

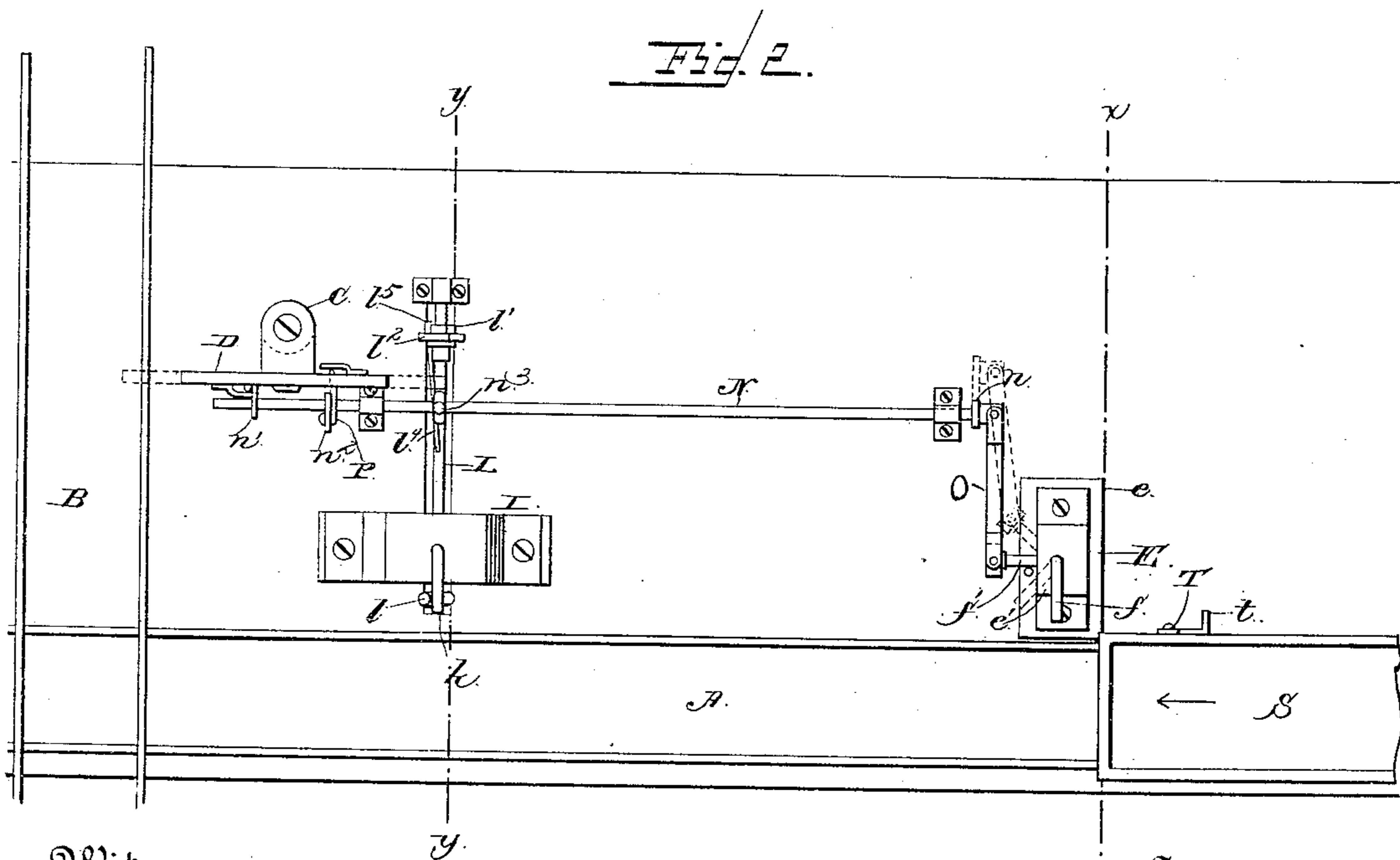
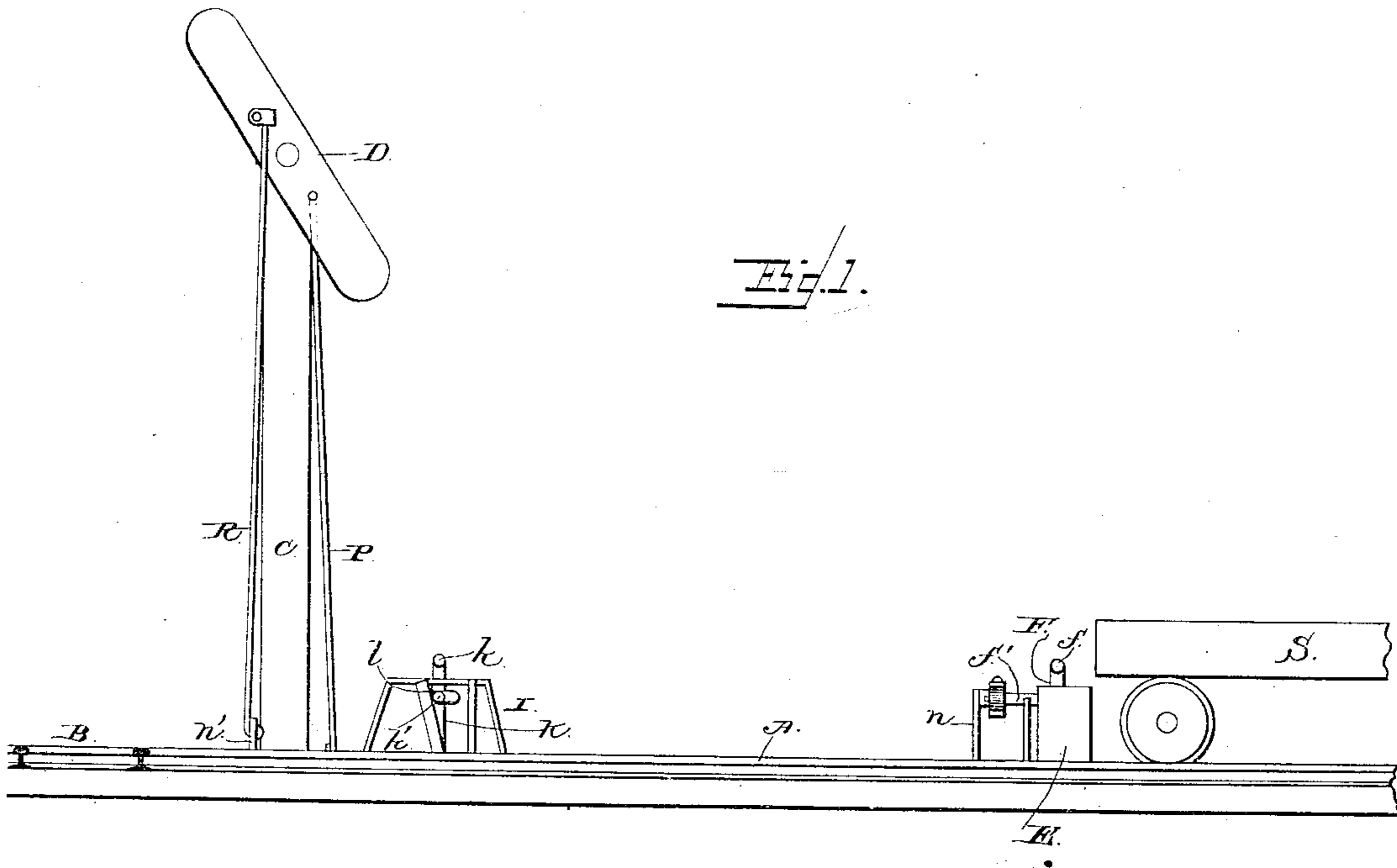
(No Model.)

2 Sheets—Sheet 1.

N. B. HOLDSWORTH.
AUTOMATIC RAILWAY SIGNAL.

No. 354,137.

Patented Dec. 14, 1886.



Witnesses

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NATHAN B. HOLDSWORTH, OF SPENCERVILLE, OHIO.

AUTOMATIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 354,137, dated December 14, 1886.

Application filed August 6, 1886. Serial No. 210,217. (No model.)

To all whom it may concern:

Be it known that I, NATHAN B. HOLDSWORTH, a citizen of the United States, residing at Spencerville, in the county of Allen and State of Ohio, have invented new and useful Improvements in Automatic Railway-Signals, of which the following is a specification.

My invention relates to an improvement in automatic railway-signals; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the drawings, Figure 1 is an elevation of a railway-signal embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical transverse section taken on the line *xx* of Fig. 2. Fig. 4 is a similar view taken on the line *yy* of Fig. 2.

A B represent railway-tracks which intersect each other and thereby form a crossing. At the intersection of the said tracks is located a vertical standard, C, which is provided at its upper end with a pivoted signal board or arm, D. This signal board or arm should be painted red to indicate "danger." Alongside the track A, at a suitable distance from the track B, is located a stand or frame, E, comprising a base-plate, *e*, and a top plate or keeper, *e'*. Between the said base and top plates is journaled a vertical rod, F, which is provided at its upper end with a tappet-arm, *f*, which extends at right angles from the said rod. At a suitable distance below the tappet-arm *f*, and extending at right angles therefrom, is a lever-arm, *f'*.

G represents a coiled spring which is placed on the rod F. The upper end of this spring is attached to the lever-arm *f'*, and the lower end thereof extends outwardly and engages a stop or pin, H.

On the same side of the track A with the stand E, but much nearer the intersection of the track B, is located a similar stand, I, which is provided with a vertical shaft or rod, K, having at its upper end above the stand a right-angled tappet-arm, *k*, and below the said arm and in a line therewith is a similar rod, *k'*.

L represents a horizontal rock-shaft, which is journaled in suitable bearings and extends under the stand I, the said rock-shaft being arranged at right angles to the track A. This shaft is provided at its ends nearest the said

track with a vertical rocking arm, *l*, which is firmly attached to the shaft, and at the opposite end of the said shaft is a similar arm, *l'*.

*l*² represents a catch, which is pivoted on the outer end of the shaft L and bears against the inner side of the arm *l'*. The said catch is provided on one side with an engaging-shoulder, *l*³, and is also provided with a bearing-spring, *l*⁴, the function of which is to keep the catch normally in a vertical position. From the outer side of the catch, near the outer end thereof, projects a stud, *l*⁵, which engages the rear side of the arm *l'*, when the said catch is in a vertical position, and limits the movement thereof.

M represents a coiled spring, which is placed on the inner end of the rock-shaft L. One end of the said spring bears under the stand I, and the other end thereof is attached to the tappet-arm *l*.

N represents a rock-shaft, which is arranged parallel with the track A and extends from the standard C to the stand E. The said rock-shaft N is journaled in suitable bearings, and is provided at one end with an arm, *n*, that is attached to the lever-arm *f'* of the rock-shaft F by means of a pitman, O, and universal joints at the ends of the said pitman to connect it to the lever-arm. The opposite end of the rock-shaft N is provided with arms *n'* and *n*², which extend outwardly from the shaft in opposite directions. The said shaft is also provided with an arm, *n*³, which is adapted to engage the catch.

P represents a rod, which connects the arm *n*² with the arm or signal-board D, on one side of the fulcrum of the latter, and R represents a similar rod, which connects the arm *n'* with the said signal-board on the other side of the fulcrum or pivot thereof.

S represents a car, which is provided on one side with a right-angled pivoted lever, T. The said lever has its short arm provided with a projection, *t*, which extends outwardly from one side of the car.

The operation of my invention is as follows: The spring G keeps the shaft F and the rock-shaft N normally in the position shown in solid lines in Fig. 2, thereby causing the arms *n'* and *n*² of the shaft N to keep the signal-board normally in a vertical position. The spring M keeps the arms *l* and *l'* of the rock-shaft L normally in a vertical position. When

the car or train running on the track A approaches the track B from the direction indicated by the arrow in Fig. 2, the hand-lever T is moved so as to cause the projection *t* to
 5 extend outwardly from the car and strike against the tappet-arm *f* of the shaft F when the car reaches the stand E. This causes the shaft F to be moved through a quarter of a circle, and its lever-arm *f'* causes the shaft N
 10 to be also rotated through a quarter of a circle, and thereby causes the arms *n'* and *n''* of the said shaft to move the signal-board into a horizontal position, one end of the said signal-board being thus projected over the track B,
 15 thus warning any trains on the said track against approaching the track A. As the shaft N is being thus partly rotated its arm *n''* is engaged by the catch *l'*, and the shaft is thus locked in this position, thus maintaining the
 20 danger-signal at display until the train or car reaches the stand I, when the projection *t* on the said train or car strikes the tappet-arm *k* of the shaft K and moves the latter, thus causing the tappet-arm *k'* to partly rotate the shaft
 25 L by striking its tappet-arm *l* and moving the catch *l'* out of engagement with the arm *l''*, thereby releasing the rock-shaft N, when the spring G, by exerting its pressure on the shaft F, instantly restores the shaft N to its normal
 30 position, before described, and thus returns the signal-board to its vertical normal position, and indicating that the way is clear.

Having thus described my invention, I claim—

35 1. The combination, with a pivoted signal-

board, of the rock-shaft N, having the arms connected with the signal-board to move the latter; the arm *n''*, projecting from the shaft N, the catch to engage with the said arm to lock the shaft N when the danger-signal is set, 40 and the spring-actuated rock-shaft F, having the tappet-arm *f* projecting normally toward the track and adapted to be engaged by a passing train, the said rock-shaft being connected to the shaft N, for the purpose set 45 forth, substantially as described.

2. The combination, in a railway-signal, of the signal-board D, the rock-shaft N, having the arms connected with the signal-board and provided with the detent-arm *n''*, the rock- 50 shaft F, having the tappet-arm *f* projecting normally toward the track and adapted to be engaged by a passing train, the said rock-shaft being connected to the shaft N, so as to impart motion to the latter, the shaft L, having 55 the spring-actuated catch *l'*, adapted to engage the detent-arm *n''*, the shaft K, having the tappet-arm *k'* and connected to the shaft L, so as to partly rotate the latter when the shaft K is moved, and thereby release the catch from 60 the detent-arm, and the spring to return the mechanism to its normal position, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 65 presence of two witnesses.

NATHAN B. HOLDSWORTH.

Witnesses:

A. C. HARTER,
 C. W. MYERS.