Nov. 21, 1933. A. E. FREEL 1,935,842

TIME INDICATING DEVICE

Filed July 16, 1930

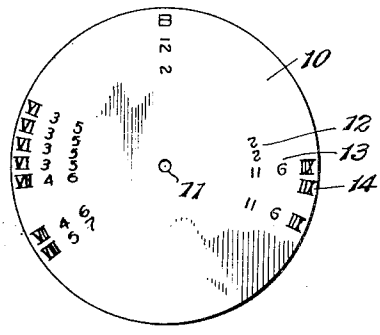


Fig. 1.

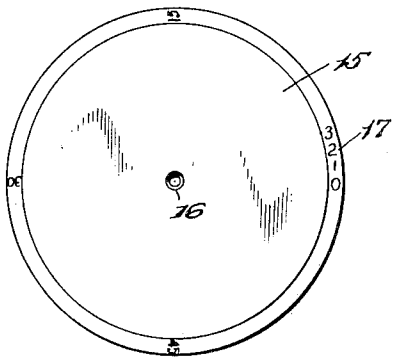


Fig. 2.

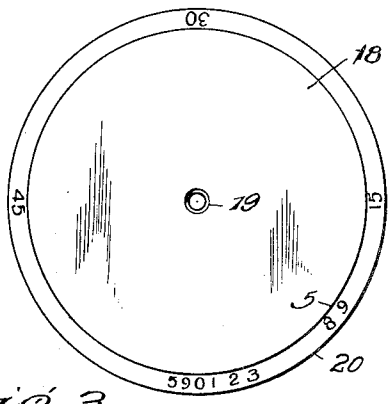


Fig. 3.

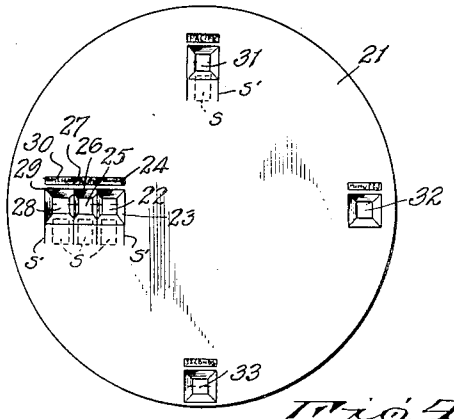


Fig. 4.

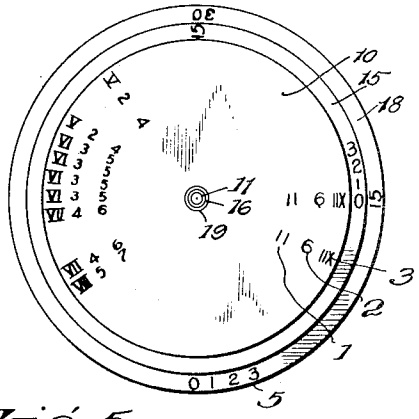


Fig. 5.

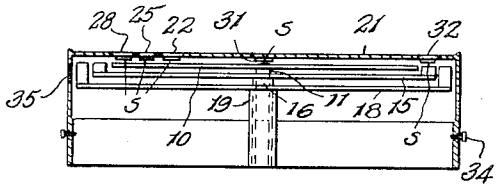


Fig. 6.

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UNITED STATES PATENT OFFICE

1,935,842

TIME INDICATING DEVICE

Albert E. Freel, Owensboro, Ky.

Application July 16, 1930. Serial No. 468,440

3 Claims. (Cl. 58—43)

My invention relates to improvements in time indicating devices and has to do, more particularly with clocks, chronometers and watches of the type in which the time is indicated by numerals visible through an aperture or apertures in an opaque covering face.

It is the primary object of my invention to provide a clock movement or similar instrument with time indicating means which may be quickly and accurately read by any individual, however young or uneducated.

It is a further object of my invention to provide a clock which will indicate time under several systems such, for example, as local time and daylight saving time; or eastern standard time, central standard time, mountain time, and Pacific time.

A further object of my invention is to provide a time indicating structure for clocks and the like which may be applied to any standard clock movement whether spring, electric, or otherwise driven.

Further objects and objects relating to details and economies of construction will definitely appear from the detailed description to follow. In one instance, I accomplish the objects of my invention by the devices and means described in the following specification. My invention is clearly defined and pointed out in the appended claims. A structure constituting a preferred embodiment of my invention is illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a plan view of the hour dial forming a part of a structure constituting a preferred embodiment of my invention;

Fig. 2 is a plan view of the minute dial forming a part of my preferred structure;

Fig. 3 is a plan view of a second dial forming a part of my preferred structure;

Fig. 4 is a face view of the apertured cover plate forming a part of my preferred structure;

Fig. 5 is a view of the hour, minute and second dials concentrically associated for disposition upon a clock or similar movement; and

Fig. 6 is a view, in cross section, of a complete time indicating structure constituting a preferred embodiment of my invention.

In the drawing, like numerals refer to similar parts throughout the several views.

Briefly, my invention consists in providing concentric hour, minute and, if desired, second dials adapted to be rotated by the appropriate driving elements of a standard clock mechanism. The hour dial is the smallest of the dials and is preferably provided with two or more concentric circular series of time indicating numerals, one for local time, and the other for daylight saving time or the like. The minute dial is larger than the hour dial and is concentrically mounted therebehind so that only a narrow band on the periphery of the dial is exposed, which band carries a circular series of numerals denoting the minutes in each hour. A third and still larger dial, similar to the minute dial, may be provided for indicating the elapsed seconds past the indicated minute. An appropriate cover plate of opaque material provided with sighting windows cuts off from view all portions of the several dials except spaces sufficiently to disclose one numeral in each series.

More specifically, and with reference to the numbered parts of my drawing, my preferred construction consists of an hour dial 10 having a central shaft 11 adapted for coupling to any conventional form of chronometric prime mover (not shown). Upon the front face of the dial is a circular series 12 of numerals ranging from 1 to 12. Around this series and concentric therewith is a second series 13, the figures of which are alined, radially, with those of the first series but are numerically so arranged with respect to those of the first series 12 that the numerals of the outer series 13 denote time two hours earlier than the alined numerals of the inner series 12. A third series 14 disposed around the series 13 denotes time one hour in advance of the first series 12. Accordingly, regarding the numerals of series 12 as denoting central standard time, the radially alined numerals of series 13 and 14 properly indicate Pacific time and central daylight saving time, respectively. The numerals of the several series 12, 13 and 14 are preferably distinguished from each other by different characterization or by distinctive coloring. The times indicated on the drawing are mentioned purely for purposes of illustration and explanation and, as is obvious, by appropriate numeralization time readings in any given system or for any set of locations may be provided in an indicating device embodying my invention. For the purpose of indicating minutes past the hour, I employ a minute dial 15 of slightly larger size than the hour dial 10, which dial 15 is concentrically disposed behind dial 10 and is provided with a tubular driving shaft 16 which surrounds shaft 11 of the hour dial and is driven by appropriate minute indicating driving mechanism of the chronometric prime mover (not shown). The exposed band-like portion of the minute dial 15 is provided with

numerals reading from 0 to 59 arranged in a circular series 17. A third and still larger dial 18, similar to the dial 15, is provided for indicating the seconds past each minute and is supported and driven by the tubular shaft 19. Second dial 18 is likewise provided with a circular series 20 of indicating numerals. For the purpose of enclosing dials 10, 15 and 18 so that there will be visible but one complete numeral of a series at any one moment, there is provided a cover member 21 formed of sheet metal or other opaque material having a plurality of small windows of approximately numeral size. Window 22 is disposed at such a distance, radially, from the center of the cover as to expose to view numerals of series 12 as the dial 10 is rotated by the chronometric prime mover. The window 22 is defined by a beveled portion 23, and a name plate 24 is disposed thereover for the purpose of informing the observer that the numeral sighted through this window 22 indicates the standard time for the location in which the clock is situated. Similar windows 25 and 28, defined by beveled portions 26 and 29, and associated with name plates 27 and 30 indicate Pacific time and central daylight saving time, respectively, in terms of the exposed numerals of series 13 and 14. As an optional or additional means of indicating time in advance or arrears of standard time without the use of more than a single series of numerals, windows may be placed at different points about the cover member 21. Such an arrangement is incorporated in the form of my invention shown in Fig. 4, in which there is a window 31 alined with the outer series 14 of hour indicating numerals. In this arrangement, the time indicated at 13 is three hours earlier than the time indicated at 28 as central daylight saving and is a proper indication of Pacific standard time. Shutters S shown in dotted lines and slidable in slots S' are preferably provided, one for each hour window so that, if desired, any one or several of the times may be eliminated from view, to the simplification of the indication. A window 32 is provided for sighting the proper minute numeral of the series 17. Likewise a window 33 is provided for sighting the numerals of the second indicating series 20 as they pass. The cover plate is provided with screws 34 or other means for its disposition upon the chronometric prime mover (not shown), and a slot 35 through which the dials may be reached for resetting.

I have disclosed what I believe to be a preferred embodiment of my invention. I am aware that many changes may be made in the construction herein shown without departing from the essential spirit of my invention. I, therefore, claim my invention broadly as indicated by the appended claims.

1. A time indicating device for use with a chronometric prime mover comprising: a rotatable hour dial having a circular series of numerals thereon, a rotatable minute dial of greater diameter than said hour dial concentrically arranged with respect thereto and bearing a circular series of numerals which encircle said hour dial and are exposed therearound, means for coupling said dials to the appropriate driving elements of the prime mover, and an opaque face plate covering said dials from view, said face plate having an opening through which one complete minute-indicating numeral of the minute dial is visible at any given moment, a second opening spaced, from the common center of said face plate and dials, a lesser distance than said first-mentioned opening and through which only one complete hour-indicating numeral of the hour dial is visible at one time, a third opening spaced the same distance from said common center as said second-mentioned opening, but so circumferentially spaced from said second-mentioned opening as to fully but restrictively reveal one other numeral of said hour dial indicative of the instant hour under a time system other than that indicated by the numeral visible through said second-mentioned opening, and shutter means for selectively covering from view one of the said hour numerals.

2. A time indicating device for use with a chronometric prime mover comprising: a rotatable hour dial having several circular series of numerals concentrically arranged thereon, the numerals of one series being radially alined with the numerals of the other series in such uniform numerical displacement that the radially alined numerals represent, individually, corresponding time under different systems, a rotatable minute dial of greater diameter than said hour dial concentrically arranged with respect thereto and bearing a circular series of numerals which encircle the hour dial and are exposed therearound, means for coupling said dials to the appropriate driving elements of the prime mover, and an opaque face plate covering said dials from view, said face plate having an opening through which only one complete minute-indicating numeral of the minute dial is visible at any given moment, and a radially alined series of openings through which one and only one complete hour-indicating numeral of each series is visible at one time.

3. A time indicating device for use with a chronometric prime mover comprising: a rotatable hour dial having several circular series of numerals concentrically arranged thereon, the numerals of one series being radially alined with the numerals of the other series in such uniform numerical displacement that the radially alined numerals represent, individually, corresponding time under different systems, a rotatable minute dial of greater diameter than said hour dial concentrically arranged with respect thereto and bearing a circular series of numerals which encircle the hour dial and are exposed therearound, means for coupling said dials to the appropriate driving elements of the prime mover, and an opaque face plate covering said dials from view, said face plate having an opening through which only one complete minute-indicating numeral of the minute dial is visible at any given moment, a radially alined series of openings through which one and only one complete hour-indicating numeral of each series is visible at one time, and shutter means for one of the openings of said radially alined series, which when closed cuts off from view one entire series of numerals.

ALBERT E. FREEL.