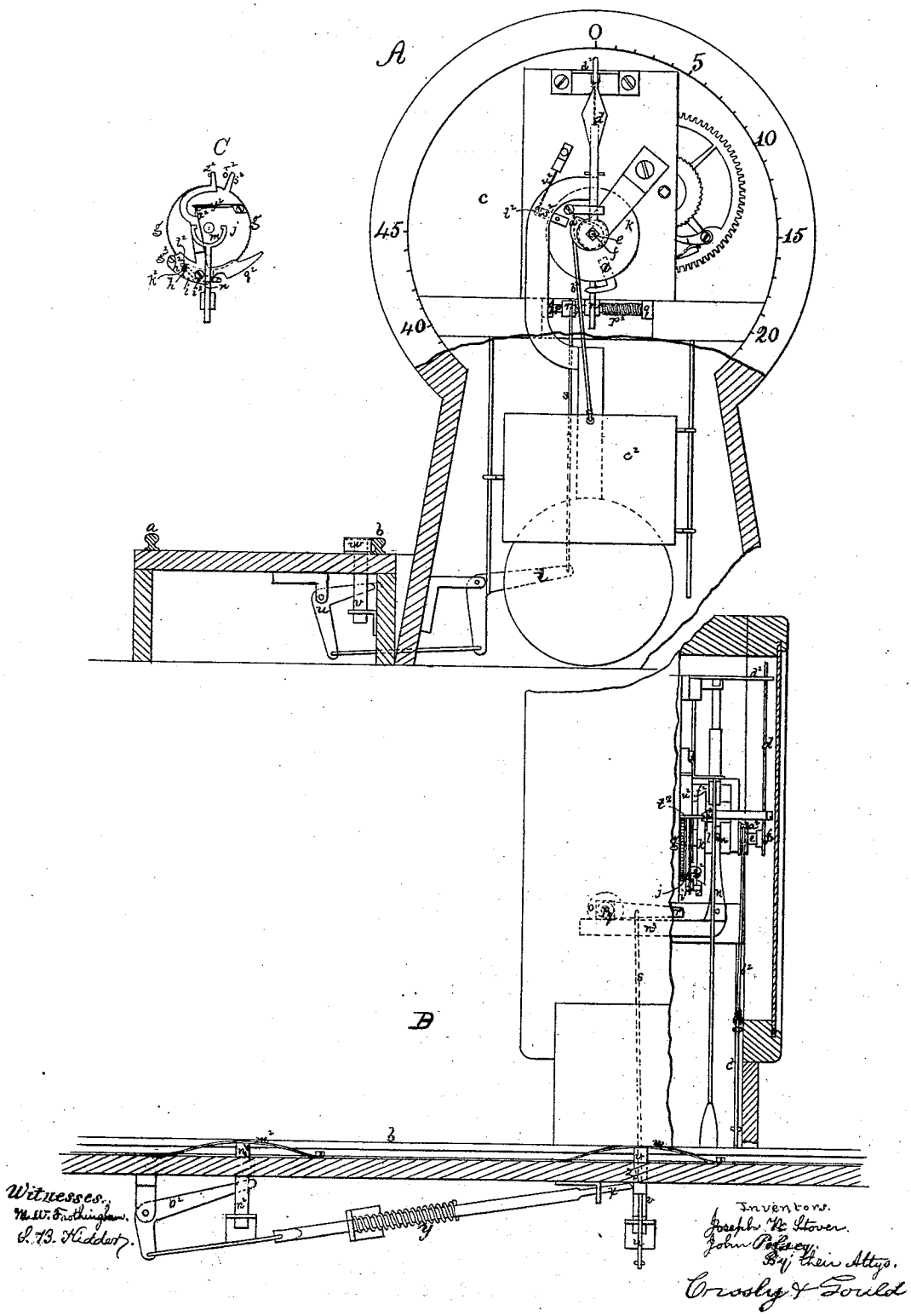
J. W. STOVER & J. POLSEY.

Improvement in Time-Signals for Railroads.

No. 128,435. Patented June 25, 1872.



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UNITED STATES PATENT OFFICE.

JOSEPH W. STOVER AND JOHN POLSEY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN TIME-SIGNALS FOR RAILROADS.

Specification forming part of Letters Patent No. 128,435, dated June 25, 1872.

To all whom it may concern:

Be it known that we, JOSEPH W. STOVER and JOHN POLSEY, both of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Signal Mechanism for Railway Trains; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

Our invention relates to a method of indicating, at a railway station, the time of absence of a passed train up to a time of passing when such train shall have reached a distance at which it will be safe for another train to follow it.

In our invention we employ a clock-work having an index-hand or pointer, which, by suitable mechanism, is connected with the track and with springs located at the side of the rail or rails, one of which springs, by its depression by a passing car-wheel, releases the hand or index pointer, so that, by the action of a weight or spring, the pointer will be turned to the zero-point or point of starting, while pressure of the car-wheel upon the other spring engages the pointer mechanism and the clock mechanism, so that the hand is moved by the time movement and the stress of a weight or spring. As a train reaches a station the action of a car upon the first spring will always release the pointer and set it back to its point of starting, at which point it will remain until the train in restarting (if it stops at the station) actuates the other spring, the mechanism connected with which throws the clock mechanism and the hand mechanism into engagement, leaving the hand in movement. If the train passes the station without stopping, the hand is set back to its starting-point and simultaneously put into re-engagement with the clock mechanism by the action of the train upon both springs, and by means of the invention it will always be shown upon the dial-face of the clock mechanism how long the last train has been gone up to such a length of time, at least, as it is desirable to have any knowledge of the length of time of departure, the extent of movement of the hand being somewhat less than sixty minutes, or than entirely around the dial, so that the number of minutes indicated by the pointer shows either the exact time which has elapsed after the passing of the train, or that such train has been gone longer than a maximum time. The invention consists, primarily, in combining with a railway track, at a station or other desirable point, a clock mechanism having a hand or pointer, which, by pressure of a car-wheel upon a spring at the side of the rail, is disengaged from the clock mechanism and thrown to its starting-point, and a mechanism which, by pressure of a car-wheel upon another spring, throws the pointer again into engagement with the clock-work, the disengaging mechanism being first operated by a passing train, and always returning the pointer to its starting-point, and the engaging mechanism being next operated by the train, and always re-engaging the pointer and clock-work at such starting-point, the clock-work being kept in motion, but the hand or pointer always stopping when returned to its starting-point until its re-engagement is effected by the passing train, when it will again start.

The drawing represents a railway track and signal mechanism embodying our invention.

A shows a front and sectional elevation. B is a side and sectional elevation. C is a detail view of the pawl mechanism.

a b denote the track-rails; *c*, a case, located at the side of the track or in any convenient position, said case containing an ordinary time-movement or train, actuated by a weight or spring in the usual manner. The hand *d* is fixed upon the end of a sleeve, *e*, or the minute-arbor *f*, and on this arbor is fixed a ratchet-wheel, *g*, with which engages a spring-pawl, *h*, said pawl being jointed to an arm, *i*, extending from a disk-wheel, *j*, said wheel being loose upon the sleeve *e*, and being rotated by the connection of the pawl with the ratchet *g*. In front of this wheel is a slide-wheel or disk, *k*, having a hub, *l*, in which is a slot for entrance of a fork, *m*, on the end of a vertical arm, *n*, of a lever, whose other arm extends back horizontally and passes under an eccentric, *o*, on a rocker shaft, *p*. This shaft turns in stationary bearings *q*, and has extending from it an arm, *r*, to which is connected the upper end of a rod, *s*, whose lower end is con-

nected to one arm, t, of a lever, the other arm of which is connected to a lever, u, one arm of which is jointed to a vertical rod or slide, v, that passes up to the side of the track-rail, so that its top comes just under a spring-plate, w, which is so located that the passing car depresses it, and by depressing it pushes down the rod or slide v, actuates the lever u, and through it the lever t, and thereby depresses the arm r, turns the shaft p, and causes the eccentric to press down the lever-arm n^3, thereby pressing inward the arm n, and sliding the disk-wheel k in toward the wheel j. When the vertical rod or slide v is so pressed down, a bolt, x, is driven forward by a spring, y, and enters a notch, z, in the rod, thereby locking the rod in the position to which it is depressed. The disk-wheel k slides on the arbor-sleeve e without rotation, but the wheel j and sleeve rotate as one. Upon or near the end of the sleeve is a segment, a^2, having a peripheral groove, in which winds a cord, b^2, having hung to it a weight, c^2. When the wheel j is connected to the ratchet-wheel g, which is fixed to the time-arbor f, the sleeve e and hand or pointer d move together, and the pointer moves on time and shows against the dial the minutes it has moved; but if the wheel j be disconnected from the ratchet, by disengaging the pawl, then the weight c^2 turns the arbor and carries the hand or pointer back, it being always arrested at the zero or starting point by a stop, d^2. The edge of the slide-wheel is made with an incline f^2, and when, by the action of the car-wheel upon the rod v and levers, the wheel k is slid in toward the pawl-wheel j, the incline acts upon a pin, g^2, extending from an arm or lever, h^2, pivoted at i^2, and presses said pin and arm radially outward. The arm h^2 has a slot, k^2, through which extends a pin, l^2, projecting from the pawl h, and when the arm h^2 is moved by the incline f^2, the bottom of the slot strikes the pin l^2, pressing it outward radially, thereby disengaging the pawl from the ratchet. The wheel j with its sleeve and pointer are then free to turn, and the weight turns them and carries the pointer back to its starting-point. This will take place wherever the pointer may be whenever the spring w is depressed by a car. The pointer being thus released, and the wheel disengaged from the time wheel or ratchet g, the time movement keeps on without interruption, but imparts no movement to the pointer. The pointer thus remains in position until the restart of the train which effected its return to its starting-point, or by the start of a new train from the same point. When such a train moves, the car-wheels pass over another spring, m^2, located similarly to the spring w, and the depression of such spring presses down a vertical slide or rod, n^2, the first effect of which is to withdraw the bolt a and release the slide v^2, for which purpose the slide n^2 is connected with a lever, o^2, which, being operated by the depression of the slide-rod, draws back the bolt. The slide v being thus released, a spring, p^2, on the rocker-shaft p, returns the shaft p, eccentric o, levers r n^3, and rod s, all to their normal positions, and a spring returns the lever to its normal position, throwing the wheel back from the pawl-wheel, releasing the pin and permitting the pawl to be again thrown into engagement with its ratchet. The clock-work will then actuate the sleeve e and pointer d, and the pointer will travel forward, indicating the number of minutes the train has passed, until by approach of a new train in the same direction the spring w is again depressed, the wheels j and k disengaged, and the pointer returned to its starting position.

The forward movement of the hand is arrested at some time within the hour, if no train passes over the springs within that time. In the arrangement shown in the drawing the hand travels forward for forty-five minutes, and the movement of the pawl-wheel then brings a tail piece, q^2, of the lever h^2 under a pin, r^2, thereby depressing the piece q^2, raising the slot k^2, and disengaging the pawl from the ratchet. The pawl-wheel will then start back, but will be arrested by an arm, s^2, striking a stop, t^2, at the end of a spring, u^2, and the hand will remain stationary at its forward terminal position, until by approach or start of a train, the spring w is depressed. While thus stationary the clock movement keeps in operation. At such depression the inward movement of the wheel k will cause an incline, v^2, to pass under a pin, t^2, at the end of the spring u^2, pressing out the spring and its stop t^2 and releasing the arm and pawl-wheel, thereby permitting the weight c^2 to carry the hand back to its normal or starting-point where it will remain stationary, but ready to be thrown into connection with the time movement by the exit or passage of the train and depression of the spring m^2 thereby. When the pawl h is in engagement with the ratchet, the lever is held in position to permit such engagement by a hook, x^2, that catches upon a spring-catch, y^2; but when the pawl is released from the ratchet, an arm, z^2, strikes a stop-pin, and throws the hook off from the catch, thereby bringing the arm to such position that the pawl cannot re-engage with the ratchet until the lever is moved back.

It will thus be seen that by means of a mechanism constantly in movement, the passing of a train is always indicated, and the time of absence of such a train up to any desired lapse of time under an hour.

The same clock-work may operate a similar mechanism at the opposite side of the case, back of a dial-face there placed, such mechanism being connected with the other track, so that the departure of trains upon both tracks is shown by the opposite dials.

We claim—

1. The combination of the track mechanism v u t s for disengaging the clock-index d from the clock movement by the passage of rail-

road cars with the detent rod x and the supplementary track-lever o^2 n^2 for holding and releasing the said disengaging mechanism, and thereby allowing the time-index to be engaged with the clock movement, substantially as described.

2. In combination with a track mechanism, the bent lever n, beveled slide-wheel k, ratchet-wheel g, disk-wheel j with its pawls, and the attached time-index d, the whole being arranged and operating substantially as shown and described.

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