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W. M. EWING ET AL

2,293,459

WATCH

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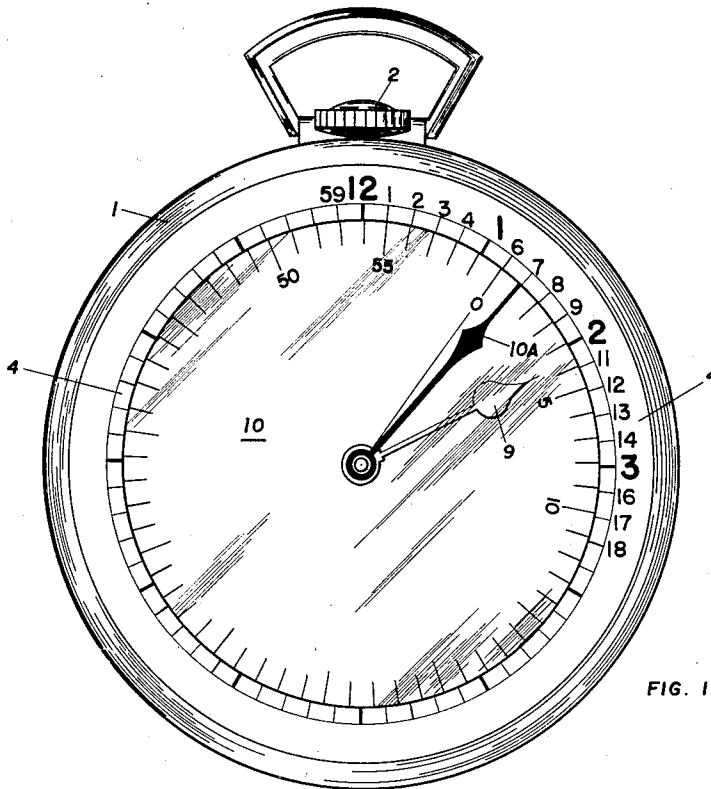


FIG. 1

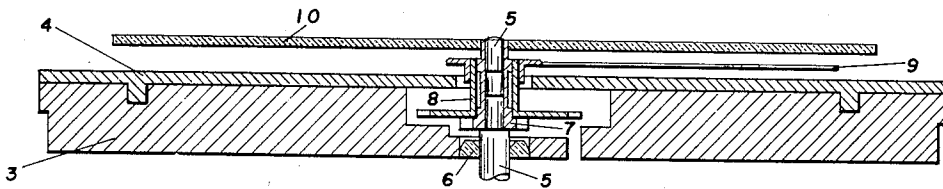


FIG. 2

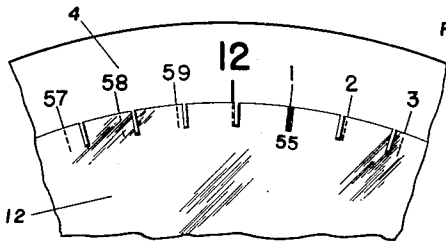


FIG. 3

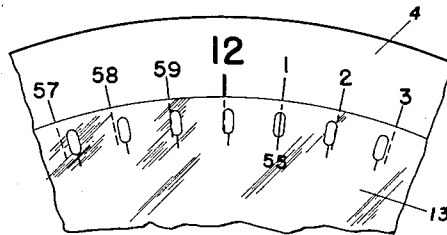


FIG. 4

INVENTORS.
WILLIAM MAURICE EWING
A. C. VINE
BY *James M. Keilman*
ATTORNEYS.

UNITED STATES PATENT OFFICE

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WATCH

William Maurice Ewing, Fountain Hill, and Allyn Collins Vine, Bethlehem, Pa., assignors to Hamilton Watch Company, Lancaster, Pa.

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3 Claims. (Cl. 58—126)

This invention relates to a watch in which the minute and seconds hands are replaced by a single rotatable disc having vernier markings.

One of the advantages of this invention is that a person having a watch with no seconds hand may be able to modify the watch so as to read the seconds merely by removing the minute hand from the upper end of the cannon pinion and slipping on a disc such as disclosed in this invention.

Another of the advantages of this invention is that the more or less complicated structure made necessary by reason of manufacturing a watch with a seconds hand, and consequently the increased cost of production by reason thereof, is rendered unnecessary with no loss of benefit.

A third advantage of this invention lies in the ability to reset the seconds hand at any time that it is desired. This resetting may be accomplished by conventional watch construction. Other and further advantages will be apparent from a reading of the following specification and claims.

Fig. 1 is a plan view of a watch having the invention incorporated therein.

Fig. 2 is a cross sectional enlarged and exaggerated view of a portion of the watch with the watch case omitted.

Fig. 3 is a modification of the present invention showing a different type dial.

Fig. 4 is another modification of this invention disclosing a third type dial.

Numeral 1 illustrates a watch case having a stem 2 which functions to wind the mainspring and reset the hour hand 9, and minute and seconds disc 10. The watch case 1 houses the watch movement comprising the pillar plate 3 and other cooperating elements. To this pillar plate a conventional dial 4, such as seen in Figure 1 may be applied.

Within the watch case 1 is positioned a center pinion shaft 5 and jewel 6. Secured to this center pinion shaft 5 is a cannon pinion 7 having an extended collar to the upper end of which a minute hand is normally secured. In this invention, however, instead of a minute hand being secured to the upper end of the cannon pinion, a transparent disc having vernier markings is frictionally attached. Secured to the cannon pinion 7, but rotatably mounted thereon is an hour wheel 8 to which an hour hand 9 is secured.

The inventive thought lies principally in the construction and arrangement of the markings on the stationary and movable dial with relation to each other so that by means of a single

element both the minutes and the seconds may be read. The hour hand 9 is visible beneath the transparent disc 10, and operates in the usual manner by means of the cannon pinion 7 driving a minute wheel (not shown) which, in turn, drives the hour wheel 8 and consequently the hour hand. The hours are indicated by the large heavy numerals on the stationary dial.

On the rotatable disc 10 is painted a minute hand 10A which likewise functions to indicate the minutes in the usual manner, i. e., on the stationary dial. The stationary dial 4 preferably has the customary sixty markings on it. On the rotating disc one space is marked which is equal to each of the spaces on the stationary dial. The remainder of the rotating disc is marked into sixty equal spaces which obviously makes each space on the inner rotating dial with the exception of the space between zero and the minute pointer less than each space on the outer stationary dial. In other words, the sixty spaces on the inner rotating dial between the pointer 10A and zero in a clockwise direction equal any fifty-nine spaces on the stationary dial. Thus the hours and the minutes may be read in the usual manner, and by glancing around the rotating dial we may quickly and easily ascertain the line on the inner dial and the line on the outer dial which register and by reading the corresponding numeral on the inner dial the number of seconds may be ascertained. For example, in Fig. 1 the time indicated is 2 hours, 6 minutes and 55 seconds.

Many modifications may be derived from this broad idea. For example, at times it may be difficult to ascertain exactly which lines on the rotating inner dial and the stationary outer dial are meeting. In Fig. 3 is shown a rotating dial 12 which has a series of narrow slots cut into the circumference. These slots are spaced exactly as are the markings on the rotating dial in Fig. 1, namely, one space equals each of the spaces on the stationary dial and the remainder of the disc is divided into sixty equal spaces. By means of these slots it will be comparatively easy to instantly pick out the line and the slot which will serve to indicate the exact time.

If the slot is somewhat larger than the width of the marker or line on the stationary dial, it may be possible to see two or three or more lines in adjacent slots at the same time, thereby directing the observer's attention to that particular section of the dial very quickly. The line, of course, in the exact center of its corresponding slot will be the line which will indicate the cor-

rect time. The relative length and width of the slots and the markers may be varied to suit the preference of the manufacturer.

Another modification, quite similar to Fig. 3, is illustrated in Fig. 4. In this modification the slots of Fig. 3 are replaced by oblong apertures in disc 13. In addition to the apertures, guide lines are also provided from the center of the curve of the aperture inwardly for a short distance to serve as guide lines and thereby more readily show the correct time.

The rotating dial could also be formed of opaque glass or plastics having apertures or transparent windows formed therein. In this modification the hour hand would be extended beyond the circumference of the inner disc. Also certain of the markers could be formed of different colors so that the time might be more readily ascertainable.

The particular style and number of markers on either the stationary or moving dials are not particularly important. However, the larger the dials, such as used on a pocket watch in comparison to a small wrist watch, the quicker will it be possible to read the vernier on the watch. Also the more markers on the dials, the more accurate will be the reading. Thirty or one-hundred twenty markers, for example, may be used on both dials; however, it is preferred to have sixty markers on the minute track and sixty markers on the rotating dial.

Likewise, the particular type vernier dial may be varied. For example, the vernier may be formed with fifty-nine spaces on it instead of sixty-one.

By extending the hour hand beyond the rotating dial and providing raised projections on the minute hand and markers, the watch may be transformed into a blind man's watch.

Many other modifications are obvious from this broad disclosure. We do not intend to limit ourselves to the particular construction, configuration, dial, or markings thereon either or all of which may be varied without going beyond the scope of my invention as shown, described and claimed.

In view of all the foregoing, it is readily ap-

parent that we have invented a watch in which the seconds, minute, and hour hands can be set by the ordinary watch stem. When a time signal is broadcast the observer does not need to be content with setting his watch only to the minute, but can easily set it to the exact second. A watch of this type can find many applications in scientific and engineering circles where accuracy to a second is necessary or desirable.

10 What we claim is:

1. A watch comprising a conventional dial having a certain number of markers thereon, an hour indicator positioned above the dial, a transparent rotatable dial positioned above said hour hand and having means thereon cooperating with the markers on said dial to indicate the minutes and the seconds, said seconds indicating means consisting of one space on the transparent dial equal to any one of the spaces on the stationary dial, and the remaining portion of the transparent dial divided into the same number of spaces as are present on the stationary dial.

2. A watch comprising a dial having equally spaced markers thereon, a rotatable dial positioned above said first dial and having indicating means thereon cooperating with the markers on said fixed dial to indicate the minutes and the seconds, said seconds indicating means consisting of spaced markers on said rotatable dial, one space on the rotatable dial equal to any one of the spaces on said first dial, and the remaining portion of the rotatable dial divided into the same number of spaces as are present on the first dial.

3. A vernier dial for a timepiece having a fixed dial and a center pinion shaft to which a cannon pinion is secured comprising a rotatable dial provided with a minute indicator, a circumferential vernier scale, said rotatable dial fastened to the cannon pinion in the place of the conventional minute hand so as to turn therewith and which cooperates with the fixed dial to enable the time to be ascertained in minutes and each second of the minute without requiring minute and second hands.

WILLIAM MAURICE EWING.
ALLYN COLLINS VINE.