March 1, 1932. M. WEIL 1,847,800

CLOCK

Filed Aug. 6, 1931

Fig. 1.

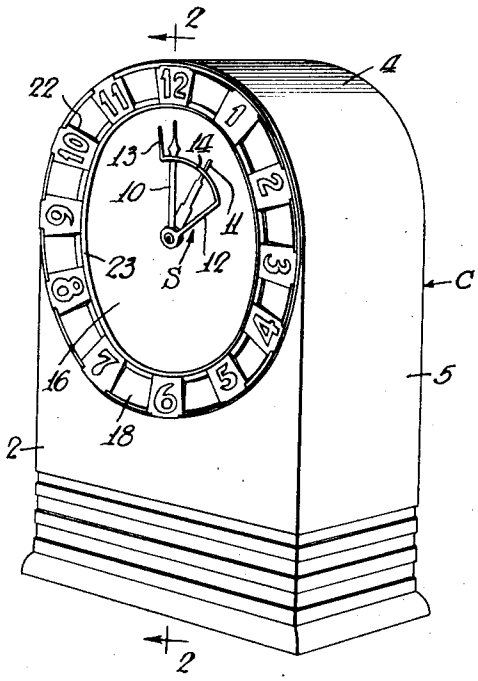


Fig. 2.

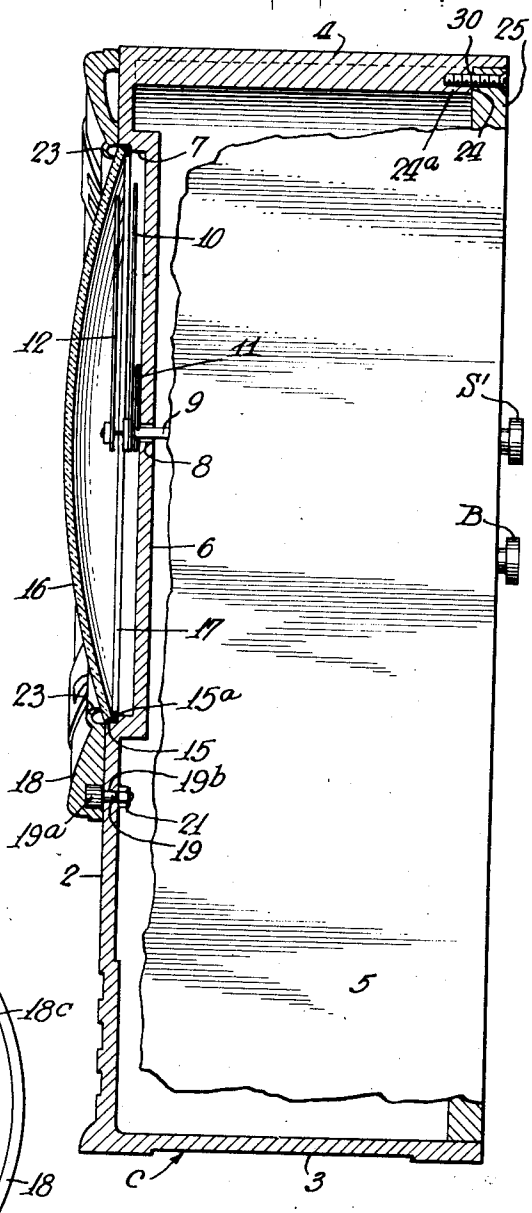


Fig. 3.

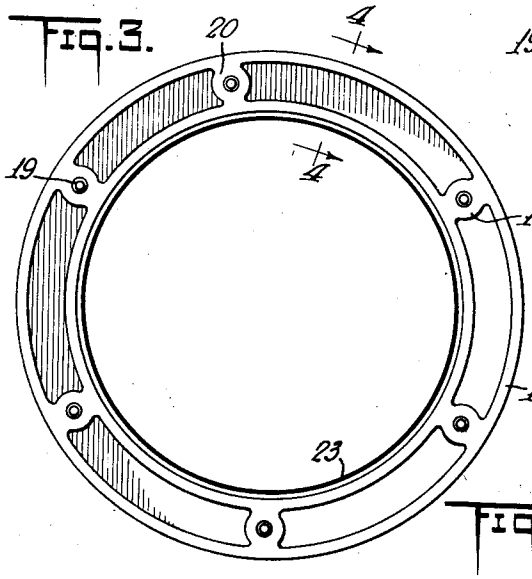
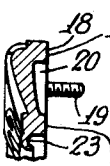


Fig. 4.



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UNITED STATES PATENT OFFICE

MAXIMILIAN WEIL, OF NEW YORK, N. Y.

CLOCK

Application filed August 6, 1931. Serial No. 555,427.

The present invention in its broader aspects has a wide and varied range of utility in connection with various classes of measuring apparatus, but relates particularly to chronological and horological instruments. It finds its preferred embodiment in a clock of the electrically driven type. While useful in connection with electric clocks using impulse motors, it is particularly effective for embodiment in a synchronous motor type of electrical clock whether of the hand started or of the self-starting variety.

The synchronous motor clocks of the hand started character run silently and continuously unless the power which supplies the motor is cut off. When the circuit is reestablished, the motor will not operate the clock until such time as a starting button is grasped and the motor spun so that it comes back into phase with the alternating operating current, whereupon the clock will run until another current break occurs.

One of the difficulties with the clocks of this character is the fact that inasmuch as their normal operation is silent, there is no cessation of ticking to indicate when the clock has stopped.

The use of special signal mechanisms effectively to apprise of the stoppage of the clock, may involve added mechanism or circuit connections to operate and restore the signals.

Ordinary sweep hands while simple, are frequently ineffective, for such hand may stop nearly or quite in alignment with either the minute or hour hand of the clock and in casually glancing at the dial, one frequently fails to note anything except the position of the hour and minute hands, which obscure or render inconspicuous the stopped sweep hand which may lie over or under one of them.

An object of the invention, therefore, is to provide a clock of the character described above, in which the position of the sweep hand always will be readily observable and its stoppage will be immediately apparent to any one glancing at the clock.

According to the invention, the sweep hand of the clock is of conformation that can at no time coincide with either hour or minute hand, and that enhances the distinctive and aesthetic appearance of the clock. In a preferred embodiment the sweep hand comprises a short radial segment having integral therewith a trailing arcuate segment integral with the trailing end of which is a second outwardly extending radial segment. It is within the scope of the invention, however, to provide a radial sweep hand in combination with modified hour and minute hands.

Another object is to provide a clock of simplified construction in which the use of the circular dial is completely eliminated, and there is no need for using bezels or other special frames with which the crystal is preassembled.

Another object is to provide a clock and a clock casing of simple, practical, rugged and durable construction, which by novel correlation of hands and numerals will be particularly easy to read, and yet afford a distinctive and ornamental appearance.

The casing which houses and encloses the electric motor and the gear train which constitute the clock works, is provided with a front face totally devoid of any indicia and the crystal which ordinarily is used to protect the hands is encircled and may be clamped into place by a numeral carrying ring attached directly to the front surface or panel of the clock casing. By virtue of this arrangement, the need for special dials carried by the clock works is completely obviated and the construction of the casing itself is materially simplified, being, if desired, of two pieces of material, one piece constituting a removable back, which may be readily detached for purposes of inspecting or repairing the works.

Preferably the numeral carrying ring is of molded material, having molded therein the securing devices which connect it with the casing, and having an inner rim molded to conveniently hold the crystal in position. The need for preassembling the crystal into a bezel or for using a dial is thus avoided and the resulting structure, while having a distinctive and unusually simple appearance, facilitates reading the time of day by a quick glance, the numerals being larger and more

widely spaced about rather than within the periphery of the crystal.

The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein

Fig. 1 is a perspective view of a clock embodying the invention;

Fig. 2 is an enlarged side elevational view of the clock with parts broken away and in section on the line 2—2 of Fig. 1;

Fig. 3 is a rear face view of the numeral carrying ring; and

Fig. 4 is a transverse sectional detail on the line 4—4 of Fig. 3.

The clock casing indicated generally by the reference character C may be fashioned of any suitable material, the casing front 2, casing bottom 3, top 4 and the straight sides 5 being integrally formed. The casing may be of molded material or of wood or of any other suitable substance. For illustrative purposes, I have shown the casing top curved for tangency with sides 5, and substantially in conformity with the curve of the circular numeral bearing ring 18 which is affixed to the front of the casing.

Near the upper end of the front or panel of the casing, the latter has a circular cavity 6 sunk therein, the surface of which is shown flat but may be slightly convex and presents a countersunk disk unitary and preferably integral with the panel. The shoulder 7, determining the periphery of the cavity is cut away near its outermost part to define an outwardly facing ledge 15 for a purpose which will more fully hereinafter appear.

Centrally of the cavity 6, the casing in front is provided with an opening 8 through which the concentric minute hand, hour hand and tell-tale hand shafts extend. These shafts in the present instance, are designated by the reference numeral 9.

A numeral ring 18 encircles cavity 6 and may on the inwardly sloping face thereof be provided at regularly spaced intervals with numerals 22 indicating the hour. The ring may be of any appropriate material, and the numerals may be displayed thereon in any of a wide variety of ways. Preferably, however, the ring is molded of material contrasting with that of the clock casing and the numerals are molded in intaglio or relief and filled in with enamel.

Also embedded in the ring 18 during this molding operation, are preferably the heads 19*a*, of securing devices such as 19, which preferably comprise bolts projecting rearwardly from the face of the ring and adapted to enter or pass through corresponding openings 19*b* in the clock case. Nuts 21 threaded upon the extremities of the bolts and pressing against the inner face of panel 2 serve to clamp the numeral ring against the front face of the panel.

Observing the ring in cross-section in Figs. 2 and 4, and noting the back plan view in Fig. 3, it will be seen that the ring is of generally convex cross-sectional shape having spaced annular concentric bearing surfaces 18*a* and 18*b*, at its rear face which lie flatly against the clock casing, concentric with but radially beyond the circular cavity 6. At the points where the securing devices 19 are molded into the ring, the two flattened portions 18*a* and 18*b*, may be connected by cross webs such as 18*c* which afford firm anchorage for the heads of said devices.

To protect the hands from inadvertent injury and to seal the casing against the entry of dust and dirt, a convex crystal 16 of conventional form may be utilized. The edges of this crystal preferably rest upon a yielding packing ring or gasket 15*a*, supported on ledge 15 and the crystal is retained in place thereagainst by suitable fastening means coacting with its rim. Preferably, the ring is formed at its inner edge with an integral bead or flange 23 of hook shaped cross section adapted to press lightly against the edge of the crystal; thus to force it into engagement with the packing 15*a* and thus to hold it in place, and to frame the edge of the crystal, all without the need for any auxiliary crystal securing means.

The hour hand 11, the minute hand 10 and the tell-tale hand, indicated generally at S, may be driven from the clock works (not shown) through any convenient or conventional train of gears. These hands contrast in color with the front face of the clock casing over which they travel and they all read on the numeral bearing ring 18.

The clock works are neither illustrated nor per se claimed herein, but as suggested above, a synchronous, non-self-starting electric motor may be used to drive the hands through any suitable gear train. When the motor stops, it may be hand started by spinning the hand-starting button B, which projects rearwardly through the casing back 25, at any suitable position not occupied by the conventional setting button S′.

This casing back is also preferably formed of molded material, fitting within the clock casing and lying against one or more integral ledges 30 molded in the casing. The back is held in place by screws or equivalent securing devices 24, which may enter tapped sockets 24*a* in the casing.

The minute and hour hands of the clock are conventionally shown as radially disposed with respect to the circular numeral carrying ring, and, therefore, to carry out the principles of the invention, the tell-tale hand includes at least some non-radial portion. Illustratively, I have shown this hand as an integral metal stamping consisting of a radial inner section 12 and a radial outer section

13 angularly displaced with respect thereto and connected by an intermediate arcuate portion 14, concentric with the ring 18. Thus in no position can the sweep hand so overlie the hour hand or minute hand or both that it will be concealed from view or become inconspicuous. Even a casual observer glancing at the clock will immediately notice whether or not this hand has stopped moving.

As suggested above, a wide variety of expedients might be resorted to for eliminating the possibility of coincidence of the sweep hand with either of the other hands upon stoppage of the clock although the specific construction shown in the drawings is preferred. The sweep hand might be of zig-zag formation or of curved formation or might be of truly radial formation while the hour and minute hands were provided with offsets or were curved. In all embodiments within the scope of my invention, insofar as the same relates to clock hand construction, the offset portion is a part of the main length of the hand which must be traversed in running the index finger from the mount of the hand along the structure of the hand to the single pointer end thereof. From another point of view a substantial part of the main length of the tell-tale hand is laterally displaced with respect to a straight line joining the mount and the pointer end of the hand. It is important so to construct the hands of the clock that in no position will it be possible for the sweep hand to lie in its entirety directly in coincidence with one or both of the other hands.

It will particularly be noted that the numeral ring in the preferred embodiment protrudes outwardly for a substantial distance beyond the plane in which the hands are located and materially beyond the periphery of the crystal. The hands preferably are lodged in a cavity in the panel, so that they move in a plane considerably below that of the numeral ring. By this arrangement the clock is afforded a uniquely attractive appearance, affording also greatly enhanced visibility and readability as compared with time pieces in which the numerals lie substantially below or at the plane of the hands.

The mode of application of the numeral ring renders possible effects of contrast attainable with difficulty where the parts are unitary and, moreover, as pointed out brings about the facility of application of the crystal retained in position by the inner rim of the numeral ring. The clock is devoid of any dial, the disk over which the hands move being blank and all three of the hands—the hour, the minute and the tell-tale hand, being co-ordinated with the numeral wing.

It will thus be seen that there is herein described apparatus in which the several features of this invention are embodied, and which apparatus in its action attains the various objects of the invention and is well suited to meet the requirements of practical use.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new, and desire to claim by Letters Patent is:—

1. A time clock having indicator hands and a tell-tale hand, said latter hand moving throughout operation of the clock at a rate materially faster than the other hands, said tell-tale hand having a mount and a pointer extremity, a substantial portion of the length between said mount and said pointer extremity being displaced with respect to the line joining the same, whereby regardless of the position of the indicator hands, a substantial portion of the length of the tell-tale hand is at all times exposed to view.

2. A time clock having a face, indicator hands extending radially of said face, a tell-tale hand mounted concentrically with said indicator hands and moving at a rate materially faster than said indicator hands, said tell-tale hand having a material part of the length thereof extending in a direction inclined to the radial, whereby, regardless of the position of the indicator hands, a substantial portion of the length of the tell-tale hand is at all times exposed to view.

3. A time clock having a face, indicator hands extending radially of said face, a tell-tale hand mounted concentrically with said indicator hands and moving at a rate materially faster than said indicator hands, said tell-tale hand having a part of the length thereof extending radially and having a substantial part of the length thereof extending in a direction sharply inclined with respect to the radial, whereby, regardless of the position of the indicator hands, a substantial portion of the length of the tell-tale hand is at all times exposed to view.

4. A time clock having a face, indicator hands extending radially of said face, a tell-tale hand mounted concentrically with said indicator hands and moving at a rate materially faster than said indicator hands, said tell-tale hand having its mounted end extending substantially radially and having its pointer end extending substantially radially, and having a substantial portion of the length thereof connecting said two radial portions and sharply inclined with respect to the radial, whereby, regardless of the position of the indicator hands, a substantial portion

of the length of the tell-tale hand is at all times exposed to view.

5. A time clock having indicator hands and a tell-tale hand, the latter comprising angularly displaced radial portions and means constituting a substantial portion of the length of the tell-tale hand and connecting the outer end of the inner radial portion to the inner end of the outer radial portion.

6. A time clock comprising indicator hands, moving relative to each other in operation, one of said hands having laterally displaced portions adjacent its opposite ends, and an intermediate arcuate connecting portion.

7. A time-clock including a casing having a unitary front with a cavity sunk therein, said casing having an encircling shoulder below said front and around said cavity, indicator hands mounted to move in said cavity, a transparent cover lodged at its periphery on said shoulder, and a numeral ring encircling said cavity, affixed to said front contiguous to said cover and protruding outward from the periphery of the latter.

8. A time-clock including a casing having a unitary front with a cavity sunk therein, said casing having a peripheral shoulder below said front and around said cavity, indicator hands mounted to move in said cavity, said shoulder having a ledge adjacent said face, packing on said ledge, a transparent cover engaging said packing with its edge surrounded by said shoulder, and a numeral ring encircling and securing said cover on the casing.

9. A time-clock comprising a panel, a transparent cover for a portion of said clock and having its periphery substantially in the plane of said panel, a numeral ring presenting a wide numeral bearing face and having its inner edge overlapping the periphery of said cover, and means for securing said numeral ring to the panel to hold the cover in place.

10. The time-clock according to claim 9 wherein the inner edge of the numeral ring is curved in cross-section and engages the cover.

11. A time-clock comprising a casing with a cavity in is front face, an annular shoulder about said cavity and below said face, indicator hands mounted to move in said cavity, said shoulder having a ledge adjacent said face, packing on said ledge, a transparent cover for said cavity engaging said packing with its edge surrounded by said shoulder, a numeral ring encircling said cover presenting a wide numeral bearing face and having its inner edge adjacent the cover, and means securing said numeral ring to the casing to hold the cover in position thereon.

12. As an article of manufacture, a numeral ring for a time clock, said ring being annularly countersunk to afford annular bearing faces at its inner and outer peripheries, bridge pieces connecting said bearing rings, and fastening elements at said bridge pieces for mounting said ring to the clock case structure.

13. As an article of manufacture, a numeral ring for a time-clock, said ring being of molded material, the lower surface of said ring being countersunk to afford flat bearing annuli at the inner and outer peripheries thereof and bridging elements unitary therewith at uniform intervals connecting said bearing annuli and bolt elements molded into said bridge pieces and protruding rearward therefrom.

14. A clock including a case having a countersunk disk, clock hands exposed on said disk, a numeral ring having spaced bearing areas in contact with said case and concentric with said disk, said ring having spaced re-inforced portions and having elements at said re-inforced portions removably affixing said ring to said case.

15. A time-clock comprising a case having a panel including a countersunk disk, clock hands exposed at the face of said disk, a molded numeral ring concentric with said disk, countersunk at its lower face to afford spaced bearing areas, re-inforce bridge elements unitary with the inner face of said ring, bolts molded in said bridge pieces and extending through corresponding apertures in said panel and nuts clamped against the rear face of said front panel and affixing said numeral ring to the panel, a crystal superposed over said disk, said numeral ring having an inner flange retaining the periphery of said crystal in place.

16. A time clock comprising a case presenting a panel, clock hands mounted in front of said panel and operated from in back of said panel, a numeral ring concentric with said clock hands and rigid with respect to said panel and protruding substantially out of the plane of said panel, and a crystal having the periphery thereof substantially in contact with a part of said panel, the inner periphery of said numeral ring overlapping said crystal periphery.

17. A time clock having a panel with a circular cavity sunk therein and presenting a face constituting a unitary part of said panel, clock hands mounted concentrically of said face and extending in a plane below the plane of said panel, a numeral ring presenting a wide numeral bearing face secured to the front of said face protruding substantially beyond the plane of said panel having its inner periphery contiguous to that of the circular cavity and engaging an annular area of said panel substantially equal to the width of said ring.

Signed at New York in the county of New York and State of New York this 4th day of August A. D. 1931.

MAXIMILIAN WEIL.