

F. M. RUSSELL.

TIME RECORDING AND INDICATING APPARATUS, WORKMAN'S TELLTALE, AND THE LIKE.

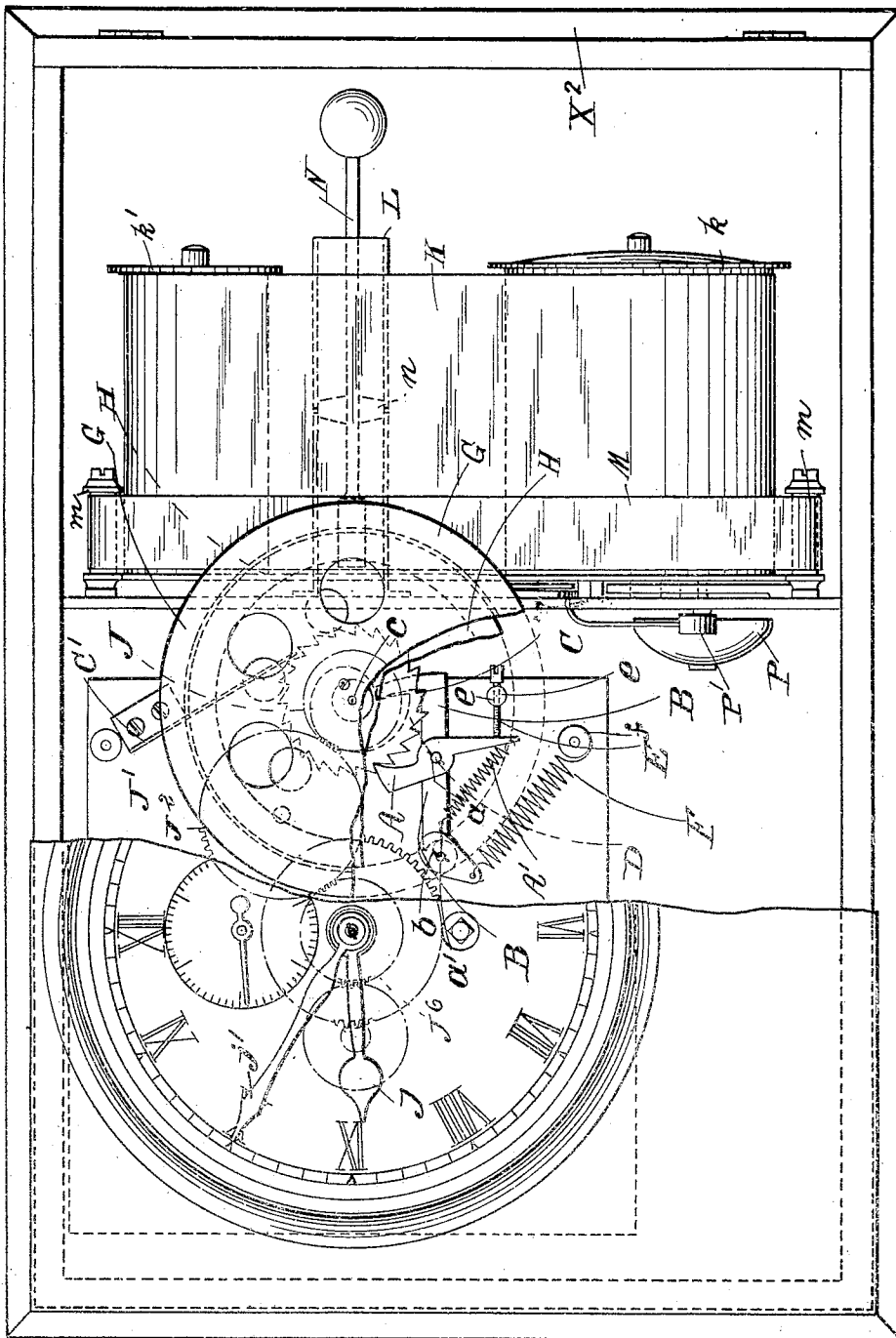
APPLICATION FILED JUNE 15, 1908.

953,802.

Patented Apr. 5, 1910.

4 SHEETS—SHEET 1.

FIG. 1.



Witnesses.
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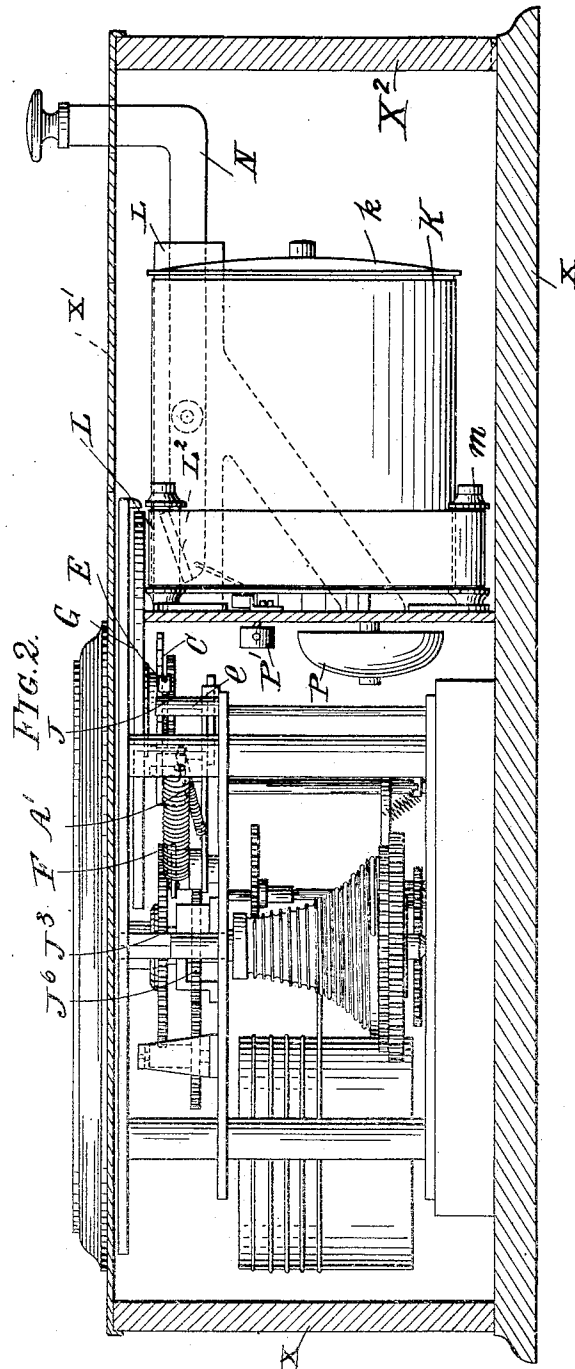
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4 SHEETS—SHEET 2.



Witnesses.

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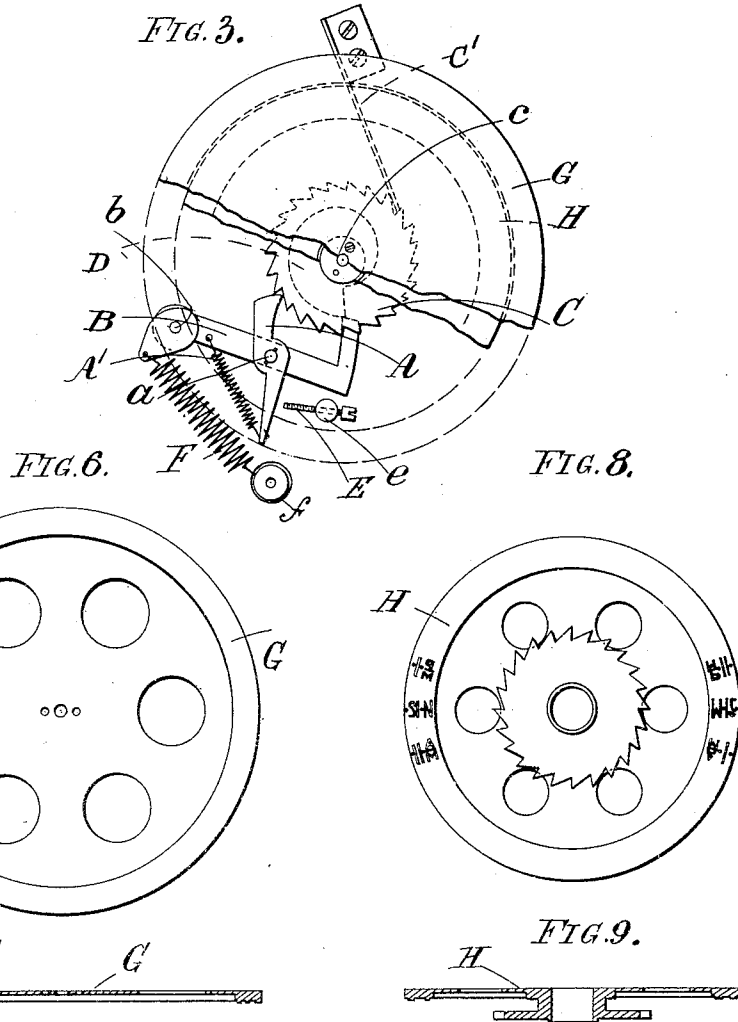
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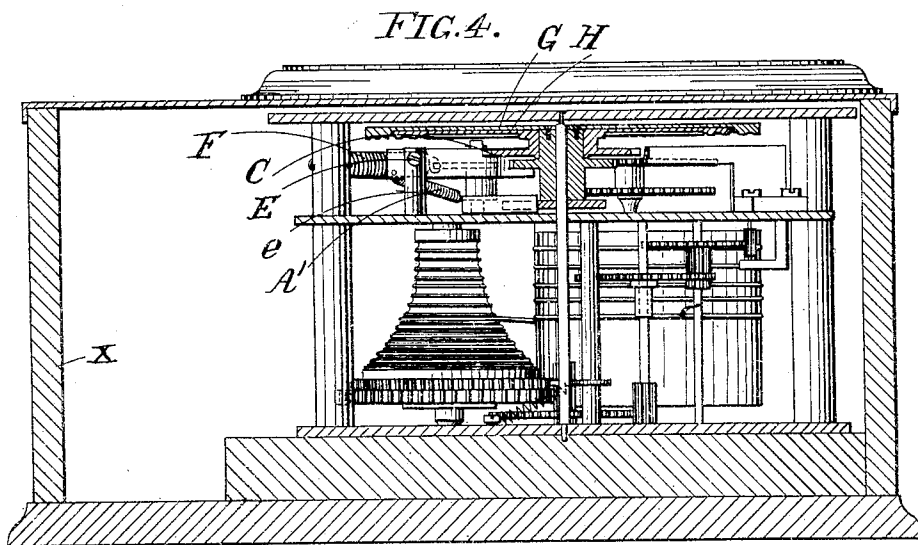
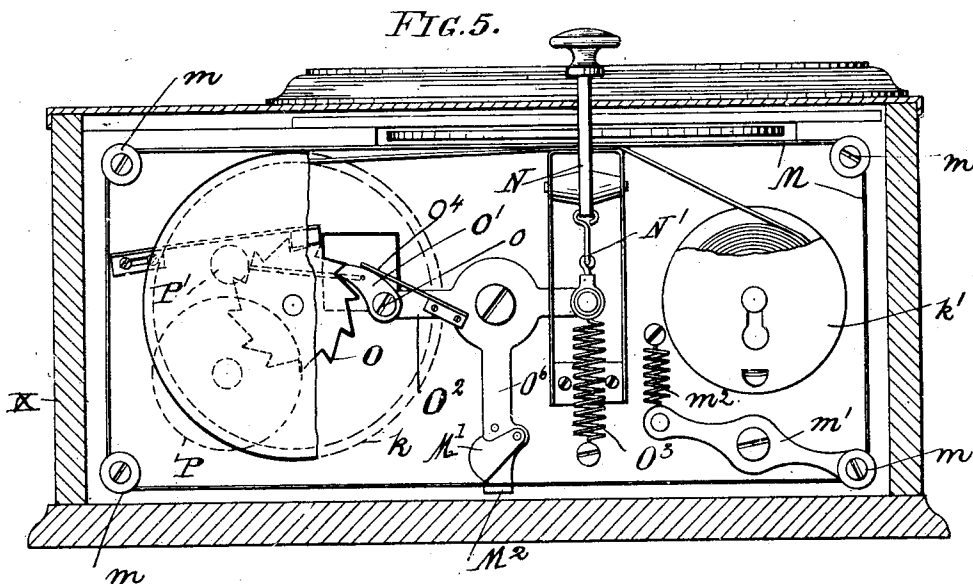
Patented Apr. 5, 1910.

4 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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TIME RECORDING AND INDICATING APPARATUS, WORKMAN'S TELLTALE, AND THE LIKE.

953,802.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed June 15, 1908. Serial No. 433,662.

To all whom it may concern:

Be it known that I, FREDERIC MONTAGU RUSSELL, of Junction Works, Willesden, London, in the county of Middlesex, England, have invented certain new and useful Improvements in or Relating to Time Recording and Indicating Apparatus, Workmen's Telltales, and the Like; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

The recording strip and the time indicating mechanism are brought into contact to impress the time on the strip exactly or approximately opposite the part marked or stamped by the user, by the movement of a suitable lever.

In apparatus of this class the intermittently rotated disks are generally operated by spring-controlled or other pawls engaging ratchet wheels and actuated by cams, back stops or pawls being employed for preventing backward rotation. In these arrangements the ratchet wheel is more or less free to move forward during the whole or part of the return stroke of the pawl, and, in many cases, also while the pawl is being moved for its driving stroke, the wheel therefore sometimes moves forward wrongly. Also when the pawl performs its working stroke the wheel is liable to travel too far or through too great a distance. These drawbacks are avoided by the present invention, in accordance with which the spring-controlled pawl which engages with a ratchet wheel carried by the hour indicating disk is pivoted upon an arm fulcrumed eccentric of the disk's axis of rotation: the pivot is thus eccentrically moved relatively to the ratchet with which the pawl engages, and during its movement the pawl is continuously pressed against a stop, which prevents the pawl being moved outward by any tendency of the ratchet wheel to overrun, and it is only when the pivot of the pawl has been moved far enough outward from the axis of the disk's rotation to pass from one tooth and to drop on to the next succeeding tooth that the stop allows the pawl to perform the required movement. At any other movement a slight over-running movement of the ratchet wheel will cause the pawl, by the action of the stop, to lock the wheel

against forward rotation. The arrangement also prevents, in the same manner, the wheel from rotating more than one tooth at a time.

Referring to the drawings Figure 1 is a sectional plan of a time recording apparatus with the improvements according to this invention. Fig. 2 is a longitudinal sectional elevation of the apparatus shown in Fig. 1. Fig. 3 is a sectional plan of part of the essential mechanism shown in Fig. 1. Fig. 4 is a cross sectional elevation of Fig. 1 taken through the time indicating disks. Fig. 5 is a sectional end elevation of Fig. 1. Figs. 6 and 7 are respectively inverted plan view and section of one of the printing disks. Figs. 8 and 9 are respectively inverted plan view and section of the other printing disk, and Fig. 10 is a view of part of the recording strip printed by the two disks.

The disks G and H are provided around their flat under surface with time indicating numerals. The disk G is rotated from the spindle rotating the minute hand *j'* of the clock J through a train of wheels J. J¹. J². J³. J⁶ and rotates on an axis concentric with the spindle of the hour disk. The hour disk H is arranged within the disk G which is recessed to receive it so that the type numerals on both disks are flush with one another. The disk G is continuously rotated while the disk H is only rotated a twenty-fourth of a revolution to change the hour numeral once in each hour, this hour disk being conveniently provided with one set of numerals with designating figures A. M. and a similar set with designating numerals P. M. The disk H is rotated from the disk G and by mechanism which forms the subject of the present invention and hereinafter described. The numerals on the disk H represent, as already stated, the hours and each hour of the twenty-four in a complete day is indicated, the numerals being distinguished by letters a. m. and p. m. after them where necessary.

Rigidly fixed to the disk H is the ratchet wheel C, having twenty-four teeth, that is to say, one for each hour division.

Mounted upon the spindle *c*, on which the disk G rotates, is a quick return cam D. This cam is attached to and rotates in company with the minute indicating disk G. In Fig. 1 the cam is shown in the position where it has released the pawl carrying the arm B, when the hour numeral has just been

changed. As the minute indicating disk G rotates continuously, the cam will gradually move the arm or lever B around its pivot *b* against the action of the spring F, one end of which is attached to the lever B and the other to the pillar *f*. This movement carries the pivot *a* upon which the pawl A is fulcrumed eccentrically of the ratchet wheel C and the pawl by the pressure thereon of the next tooth of the wheel, has tension put upon its operating spring A¹ which is connected at *a*¹ to the arm B. The stop E, which is adjustably mounted in the pillar *e* is so disposed that, during this combined movement of the pawl A around its fulcrum *a* and the movement in company with the lever B, it prevents the pawl being moved or jerked and allowing the wheel C to slip.

C¹ is a spring which prevents backward rotation of the wheel C.

The operation of the cam D is such that at the end of the hour, the end of the lever B which engages the cam falls over the cam, a position which is just being approached in Fig. 2. The spring F quickly returns the lever to the position shown in Fig. 1 and during the return movement, the pawl A moves the ratchet wheel C and with it the intermittently rotating hour disk one division forward, the stop E again acting to prevent inaccurate movement, that is to say, it both prevents the wheel being moved forward two divisions or no division at all. Further, it locks the pawl against any movement by which the wheel C might jump or slip during the gradual movement of the arm B and only when the arm is freed from the cam is the pawl allowed to override a tooth. Thus the disk H, in addition to being moved accurately, is locked against motion in either direction throughout the hour, and is only allowed to move at the required instant.

The hour hand *j* and the minute hand *j*¹ of the clock are adapted to pass over a clock face mounted in the upper side of the inclosing casing X whereby the user of the apparatus can ascertain the time which is being recorded opposite his signature or mark.

The recording strip K is mounted on rollers *k*, *k*¹ being wound from the roller *k*¹ and received by the roller *k*. The strip is led over a supporting table or plate L situated below an opening X¹ in the top of the casing. A section of the printing disks adjacent to the printing point overlaps a portion of the strip and between these overlapping parts the inking ribbon M which is mounted on rollers *m* is adapted to pass so that when the recording strip and the disk are forced into contact the printing operation is effected. The strip is pressed up against the type on the disks by a lever N which is pivoted at *n* to the frame L¹ supporting the

table L. At its inner end the lever carries a rubber or other pad L² which when the lever is operated carries the paper strip up into contact with the type on the disk. After the user has signed or marked the section of the recording strip appearing in the opening, he depresses the end of the lever N by which action the time of his signing or marking the strip is recorded on the strip opposite his signature. On releasing the lever the paper is fed forward so that a fresh portion appears under the opening and conveniently also the inking ribbon is moved to bring a fresh piece under the type of the printing point, and should the disk A have been retarded in any way by this printing operation, the spring C above referred to returns the disk to a position to agree with the clock.

The mechanism by which the paper strip and the ink ribbon are operated by the release of the lever consists in a ratchet wheel O with which engages a pawl O¹ pivoted at *o* on the end of a pivoted lever O². The lever is controlled by a spring O³ and connected at the end opposite to the pawl to the lever N by a link N¹ so that when the user depresses the lever the link N¹ rocks the lever O² causing the pawl to override a tooth on the ratchet O, the pawl being caused to engage with the face of the next tooth by a spring O⁴. The spring O³ returns the lever N on its release and also operates the lever O², causing the pawl O¹ to rotate the ratchet wheel and with it the roller *k* and thereby feed forward the paper. At the same time the inking-ribbon M is moved by a clip carried by an arm O⁵ of the lever O²: this clip consists of an eccentrically pivoted jaw M¹ and a stationary jaw M² between which the ribbon passes, the arrangement being such that the jaws only grip the ribbon when moving in one direction. One of the rollers *m* on which the ribbon is mounted is carried on one end of a pivoted lever *m*¹ which is controlled at its opposite end by a spring *m*² to keep the ribbon in tension.

P is a bell, the hammer P¹ of which is carried by the pawl O¹ which after overriding a tooth is returned by its spring, causing the hammer to strike the bell and intimate to the user that the lever may now be released, the recording operation having been completed.

The end X² of the casing is preferably hinged to permit ready access to the interior of the casing for removing or renewing the record strip.

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

In a time recording or like apparatus, the combination with a clock mechanism and a time printing disk, rotated continuously

thereby, of a second time printing disk
mounted concentrically with the continu-
ously rotated disk, a cam on the continu-
ously rotated disk, a ratchet wheel secured to
5 the second disk, an arm, a pivot for the arm
eccentric to the disk's axis of rotation, a
pawl pivoted to the arm intermediate its
ends, a nose on the pawl engaging the
ratchet wheel, a spring tending to keep the
10 pawl in engagement with the ratchet wheel,
a projecting piece on the arm engaging the
cam, a spring tending to keep the arm in

engagement with the cam, a tail piece on the
pawl, and an adjustable stop in constant
engagement with the tail of the pawl until 15
the arm is released from the cam and per-
mitted to return.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

FREDERIC MONTAGU RUSSELL.

Witnesses:

H. D. JAMESON,

F. L. RAND.