

(No Model.)

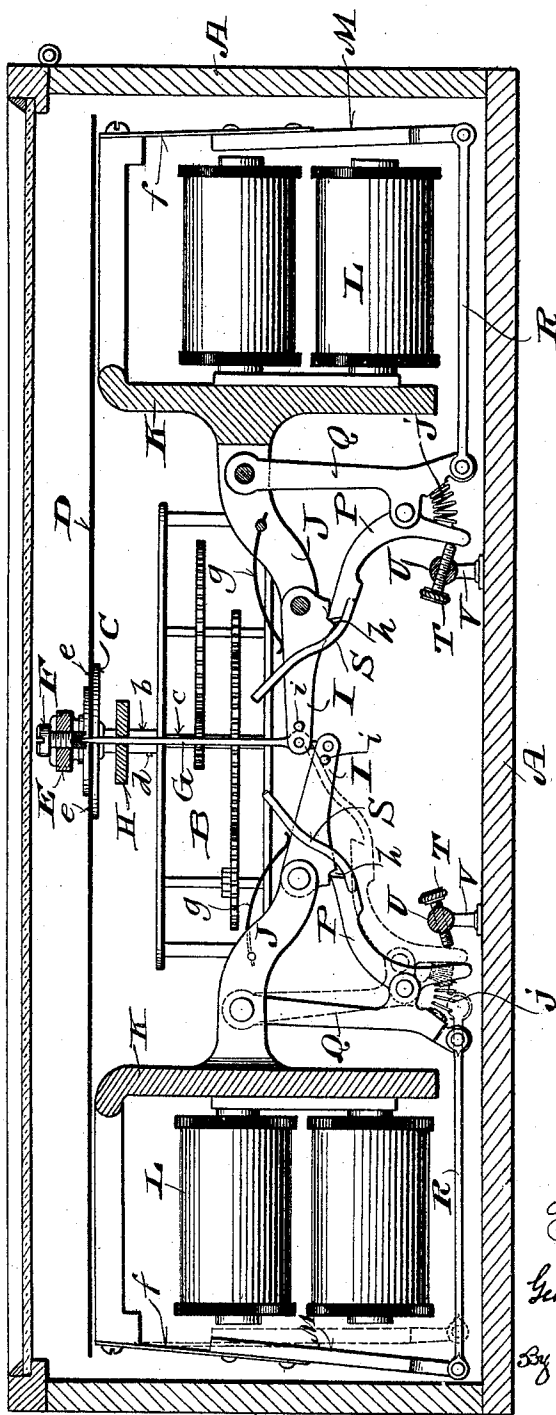
2 Sheets—Sheet 1.

G. F. RANSOM.
WATCHMAN'S TIME RECORDER.

No. 543,655.

Patented July 30, 1895.

Fig. 1.



Witnesses.
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N. E. Cliphant

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Geo. F. Ransom
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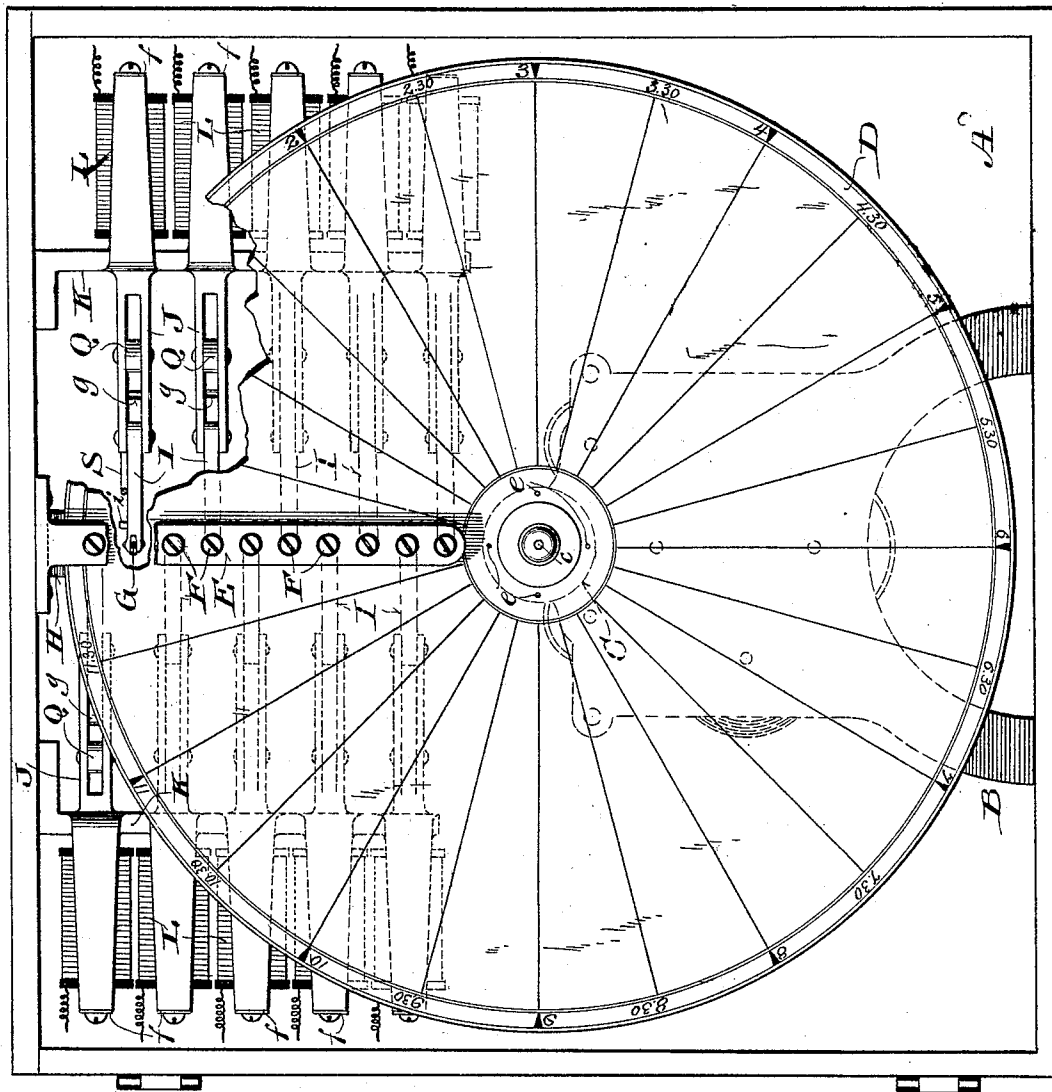
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Witnesses:
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Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE F. RANSOM, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO HAROLD G. UNDERWOOD, OF SAME PLACE.

WATCHMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 543,655, dated July 30, 1895.

Application filed September 4, 1894. Serial No. 521,999. (No model.)

To all whom it may concern.

Be it known that I, GEORGE F. RANSOM, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Time-Recorders; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to insure retraction of pricking-pins or other reciprocative devices employed as parts of time-recording apparatus to mark a removable record-dial, sheet, or ribbon traveled by a clock mechanism in synchronism therewith.

A further object of my invention is to provide a simple, compact, and economical apparatus especially adapted for recording the time a watchman visits various stations on his beat, said invention consisting in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings, and subsequently claimed.

In the drawings, Figure 1 represents a vertical transverse section of a time-recording apparatus organized according to my invention, and Fig. 2 a plan view of the same partly broken away.

Referring by letter to the drawings, A represents a suitable casing that may be provided with a glazed cover in hinge and lock connection therewith, as is common in the art to which my invention relates. Supported in the casing is a clock-train B that serves as a motor for a shouldered disk C, having a depending thimble *b*, engaged by a post *c* of said train and made fast thereto by a key-pin *d* or other suitable means, the post being timed to make one revolution in a predetermined number of hours. The disk is provided with a series of points *e*, and detachably held on said disk by means of the points is a paper dial D having a time scheme delineated thereon.

As herein shown the dial is schemed for twelve hours, and the clock-train post is geared to complete one revolution in the same time; but I do not wish to be understood as limiting myself to a rotative dial, as it is not uncommon in the art to delineate a time-scheme on a paper sheet or ribbon and travel

the same opposite a registering-point by means of power derived from a clock-train.

As herein shown the casing contains a transverse bar E arranged above the dial, and this bar is provided with a series of tapped openings engaged by screws F, the inner ends of these screws being recessed, as illustrated in Fig. 1, when they are employed in opposition to reciprocative pins G utilized to prick said dial. By having the inner end of each screw recessed I obtain sufficient clearance for insuring a prick in the dial by the pin in line with said screw, and at the same time this screw acts as a stop to prevent said dial from being lifted off the points on the rotative disk or carrier. The employment of the screws enables me to obtain a fine adjustment proportionate to the throw of the pricking-pins; but other reciprocative devices, such as embossing-punches or printing-bars, may be substituted for said pins, and it also follows that other adjustable or non-adjustable devices may be utilized in place of the screws to serve as stops in the path of the aforesaid pins or their substitutes.

The pins G (or analogous devices) work in guide-openings in a bar H parallel to bar E on the opposite side of the dial, and the inner end of each pin is pivotally connected to a lever I, the latter being fulcrumed between parallel arms J extending from a bracket or plate K secured in the casing transverse of the latter and constituting the support for a series of electromagnets L, the armature M of each magnet being shown as connected by a retractive spring *f* to another arm of said bracket or plate.

A spring *g* is preferably employed in opposition to the outer edge of the lever I to steady the latter, and the inner edge of this lever is provided with a notch *h* normally engaged by a dog P, the latter being pivoted intermediate of its extremities to another lever Q that is also fulcrumed between a pair of the bracket or plate arms above specified and joined by a link R with one of the aforesaid armatures. Extending from the notch-engaging end of each dog P is a wiper S, and a lateral projection *i* on the adjacent lever I is arranged in the path of this wiper.

A spiral spring *j* is interposed between the

inner end of each dog P and adjacent lever Q, this spring serving to hold said dog in contact with a preferably-adjustable stop T supported in the casing, the stops herein shown being screws that turn in rods U mounted on standards V on the bottom of said casing. By having the stops T adjustable the tension of the springs *j* may be regulated and the trip of the dogs P accurately timed.

To economize space and provide for the employment of a number of reciprocative pricking-pins or analogous devices in a single casing, I arrange the electromagnets in two parallel series, those in one series being sufficiently out of line with those in the other series to permit of the bracket or plate arms J being disposed to the best advantage, it being shown in Fig. 1 that the arms corresponding to the magnets in one series alternate with those in the opposite series.

In practice each electromagnet is wired to a push-button or other suitable make-and-break device at some distant point, and the circuit being closed the relative armature is attracted. As the armature approaches the magnet the lever Q is swung on its fulcrum by the connecting-link R, and the dog P carried by said lever being in engagement with the notch in the other lever I the latter is also swung on its fulcrum to cause an action of the pricking-pin or analogous device on the dial to thereby record the time at which the magnet was energized. Before the armature is fully attracted, the resistance of the stop T against the dog P will cause the latter to move on its pivot and trip out of the notch in the lever I, and subsequent to this operation the wiper S will come against the lateral projection *i* on said lever. The armature continuing toward the magnet the movement of the lever Q results in pressure of the wiper S on the lateral projection *i* of the lever I, and consequently the return of the latter lever to normal position is assured, even though the magnet remains energized for an indefinite length of time, as not infrequently occurs in electric time-recorders. At the left in Fig. 1 the normal position of parts involved in the lever mechanism is shown by full lines. At the right in the same figure the full lines show the lever mechanism when the pricking-pin or analogous device has operated on the dial, and referring again to the left of said figure the dotted lines show said mechanism as it appears when a trip of the dog involved therein has taken place. The pricking-pin or analogous device being positively retracted as soon as it has made a registration, there is no impediment to the travel of the dial and consequently the latter cannot tear or pull away from its carrier.

While I have shown my apparatus organized as a time-recorder to be operated electrically from distant stations, it may as readily be organized for operation by pneumatic, hydraulic, or mechanical impulses from such stations, and it may also be organized

to have all the registrations made at one station, as is common with recorders utilized to keep the time of workmen in factories and other places of business.

As one instance of possible variation in the apparatus, herein shown and particularly described, the electromagnets may be omitted and the armatures serve as levers to be actuated by push-keys, inserted through apertures made in the casing, but under any circumstances the main object of my invention is to prevent a continued contact of the marking-device and dial or analogous device. It is also possible to vary the structural detail and arrangement of the various parts involved in the apparatus without in any way affecting the general operation, one important feature of the latter being that the retraction of any of the marking devices is a result of the same power exerted to effect its impact, or, in other words, the lever attached to a marking device is acted upon successively by the dog and its wiper extension connected to another lever, while this lever is on throw in one direction, whereby the lift and trip of the former lever is effected, the trip being incidental to a resistance in the path of said dog on that side of its pivot farthest from the wiper extension. It also follows that after the double action of the lever connected to a marking device has been effected the other lever must be returned to normal position before another operation of the relative marking device can be effected, but any impediment to such return cannot in any way interfere with the travel of the time-record.

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

1. In a time-recording apparatus, the combination of a removable record-dial or analogous device and its motor, a pricking-pin or analogous marking-device opposed to the record-device but normally out of contact therewith, a lever connected to the marking-device and provided with a lateral projection, an actuating mechanism that has trip-engagement with the lever, and a wiper extended from the actuating-mechanism to operate upon the lever-projection when a trip of said mechanism takes place.

2. In a time-recording apparatus, the combination of a removable record dial or analogous device and its motor, a loose pricking-pin or analogous marking-device in normal opposition to the record device, a lever connected to the marking-device, another lever, a lift-and-trip device pivoted to the latter lever to operate the former lever, a stop in the path of one extremity of the lift-and-trip device, and suitable means for actuating the lever to which said lift-and-trip device is pivoted.

3. In a time recording apparatus, the combination of a removable record dial or analogous device and its motor, a loose pricking-pin or analogous marking-device, in normal

opposition to the record device, a lever connected to the marking-device, another lever, a pivotal lift-and-trip device carried by the latter lever to operate the former lever, a stop in the path of one extremity of the lift-and-trip device, an electro-magnet, an armature for the magnet, and a link connecting the armature with the lever to which said lift-and-trip device is pivoted.

4. In a time-recording apparatus, the combination of a removable record dial or analogous device and its motor, a loose pricking-pin or analogous marking-device in normal opposition to the record device, a notched lever connected to the marking-device and provided with a lateral projection, another lever, a dog pivoted intermediate of its extremities to the latter lever and normally engaged with the notch in the former lever, a wiper-extension on the dog opposed to the lateral projection on the marking-device lever, a stop in the path of that portion of the dog farthest from the wiper-extension, and suitable means for actuating the dog-carrying lever.

5. In a time-recording apparatus, the combination of a removable record dial or analogous device and its motor, a loose pricking-pin or analogous marking-device in normal opposition to the record device, a notched lever connected to the marking-device and provided with a lateral projection, another lever, a dog pivoted intermediate of its extremities to the latter lever, a wiper-extension on the dog opposed to the lateral projection on the marking-device lever, a stop in the path of that portion of the dog farthest from the wiper-extension, an electro-magnet, an armature for the magnet, and a link connecting the armature and dog-carrying lever.

6. In a time-recording apparatus, the combination of a removable record dial or analogous device and its motor, a loose pricking-

pin or analogous marking-device in normal opposition to the record device, a lever connected to the marking-device, another lever, a spring-controlled lift-and-trip device pivoted to the latter lever to operate the former lever, a stop in the path of an extremity of the lift-and-trip device, and suitable means for actuating the lever to which said lift-and-trip device is pivoted.

7. In a time-recording apparatus, the combination of a removable record dial or analogous device and its motor, a loose pricking-pin or analogous marking device in normal opposition to the record device, a lever connected to the marking-device, another lever, a lift-and-trip device pivoted to the latter lever to operate the former lever, an adjustable stop in the path of an extremity of the lift-and-trip device, and suitable means for actuating the lever to which the lift-and-trip device is pivoted.

8. In a time-recording apparatus, the combination of a removable record-dial or analogous device and its motor, a row of pricking-pins or analogous marking-devices arranged to oppose the record-device, two parallel series of supporting-arms extending toward the marking-devices, the arms in one series alternating with those of the other series, a lever connecting each marking-device with one of said arms, another lever in connection with each arm, a lift-and-trip device pivoted to the latter lever to operate the former lever, and suitable means for actuating the lever carrying the lift-and-trip device.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

GEORGE F. RANSOM.

Witnesses:

N. E. OLIPHANT,
HENRY DANKERT.