May 21, 1940. H. D. BEHR 2,201,941

TIMER

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Fig. 1

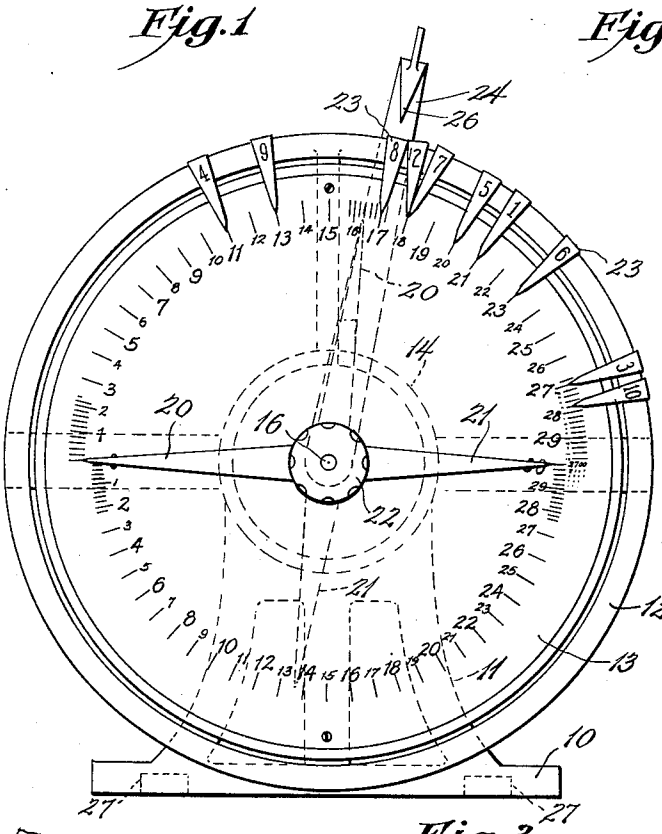


Fig. 2

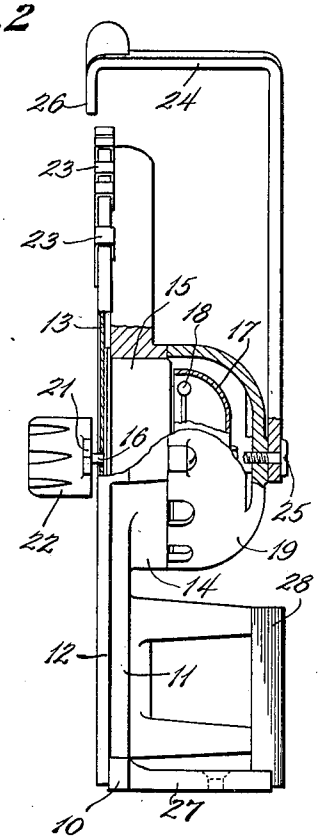
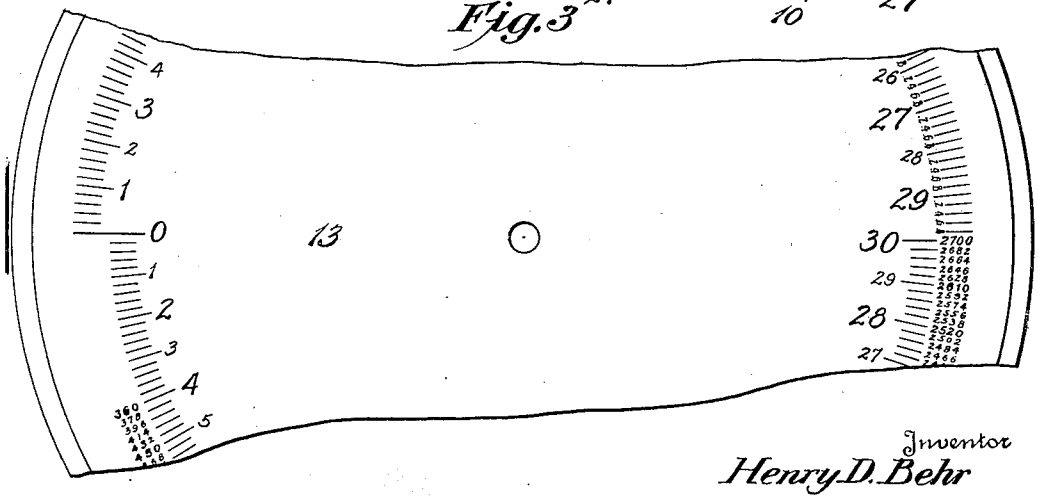


Fig. 3



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TIMER

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5 Claims. (Cl. 161—23)

This invention relates to timers and, among other objects, aims to provide a greatly improved combination cue signal and performance time or film measuring device especially adapted for use in moving picture projection booths or in timing and producing signals for other performances such as radio and television broadcasts, musical numbers, stage acts and the like.

Other aims and advantages of the invention will appear in the specification, when considered in connection with the accompanying drawing, wherein:

Fig. 1 is a front elevation of one form of device embodying the invention;

Fig. 2 is a side elevation, partly in section, of the device shown in Fig. 1; and

Fig. 3 is a fragmentary enlarged face view of the dial shown in Fig. 1.

Referring particularly to the drawing, the timer device there shown is especially designed for use in moving picture booths, first, to determine the time required for exhibiting a reel of film and, second, to give the projectionist a cue signal to warm up the next projector arc for a change over to the next reel of film of a series. Furthermore, it is so constructed that the projectionist or an observer can determine at a glance by the position of a pointer on the dial of the device the length of a film to be projected and, if the film is defective at any point intermediate its length he can also note the footage or length from the beginning to the point where such defect is noted on the screen. Also, it is designed to enable a projectionist to tell how long a film has been running and the time to elapse before the end of the film is reached.

Referring particularly to the illustrative embodiment of the invention shown in the drawing, the device is shown as being supported by a cast metal frame having a base 10, standards 11 and circular supporting ring 12 within which there is mounted a circular dial in the form of a sheet metal disk 13. The frame also carries an inner circular flange or ring 14 providing a socket to receive clockwork 15 of standard construction having a shaft 16 projecting through the face of the dial. While the clock mechanism may be operated electrically, it is preferably of the spring wound type. The clock mechanism operates an ordinary signal conveniently in the form of a bell 17 having a clapper 18 and is housed within a casing 19 bolted or otherwise secured to the ring 14. However, the clapper may be considered as a part of a switch to energize a circuit to any visible or audible signal.

The forward end of the clock shaft 16 is shown as carrying diametrically opposed pointers 20 and 21 cooperating with graduations on the face of the dial. In this instance, the pointers are cast integral with a knurled knob 22 on the shaft which is adapted to be grasped and turned clockwise to wind the clockwork. It is connected to be turned through 180° so that the clock will operate the pointers for a period of 30 minutes, which happens to be the maximum time consumed in the projection of standard moving picture films. The construction of the clockwork is such that when the knob is released after the pointer 20 is turned clockwise, the clock will operate the pointer counterclockwise until it reaches the starting or zero position, when the bell clapper will be released to ring the bell and the clock mechanism stopped by the usual well known means, not necessary to describe in detail.

The dial 13 is here shown as having two sets of graduations beginning at zero on the left hand side and both semi-circular series of graduations reading from zero to 30 on the diametrically opposite side of the dial and these graduations denote minutes or time units and fractions thereof. The lower scale is likewise graduated in terms of standard film footage on the basis of the number of feet of standard film usually projected per minute by ordinary film projectors, it being known that an ordinary projector will display 2700 feet of film in 30 minutes or 90 feet per minute. The arrangement of this scale is such that it cooperates with the pointer 21 when it is turned clockwise from the position shown in Fig. 1 to the zero or film starting position when it is desired to determine the amount of time to be consumed in displaying a reel of film of unknown length. As soon as the clock is released to operate the pointers, the projector is started and the time is noted by the position of the pointer 21 when the projector has finished exhibiting the film. Assume, for example, that a roll or reel of film of a series to be used in a particular performance has been run through the projector and it was determined that the time consumed was 17 minutes. The pointer 21 would point to 17 on the lower scale when the projector finishes running through that film. The film is rewound to be shown in its proper sequence. The projectionist makes a note of the time consumed or sets a marker 23 shown as being in the form of a U-shaped piece of sheet metal bearing a stamped number on it. The particular one referred to is numbered 8 to indicate the number of the film

in the series to be shown. In this instance, ten such markers are frictionally secured on the outer ring 12 of the frame and point to the graduations on the upper scale at the proper places as determined by the amount of time required for the showing of each reel of film.

After the projectionist has measured the time for exhibiting ten successive reels of film and has set the markers on the upper scale, he is ready to start the performance. He turns the pointer 20 to a point nearly opposite the marker numbered 1. He wants to be warned slightly in advance of the end of the reel to give him sufficient time to warm up the arc on the second machine which is to exhibit reel number 2, two such machines usually being used in a projection booth. Therefore, he moves the pointer 20 slightly to the left or counterclockwise from the marker to give him a cue signal, say, 12 seconds to a half minute before reel number 1 is finished. This gives him an opportunity to warm up the second projector arc and, at the instant reel number 1 finishes, to make the necessary "change-over". The instant the second machine starts, he resets the pointer 20, allowing for the cue time to the left of marker number 2. Of course, it will be understood that the markers themselves may be set to make allowance for the necessary cue time. In each instance, when the pointer 20 reaches the zero position, it will give a signal by ringng the bell 17.

To avoid any mistake about the sequence of the reels of film being exhibited, there is shown an L-shaped indicating arm 24 frictionally secured to the back of the casing 10 by a screw or bolt 25 having a downturned pointer 26 adapted to be turned manually opposite the marker referring to the particular reel being exhibited. It will be noted by the dotted position of the pointer 20 in Fig. 1 that reel number 8 has just been started or is about to be started and the indicator pointer 26 has been moved opposite marker 8. As soon as the projectionist presets the pointer 20 for reel number 9, he will move the indicator opposite the marker 9 and this operation is repeated for all reels of film used in a performance.

The timer is adapted to be secured to a table or a wall adjacent to the projectors so that it will not fall off or move when it is being operated. For this purpose, the base has rearwardly extending feet 27 having screw holes so that they may be secured to a table top or shelf and a vertical wedge member or tongue 28 is provided on the back of the frame to be secured in the complemental socket of an ordinary wall bracket.

From the foregoing description, it will be seen that the timer is eminently adapted for use in projection booths or wherever films are exhibited. A projectionist can always determine, after setting the cue timing pointer and starting a projector, how much time will be required to finish the showing of a particular reel of film. The cue signal gives him ample warning to make the necessary change-over without any interruptions on the screen. When the exact length of a film received from a film exchange is known, he may rely upon the time shown opposite the figure on the lower scale as being that required to exhibit the particular reel of film; but he may also choose to test the time on his particular projectors if he has reason to believe that a part of the film has been cut off or the length is not accurately measured.

As used in the projection room, it is contemplated that the improved timer of this type will become a necessity; it will measure each reel and time a whole show accurately; it will determine the running time of each reel before or during the first screening; it has no complicated mechanisms to get out of order; it presents no hazards to the projectionist; it can easily be set for film measuring; it avoids a blank screen due to a miss of motor-start or change-over cue dots applied to ordinary films; it gives a dependable cue signal to enable the projectionist to strike his arc and prepare for a change-over; the projectionist may set it to meet any timing requirements and avoid any mutilation of a film caused by making special cue marks on it; it saves carbons and current by accurately timing the change-over; it can easily be used to measure carbon burning time and to determine the time of use for short lengths of carbon, thereby avoiding any interruptions or damage to apparatus; it is simple in design, durable in construction and easy to operate; a single motion imparted by turning the knurled knob winds the mechanism and also sets the pointer to run concurrently with the reel; it measures elapsed time and remaining time for the showing of each reel and is always easily read; it can also be used for the exact timing of volume changes on film, television-radio programs, picture effects, non-synchronous music, vaudeville acts, dialogues, spotlights, etc. and it will enable previewers or censors to spot specific acts, parts of music or dialogue by observing elapsed time or footage on the proper scale, thereby avoiding the necessity of stopping the projection apparatus frequently to make notes.

Obviously, the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since they may be employed advantageously in various combinations and sub-combinations.

What is claimed is:

1. In a timer of the class described a frame support; spring wound clock mechanism carried by the support and having a winding shaft; a single dial through which the winding shaft projects and having opposed semi-circular sets of graduations reading in opposite directions from a common zero position; and integral opposed pointers on the shaft adapted to be turned with it to a starting position either to measure the unknown time of a performance or to denote elapsed time of a performance of known duration.

2. In a timer of the class described comprising a frame support; spring wound clock mechanism carried by the support and having a winding shaft; a dial through which the winding shaft projects and having opposed semi-circular sets of graduations reading in opposite directions from a common zero position; diametrically opposed pointers on the winding shaft cooperating with both series of graduations and connected to be turned with the shaft to a starting position either to measure the unknown time of a performance or to denote elapsed time of a performance of known duration; and a cue-signal device operated by the clock mechanism when the pointer reaches the zero position.

3. In a timer for measuring the duration of the projection of cinema films and for producing a cue signal for change-overs comprising, in combination, a supporting frame; spring wound clock mechanism mounted in said frame; a circular dial carried by said frame and having

upper and lower semi-circular scales of graduations in time units beginning at a common zero point and reading in opposite directions, the lower series being also provided with indicia denoting film footage in terms of film length per time unit; a winding shaft for the clock mechanism projecting through the center of the dial; a pair of integral diametrically opposed pointers on the shaft carrying a winding knob adapted to cooperate with the respective scales of graduations, one pointer arranged to be turned to the zero position to measure the time required to exhibit a reel of film and the length thereof, and the other pointer being adapted to be turned to a position on its scale corresponding with the measured duration allowing for a cue or change-over interval to measure elapsed time during the film exhibition; a cue signal operable by the clock mechanism when the last-named pointer reaches its zero position; a plurality of markers numbered to denote successive reels to be exhibited and adapted to be placed on the upper scale to denote the time required for exhibiting each reel of film; and a manually operable indicator arm cooperating with the markers to denote the number and proper sequence of several reels of film.

4. In a timer for measuring the duration of the projection of cinema films and for producing a cue signal for change-overs comprising, in combination, a supporting frame; spring wound clock mechanism mounted in said frame; a circular dial carried by said frame and having upper and lower semi-circular scales of graduations in time units beginning at a common zero point and reading in opposite directions, the lower series being also provided with indicia denoting film footage in terms of film length per time unit; a winding shaft for the clock mechanism projecting through the center of the dial; a pair of diametrically opposed pointers on the shaft carrying a winding knob adapted to cooperate with the respective scales of graduations, one pointer arranged to be turned to the zero position to measure the time required to exhibit a reel of film and the length thereof, and the other pointer being adapted to be turned to a position on its scale corresponding with the measured duration allowing for a cue or change-over interval to measure elapsed time during the film exhibition; a cue signal operable by the clock mechanism when the last-named hand reaches its zero position; markers for the upper scale denoting the time required for exhibiting the several reels of films; and a movable indicator coacting with the markers to denote at a glance which reel is being exhibited, while the timer pointer shows how much time has elapsed since it started and the time required for completion of the exhibition of the reel.

5. In a timer for measuring the duration of the projection of cinema films and for producing a cue signal for change-overs comprising, in combination, a supporting frame; spring wound clock mechanism mounted in said frame; a circular dial carried by said frame and having upper and lower semi-circular scales of graduations in time units beginning at a common zero point and reading in opposite directions, the lower series being also provided with indicia denoting film footage in terms of film length per time unit; a winding shaft for the clock mechanism projecting through the center of the dial; a pair of diametrically opposed pointers on the shaft carrying a winding knob adapted to cooperate with the respective scales of graduations, one pointer arranged to be turned to the zero position to measure the time required to exhibit a reel of film and the length thereof, and the other pointer being adapted to be turned to a position on its scale corresponding with the measured duration allowing for a cue or change-over interval to measure elapsed time during the film exhibition; a cue signal operable by the clock mechanism when the last-named pointer reaches its zero position.

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