United States Patent

Okamoto

[15] **3,701,252**

[45] **Oct. 31, 1972**

[54] **COMPLEMENTARY TIME INDICATING MECHANISM FOR A CLOCK**

[72] Inventor: **Takeshi Okamoto,** 2-3-9, Shibuya, Shibuya-ku, Tokyo, Japan

[22] Filed: **July 20, 1971**

[21] Appl. No.: **164,361**

[52] **U.S. Cl.** .....**58/126 R,** 58/2 R, 116/114

[51] **Int. Cl.**.....**G04b 19/00**

[58] **Field of Search** .58/126 R, 126 D, 126 C, 127 R, 58/152 F, 2 R, 45, 53; 46/45, 236, 238, 239

[56] **References Cited**

UNITED STATES PATENTS

298,557	5/1884	Diolot	58/2
3,595,010	7/1971	Kaiser	58/126
1,167,020	1/1916	Reuter	46/45
2,915,874	12/1959	Ferguson, Jr.	58/126 C
3,465,512	9/1969	Usui et al	58/53

Primary Examiner—Richard B. Wilkinson
Assistant Examiner—Stanley A. Wal
Attorney—Marshall & Yeasting

[57] **ABSTRACT**

A complementary time indicating mechanism for a clock comprising a clock body including mechanisms for indicating the predetermined divisions of time, long and short hands having each inner end rotatably pivoted to said clock body and actuated by said time division mechanisms, a piece of permanent magnet fitted to the outer end of at least one of said hands, a panel of a transparent or semitransparent material covering the surface of said clock body containing said hands and a piece of magnetic material movably placed on said panel facing of said permanent magnetic piece.

1 Claim, 2 Drawing Figures

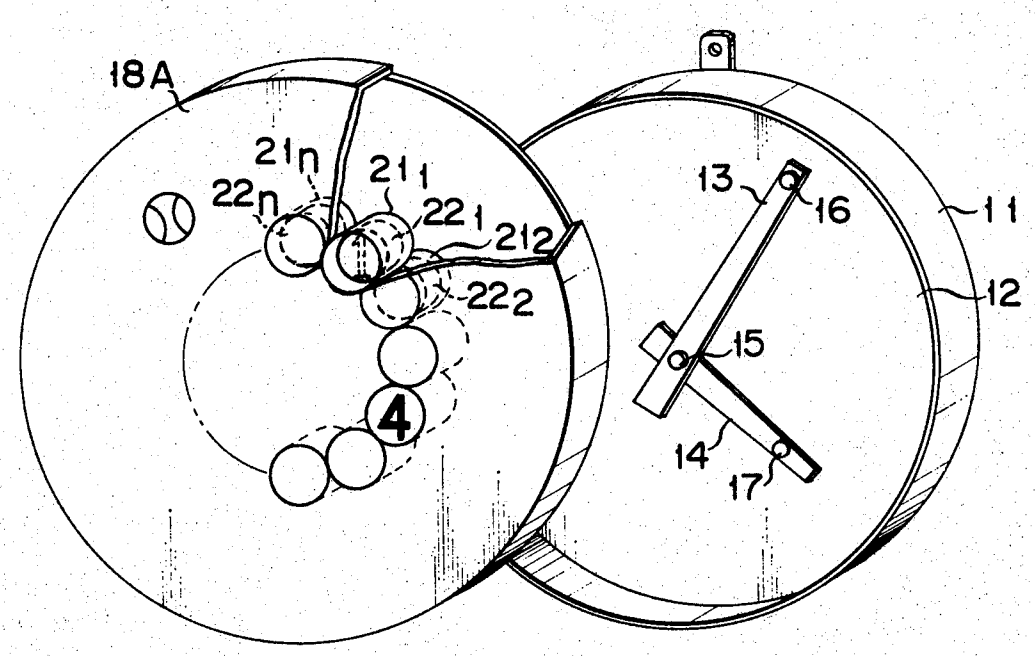


FIG. 1

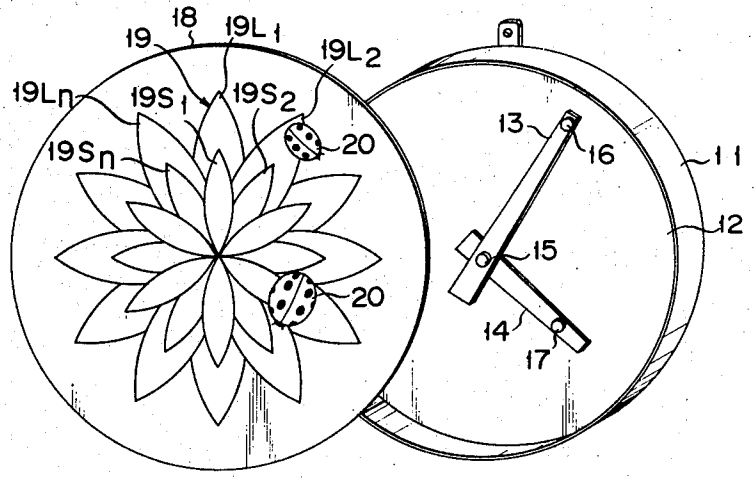
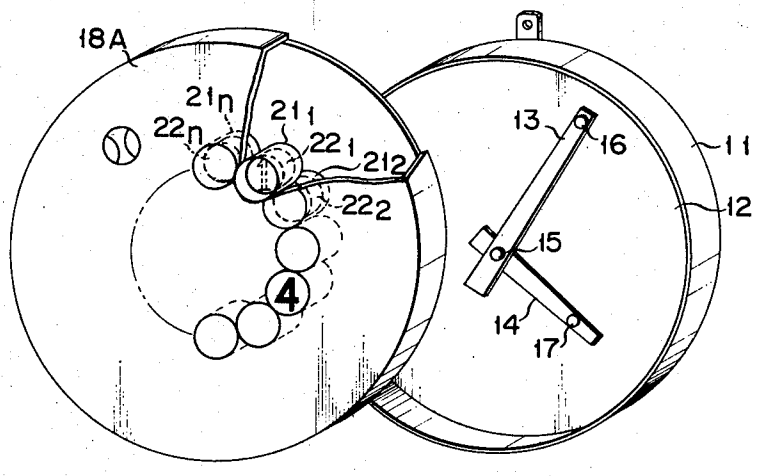

18
19
19L1
19L2
19Ln
19S1
19S2
19Sn
20
20
13
16
11
12
15
14
17

FIG. 2


18A
21n
211
22n
221
212
222
4
13
16
11
12
15
14
17

COMPLEMENTARY TIME INDICATING MECHANISM FOR A CLOCK

BACKGROUND OF THE INVENTION

The present invention relates to a time indicating mechanism for a clock and more particularly to a complementary time indicating mechanism for a clock using magnetic means interlockingly actuated with the rotation of its hands.

An object of the present invention is to provide a complementary time indicating mechanism for a clock which presents an original analogous or digital time indication using magnetic means in addition to a conventional time indication utilizing long and short hands.

SUMMARY OF THE INVENTION

As an aspect of the present invention, there is provided a complementary time indicating mechanism for a clock comprising a clock body including mechanisms for indicating the predetermined divisions of time, long and short hands having each inner end rotatably pivoted to said clock body and actuated by said time division mechanisms, a piece of permanent magnet fitted to the outer end of at least one of said hands, a panel of a transparent or semitransparent material covering the surface of said clock body containing said hands and a piece of magnetic material movably placed on said panel facing of said permanent magnetic piece.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 shows an exploded perspective view of a complementary time indicating mechanism for a clock according to an embodiment of the present invention which presents an analogous time indication; and

FIG. 2 illustrates an exploded perspective view sectioned a part of a complementary time indicating mechanism for a clock according to another embodiment of the invention which displays a digital time indication.

PREFERRED EMBODIMENTS OF THE INVENTION

There will now be described by reference to the appended drawing the preferred embodiments of a complementary time indicating mechanism according to the present invention for a clock.

Generally, the body **11** of a clock includes various forms of mechanism (not shown) for indicating the predetermined divisions of time. On the upper side of the clock body **11** there is installed a dial plate **12** with the time graduation separated into equal peripheral divisions. Each inner end of a long hand **13** and a short hand **14** is rotatably pivoted by means of a shaft **15** stand on the axis of the dial plate **12**. Thus, the long and short hands **13** and **14** are actuated in an interlocking relationship with said time division mechanisms included in the clock body **11**.

With the present invention, there are fitted permanent magnetic pieces **16** and **17** to the respective outer ends of the long and short hands **13** and **14**. On the surface of the clock body **11** containing said hands **13** and **14** is detachably placed a panel **18** made of a transparent or a semitransparent material, for example, glass or plastics. There is previously provided a given floral pattern **19**, for example, a chrysanthemum or a

sunflower, consisting of plural large pedals **19L1**. **19L2**..**19** LM and plural small pedals **19S1**, **19S2**,...**19S***m* on the surface of the panel **18**. On the other hand, desired several insects **20** suitable for the floral pattern **19**, for example, a ladybug or a gold beetle made of magnetic material are beforehand prepared.

With a complemental time indicating mechanism for a clock of the aforesaid arrangement, when there are placed the insects **20** on the surface of the panel **18** which face the long and short hands **13** and **14** respectively, then the inserts **20** are magnetically attracted by the corresponding permanent magnetic pieces **16** and **17** and are each rotated successively along the corresponding pedals of the floral pattern **19** in an interlocking relationship with the rotation, in a clockwise direction, of the long and short hands **13** and **14**, thus presenting an original or unique analogous time indication in addition to the well known time indication due to the long and short hands **13** and **14**.

In this case, it is preferred that various kinds of panels **18** on the surfaces of which are formed different floral patterns from each other are prepared, and various kinds of insects **20** made of magnetic material are prepared in order to exchange them at any desired time.

Also, since the insect is preferred to be as light as possible it should be prepared by coating a magnetic material on a slice of light plastic, for example, foamed styrol.

FIG. 2 illustrates an exploded perspective view sectioned a part of a complementary time indicating mechanism for a clock according to another embodiment of the invention which displays a digital time indication.

In the embodiment, panel **18A** is made of semitransparent material. From the inner wall portions of the panel **18A** facing the rotation locus of said permanent magnetic piece **16** or **17** fitted to the long hand **13** or short hand **14** integrally projected a plurality of cylindrical hollow portions, **211**, **212**, ...**21***n*, at an equal peripheral interval. And in the cylindrical hollow portions **211** to **21n** are slidably received a plurality of second rod-shaped permanent magnetic pieces **221**, **222**, ...**22***n* along the inner walls of the corresponding cylindrical hollow portions **211** to **21***n*, each of said second permanent magnetic pieces **221** to **22***n* having its inner end of an opposite magnetic polarity to that of the outer surface of said magnetic piece **16** or **17** and previously displayed with a given time indicating numeral on its outer surface.

The second magnetic pieces **221** to **22***n* are normally received in the inmost parts of the corresponding cylindrical hollow portions **211** to **21***n*.

With a complementary time indicating mechanism for a clock of the aforesaid construction, when the long and short hands **13** and **14** are successively advanced in the clockwise direction by said time division mechanism included in the clock body **11**, then only two of the second magnetic pieces **221** to **22***n* which face the magnetic pieces **16** and **17** fixed at the outer ends of the hands **13** and **14** are magnetically repled and slided at the outmost parts along the inner walls of the corresponding cylindrical hollow portions, while the other second magnetic pieces are still received at

the inmost parts of the corresponding cylindrical hollow portions, thus displaying an original or unique digital time indication in addition to the conventional time indication according to the long and short hands.

In this case, the inner wall of each cylindrical hollow portion should be so tapered that the corresponding second magnetic piece received therein is slided back at said normal position, when the long or short hand is again going away therefrom.

I claim:

1. A complementary time indicating mechanism for a clock comprising a clock body including mechanisms for indicating the predetermined divisions of time, long and short hands having each inner end rotatably pivoted on said clock body and actuated by said time division mechanisms, a piece of first permanent magnet

fixed on an outer end of at least one of said hands, a panel of a semitransparent material covering the surface of said clock body containing said hands, a plurality of cylindrical hollow portions integrally projected from inner wall portions of said panel facing the rotation locus of said permanent magnetic piece at an equal peripheral interval, and a plurality of second permanent magnetic pieces slidably received in the corresponding cylindrical hollow portions formed on said panel, said each second permanent magnetic piece having its inner end of an opposite magnetic polarity to that of the outer surface of said first permanent magnetic piece and previously displayed with a given time indicating numeral on its outer surface.

* * * * *