

May 9, 1933.

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1,908,452

GAME TIMING CLOCK

Filed April 7, 1931

Fig. 1.

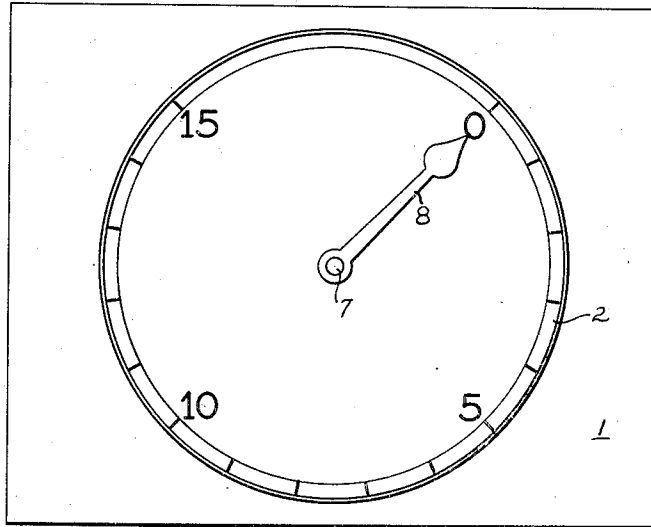
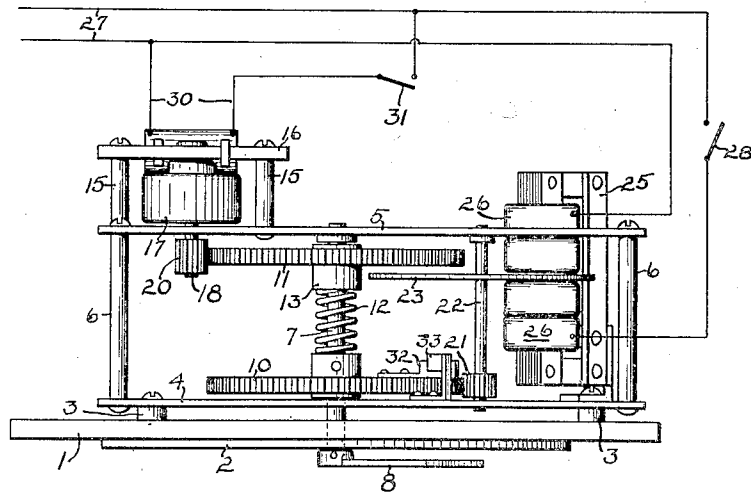


Fig. 2.



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GAME-TIMING CLOCK

Application filed April 7, 1931. Serial No. 528,312.

My invention relates to clocks for timing football games, basketball games, and the like, and particularly to score board clocks for the use of spectators.

5 Among the objects of my invention are: To provide a score board clock which gives an actual record of playing time, and which does not have to be manually set by a score board keeper; to provide a clock which is directly
10 under the control of the timekeeper, and which replaces the customary stop watch with a more accurate and dependable instrument; to provide a clock which may be run backward at high speed in resetting between
15 periods of the game; to provide a clock which starts and stops instantly under the remote control of the timekeeper; and to provide a clock which resets rapidly and definitely to zero time when desired.

20 Other objects of my invention will be apparent or will be specifically pointed out in the description forming a part of this specification, but I do not limit myself to the embodiment of my invention herein described, as various forms may be adopted
25 within the scope of the claims.

Referring to the drawing:

30 Figure 1 is a front elevation showing one embodiment of my invention as viewed by the spectators.

Figure 2 is a plan view of the clock shown in Figure 1, the electrical control circuit being diagrammatically indicated in the figure.

35 In timing football games, basketball games, and the like, it has long been customary for the timekeeper to use a stop watch to keep track of the actual time of play, starting or stopping the watch at the gun or the officials' signals. Spectators at the game
40 have been apprised of the playing time by means of a large clock face whose hands are manually set by a score board keeper in response to telephoned instructions or to signals from the playing field.

45 This practice, although the best available, has been notoriously unsatisfactory. It is easy to fumble in the manipulation of a stop watch, and this constantly occurs. Moreover, signals to the score board tender are
50 easily mis-understood and can at best only

be communicated to him at intervals, and at crucial moments of play there is always doubt as to the actual time factor.

My invention provides a remedy for these
55 unsatisfactory conditions. Broadly considered, it comprises an electrically driven clock which may be the score board clock itself, or may be a small pilot clock in the hands of the timekeeper. This electric clock
60 is stopped or started by manipulating a switch. The synchronous motor with which the clock is driven is frictionally geared to the hand or hands marking the minutes of play, the hand moving or stopping as the
65 circuit to the motor is made or broken. In addition to the timing motor, the clock is provided with a second motor, preferably asynchronous, which is positively geared to the
70 hand to drive it in the reverse direction. When it is desired to reset the clock the circuit to the second motor is closed, when the motor revolves the hand in reverse direction and at greatly increased speed, so that re-
75 setting requires but a few seconds to return the hand over the space which it has required many minutes to traverse during the timing operation. A stop is provided to block the
80 hand definitely at its predetermined zero position, the motor being so constructed that it is undamaged by being blocked.

85 Describing in detailed terms an embodiment of my invention which I have chosen for purposes of illustration, a face board 1 on which is mounted a suitable dial 2, supports the clock mechanism on small spacer
90 blocks 3.

The mechanism comprises a front plate 4 and back plate 5, which are spaced by posts 6. Journalled in the front and back plate is a shaft 7, upon which is fixed a large minute
95 hand 8.

Mounted on the shaft 7 are two gears 10 and 11, which are preferably of the same size and pitch. The gear 10 is permanently fixed to the shaft. The gear 11 is journalled to
100 turn upon the shaft, but is rotatably joined therewith by a clutch mechanism which may comprise a spring 12 and friction plate 13, the latter bearing against the face of the gear 11 so that gear and shaft tend to rotate

together. Any type of friction clutch, which is capable of slipping, may be utilized instead of the one shown to connect the gear and shaft together.

5 Mounted on the back plate 5, by means of the post 15 and plate 16, is a synchronous clock motor 17 of known type, which carries upon its shaft 18 a pinion 20, which meshes with the gear 11. Synchronous clock motors
10 of this character are usually constructed so that the shaft makes one revolution per minute when supplied from standard frequency lines. The pinion 20 and gear 11 are so
15 chosen that the minute hand 8 moves over one division of the dial for each revolution of the motor shaft.

The gear 10 meshes with a pinion 21 mounted on a shaft 22, which is journaled between the front and back plates of the frame and
20 which carries the disk 23 of an induction disk type motor whose field magnet 25 is fixed to the frame. The pinion 21 may be of the same size and number of teeth as the pinion 20, and the shaft 22 may be carried
25 through the clock dial and have mounted upon it a second hand if desired, although this is not ordinarily required.

Coils 26, which excite the induction motor field 25, are supplied from an alternating
30 current line 27, and controlled by a switch 28. The leads 30 for supplying the synchronous motor are bridged across the same line, the motor being controlled by a switch 31. Shading coils are supplied on the field
35 25 to cause the disk to rotate in the opposite direction from the shaft of the synchronous motor 17. As this is well known construction for motors of this type, the shading coils are not shown.

40 Secured to the face of the gear 10 is a stop plate 32, which engages a pawl or stop 33, mounted on the front plate 3. The location of the stop plate 32 and pawl 33 is such that the two engage when the minute hand is at
45 the zero position.

In using the clock, the switch 28 is first closed to rotate the hand in reverse direction to the zero position, where it is definitely
50 blocked. This blocking does not injure the induction disk motor, which may be left across the circuit indefinitely in the blocked condition without harm to its winding. The switch 28 is then opened, after which the timing is carried on in the ordinary manner by
55 closing switch 31 for "time in" and opening said switch for "time out".

At the end of the time allotted for each period of the game, the switch 28 is again closed to return the hand to the zero position.
60 It may be noted that this return to zero will occur even though switches 31 and 28 be closed simultaneously, the clutch slipping to permit the reverse rotation of the hand.

I claim:

65 1. A game-timing clock comprising a min-

ute shaft, a minute hand fixed to said shaft, a gear mounted to rotate on said shaft, a friction clutch for rotating said shaft with said gear, a synchronous motor having a pinion
70 meshed with said gear to drive said shaft, a second motor geared to slip said clutch and drive said shaft at increased speed, and means for stopping the rotation of said shaft by said second motor at a predetermined position.

2. A game-timing clock comprising a minute shaft, a minute hand fixed to said shaft, a gear mounted to rotate on said shaft, a friction clutch for rotating said shaft with said gear, a synchronous motor having a pinion
75 meshed with said gear to drive said shaft, a second gear fixed to said shaft, and a second motor having a pinion meshed with said fixed gear, whereby said shaft may be driven at increased speed by slipping said clutch.

3. A game-timing clock comprising a minute shaft, a minute hand fixed to said shaft, a gear mounted to rotate on said shaft, a friction clutch for rotating said shaft with said gear, a synchronous motor having a pinion
80 meshed with said gear to drive said shaft, a second gear fixed to said shaft, and an asynchronous motor having a driving pinion meshed with said fixed gear for driving said shaft in reverse direction at increased speed.

4. A game-timing clock comprising a minute shaft, a minute hand fixed to said shaft, a gear mounted to rotate on said shaft, a friction clutch for rotating said shaft with said gear, a synchronous motor having a pinion
85 meshed with said gear to drive said shaft, a second gear fixed to said shaft, an asynchronous motor having a driving pinion meshed with said fixed gear for driving said shaft in reverse direction at increased speed, and means for blocking said second motor and
90 said shaft at a predetermined position.

In testimony whereof, I have hereunto set my hand.

EDWARD A. SCHLUETER.

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