(No Model.)

J. C. DICKOVER & W. SCOTT.

RAILWAY TIME SIGNAL.

No. 456,023. Patented July 14, 1891.

Fig. 1.

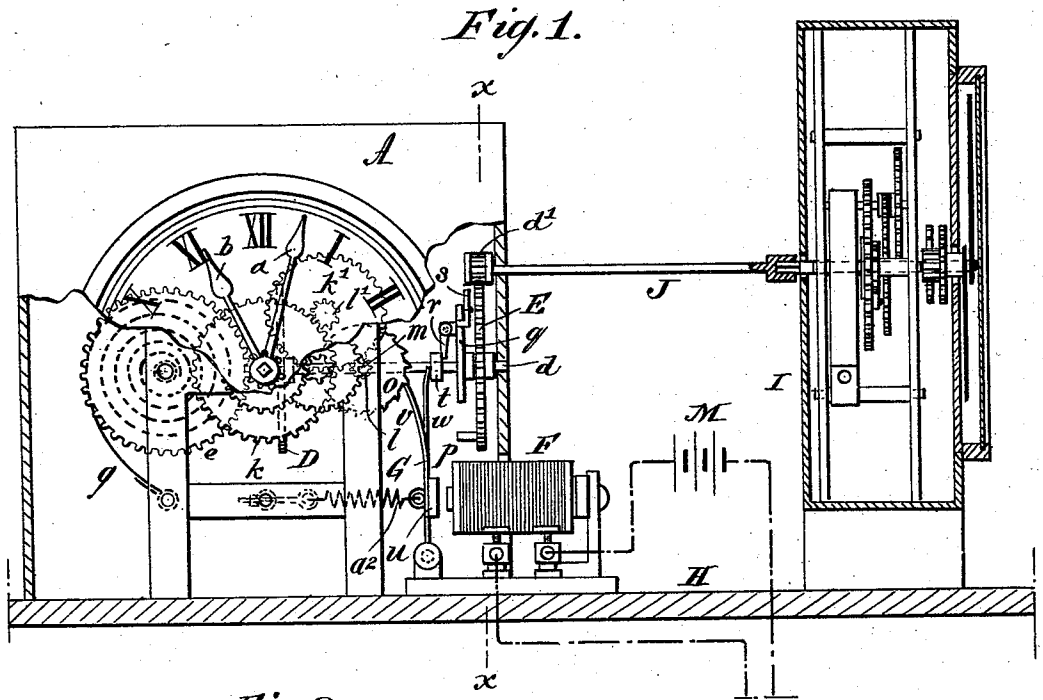
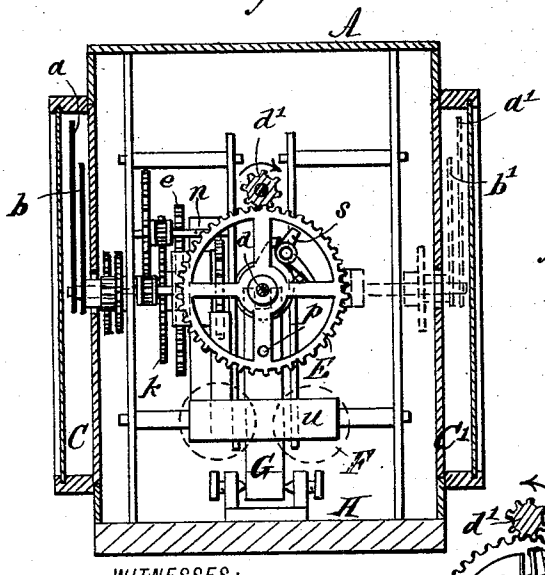


Fig. 2.



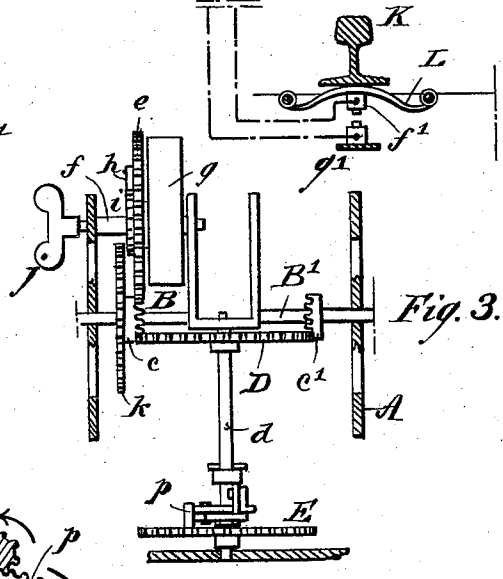


Fig. 3.

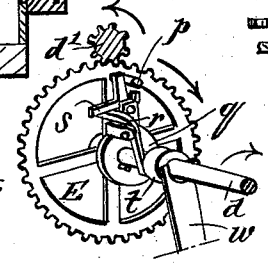


Fig. 4.

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JOSHUA C. DICKOVER AND WALTER SCOTT, OF HOT SPRINGS, SOUTH DAKOTA, ASSIGNORS OF ONE-HALF TO JOSEPH B. DICKOVER AND CHARLES G. FARGO, BOTH OF SAME PLACE.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 456,023, dated July 14, 1891.

Application filed February 24, 1891. Serial No. 382,438. (No model.)

To all whom it may concern:

Be it known that we, JOSHUA C. DICKOVER and WALTER SCOTT, both of Hot Springs, in the county of Fall River and State of South Dakota, have invented a new and Improved Railway Time-Signal, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation, partly in section, of our improved train-register. Fig. 2 is a vertical transverse section taken on line *x x* in Fig. 1. Fig. 3 is a sectional plan view of the double-dial mechanism, and Fig. 4 is a detail perspective view of the mechanism for connecting the time-movement with the indicating movement.

Similar letters of reference indicate corresponding parts in all the views.

The object of our invention is to construct a train-register which will show positively the time when the last train passed over the railroad-track.

Our invention consists in the combination, with a clock, of one or more sets of spring-actuated dial mechanism, having a toothed wheel and an electrically-operated detent for controlling its movement, mechanism connected with the clock for limiting the movements of the dial mechanism, and a track-instrument for closing the circuit of the indicating mechanism, all as will be hereinafter more fully described.

In the double frame A are journaled the minute-hand arbors B B′, which carry on their extremities minute-hands *a a′* in front of the clock-dials C C′, on opposite sides of the machine, and motion is imparted by these minute-hand arbors to hour-hands *b b′* through dial-wheels in the usual way. The arbors B B′ are provided with crown-pinions *c c′*, which are engaged by a spur-wheel D, mounted on an arbor *d*, journaled in the frame of the machine. The crown-pinion *c* on the arbor B is engaged by a spur-wheel *e*, loosely placed on the mainspring-arbor *f*, and to the said mainspring-arbor is attached one end of a clock-spring *g*, the other end of which is fixed to the frame A. The said wheel *e* carries a pawl *h*, which engages a ratchet *i*, secured to the arbor *f*. The said arbor *f* is provided with a key *j*, by which the spring *g* may be wound.

Upon the arbor B is mounted a spur-wheel *k*, which engages a pinion *l′*, mounted on the same arbor with a spur-wheel *k′*, which engages a pinion *l* on the arbor *m*, the said arbor being provided with a small fly *n* (such as was formerly used in clocks) to regulate its motion and with a toothed wheel *o*.

Upon the end of the of the arbor *d* opposite that which carries the spur-wheel D is loosely mounted the spur-wheel E, which carries a stud *p*, projecting toward the wheel D and parallel with the arbor *d*. Upon the arbor *d* is mounted an angled arm *q*, to which is pivoted a right-angled lever *r*, the longer arm of which extends down past the arbor *d*, Fig. 4. The shorter arm extends toward the wheel E, and to the radial portion of the arm *q* is pivoted an angled lever *s*, one arm of which extends outwardly over the shorter arm of the lever *r*, the other arm projecting in a radial direction into the path of the stud *p*. Upon the arbor *d* is mounted the sleeve *t*, which is in the path of the longer arm of the lever *r*.

On the base of the instrument is mounted an electro-magnet F, furnished with an armature-lever G, supporting an armature *u* normally within the field of the magnet F. The armature-lever G is divided into two arms *v w*. The arm *w* is forked at its upper end, Fig. 4, and extends upwardly upon opposite sides of the arbor *d* behind the sleeve *t*. The arm *v* is curved toward the toothed wheel *o*, so that it can enter into engagement with the teeth of the said wheel. A retractile spring a^2, attached to the armature-lever G and to the frame A, tends to draw the armature-lever G away from the magnet F.

Upon the base H, which supports all the parts of the apparatus, is mounted a clock I, of ordinary construction, and to the minute-hand arbor, which projects through the back of the clock-case, is attached one end of a spindle J, the opposite end of which carries a pinion *d′*, which engages the spur-wheel E

and imparts to the said spur-wheel a motion equal to that of the hour-hand of the clock I.

Under the track-rail K of the road to which our improvement is applied is placed a bow-spring L, which carries an electrical contact-point f', which is connected electrically with one pole to the battery M, the other pole of the battery being connected with one terminal of the magnet F. Below the movable contact-point f' is placed a stationary contact-point g', which is connected electrically with the remaining terminal of the magnet F.

The operation of our improved train-register is as follows: The clock I being wound and set to the correct time, and the spring g of the registering mechanism being wound, when a train passes over the track-rail K the spring L is depressed, closing the contact between the points f' and g', thus causing the magnet F to attract the armature u and move the lever G, so as to withdraw the detent-arm v of the said lever from the toothed wheel o, at the same time causing the arm w of the lever to move the sleeve t over toward the wheel E, tilting the levers r s on their pivots. When the wheel o is released, the rain of gearing connected with the said wheel is turned by the spring g, thereby causing the arbors B B′ to turn, carrying around the minute and hour hands through the mechanism already described, and also turning the spur-wheel D and the arbor d forward until the radially-projecting arm of the lever s strikes the stud p, carried by the wheel E, when the said lever s is turned on its pivot, so as to depress the shorter arm of the lever r, causing the longer arm of the said lever to push the sleeve t outwardly, thus swinging the lever G over, so as to bring the detent-arm v of the said lever again into engagement with one of the teeth of the wheel o, thereby arresting the movement of the indicating-gearing, the relative arrangement of the stud p and the hour-hand of the clock I being such as to cause a stoppage of the indicating mechanism when the hands of the said mechanism indicate the time then shown by the hands of the clock I. As soon as the train has passed the circuit is broken between the contact-points f' g', and the retractile spring a^2 retains the detent-arm v in engagement with the wheel o, and the indicating mechanism remains quiet; but the wheel E is carried forward by the clock I, and the stud p projecting from the said wheel, always corresponds in position with the position of the hour-hand of the clock, so that when the mechanism is again released in the manner described the hands will be moved forward until the lever s again strikes the stud p, when the indicating mechanism will be stopped, with the hands indicating the time shown by the hands of the clock I.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a train-register, the combination, with a time-clock movement, of auxiliary clock-gearing furnished with a motor-spring, dial-wheels, hands, and a dial, electro-magnetic releasing mechanism for starting the auxiliary clock-gearing, and stop mechanism controlled by the time-clock movement for stopping the auxiliary clock-gearing, substantially as specified.

2. In a train-register, the combination of the time-clock movement I, the auxiliary clock-gearing furnished with a motor-spring, dial-wheels, hands, a dial, and a toothed stop-wheel o, the arbor d, connected with the hand-moving mechanism of the auxiliary clock-gearing, the wheel E, mounted loosely on the arbor d and provided with a stud p, the arm q, fixed to the arbor d and carrying the angled levers r s, the sleeve t, mounted loosely on the arbor d, the electro-magnet F, and the armature-lever G, provided with the arms v w for engaging the toothed wheel o and sleeve t, respectively, substantially as specified.

3. In a train-register, the combination, with a time-clock, of auxiliary hand-moving mechanism, an electro-magnetic releaser, and an arrester controlled by the time-clock, substantially as specified.

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