

W. K. MENNS.  
 RECORDING TIMEPIECE.  
 APPLICATION FILED MAR. 13, 1920.

1,354,674.

Patented Oct. 5, 1920.

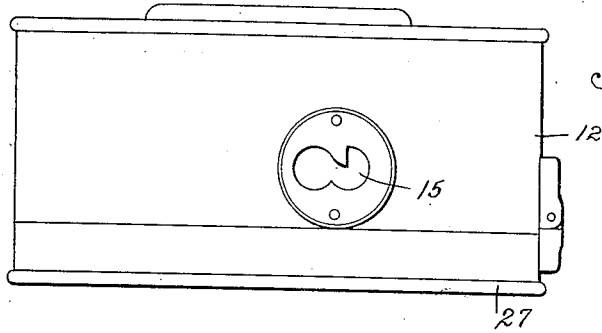


Fig. 1.

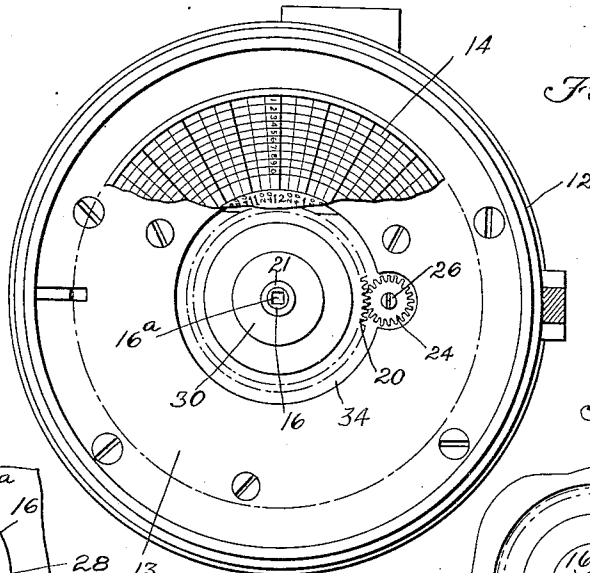


Fig. 2.

Fig. 5.

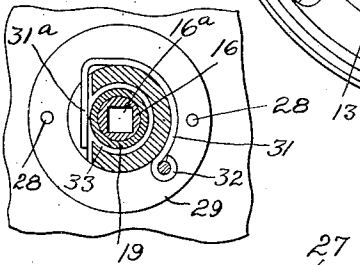


Fig. 4.

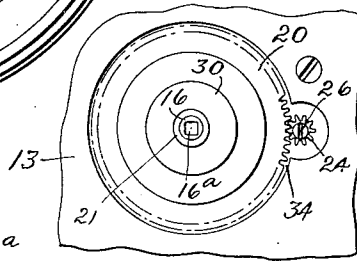
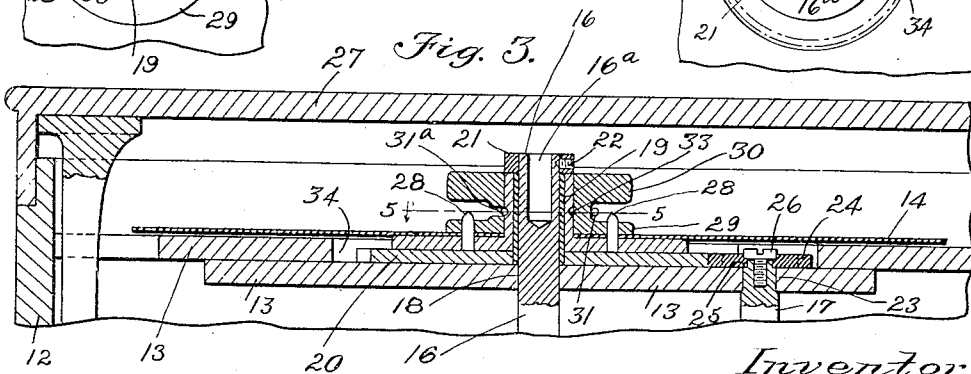


Fig. 3.



Inventor  
 Walter K. Menns  
 by Wright, Bruns, Dumbly & Gray  
 Attorneys

# UNITED STATES PATENT OFFICE.

WALTER K. MENNS, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO BOSTON CLOCK COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## RECORDING-TIMEPIECE.

1,354,674.

Specification of Letters Patent.

Patented Oct. 5, 1920.

Application filed March 13, 1920. Serial No. 365,390.

*To all whom it may concern:*

Be it known that I, WALTER K. MENNS, a subject of the King of Great Britain, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Recording-Timepieces, of which the following is a specification.

This invention relates to a recording time piece, such as a watchman's clock, comprising a time mechanism, a record dial rotated thereby, and a case inclosing the time mechanism and dial, the dial being usually a disk of paper, and the case being provided with means for making a mark on the dial, recording an act of a watchman, such as the insertion of a key into the case, the location of the mark indicating the time when the act was performed.

The time mechanism is organized to impart to the dial a complete rotation in a predetermined period, usually twenty-four hours. It is often desirable, however, to provide for a complete rotation of the dial in a shorter period, and sometimes in a longer period.

My invention has for its object to enable the period of a complete rotation of the dial of a recording time piece to be quickly and conveniently varied, by the simple operation of removing two easily accessible gears constituting a couple through which torque is transmitted from an arbor of the time mechanism to the dial, and substituting therefor other gears having different relative proportions, and adapted to rotate the dial at either a faster or a slower rate than before.

The invention is embodied in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a side view looking toward the periphery of the case of a recording time clock.

Fig. 2 is a top plan view, showing the case and a portion of the dial, and the changeable gears hereinafter described, within the case, the cap of the case being removed.

Fig. 3 is an enlarged section on line 3—3 of Fig. 2, showing the changeable gears, a

portion of the case, and portions of two of the time mechanism arbors.

Fig. 4 is a view similar to a portion of Fig. 2, showing another pair of gears substituted for the pair shown by Fig. 2.

Fig. 5 is a section on line 5—5 of Fig. 3.

The same reference characters indicate the same parts in all of the figures.

In the drawings, 12 represents the body of a time-recording clock case, 13 represents a fixed plate forming a part of the case, and 14 represents a record dial backed by the plate 13. Said plate is arranged adjacent to the outer end or mouth of the case, and at one side of the space containing the usual time mechanism, whereby the dial 14 is rotated. The usual manually operable mechanism is provided for marking the dial, the last-mentioned mechanism being actuated, for example, by a key inserted by a watchman in a key hole 15 in the case.

The only parts of the time mechanism shown by the drawings are portions of the winding arbor 16, and of an arbor 17, which is known as the transfer arbor. The winding arbor 16 is provided in its outer end with a squared socket 16<sup>a</sup>. Any suitable dial-marking mechanism may be employed, and as such mechanism is well known, it is not illustrated.

The winding arbor 16 is centrally located in the case, and projects through a bearing 18 in the plate 13, the outer end portion of said arbor being cylindrical and constituting a stud on which the hub 19 of a driven gear 20 is freely rotatable. Said arbor is provided with a detachable stop 21, here shown as a collar attached by a set screw 22 to the arbor, and bearing on the outer end of the hub 19, to confine the hub and gear on the arbor, without preventing their free rotation independently of the arbor.

The transfer arbor 17 is rotated at a predetermined and relatively slow rate, and is journaled in a bearing 23 in the plate 13, the outer end of the arbor projecting slightly from the surrounding surface of the plate.

The transfer arbor is provided with clamping means adapted to positively secure to the arbor a driving gear 24, and to permit the removal of said gear from the arbor. As here shown, I have embodied said clamping means in an outwardly facing annular

shoulder 25 on the arbor, and a headed screw 26 engaged with a tapped socket in the arbor, the shoulder and the head of the screw constituting opposed annular jaws between  
 5 which the central portion of the gear 24 is firmly clamped when the screw is tightened.

It will now be seen that provision is made for positively and releasably attaching a driving gear to the transfer arbor, and for  
 10 releasably confining and permitting the rotation of a driven gear on the winding arbor. The driven gear is provided with suitable means for engaging and rotating the dial 14, and meshes with the driving gear, the two  
 15 gears constituting a couple adapted to transmit torque from the transfer arbor to the dial. The relative diameters and numbers of teeth of the gears determine the difference between the rates of rotation of the transfer  
 20 arbor and the dial. For example, a pair of gears having a four-to-one ratio, as shown by Fig. 2, will cause a complete rotation of the dial in a shorter period than a pair of gears having an eight-to-one ratio, as shown  
 25 by Fig. 4. The gears are located at the outer side of the plate 13, so that when the case cap or cover 27 is removed, the gears and the releasable means on the arbors, cooperating therewith, are readily accessible.  
 30 The dial 14 may be detachably engaged with the driven gear 20, by spurs 28 fixed to the gear and adapted to penetrate the central portion of the dial, and a holding-down collar which includes a base 29, perforated to  
 35 receive the spurs 28, and a head 30, connected by a neck with the base portion. Said collar is bored to receive the gear hub 19, and is removable therefrom, and detachably confined thereon by a spring detent, composed of a length of resilient wire 31, hinged  
 40 at 32 to the base portion 29, and having a free end portion 31<sup>a</sup> formed to enter a slot in the neck portion of the collar, and engage a peripheral groove 33 in the hub 19. The  
 45 stop 21 is formed to permit the holding-down collar to be slipped on to and off from the hub 19.

The plate 13 is preferably provided in its inner side with a recess 34, formed to receive  
 50 variously proportioned pairs of gears 20 and 24. The bottom of said recess is offset inwardly from the annular portion of the outer face of the plate surrounding the recess, and said annular portion is substantially flush with the dial-supporting face of the gear 20, and forms a backing for the  
 55 outer portion of the dial 14, adapted to prevent said outer portion from bending inwardly, to any objectionable extent.

The plate 13 forms the bottom of an unobstructed dial-containing chamber at the outer  
 60 portion of the case. In stating that the chamber is unobstructed, I mean that when the cover 27 is removed, there is no obstructing part requiring removal, preparatory to

installation and removal of the interchangeable gears. The outer or stud-forming portion of the winding arbor 16, projects into said chamber, and is readily accessible when the cover 27 is removed, so that a driven gear  
 70 20, and the dial-securing means associated therewith, may be conveniently applied to, and removed from the winding arbor. The outer end of the transfer arbor is exposed in said chamber, so that convenient access to the  
 75 means releasably securing the driving gear to the transfer arbor is permitted. The recess 34 in the plate 13, forms a depressed portion of the chamber bottom, and is formed to receive either of a plurality of pairs of  
 80 gears, the members of which may vary in diameter to a considerable extent, said recess being surrounded by a raised dial-supporting portion of the plate. In preparing  
 85 the case for the installation and removal of the gears, it is only necessary to remove the cover 27.

I claim:

1. A recording time piece comprising a case which includes a dial-backing plate  
 90 forming the bottom of an unobstructed chamber in the outer portion of the case, a winding arbor journaled in and projecting from the plate into said chamber, and constituting a center on which a gear is rotatable, and a transfer arbor constituting a  
 95 member of the time mechanism and journaled in said plate, the outer end of the transfer arbor being exposed in said chamber and provided with means accessible  
 100 within the chamber for releasably attaching a driving gear to the transfer arbor, means being provided for releasably confining and permitting the free rotation of a  
 105 dial-carrying driven gear on said winding arbor, so that different pairs of driven and driving gears, having different rotative diameters, may be interchangeably employed, to vary the rate of rotation of a  
 110 dial carried by one of said gears, with relation to the rate of rotation of the transfer arbor.

2. A recording time piece comprising a case which includes a dial-backing plate  
 115 forming the bottom of an unobstructed chamber in the outer portion of the case, a winding arbor journaled in and projecting from the plate into said chamber, and constituting a center on which a gear is rotatable, and a transfer arbor constituting a  
 120 member of the time mechanism and journaled in said plate, the outer end of the transfer arbor being exposed in said chamber, and provided with means accessible  
 125 within the chamber for releasably attaching a driving gear to the transfer arbor, the winding arbor being provided with a detachable stop adapted to releasably confine a  
 130 loose driven gear thereon, so that different pairs of driven and driving gears, having

different relative diameters, may be interchangeably employed, to vary the rate of rotation of a dial carried by one of said gears, with relation to the rate of rotation

5 of the transfer arbor.

3. A recording time piece comprising a case which includes a dial-backing plate forming the bottom of an unobstructed chamber in the outer portion of the case, 10 a winding arbor journaled in and projecting from the plate into said chamber, and constituting a center on which a gear is rotatable, and a transfer arbor constituting a member of the time mechanism and journaled in said plate, the outer end of the transfer arbor being exposed in said chamber, and provided with means accessible within the chamber for releasably attaching a driving gear to the transfer arbor, means 20 being provided for releasably confining and permitting the free rotation of a dial-carrying driven gear on said winding arbor, so that different pairs of driven and driving gears, having different rotative diameters, 25 may be interchangeably employed, to vary the rate of rotation of a dial carried by one of said gears, with relation to the rate of rotation of the transfer arbor, the dial-backing plate being provided with a recess forming a depressed portion of the chamber bottom and formed to receive either of a plurality of pairs of said driven and driving gears, and with an annular dial-backing surface raised above and surrounding said recess. 35

4. A recording time piece comprising a case which includes a dial-backing plate forming the bottom of an unobstructed chamber in the outer portion of the case, a 40 winding arbor journaled in and projecting from the plate into said chamber, and constituting a center on which a gear is rotatable, a transfer arbor constituting a member of the time mechanism and journaled in said plate, the outer end of the transfer arbor

being exposed in said chamber, and provided with means accessible within the chamber for releasably attaching a driving gear to the transfer arbor, a dial-carrying driven gear rotatable and releasably confined on 50 the projecting portion of said winding arbor, and a driving gear releasably attached to the transfer arbor, and positively rotated thereby, the releasability of said gears permitting different pairs of gears to 55 be used interchangeably as elements of the recording time piece.

5. A recording time piece comprising a case which includes a dial-backing plate forming the bottom of an unobstructed 60 chamber in the outer portion of the case, a winding arbor journaled in and projecting from the plate into said chamber, and constituting a center on which a gear is rotatable, a transfer arbor constituting a member of the time mechanism and journaled in said plate, the outer end of the transfer arbor being exposed in said chamber and provided with means accessible within the chamber for releasably attaching a driving 70 gear to the transfer arbor, a dial-carrying driven gear rotatable and releasably confined on the projecting portion of said winding arbor, and a driving gear releasably attached to the transfer arbor, and positively 75 rotated thereby, the releasability of said gears permitting different pairs of gears to be used interchangeably as elements of the recording time piece, the said driven gear being provided with a dial-supporting face, 80 and the dial-backing plate being provided with a recess forming a depressed portion of the chamber bottom and formed to receive either of a plurality of pairs of said driving and driven gears, and with an annular dial-backing face raised above and surrounding 85 said recess.

In testimony whereof I have affixed my signature.

WALTER K. MENNS.