April 16, 1957 W. S. HAYNES 2,788,765

STOP WATCH

Filed March 31, 1954

Fig. 1.

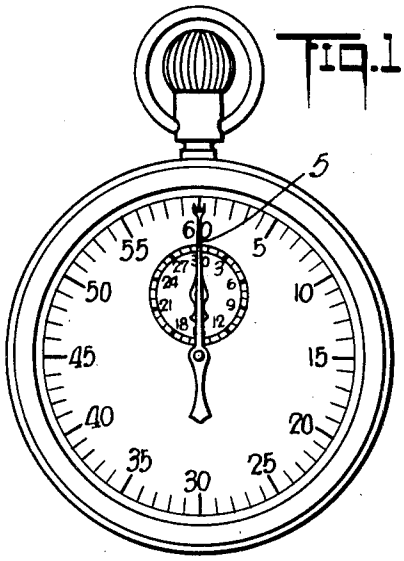


Fig. 2.

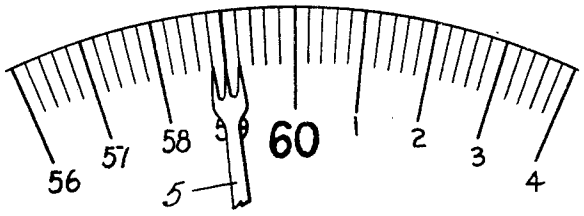


Fig. 3.

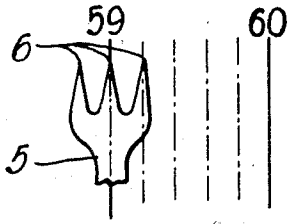


Fig. 5.

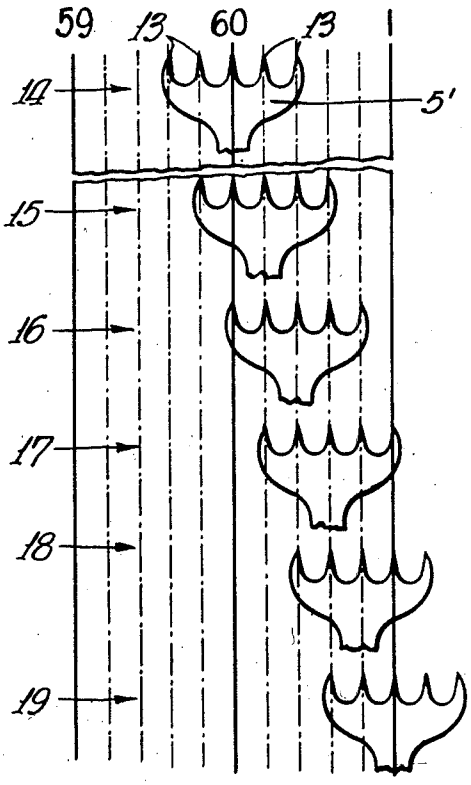
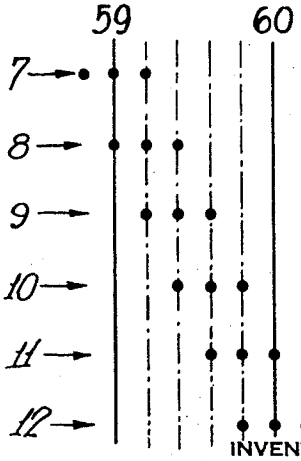


Fig. 4.



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STOP WATCH

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2 Claims. (Cl. 116—129)

My invention relates to means for accurately reading fractional spaces between lines, and, more particularly, to a dial and hand device such as a stop watch.

In a stop watch there is usually a sweep-second hand and the spaces between seconds marked on the dial are usually in fifths. The sweep-second hand indicates the seconds and the fifths, but it is sometimes very difficult to read accurately because the sweep-second hand has merely a thin blade and a point to indicate its position.

My invention relates particularly to a hand having a relatively wide head end so that the position of the hand between the seconds lines may be read easily by the position of the relatively wide end rather than by the positioning of a single point such as the end of a sweep-second hand.

It is an object of the invention, therefore, to provide means for accurately reading fractional distances between two marks such as the marks on a dial, hub or other similar device.

It is another object to provide a device of the character indicated, in which subdivisions between lines may be readily read from the position of an indicator or hand positioned over or between certain division lines.

More specifically, it is an object of the invention to provide a stop watch with much improved means for reading subdivisions between seconds.

It is another object to provide a device such as a stop watch with a sweep-second hand so arranged that its position may be readily ascertained because of its width or other configuration rather than by a single point.

In the drawings, which show, for illustrative purposes only, preferred forms of the invention:

Fig. 1 is a more or less conventional face view of a stop watch;

Fig. 2 is a fragmentary view, on an enlarged scale, of a watch dial and an improved sweep-second hand;

Fig. 3 is a view similar to Fig. 2, but on a further enlarged scale;

Fig. 4 is a diagrammatic view to illustrate the positioning of the sweep-second hand shown in Fig. 3; and

Fig. 5 is a view similar to Figs. 3 and 4 to illustrate a sweep-second hand of slightly different form.

My invention will be described as embodied in a stop watch, but it is to be understood that the invention is of broader application and may be employed for accurate reading of dials and hands relatively to each other where great accuracy is desired.

In said drawings, the stop watch illustrated has a usual dial divided into minute and second intervals. The seconds marks are shown, but the one-fifth seconds usually marked on a stop watch dial need not be employed in connection with my invention. It is my particular object to provide a dial and a specific pointer or hand having two or other plurality of spaced points to facilitate reading fractional divisions between spaced dial marks. The total circumferential span of such a plurality of points is less than the circumferential span between adjacent seconds divisions.

In the form shown in Figs. 1–4, the sweep-second hand **5** is mounted as usual in the center of the dial, and the forward or free end is provided with three equidistantly spaced points or projections **6**. In this particular form, the hand **5** has the points **6** spaced apart one-fifth of a second. Thus, when the hand **5** is in the position shown in Figs. 2 and 3, the center point indicates that the hand is directly on a seconds mark. This reading is also obtained by observing the equal spaces at opposite sides of the broad head. This position of the hand is indicated in the zone **7** of Fig. 4. When the hand **5** moves to the right one-fifth of a second, the lefthand point **6** will coincide with the seconds line, as indicated at **8** in Fig. 4, and the reading will be ⅕ after the second.

In the next position **9**, in Fig. 4, the hand will have been moved over ⅖ of a second. In the position **10**, the hand will have moved over ⅗, while in position **11** the hand will have moved over to the ⅘ position. In the position **12**, the hand will be on the 2nd second.

It will be clear that, in the diagram of Fig. 4, it will be easier to read the position of the hand with its three points rather than the single point of the ordinary sweep-second hand. The width of the free end of the hand **5** is such that the spaces between the seconds lines and the hand are such that, by the mere proportioning between the three prongs and the seconds lines, it is very easy to read the exact ⅕ seconds. Thus, in Fig. 4, in the position **8**, the lefthand prong coincides with the seconds mark and the actual reading is one-fifth more than the second. This is readily determined and the reading is much facilitated by the mere spacing of the relatively wide hand between the seconds lines. In positions **9** and **10** of Fig. 4, in which none of the three prongs coincides with a seconds line and which positions specifically represent readings of ⅖ and ⅗ more than the second respectively, it is readily determined by the eye of the beholder that in the **9** position the hand is left of center and that in the **10** position the hand is right of center since the eye readily perceives unbalance of this character. In positions **11** and **12** representing ⅘ after the second and the even second following, the prongs of the hand again coincide with a second line and the correct reading is thus certified.

If it is desired to apply this principle to the reading of 10th parts of a second, the same type of hand may be employed but made with prongs spaced ⅒ second apart and the reading is accomplished over a dial having second and half-second divisions. To illustrate how this is accomplished, consider that Fig. 4 represents one-half second from outside line **59** to outside line **60**. Then, instead of reading ⅕ second units, the beholder reads in ⅒ seconds by the identical system.

In the form shown in Fig. 5, the hand **5'** has five points **13** and, when the hand **5'** is in the first position **14**, the center prong **13** coincides with a seconds line. When the hand has been moved to the right until the second point from the left coincides with the seconds line, the reading will be ⅕ beyond the seconds line, as indicated at position **15**. Position **16** indicates coincidence of the left-hand prong with the seconds line, while in the position **17** the righthand prong coincides with the next succeeding seconds line. In the position **18**, the second prong from the right coincides with the next succeeding seconds line, and in the position **19** the center prong coincides with the next succeeding seconds line.

In the particular form illustrated, the points **13** are spaced apart a distance of ⅕ of a second, or one-fifth of a distance between succeeding lines, so that the mere positioning of the prongs indicates quite accurately the position of the hand and the fractional part of a second to be read. In the position **14**, the hand, as stated, corresponds to a full second. In the next position **15**, the hand is moved over ⅕ of a second. In the next position

16, the hand is moved ⅖ of a second, while in position 17 the righthand prong corresponds with the next succeeding second line and the hand is moved over ⅗ of a second. In the position 18, it will be seen that the hand is moved ⅘ of a second, while in the position 19 the hand is moved over a complete second.

It will be clear, therefore, that in either form of the invention, the fractional second is read largely by the position of the wide hand relatively to one of the other of two adjacent seconds lines. Such reading is believed to be much more accurate and convenient than the usual reading of a single-point second hand coinciding with marks designating ⅕ of a second.

Here also, if required to be read in 1/10 second, the prongs of the hand need only be spaced 1/10 of a second division apart, and the dial marked to show each half-second as well as each second. To illustrate, if Fig. 5 is taken to represent only one second between outside lines 59 and 1, and the line 60 is taken to represent the half-second division, the facility with which 1/10 second positions of the hand may be determined will be readily apparent.

It will be seen that I have provided an improved hand or the like to be moved relatively to the face of a dial or other part having subdivisions and the reading of fractional spaces between adjacent lines is much facilitated. My improved hand is read by its relative position rather than the mere coinciding of a single point with a single division line indicating, say, ⅕ second. My improved stop watch is, therefore, very easy to read and the user is more likely to be more accurate in the reading than where there is simply a single-pointed second hand.

While the invention has been described in considerable detail and preferred forms illustrated, it is to be understood that various other embodiments and modifications may be made within the scope of the invention as defined in the annexed claims.

I claim:

1. In a device of the character indicated, a watch dial having seconds divisions marked thereon, a hand to move relatively over said divisions, said hand having a plurality of points spaced apart circumferentially to be positioned relatively to said divisions to assist in reading spacings between adjacent divisions, the total circumferential span of said plurality of points being less than the circumferential span between adjacent seconds divisions.

2. In a stop watch, a dial divided into seconds, a sweep second hand to traverse said dial, said sweep second hand having a plurality of circumferentially equally spaced points adjacent said seconds divisions to assist in reading the position of said second hand between adjacent seconds marks, the angular span between adjacent points being a fraction of the angular span between adjacent seconds divisions on said dial.

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