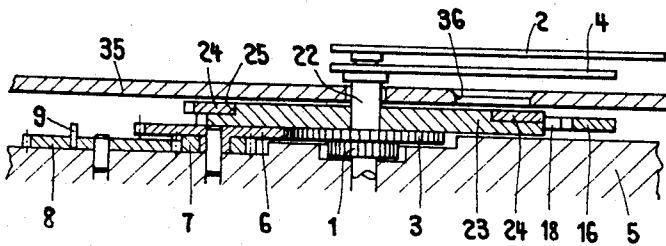


FIG. 2



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2,976,672

**TIMEPIECE WITH DATE INDICATOR**

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Filed Sept. 24, 1956, Ser. No. 611,561

Claims priority, application Switzerland Oct. 21, 1955

4 Claims. (Cl. 58—58)

The present invention relates to a timepiece with date indicator, in which the said indicator includes two elements concentric to each other, one of these elements bearing the numerals of the units and the other element the numerals of the tens of the date. In accordance with the invention the said elements are intermittently driven by a common actuating member which is controlled by the movement of the timepiece.

The accompanying drawing shows, by way of example, an embodiment of the invention.

Fig. 1 is a plan view of this embodiment.

Fig. 2 is a sectional view taken along the line II—II in Fig. 1.

In the embodiment illustrated in the drawing the cannon pinion is denoted by the reference numeral 1 and carries as usually the minute hand 2, whereas the hour wheel 3, connected with the cannon pinion 1 by means of a transmission gear (not shown), carries the hour hand 4. The pillar plate is denoted by the reference numeral 5.

The hour wheel 3 meshes with a wheel 6 rigidly connected with a pinion 7 which meshes with a wheel 8 carrying a pin 9. The wheels 6 and 8 are pivoted in the pillar plate 5. The pinion 7 has a number of teeth which is equal to half of that of the wheel 6, so that the pin-holder wheel 8 rotates by one revolution in 24 hours.

A lever 10 having two arms 10a and 10b is pivoted on a cap screw 11 screwed into the pillar plate 5. The arm 10a, which is considerably shorter than the arm 10b, has an end portion 12 extending substantially perpendicular to the arm 10a. The end portion 12 carries a leaf spring 13 held by a screw 14 and arranged in such a way that its free end slightly projects from the portion 12 (see Fig. 1) and lies in the path of the pin 9. At the end of the arm 10b is pivoted by means of a pin 15 a driving pawl 16. A weak spring 17, bearing on the lever arm 10b, tends to rock the driving pawl 16 in the counter-clockwise direction in Fig. 1. The pawl 16 has at its free end a nose 18. A spring 19 the base 37 of which is secured to the pillar plate 5 by means of a screw 20 and a foot or orienting pin 21 permanently presses the lever arm 10a and tends to turn the lever 10 in the clockwise direction in Fig. 1.

On the cannon 22 of the hour wheel 3 is rotatably mounted an element or disc 23 bearing on its upper face two series each including four numerals "1-2-3-3" and one blank space (or a space provided with a dash "-"), constituting the tens of the date. An element or ring member 24 concentric to the disc 23 and rotatably mounted on a groove 25 of the latter, bears on its upper face the ten numerals "0-1-2- . . . -9" of the units of the date. The numerals of the units and those of the tens of the date are exactly flush with one another. The periphery of the ring 24 has nine shallow notches 26 and one deeper notch 27. On the other hand, the disc 23 has on its periphery six notches 28 standing back from the periphery of the ring 24, two notches 29 superposed to the shallow notches 26 of the ring 24, and two notches

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30 situated outside the periphery of the ring 24 (see Fig. 1). The nose 18 of the driving pawl 16 is arranged at such a height that it can simultaneously cooperate with the notches of the disc 23 and those of the ring 24 (see Fig. 2). Two stop pawls 31 and 32, subjected to the action of a common spring 33 secured on the pillar plate 5 by means of a screw 34, cooperate with the notches of the disc 23 and of the ring 24 respectively.

As may be seen from Fig. 1, the element or disc 23 is of generally elliptical shape while the element or disc 24 is of circular shape, the variation in the shapes of the elements obviously depending upon the depth of the notches therein. A workable combination of proportions of the dimensions is had when the elliptical element 23 has a larger width at its widest portion as compared to the diameter of the circular element 24, while the elliptical element 23 has a lesser width at its narrowest portion as compared to the diameter of the circular element.

The wheel 6 is held in axial direction by the disc 23, whereas the pin-holder wheel 8 is held axially by the wheel 6.

The dial 35 of the timepiece is shown as removed in Fig. 1. It is secured to the pillar plate 5 by means of non-illustrated supports and holds in axial direction the disc 23 with the ring 24. In the dial 35 is provided a window 36 through which the date can be perceived.

The described mechanism operates as follows:

Upon running of the timepiece, the hour wheel 3 and therefore the pin-holder wheel 8 are rotated in the clockwise direction in Fig. 1. There has been shown in full lines in Fig. 1 the position of the parts at the moment when the pin 9 comes into contact with the leaf spring 13 carried by the lever 10. Since this spring 13 bears on the major portion of its length against the end portion 12 of the lever 10, it remains applied against this portion 12 when the pin 9 acts on it from the right (Fig. 1), so that the lever 10 is swung in the counter-clockwise direction. There is shown in dotted lines in Fig. 1 the end position reached by the lever 10 at the moment when the pin 9 is to leave the end of the leaf spring 13. During the movement of the lever 10, the nose 18 of the pawl 16, which was first engaged in the notches 26 and 29 of the elements 24 and 23, has slid along the periphery of the disc 23. The stop pawls 31 and 32 prevent the elements 23 and 24 from rotating during this backward movement of the lever 10 and of its pawl 16. When the pin 9 leaves the leaf spring 13, the strong spring 19, which has become tensioned during the backward movement of the lever 10, acts on the lever arm 10a and suddenly swings the lever 10 in the clockwise direction in Fig. 1, so that the lever 10 takes again its initial position (shown in full lines). The movement of the lever 10 is limited by the fact that its arm 10b strikes against the base 37 of the spring 19. On the sudden movement of the lever 10, the pawl 16 turns the disc 23 by an angle of 36°, whereas the ring 24 remains unmoved since the nose 18 of the pawl 16 does not engage any notch of the ring 24. Therefore, the indication "31" appearing through the window 36 is replaced by the indication "1" (or "-1" if the blank spaces of the disc 23 are replaced by dashes).

Twenty-four hours later, the pin 9 again acts on the lever 10 and this time the nose 18 of the pawl 16 enters one of the notches 26 of the ring 24, but cannot reach the notch 28 of the disc 23, standing back from the periphery of the ring 24, so that only the ring 24 is turned by one step of 36°, and the indication "1" gives place to the indication "2" in the window 36 of the dial 35. The same occurs when the date passes from "2" to "3," from "3" to "4," etc.

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When the date has to pass from "9" to "10," the nose 18 of the pawl 16 simultaneously enters one of the notches 28 of the disc 23 and the deep notch 27 of the ring 24, so that both elements 23 and 24 simultaneously rotate by an angle of 36°. The same occurs when the indication passes from "19" to "20" and from "29" to "30."

When the date passes from "30" to "31," the nose 18 of the driving pawl 16 simultaneously enters one of the notches 26 of the ring 24 and one of the two notches 29 of the disc 23. This time again, both elements 23 and 24 simultaneously rotate by an angle of 36°, one of the numerals "3" of the disc 23 being replaced by the second numeral "3" of the same disc.

In all cases the change of the date is instantaneous.

The arrangement illustrated offers the advantage that the indication "31" is always followed by the indication "1," whereas in the known devices having separate elements for indicating the tens and the units of the date, the indication "31" is followed by the indications "32," "33," . . . "39," "0," and then finally arrives at the indication "1," so that at least nine successive corrections are necessary at the end of every month, this being most unpleasant to the user of the watch.

The watch illustrated in the drawing does not present any corrector for setting the date indicator. At the end of a month having less than thirty-one days, it suffices to actuate the setting mechanism of the watch backwards to reengage the pin 9 with leaf spring 13 on the right side thereof for again subsequently advancing the dials upon setting the watch in a forward direction. Thus it is not necessary to turn the hands forward through a 24 hour cycle to set the next date. It is sufficient to turn the pin-holder wheel 8 in a reciprocating movement controlled by a reciprocating movement of the setting mechanism. As a matter of fact, when the wheel 8 rotates in the counter-clockwise direction in Fig. 1, the pin 9 acts on the left face of the spring 13 and displaces the latter without actuating the lever 10; besides, the arm 10b of the lever 10 rests against the base 37 of the spring 19 and thus is prevented from being swung in the clockwise direction. The absence of a corrector results in a more watertight watch.

The window 36 of the dial 35 is preferably provided between the center of the movement and the mark "3 hours" of the dial. In opposition to the known devices in which the date indications are given by a single ring, the described mechanism presents large numerals for the indication of the date, so that reading of same is quite easy. Moreover, the indication of the date appears rather near the center of the movement, so that the mark "3" of the dial may subsist.

In the particular embodiment shown and described the elements of the date indicator are provided with notches on their outer periphery, and by means of these notches they are intermittently driven by a common actuating member, viz. the pawl 16 carried by the lever 10, this actuating member in turn being controlled by the pin-holder wheel 8, that is to say by the movement of the timepiece.

In another non-illustrated embodiment the elements of the date indicator might be constituted by two rings concentric to each other and having notches on their inner peripheries, these rings being driven in a manner similar to that described above.

In a modified embodiment the disc 23 might bear two series each including three numerals "1-2-3" and one blank space or a space provided with a dash "-." The notches 26 to 30 should then be accordingly modified and it would thus also be possible to obtain the result that the indication "31" be always followed by the indication "1," as explained above. In this case, the angular pitch or step of the disc 23 would be 45°, whereas that of the ring 24 would be 36°, so that the stop pawl 31 had to be replaced by a jumper which would complete the rotation started by the pawl 16.

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The backward setting of the hands is possible at all times without injuring the mechanism.

The invention has been described in connection with a watch, particularly a wrist-watch, but it is to be understood that it is applicable to any timepiece in general such as a pocket watch, a clock, etc.

Various changes in the construction, design and operation of the invention as shown and described, may be made, within the scope of the appended claims, without departing from the spirit of the invention or sacrificing any advantage thereof.

What I claim is:

1. In a timepiece with a date indicator of the type including a powered movement driving a twenty-four hour wheel adapted to turn a pair of concentric discs by use of a common pawl engaging a deep-notch transfer mechanism, the improvement wherein two notched elements are used for the transfer mechanism, one of the notched elements bearing the numerals of the units of the date, the other of the notched elements bearing two series of three of the numerals of the tens of the date and a space (space, 1, 2, 3, 3, space, 1, 2, 3, 3), said one element having nine shallow notches and one deeper notch, said other element having on its periphery six notches positioned inwardly from the periphery of said one element, two notches superposed to the shallow notches of said one element and two notches positioned outwardly from the periphery of said one element, so that upon the rotation of the one element ten notches the other element is rotated one notch and likewise upon the second rotation of ten notches of the one element the other element is rotated one notch and upon the third rotation of the one element of ten notches the other element is rotated one notch, while upon the next one notch rotation of the one element the other element is likewise rotated on notch and upon the following one notch rotation of the other element the one element is not rotated whereby composite successive numerals of 1-31 are repetitively presented.

2. In a timepiece with a date indicator of the type including a powered movement driving a twenty-four hour wheel turning a pair of concentric discs through a common pawl engaging a deep-notch transfer mechanism, the improvement wherein two notched elements are used for the transfer mechanism; one of the notched elements bearing the numerals 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0 of the units of the date; the other of the notched elements bearing two successive series of the numerals 1, 2, 3, 3, together with a space at the end of each series, said numerals forming the tens of the date; said one element having nine shallow notches and one deeper notch on its periphery; said other element having on its periphery six notches positioned inwardly from the periphery of said one element, two notches on its periphery positioned similarly to the shallow notches of the one element, and two notches positioned outwardly from the periphery of said one element; so that upon the rotation of the one element ten notches the other element is rotated one notch, likewise upon the second and third rotation of the one element ten notches the other element is rotated one notch, but upon the next one notch rotation of the one element the other element is also rotated one notch and upon the following one notch rotation of the other element the one element is not rotated; whereby composite successive date numbers of 1 through 31 are repetitively presented.

3. In a timepiece with date indicator, a powered movement of the type including an hour wheel, an hour wheel cannon carried by the hour wheel, a twenty-four hour wheel, gearing driving the twenty-four hour wheel from the hour wheel, an element bearing two series of the numerals "1-2-3-3" and a space (1, 2, 3, 3, space, 1, 2, 3, 3, space), the element journaled on the hour wheel cannon having a groove on its upper surface adjacent its periphery, a ring member concentric to the element and

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rotatably carried on the groove of the element, the ring member bearing the numerals "0-1-2-3-4-5-6-7-8-9," the ring member having on its periphery means forming nine shallow notches and one deeper notch, the element having a portion of its periphery of a lesser radius than the radius of the ring member, means forming six notches in the element periphery in said portion of said shorter radius, the element having a portion of its periphery of the same radius as the radius of the ring, means forming two notches in the element periphery in the said portion having the same radius as the ring member, the element having a portion of its periphery of a greater radius than the radius of the ring member, means forming two notches in the element periphery in the said portion having a greater radius than the radius of the ring member, a driving pawl, means actuating the driving pawl from the twenty-four hour wheel upon each rotation thereof, the driving pawl adapted to draw forward at least one of the notches of the ring member upon each actuation of the driving pawl.

4. In a timepiece with a date indicator of the type including a powered movement driving a twenty-four hour wheel adapted to turn a pair of concentric elements by use of a common pawl engaging a deep-notch transfer mechanism, the improvement wherein two notched ele-

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ments are used for the transfer mechanism, one of the notched elements bearing the numerals of the units of the date, the other of the notched elements bearing the numerals of the tens of the date, one of the notched elements having a circular outline, the other of the notched elements having a generally elliptical outline, the circular element having one deep notch and nine notches of lesser depth than said deep notch and having consecutive numerals 0-9 thereon, the generally elliptical element having ten notches of the same depth and having two sets of the numerals 1, 2, 3, 3 and a blank space before each numeral "1," whereby by successive engagement of the pawl in the notches a composite series of numbers from 1 to 31 is presented repetitively.

References Cited in the file of this patent

UNITED STATES PATENTS

34,341	Lewis	Feb. 4, 1862
234,355	Wagner	Nov. 9, 1880
2,024,598	Powers	Dec. 17, 1935
2,146,340	Jiskra	Feb. 7, 1939

FOREIGN PATENTS

21,317	Great Britain	Nov. 9, 1891
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