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(54) DIGITAL ELECTRONIC TIMEPIECE

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese Company of 3-4, 4-chome, Ginza, Chuo-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a digital electronic timepiece.

In a conventional timepiece in which hands are employed to indicate the time, the time can be seen at a glance, merely by noting the angular disposition of the hands. In the case of an electronic timepiece, however, in which the time is indicated digitally, it is not easy to read the time at a glance. This is especially the case where the timepiece indicates the hour, minute and second of the time and, in addition, indicates the day of the month, since all these indications are provided by numeric characters which are difficult to distinguish from each other.

Accordingly therefore to the present invention, there is provided an electronic timepiece having a digital display in which there are numeric characters indicating seconds which differ in size and/or style from numeric characters indicating minutes and hours.

The numeric characters indicating the hours, minutes and seconds are preferably linearly aligned. In addition there may be numeric characters indicating the date which are not linearly aligned with those indicating the hours, minutes, and seconds. Preferably, the numeric characters indicating the date differ in size and/or style from the numeric characters indicating the minutes and hours.

Each of the numeric characters is preferably made up of a plurality of segments each of which is constituted by a liquid or solid display element.

Thus, each display element may be a liquid crystal or a light-emitting diode.

The invention is illustrated, merely by way of example, in the accompanying drawings, in which:—

Figure 1 is a plan view of a known electronic timepiece and

Figures 2 and 3 illustrate different embodiments of an electronic timepiece according to the present invention.

In Figure 1 there is shown an electronic wristwatch provided with time and date display apparatus 1 in which each of the different components of the time and the date is indicated digitally. Thus these components are constituted by numeric characters 2 which indicate the date, i.e. the day of the month, numeric characters 3 which indicate the hour, numeric characters 4 which indicate the minute, and numeric characters 5 which indicate the seconds. Each of the numeric characters 2, 3, 4, 5 is made up of a plurality of segments each of which is constituted by a liquid or solid display element, e.g. a liquid crystal or a light-emitting diode.

In the display device shown in Figure 1, however, the segments of the various numeric characters 2 to 5 all have substantially the same form and size, with the result that it is very difficult to distinguish the characters.

In Figure 2, however, there is shown an electronic wristwatch having a time and date display apparatus 6 in which use is made of numeric characters 7 which indicate the date, i.e. the day of the month, numeric characters 8 which indicate the hour, numeric characters 9 which indicate the minutes, and numeric characters 10 which indicate the seconds. Thus the numeric characters 7 to 10 digitally indicate the various components of the time and the date. Additionally, it would be possible, if desired, to have further

numeric characters (not shown) representing the month of the year. Each of the numeric characters 7 to 10 is made up of a plurality of segments 16 each of which is constituted by a liquid or solid display element such as a liquid crystal or a light-emitting diode (not shown).

In the Figure 2 embodiment it will be noted that the numeric characters 8, 9 have a similar appearance to each other, inasmuch as they are of the same size and shape, but by reason of their larger size, have an appearance which differs from that of the numeric characters 7, 10 which indicate the date and the seconds respectively.

Similarly, if the date were amplified to show both the day of the month and the month of the year, the numeric characters representing the day of the month and the month of the year could differ in appearance from each other, e.g. in size, shape, colour or style.

It will be noted that the numeric characters 8, 9, 10 which indicate the hours, minutes and seconds respectively, are linearly aligned, whereas the numeric characters 7 which indicate the date are not linearly aligned with the numeric characters 8, 9 and 10.

Means (not shown) are provided for appropriately energising the various segments 16 of the numeric characters 7-10 so that at all times the time and the date are digitally indicated.

Since the segments 16 of the numeric characters 7, 10 are smaller than the segments 16 of the numeric characters 8, 9, the hour and minute indication stands out boldly enabling the time and date to be distinguished more easily.

Moreover, since the size of the numeric characters 7, 10 is smaller than would otherwise be the case, the size of the numeric characters 8, 9 may be increased without increasing the overall size of the display apparatus 6 itself. This will be apparent by comparing the relative sizes of the numeric characters 3, 4, of Figure 1 with the numeric characters 8, 9 of Figure 2.

In Figure 3 there is shown another embodiment of a wrist-watch according to the present invention.

Thus in Figure 3 there is shown an electronic time and date display apparatus 11 having numeric characters 12 which indicate the day of the month, numeric characters 13 which indicate the hour, numeric characters 14 which indicate the

minute, and numeric characters 15 which indicate the second. The arrangement is generally similar to that of Figure 2, except that the numeric characters 12, 15, instead of being smaller than the numeric characters 13, 14 are the same size as the latter but have segments 17 which are of a different style from the segments 18 of the numeric characters 13, 14.

If desired, the segments of the numeric characters representing the date and the seconds may differ both in size and in style from those representing the hours and minutes.

As will be appreciated, the differences in size and style between the numeric characters representing the various components of the time and date, in addition to making it easier to distinguish the characters from each other, also constitutes an attractive element of the design thereof.

WHAT WE CLAIM IS:—

1. An electronic timepiece having a digital display in which there are numeric characters indicating seconds which differ in size and/or style from numeric characters indicating minutes and hours.
2. An electronic timepiece as claimed in claim 1 in which the numeric characters indicating the hours, minutes and seconds are linearly aligned.
3. An electronic timepiece as claimed in claim 2 in which there are also numeric characters indicating the date which are not linearly aligned with those indicating the hours, minutes and seconds.
4. An electronic timepiece as claimed in claim 3 in which the numeric characters indicating the date differ in size and/or style from the numeric characters indicating the minutes and hours.
5. An electronic timepiece as claimed in any preceding claim in which each of the numeric characters is made up of a plurality of segments each of which is constituted by a liquid or solid display element.
6. An electronic timepiece as claimed in claim 5 in which each display element is a liquid crystal or a light-emitting diode.
7. An electronic timepiece substantially as hereinbefore described with reference to and as shown in Figure 2 or Figure 3 of the accompanying drawings.

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numeric characters (not shown) representing the month of the year. Each of the numeric characters 7 to 10 is made up of a plurality of segments 16 each of which is constituted by a liquid or solid display element such as a liquid crystal or a light-emitting diode (not shown).

In the Figure 2 embodiment it will be noted that the numeric characters 8, 9 have a similar appearance to each other, inasmuch as they are of the same size and shape, but by reason of their larger size, have an appearance which differs from that of the numeric characters 7, 10 which indicate the date and the seconds respectively.

Similarly, if the date were amplified to show both the day of the month and the month of the year, the numeric characters representing the day of the month and the month of the year could differ in appearance from each other, e.g. in size, shape, colour or style.

It will be noted that the numeric characters 8, 9, 10 which indicate the hours, minutes and seconds respectively, are linearly aligned, whereas the numeric characters 7 which indicate the date are not linearly aligned with the numeric characters 8, 9 and 10.

Means (not shown) are provided for appropriately energising the various segments 16 of the numeric characters 7-10 so that at all times the time and the date are digitally indicated.

Since the segments 16 of the numeric characters 7, 10 are smaller than the segments 16 of the numeric characters 8, 9, the hour and minute indication stands out boldly enabling the time and date to be distinguished more easily.

Moreover, since the size of the numeric characters 7, 10 is smaller than would otherwise be the case, the size of the numeric characters 8, 9 may be increased without increasing the overall size of the display apparatus 6 itself. This will be apparent by comparing the relative sizes of the numeric characters 3, 4, of Figure 1 with the numeric characters 8, 9 of Figure 2.

In Figure 3 there is shown another embodiment of a wrist-watch according to the present invention.

Thus in Figure 3 there is shown an electronic time and date display apparatus 11 having numeric characters 12 which indicate the day of the month, numeric characters 13 which indicate the hour, numeric characters 14 which indicate the

minute, and numeric characters 15 which indicate the second. The arrangement is generally similar to that of Figure 2, except that the numeric characters 12, 15, instead of being smaller than the numeric characters 13, 14 are the same size as the latter but have segments 17 which are of a different style from the segments 18 of the numeric characters 13, 14.

If desired, the segments of the numeric characters representing the date and the seconds may differ both in size and in style from those representing the hours and minutes.

As will be appreciated, the differences in size and style between the numeric characters representing the various components of the time and date, in addition to making it easier to distinguish the characters from each other, also constitutes an attractive element of the design thereof.

WHAT WE CLAIM IS:—

1. An electronic timepiece having a digital display in which there are numeric characters indicating seconds which differ in size and/or style from numeric characters indicating minutes and hours.

2. An electronic timepiece as claimed in claim 1 in which the numeric characters indicating the hours, minutes and seconds are linearly aligned.

3. An electronic timepiece as claimed in claim 2 in which there are also numeric characters indicating the date which are not linearly aligned with those indicating the hours, minutes and seconds.

4. An electronic timepiece as claimed in claim 3 in which the numeric characters indicating the date differ in size and/or style from the numeric characters indicating the minutes and hours.

5. An electronic timepiece as claimed in any preceding claim in which each of the numeric characters is made up of a plurality of segments each of which is constituted by a liquid or solid display element.

6. An electronic timepiece as claimed in claim 5 in which each display element is a liquid crystal or a light-emitting diode.

7. An electronic timepiece substantially as hereinbefore described with reference to and as shown in Figure 2 or Figure 3 of the accompanying drawings.

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