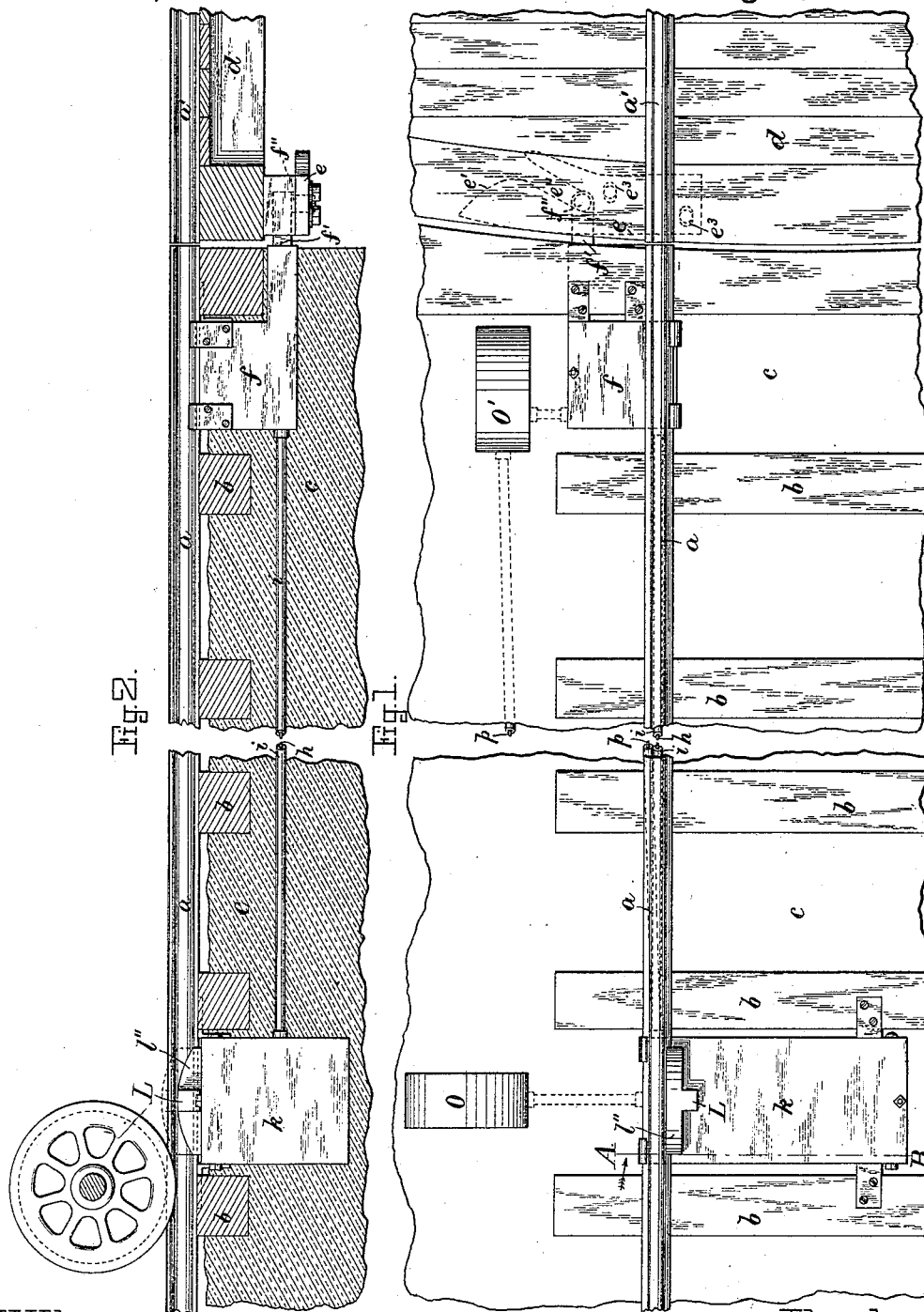


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AUTOMATIC MECHANICAL RAILROAD STOP AND SIGNAL.

No. 346,843.

Patented Aug. 3, 1886.



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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC MECHANICAL RAILROAD STOP AND SIGNAL.

SPECIFICATION forming part of Letters Patent No. 346,843, dated August 3, 1886.

Application filed May 1, 1886. Serial No. 200,780. (No model.)

*To all whom it may concern:*

Be it known that I, CARL A. DAHL, a citizen of Sweden, now residing at Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Mechanical Railroad Stop and Signal Apparatus; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in automatic stop and signal apparatus for railroads; and it is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 represents a plan view of the apparatus as applied to a draw-bridge, and Fig. 2 represents a side elevation of the same. Fig. 3 represents a side elevation of a locomotive with my signal and automatic stop device applied to it. Fig. 4 represents a plan view of the yielding-lever box with its cover removed. Fig. 5 represents a vertical section of the same on the line A B, shown in Fig. 1. Fig. 6 represents a cross-section on the line C D, shown in Fig. 5. Fig. 7 represents a sectional plan view of the box containing the locking-bar and connections. Fig. 8 represents a vertical section on the line E F, shown in Fig. 7, and Fig. 9 represents an interior view of the bell-alarm box.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

My automatic stop and signal apparatus is intended for use and operation in connection with a draw-bridge, or switch, or gate on railroads; and it has for its object to automatically signal and actuate the air-brakes on the train in case the draw-bridge is open, or if the switch is moved out of the desired position, and it is carried out in a manner as will hereinafter be more fully described.

*a* represents one of the rails on an ordinary railroad-track, on which *b b b* represent the sleepers, as usual.

*c* is the road-bed.

*d* in Figs. 1 and 2 represents a draw-bridge adapted to swing on a vertical axis, as usual, and *a'* represents one of the rails thereon, which

is to be in a line with the stationary rail *a* when the bridge is closed, as shown in Figs. 1 and 2.

To the draw-bridge *d*, I secure, in a suitable manner and at a suitable part of its outer end, the locking cam-plate *e*, having its free end provided with a cam, *e'*, and slotted groove or recess *e''*. (Shown in Figs. 1 and 7.) The plate *e* is preferably provided with slot-holes *e<sup>3</sup> e<sup>3</sup>*, (shown in Fig. 7,) through which fastening-bolts pass and are screwed to the draw-bridge, and by which means the position of the locking-plate *e* can be adjusted relative to the locking-bar.

*f* in Figs. 1, 2, 7, and 8 is the locking-bar box, that is secured firmly in a suitable manner to the track near to the end where it joins the draw-bridge *d*, as shown in Figs. 1 and 2. In suitable guides in said box *f* the locking-bar *f'* is arranged to slide, the outer end of said locking-bar *f'* being provided with a pin, or pin and roll, *f''*, adapted to enter the slot *e''* in the cam-plate *e* when the draw-bridge is locked, as shown in Figs. 1 and 2. Within the box *f* is pivoted at *g'* the rock-lever *g*, the upper end of which is hinged to the bar *f'*, and the lower end connected to the rod or wire *h* by means of a suitable screw-coupling, *g''*, as shown in Figs. 7 and 8.

*k* is the lever-box, that is secured firmly to the track in a suitable manner, and to the rail *a*, as shown in Figs. 1, 2, and 5, such box *k* being located about one hundred and fifty yards (more or less) from the end of the track adjoining the draw-bridge, or a similar distance from the switch or gate, if used for such purposes.

*i* is a hollow pipe connecting the locking-bar box *f* and lever-box *k* under ground, as shown in Figs. 1 and 2, in which pipe is contained and inclosed the connecting rod or wire *h*. Within the box *k* is pivoted at *l'* the lever *l*, the free end of which is provided with an upwardly-projecting cam or incline, *l''*, arranged in close proximity to the inside of the rail *a*, as shown in Figs. 1, 2, 3, and 5. The free end of cam-lever *l* rests on the upper end of the knee-lever *m*, that is pivoted at *m'* within the box *k*, and provided with rear extensions, *m'' m''*, terminating in a counter-

weight,  $m^3$ , (shown in Figs. 4 and 5,) by means of which the cam-lever  $l$  is held upward to the limit of its stroke in case the draw-bridge is open more or less or the switch not properly set, and for this purpose the wire or rod  $h$  is connected to the lower end of the knee-lever  $n$ , pivoted at  $n'$  within the box  $k$ , and having its upper end resting on top of the free end of lever  $l$ , as shown in Figs. 4, 5, and 6. To the lower end of knee-lever  $m$  is connected the wire  $o$ , the other end of which is connected to the knee-lever  $o'$ , by means of which and suitable connection to the hammer  $o''$  the bell  $o^3$  is sounded every time the cam or incline  $l''$  is depressed.

$O$  is the box or case in which the bell-alarm mechanism is inclosed, such box being preferably located in the vicinity of the lever-box  $k$ , as shown in Fig. 1, so as to enable the engineer in charge on the locomotive to hear the sound of the gong when the cam  $l''$  is depressed by the flanges of the wheels on the locomotive as it passes such place, and if such alarm is sounded the engineer will know that something is wrong ahead of him on the track, either that the draw-bridge is open or the switch not properly set, as the case may be. If everything is all right on the track for the train to pass on, the cam  $l''$  is automatically held down without permitting the wheel-flanges on the locomotive to touch it, and consequently no alarm will be sounded if everything is all right.

If the device is to be used for a switch or gate, I prefer to add another alarm-box,  $O'$ , (shown in Fig. 1,) with a connecting-wire,  $p$ , leading to a knee-lever,  $p'$ , pivoted at  $p''$  in the lever-box  $k$ , as shown in dotted lines in Figs. 4, 5, and 6, the upper end of such knee-lever  $p'$  being located below the outer free end of lever  $l$ , so as to cause an alarm to be sounded in box  $O'$  near the switch or gate in case such parts should be out of order. If so desired, a wire may be connected from the alarm mechanism in box  $O'$  to the lever  $g$  or an arm thereon, as shown in dotted lines in Figs. 1 and 7. It is also desirable that an automatic alarm should be sounded on the locomotive and the brakes applied if the draw-bridge should be open or the switch or gate not properly set, and for this purpose I make on the cam or incline  $l''$  a side projection or lip,  $L$ , (shown in Figs. 1, 2, 3, 4, 5, and 6,) which when the cam  $l''$  is in its upper position (indicating danger ahead) will come in contact with a lever,  $r$ , pivoted at  $r'$  on any suitable part of the locomotive  $R$ , as shown in Fig. 3, such lever having attached to its upper end the rod  $r^3$ , the other end of which is connected to a bell-crank lever,  $r^4$ , near the cab  $R'$ , from which lever connection is made to the striker on the gong or bell, or other suitable alarm,  $r^5$ , as shown in said Fig. 3.

For the purpose of automatically applying the brakes when the lever  $r$  comes in contact with the projection  $L$ , I arrange on the pipe  $s$ , that leads from the compressor or exhaustor

$S$ , usually employed on engines provided with air-brakes, to the various cars on the train, the cock or valve  $s'$ , the handle or lever  $s''$  of which is connected to the rod  $r^3$ , as shown in Fig. 3, so that a communication will be immediately established between the exhaustor or compressor  $S$  and the brakes throughout the train as soon as the lever  $r$  comes in contact with the tooth  $L$ , and thus not alone sounding an alarm on the engine, but also automatically applying the air-brakes.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. In an automatic railroad signaling apparatus, the lever-box  $k$ , having vertically-adjustable cam  $l''$  arranged on the hinged lever  $l$ , and automatically actuated by the lever  $m$  and its weight  $m^3$ , the locking-bar box  $f$ , with its movable locking-bar  $f'$ , lever  $g$ , the connecting rod or wire  $h$ , and one or more alarm or signal boxes,  $O$  or  $O'$ , mechanically connected to the mechanism in box  $k$  or box  $f$ , as and for the purpose set forth.

2. In a railroad signaling apparatus, the yielding cam  $l''$ , automatically held upward by means of a weight,  $m^3$ , the locking-bar  $f'$ , and intermediate connecting mechanism between them, combined with the locking-plate  $e$  and one or more alarm or signal boxes,  $O$  or  $O'$ , mechanically connected to the cam  $l''$ , as and for the purpose set forth.

3. In a railroad signaling apparatus, the yielding tooth or cam  $l''$  and its pivoted lever  $l$ , and the weighted lever  $m$  or  $m''$  or  $m^3$ , for automatically forcing and holding the cam  $l''$  upward, combined with one or more signal or alarm boxes,  $O$  or  $O'$ , mechanically connected to the yielding tooth or cam  $l''$ , as and for the purpose set forth.

4. In a railroad signaling and automatic stop device, the yielding tooth or cam  $l''$  and its side projection,  $L$ , automatically held upward by means of a weighted lever and connecting device to a switch, draw-bridge, or gate, combined with the lever  $r$ , pivoted on the locomotive, and having rod  $r^3$  connected to the valve-lever  $s''$ , for automatically actuating the air-brakes, and to the alarm-bell  $r^5$  in the cab of the locomotive  $R$ , as and for the purpose set forth.

5. In a railroad signaling device, the locking-plate  $e$ , secured to the draw-bridge  $d$ , and having cam  $e'$  and slot  $e''$ , combined with the sliding locking-bar  $f'$  and its roll or pin  $f''$ , the lever  $g$ , pivoted to the said bar  $f'$ , and intermediate connecting mechanism to the yielding cam  $l''$  and its weighted lever  $m$  or  $m''$  or  $m^3$ , and connecting mechanism from the latter to one or more signal or alarm boxes,  $O$  or  $O'$ , as and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

CARL A. DAHL.

Witnesses:

ALBAN ANDRÉN,  
HENRY CHADBOURN.