

(No Model.)

2 Sheets—Sheet 1.

C. E. SANFORD.
WORKMAN'S TIME RECORDER.

No. 565,037.

Patented Aug. 4, 1896.

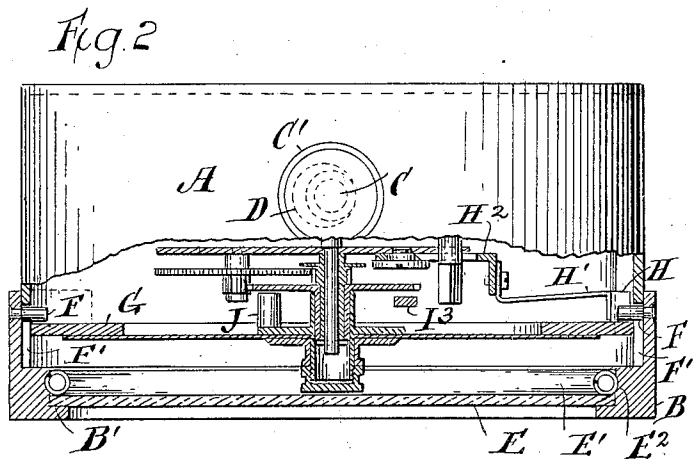
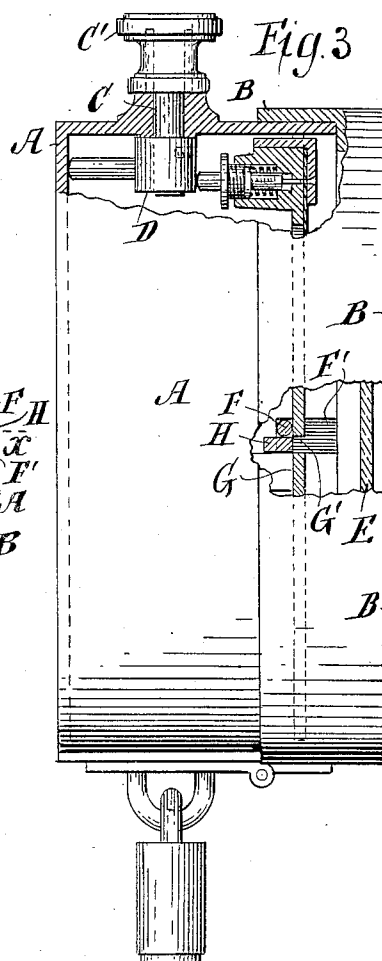
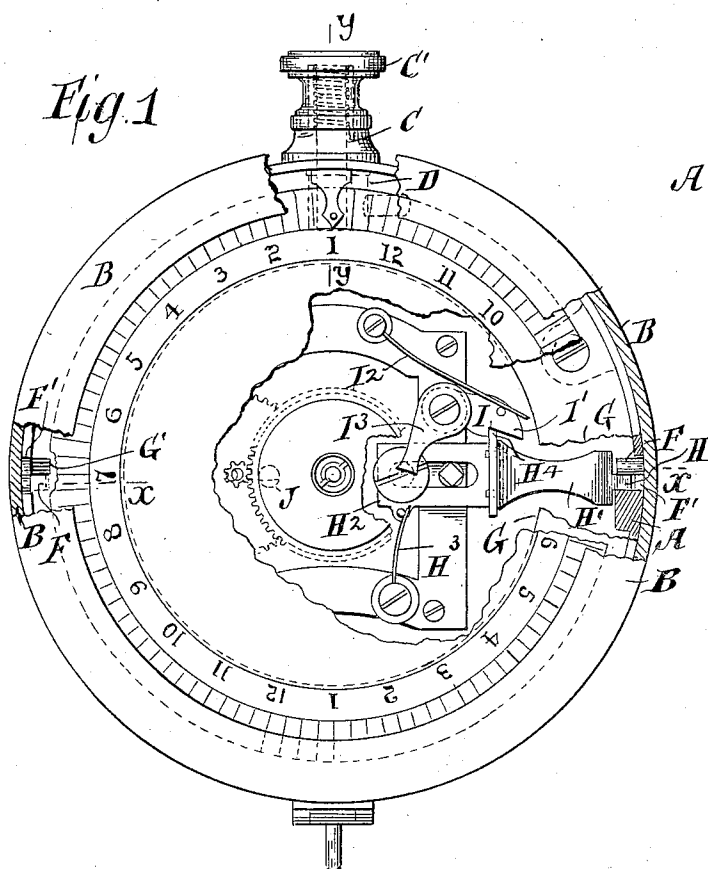


Fig. 5

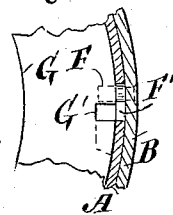


Fig. 4



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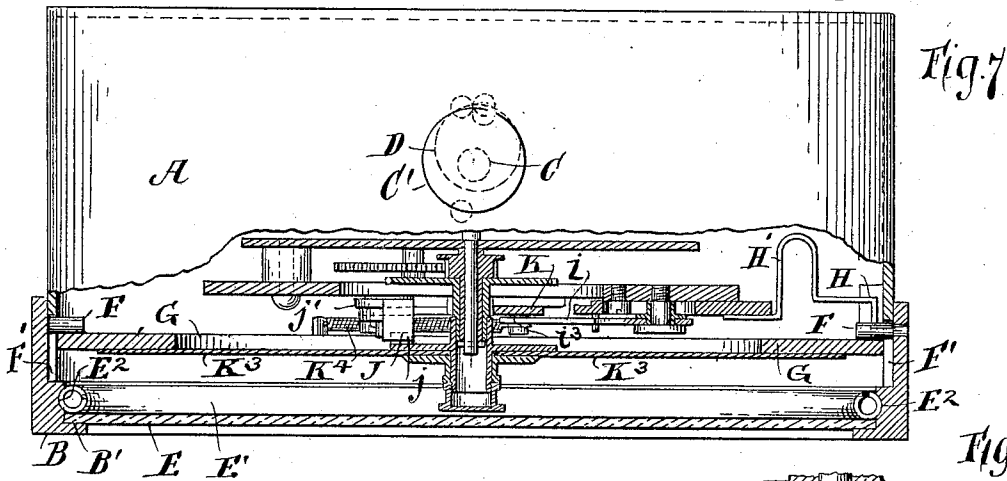


Fig. 7

Fig. 8

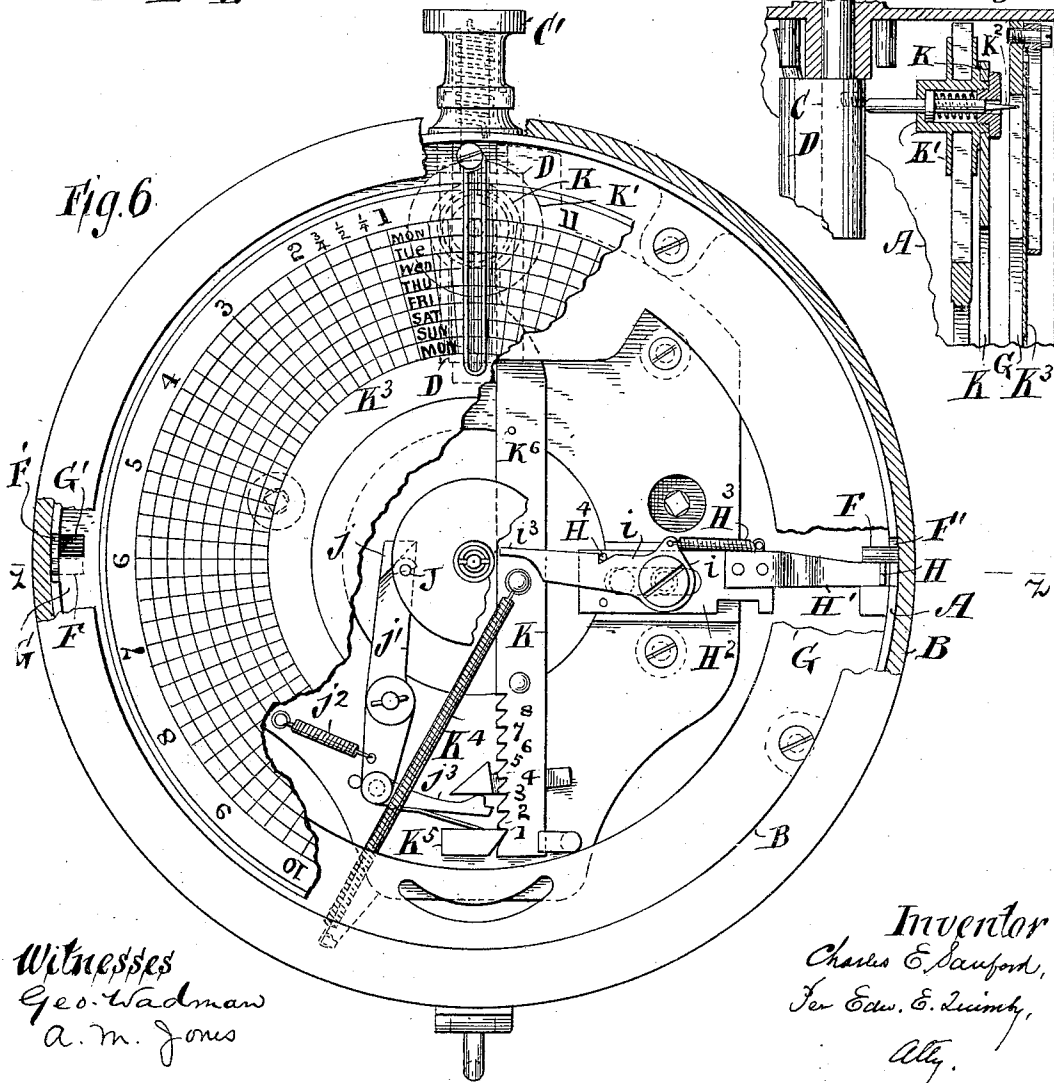
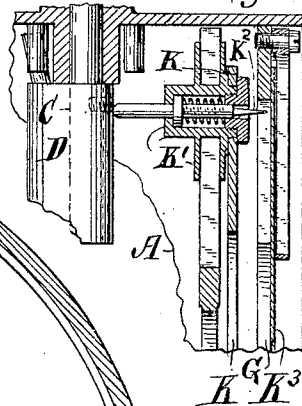


Fig. 6

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UNITED STATES PATENT OFFICE.

CHARLES EDWARD SANFORD, OF BROOKLYN, NEW YORK.

WATCHMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 565,037, dated August 4, 1896.

Application filed February 25, 1896. Serial No. 580,707. (No model.)

To all whom it may concern:

Be it known that I, CHARLES EDWARD SANFORD, of Brooklyn, New York, have invented certain Improvements in Watchmen's Clocks, of which the following is a specification.

These improvements relate to the construction of a watchman's clock provided with a time-lock for preventing access to the recording-dial during a period of time determinable by appropriately setting the clock mechanism.

The invention is herein illustrated as applied to a twenty-four-hour watchman's clock, and also as applied to an eight-day watchman's clock.

The accompanying drawings are as follows, viz:

Figure 1 is a face view of a twenty-four-hour watchman's clock with portions of the covers of the case represented as broken away. Fig. 2 is a top view, partly in section, on the plane indicated by the dotted line xx on Fig. 1. Fig. 3 is a side view, partly in section, on the plane indicated by the dotted line yy on Fig. 1. Fig. 4 is a section of a portion of the case, showing the bayonet-joint in its unlocked position. Fig. 5 is a section similar to Fig. 4, but showing the bayonet-joint in its locking position. Fig. 6 is a face view of an eight-day watchman's clock with portions of the case represented as broken away, illustrating a modification of the lock-controlling mechanism. Fig. 7 is a top view, partly in section, on the plane indicated by the dotted line zz on Fig. 6. Fig. 8 is a detail showing a part of the pin-carriage of the eight-day-clock mechanism.

Figs. 1, 2, and 3 of the drawings represent a case the body A of which is of cylindrical form and is represented as containing a twenty-four-hour-clock movement. The case is provided with a circumferentially-flanged cover B, which is attached to the body in any convenient way, as, for example, by a bayonet-joint. The body has inserted through its top the rock-shaft C, provided upon its outer end with the knob C', and having mounted upon its interior portion the cam D for operating the puncturing-pin. Within the cover B is an annular seat B', affording the bearing for the glass disk E, which is held in place by the expanding spiral spring

E', sprung into the annular groove E² in the cover B.

At each of two or more places the flange of the cover B is provided with an inwardly-projecting stud F. At each of the corresponding places the edge of the body A is provided with a comparatively wide notch F'. At each of the corresponding places the annular plate G, appropriately fastened within the body A, is provided with the narrower notch G'. The stud F, which constitutes the male member of the bayonet-joint, is passed sidewise through the notches F' and G', and is then by the turning of the cover B carried under the edge of the annular plate G.

The spring-latch H, which, when appropriately adjusted, occupies the path of the stud F immediately below the notch G' in the annular plate G, yields when the stud F is pressed inward, and after the stud has been moved under the adjoining part of the plate G springs back in the rear of the stud, and thereafter acts as a chock, which prevents the return movement of the stud, and hence prevents the removal of the cover. The latch H is at the free end of a flexible arm H', affixed to the manually reciprocably sliding tumbler H². The tumbler H² is constantly under the influence of the spring H³, tending to pull back the tumbler radially, and thus carry the latch inward out of the path of the stud F.

To retain the latch in its outward or operative position, the tumbler H² is provided with a standard H⁴, which, when the tumbler is pushed outward, engages a notch I in the sear I', which is constantly under the influence of the sear-spring I², and during such engagement acts as a hook, which holds the tumbler H² against the influence of its spring, and thus keeps the latch in operative position.

The hub of the sear I' is provided with a radius-arm I³, projecting across the path of rotation of the tripper J, which is so operated by the clock-movement as to make one revolution every twenty-four hours and which at a prearranged hour, by its collision with the radius-arm I³, causes the sear I' to be tripped out of engagement with the standard H⁴, and thus releases the tumbler H² to the influence of its spring H³. Thereupon the spring pulls the tumbler H² inward and withdraws the latch H from its operative position, thus clear-

ing the path of the stud F and permitting the cover B to be appropriately turned and removed from the case.

The eight-day clock is also provided with
 5 a tripper J, making one revolution every twenty-four hours, which acts to trip the sear I, through a series of intermediate connections, whenever the continuity of said connections is established by the step-by-step
 10 movements of one of the members of the said series of connections, one of which movements is induced daily by the rotation of the tripper. The clock-movement and the parts may be so adjusted that the continuity of the said
 15 intermediate connections will be established at the end of any number of days, not exceeding eight, after the clock is wound up and the latch thrown outward into operative position. The step-by-step moving member in said train
 20 of intermediate connections is an arm K, which is journaled at one end upon the radially-moving carriage K', in which the puncturing-pin K² is arranged.

When the parts are adjusted with reference
 25 to having the case unlocked at the end of eight days, the arm and the puncturing-pin are arranged as shown in Fig. 6, the puncturing-pin occupying such a position as to enable it when operated to pierce the outer
 30 circle of divisions in the registering-disk K³.

A contracting spiral spring K⁴ tends to pull the arm K in such direction as to carry the puncturing-pin toward the axis of the clock-movement. This tendency is resisted by the
 35 detent K⁵, which, as will be seen, engages the end tooth 1 of the series of eight teeth formed in the edge of the arm K.

At the end of twenty-four hours, or such
 40 less number of hours as may be arranged for by appropriate adjustment of the clock mechanism, the tripper J strikes against the adjacent end j of the lever j', overcoming the influence of the contracting-spring j² and carrying the pawl j³ into collision with the apex of the
 45 tooth 2, and thereby rocks the arm K clear of the detent K⁵, so that under the influence of the contracting-spring K⁴ the arm K is pulled backward.

The parts are so timed that the lever J' is
 50 released and rocked by its spring j² in the reverse direction, and the pawl j³ hence withdrawn from engagement with the tooth 2 in time to allow the tooth 2 to catch against the detent K⁵. By this movement of the arm K
 55 the puncturing-pin is brought into position to make punctures in the next circle of divisions in the registering-disk. After an interval of twenty-four hours the lever j' is again actuated by the tripper J and the arm K
 60 again rocked clear of the detent K⁵ and permitted to be pulled backward until the tooth 3 catches upon the detent K⁵. As this operation is repeated from day to day a pin K⁶, affixed to the arm K, is carried step by step
 65 toward the radius-arm i³, which in the eight-day clock is a prolongation of the sear i therein employed. After a prearranged number

of such step-by-step movements, or, in other words, after a predetermined number of days, the pin K⁶ is carried into close proximity with
 70 the radius-arm i³, so that concurrently with the actuation of the lever j' by the tripper J at the prearranged hour of the predetermined day the pin K⁶ trips the sear i, thus
 75 releasing the tumbler H² to the action of its retracting-spring H³ and causing the tumbler H² to be pulled inward and the latch H to be withdrawn from its operative position.

What is claimed as the invention is—

1. A locking instrumentality for locking the
 80 cover of a case of a watchman's clock, and mechanism for operating said locking instrumentality contained within said case and inaccessible except when the cover is removed
 85 therefrom, said locking instrumentality consisting of a spring-latch susceptible of being set into operative position, and said mechanism consisting of a spring tending to retract
 90 said spring-latch from its operative position; a sear for holding said spring-latch in its operative position against the influence of said
 95 spring, and a tripper connected with and actuated by the clock-movement for tripping said sear at a predetermined hour, and thereby releasing said spring-latch to the influence of its retracting-spring, as and for the purpose set forth.

2. A locking instrumentality for locking the
 100 cover of a case of a watchman's clock, and mechanism for operating said locking instrumentality contained within said case and inaccessible except when the cover is removed therefrom, said locking instrumentality consisting of a spring-latch susceptible of being
 105 set into operative position, and said mechanism consisting of a spring tending to retract said spring-latch from its operative position; a sear for holding said spring-latch in its operative position against the influence of said
 110 spring; a tripper connected with and rotated once in every twenty-four hours by the clock-movement; connections between said tripper and said sear for effecting the tripping of said
 115 sear and thereby the release of said spring-latch to the influence of its retracting-spring concurrently with the movement of said tripper through a prescribed part of its path of
 120 revolution at the end of a predetermined period of time after the clock has been wound, the spring set in its operative position and the cover applied to and locked upon the case.

3. In a watchman's clock employing an eight-day-clock movement contained in a case
 125 provided with a removable cover and with means for locking said cover, consisting of a locking instrumentality contained within said case and inaccessible except when the cover is removed therefrom; a spring tending to retract said locking instrumentality
 130 from its operative position, a sear for holding said locking instrumentality in its operative position against the influence of its retracting-spring, an endwise-movable arm having

formed upon one of its edges a series of ratchet-teeth and carrying a pin for tripping said sear, a detent adapted to engage said ratchet-teeth successively, a spring tending
5 constantly to move said arm in such direction as to cause its teeth to engage said detent and to carry said pin toward said sear, a pawl for momentarily swaying said arm side-wise and thus moving the engaged tooth of
-10 said arm clear of said detent and permitting the said arm under the influence of its retracting-spring to be moved bodily until arrested by the engagement with said detent of its next following tooth, a tripper connected
15 with and rotated once in every twenty-four hours by the said clock-movement, a rocking

lever carrying the said pawl at one end and at its opposite end intersecting the path of rotation of the said tripper, whereby the said tripper actuates the said rocking lever once
20 in twenty-four hours, and thereby permits the said arm to be moved one step until during the last one of a plurality of such actuations the said pin carried upon said arm trips the said sear and thereby permits the said lock-
25 ing instrumentality to be, by the action of its spring, withdrawn from its operative position.

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Witnesses:

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