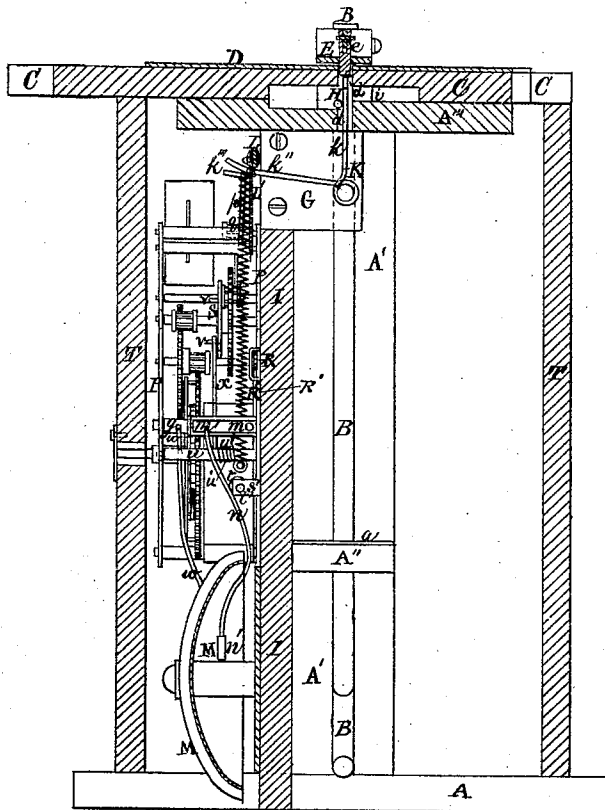


A. C. GARRATT.
Switch-Alarms.

No. 149,112.

Patented March 31, 1874.

Fig. 3



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ALFRED C. GARRATT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SWITCH-ALARMS.

Specification forming part of Letters Patent No. **149,112**, dated March 31, 1874; application filed November 15, 1873.

To all whom it may concern:

Be it known that I, ALFRED C. GARRATT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Railroad-Switch Alarms, of which the following is a specification:

Figure 1 of the accompanying drawing is a front view of my improved railway-switch alarm with the case removed. Fig. 2 is a top view of the same at one-half the scale of Fig. 1. Fig. 3 is a transverse vertical section of the same with the case attached, taken in line *xy*, and of the same scale as Fig. 1.

The object of the present invention is to provide a reliable and effective method of giving and continuing an alarm while a railway-switch is open, and notifying the operator, both when he opens and closes the switch, when the mechanism is partly run down, to warn him of the necessity of immediately attending to the winding of the mechanism before leaving the switch. My invention consists, mainly, in a railway-switch provided with a series of mechanical devices, arranged and operated, as will be hereinafter more fully described, in combination with clock mechanism and a bell or bells, so that when the switch-lever is carried forward to open the switch it shall, at the proper time, cause the clock mechanism to be set in operation, and strike a bell so long as the switch is open. This invention also consists in a railway-switch provided with a series of mechanical devices arranged and operated, as will be more fully explained in due course, in combination with clock mechanism and a bell or bells, so that when the clock mechanism is partly run down an alarm is struck as the switch-lever is carried forward to open, or brought back to close, the switch, to warn the operator of the immediate necessity of attending to the winding of the clock mechanism, all of which I will now proceed more particularly to describe.

In the drawings, A represents the sills or bottom supports of a switch-frame, having vertical standards A', connected by a cross-beam, A'', located at a suitable height, and provided with a circular or other shaped plate or washer, *a*, to support the lower portion, and allow the turning of a switch vertical shaft, B, curved or

otherwise properly formed at the bottom to connect with the ordinary switch-lever. Supported by the vertical standards A are top plates A''', which support a circular, or segmental, or other properly-shaped table or top, C, to which is attached a central metallic disk, D.

The frame of the switch may be of wood, metal, or other suitable material; or may be made partly of wood and partly of metal; and may be constructed in any other shape or manner preferred; and may be incased from the weather or accident by metal or other casings T, suitably arranged to give access to the works, and allow a key to be inserted from the outside to wind the works.

The switch-shaft B extends through and above the top C and disk D, where it is provided with a hand-lever, E, provided on its outer end with a suitable handle, *b*, and formed on the bottom with a right-angled or other-shaped guide, *c*, whose horizontal portion extends under the top C, to prevent the upward movement of the lever E, which is prevented from going beyond the desired point, on either side, by rabbeted or other stop-blocks *f'* attached to the top on either side of the table C, through which and the disk D on each side is formed an aperture, *d d'*, to receive and hold, when the lever E is in position, a drop-stem, *e*, which operates through an aperture formed in the lever E, and is raised and lowered, so as to release or hold the lever E, by the action of a bent hand-lever, *f*, to which it is pivoted, the said lever *f* being pivoted to a vertical bifurcated bearing, *g*, attached to, or formed on, the lever E, and formed with an under slot to receive and allow the action of a bent spring, *h*, attached at one end to the lever E, and at the other end impinging against the bottom of the forward end of the lever *f*; or the stem *e* may be otherwise arranged to be raised and lowered; or the lever E may be provided with any other locking device or devices that may be preferred. Near the stem end of the lever *f*, projecting upward from the lever E, is a staple or bifurcated standard, E', to guide the lever *f*, and prevent its being raised above the desired height, and to which staple a padlock or other locking device may be connected, to lock the switch when not in use. Beneath the top

C, attached to the shaft B by a nut, *i*, and screw *j*, or otherwise secured to the shaft so as to be turned by it, is a rod or arm, H, that extends horizontally a sufficient distance to be brought in contact with and operate, at the proper time, vertical arms *k k'* of right-angled levers K K', pivoted at their angles to standards G projecting rearward from each side of the upper portion of a vertical plate or back board I, that extends between the standards A', and has its upper corners notched out, or slotted, or is otherwise formed to allow the up and down movement of the horizontal forward-projecting arms *k'' k'''* of the pivoted right-angled levers K K'. Pivoted to a plate, *V*, secured to the back plate or board I, or pivoted directly to the plate or board I, is a horizontal lever, L, that is pivoted at one end to a vertical arm, L', formed or arranged, near its bottom, with a latch, *l*, curving from the top and bottom concavely toward a central point, or otherwise formed to hit and allow the slipping by of a rod or arm, *m*, projecting laterally from an arbor, *m'*, supported by a suitable bracket or bearings, *m''*, secured to the back I. The arbor *m'* is provided with a downward-extending rod or arm, *n*, having a hammer, *n'*, arranged to be swung, by the action of the arbor *m'*, against and from a gong or bell, M, attached to the lower portion of the back I. The horizontal arm *k''* of the right-angled lever K is connected with, so as to raise and lower, the lever L and the arm L' as the vertical arm *k* is brought forward or backward by the action of the rod or arm H, a vertical spiral or other spring, N, being attached to the lever L and the back I to hold the lever L down when the switch is opened, the said lever being prevented from dropping beyond its desired position by a stem, *o*. The forward end of the horizontal arm or rod *k'''* of the right-angled lever K' connects with, so as to raise and lower, by the contact and release of the arm H with the vertical arm or rod *k''*, one end of an escapement rod or arm, *p*, attached at the other end to an arbor, *r*, turning in the frame P of the clock mechanism, and is bent or otherwise formed to bear upon a pinion, *q*, and hold in check clock mechanism, when the switch is closed, by the contraction of a vertical spiral or other spring, Q, attached to the rods or arms *k'''* and *p*, and to the back I. Connected with the arm L' is one end of a horizontal lever-arm, R, pivoted at the other end to the top of a vertical arm, R', which is pivoted at or near its center to the back I, and at the bottom is pivoted to one end of a parallel horizontal bottom arm, R'', whose other end is formed with a lateral projecting bearing, *s*, which receives one end of a spiral or other spring, *t*, supported on a horizontal rod, *t'*, one end of which rod is held in the bearing *s*, and the other end is held in the projecting arm of a right-angled bearing, *s'*, attached to the back I, the said projecting arm forming a bearing for the other end of the spring *t*. Extending upward from an arbor, *u*, turning in

the lower portion of the clock-frame P, is an escapement rod or arm, *x*, arranged to engage with and disengage from stems *v*, projecting from the face of an escapement-wheel, S; and extending downward from the arbor *u* is an arm or rod, *w*, provided with a hammer, *w'*, arranged to strike against and be freed from the gong or bell M by the action of the arbor *u*, which is provided with a spiral or other spring, *w'*, to bring the rods *x* and *w* back in position after performing their functions, an upper rod or bar, *y*, supported by the frame P, preventing the rods or arms *x w* from going beyond their desired positions, and holding one end of the spring *w'*.

The operation of my invention is as follows: When it is desired to open the switch, the drop-stem *e* is raised from its aperture *d* by pressing down the outer end of the lever *f*. The lever E is thus released and swung round over the top or table C, thereby rotating the shaft B, and carrying with it the arm or rod H, which, as it is brought to the other side of the table C, impinges against, so as to carry back, the vertical arm *k'* and raise the horizontal arm *k'''* of the right-angled lever K', thus lifting the escapement rod or arm *p* from the pinion *q*, and setting in motion the clock mechanism, the stems *v* of the escapement-wheel S of which engage with the escapement-rod *x*, which turns the arbor *u* and swings the rod *w* so as to carry the hammer *w'* against and from the bell M, thus causing an alarm to be sounded as long as the switch is open, the lever E being held in position, when it has reached its terminus, and the switch kept open by the dropping of the stem *e* into the aperture *d'*.

When desired to close the switch, the stem *e* is raised from the aperture *d'*, as before, and the lever E, and, consequently, the arm H, are carried back to their original position, the release of the arm H from the arm *k'* lowering the arm *k'''*, and causing the arm or rod *p* to bear upon the pinion *q*, and hold in check the movement of the clock mechanism, the arms *p* and *k'''* being brought down and held in position by the contraction of the spring Q.

When the rod or arm *k''* is lowered, by the bringing forward of the arm H, it lowers the lever L and arm L', so that when the clock mechanism is nearly run down, the clock-spring, in its expanded state, impinges against the projecting end of the arm R'', and carries forward the said arm R'', which operates the vertical arm R' so as to carry backward the upper arm R and bring the arm L' in position to allow its latch *l* to engage with and disengage from the rod *m*, and operates the arbor *m'*, which swings the rod *n* and carries the hammer *n'* against and from the gong or bell M, as the arm L' is raised and lowered by the action of the right-angled lever K, induced by the forward and back passage of the arm H; thus producing an alarm-signal that warns the operator, when he opens and closes the switch, that the clock mechanism is in a condition to

be wound before he leaves the switch; and allowing the roadmaster or other inspector to know at any time, by merely shoving the lever E a short distance forward and back, whether the mechanism is properly attended to.

Instead of the arm H and the other operating devices herein described and shown for releasing and holding the clock mechanism, the switch may be provided with any other suitable arrangement of mechanical devices or device that may be preferred for producing the like results by the opening and closing of the switch.

The switch may be provided with any other suitable arrangement of mechanical devices or device that may be preferred, instead of those herein employed, for automatically sounding the gong or bell on the opening and closing of the switch when the clock mechanism is partially run down.

The clock mechanism may be arranged to run any length of time desired, and to strike the bell or gong more or less frequently.

Having thus fully described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The sliding arm R'', having a bent end

or projection, S, in combination with a coiled spring, R' and R, lever L, provided with latch l, and the hammer-tail of an alarm, substantially as described, and for the purpose specified.

2. In a switch-signal, a sliding rod having a projection adapted and arranged to receive motion from the expansion of a clock-spring as it becomes uncoiled, and give notice thereof by operating a signal.

3. The combination of the shaft B, having the horizontal arm H, angular lever K, lever L, arm L', having the latch l, arms R R' R'', spring t, arm m of the hammer n, and clock-spring x, all arranged and operating substantially as described.

4. The combination of the table C, shaft B, lever E, arm H, right-angled lever K', rod p, spring Q, and back I, with the clock mechanism, consisting of the rod or arm x, arbor u, rod w, hammer w', and bell M, as described.

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

ALFRED C. GARRATT.

Witnesses:

CARROLL D. WRIGHT,
SAML. M. BARTON.