

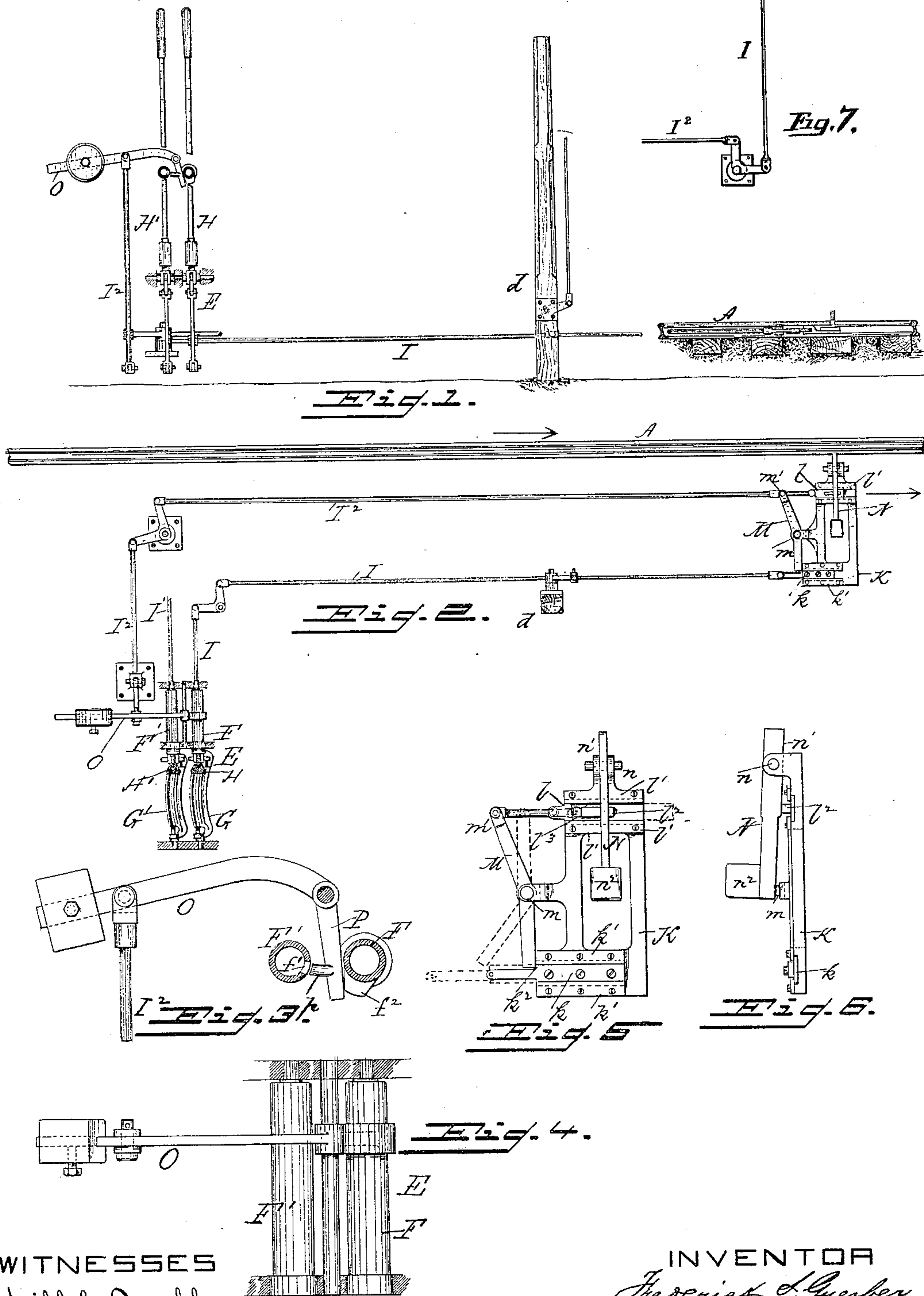
(No Model.)

F. S. GUERBER.

SAFETY APPLIANCE FOR RAILWAYS.

No. 365,001.

Patented June 14, 1887.



WITNESSES

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SAFETY APPLIANCE FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 365,001, dated June 14, 1887.

Application filed July 28, 1886. Serial No. 209,306. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK S. GUERBER, a citizen of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Safety Appliances for Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side elevation, partly broken away, of interlocking apparatus, signal-post, track-instrument, and railway-track. Fig. 2 is a plan view of interlocking apparatus and track-instrument, with signal-post in section. Fig. 3 is a vertical detail, and Fig. 4 a horizontal section, partly in plan, of interlocking cylinders and lever. Fig. 5 is a plan, and Fig. 6 an end elevation, of track-instrument. Fig. 7 is a detail view of a portion of the apparatus.

My invention has reference to interlocking switch and signal apparatus, and has for its object to provide means whereby when a track has been cleared for the passage of a train, the position of the parts whose movement has preceded the setting of the signal cannot be changed by the switchman or operator until a train has passed and effected an automatic unlocking.

My improvements consist in the peculiar construction and combination of parts, herein-after fully described, whereby the aforesaid result is accomplished by mechanical means solely.

Referring to the accompanying drawings, A represents one rail of a main track and *d* a signal-post.

E represents an interlocking apparatus controlling the signal, to be on the post *d*, and a switch-lock. (Not shown in the drawings.) F and F' are two cylinders of such apparatus, having rockers G and G', in which rockers are levers H and H', said levers having connections I and I' with the signal and switch-lock, respectively, the lever H being that which effects the movements of the signal-connection and the lever H' the one by which the switch-lock is moved. The connection I is connected at any suitable point with a slide, *k*, which is fitted to move longitudinally in guides or ways *k'* on a support, K, so that when lever H is thrown slide *k* will be moved longitudinally. There is provided

a connection, I², attached to a slide, *l*, which may be moved longitudinally between guides or ways *l'* on said support K.

M is a lever fulcrumed at *m* on the support K, and pivotally connected at *m'* with the connection I², the opposite end of said lever coming in front of the shoulder *k*² of the slide *k*, so that when the slide *k* is moved outwardly it will move the lever M on its fulcrum and push slide *l* inwardly. The slide *l* is formed with a projection, *l*², and a transverse lever, N, pivoted at *n* on the support K, is arranged so as to form a stop or dog for such projection when said lever N drops down in front of the shoulder *l*² thereof. When the lever N is elevated out of engagement with the stop or projection *l*², the slide *l* may be moved so as to bring said projection under said lever, as shown in Fig. 5. The lever N can only be raised by a train in passing, its lifting being accomplished by the action of the first wheel of a train, car, or engine when passing, such wheel passing over its short arm *n'* and raising its opposite end, which carries a weight, *n*², out of engagement with the shoulder *l*². When lever N is so raised, another weighted lever, O, secured to the connection I² and to a dog-bar, P, moves the latter, and causes its dog *p* to recede from an opening, *f'*, in the cylinder F', thereby unlocking said cylinder and permitting the lever H' to be moved.

The operation is as follows: The switch operator, having cleared the track and thereby put the signal to "safety," in so doing moves the slides *k* and *l*, through the connections with the interlocking apparatus E, to the position shown in dotted lines in Fig. 5, whereupon the lever N drops into position against the shoulder *l*², and dogs the slide *l*, preventing its backward movement, or movement to the left, in Figs. 2 and 5. In moving the slide *l* in the act of setting the signal to "safety" connection I², lever O, and dog-bar P are also moved, causing dog *p* to enter opening *f'* in cylinder F', thus locking the latter and preventing the movement of connection I'. I may here mention that cylinder F may have a cam, *f*², which, when said cylinder is oscillated in the proper direction, bears against bar P and aids the entrance of dog *p* to opening *f'* in cylinder F'. Now the operator, whose place is at the interlocking apparatus E, has virtually lost control

of the movement of the connection I', as the lever N is at a point remote from him and where he cannot move it, although he still retains control of the signal and its connections, and the switch-lock or other part whose movement depends upon said connection I' will remain locked until a passing train moves the lever N, whereupon the signal-connection I, having been previously moved to bring slide k to position shown in Fig. 5, the lever O, acting upon the connection I², moves the dog-bar p and unlocks the cylinder F'. The action of lever O moves slide l, so that its projection l² comes below the lever N, as shown in Fig. 5, affording a support to the latter and keeping its end n' out of further contact with the wheels of the passing train, so that only the first passing wheel strikes said lever.

The support K, slides k and l, and levers M and N comprise the track-instrument, through the medium of which the automatic locking and unlocking described are effected. The special construction of this track-instrument, as well as of the unlocking apparatus, may be varied, my improvements comprising the combination, with interlocking mechanism, of any equivalent mechanically-operating track-instrument and connections which will operate to produce the result described in the manner specified.

I have spoken of the connection I' as being a switch-lock connection; but it is obvious it may be a connection for a switch, gate, draw-bridge, or other adjunct of a track or way.

It will be noted that the track-instrument does not operate by a direct pull on the interlocking apparatus or on the lever controlling the latter. On the contrary, the trip-lever N of the track-instrument is merely tilted by a passing-train, so as to release slide l, and then the weighted lever O effects the retirement of the dog p from cylinder F'. If said lever N were directly connected with said lever O and pulled on the latter, the sudden jerk of said levers, which would result from contact with the wheel of a passing train, would quickly shatter or rupture such connection.

In lieu of a weight on lever N a spring may be employed, and as a substitute for the weighted lever O a spring on or connected to the connection I², and operating to produce the same effect as said weighted lever, may be used.

When the track has been cleared, the parts of the track-instrument occupy the positions shown in Fig. 5, the lever M and slide k being in the position shown in dotted lines, the slide k then engaging the lever M and preventing movement of slide l. The signal operated by connection I is now at "safety." As soon as a train, or the first part of it, passes said signal, and before it reaches the track-instrument,

(the track-instrument and signal being usually a considerable distance apart, though shown close together in the drawings,) such signal should be moved to "danger." This moves slide k lengthwise, so that it does not then dog the lever M, and slide l and trip-lever N are free to operate as described when said lever is struck by the first wheel of a passing train or engine; and until said signal-connection is so moved to set the signal to "danger" the track-instrument will not operate to effect the automatic unlocking of its lock on or control of the interlocking apparatus.

I have spoken of the connection I as being a signal-connection; but it may be a connection for any other adjunct of a railway, the essential idea of my invention being to effect a locking of one lever by the movement of a second, said lock not being unlocked by the restoration of the second lever to its original position alone, but requiring the coaction of a device that is operated by a passing train.

What I claim as my invention is as follows:

1. A track-instrument for automatically locking and unlocking a switch-connection or other railway appliance, said instrument comprising a support, K, with slides k and l and levers M and N, substantially as shown and described.

2. The combination, with an interlocking apparatus, of a track-instrument operative by a passing car or engine, and intermediate connections, I and I², between said interlocking apparatus and track-instrument, whereby, when the connection I is moved, the track-instrument locks the interlocking apparatus, and when a car or engine passes said instrument the interlocking apparatus is automatically unlocked or released from the lock effected by the track-instrument, substantially as shown and described.

3. The combination, with an interlocking apparatus having a locking cylinder, F', of a dog, p, adapted and designed to dog said cylinder, a weighted lever, O, or equivalent, connected to said dog and to a connection, I², and a track-instrument having a lever, N, which controls the movement of said connection I², and is moved by a passing car or engine, whereby, when said lever is tilted by a passing car or engine, the lever O or equivalent acts on said dog and withdraws it from engagement with the cylinder, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of June, 1886.

FREDERICK S. GUERBER.

Witnesses:

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R. DALE SPARHAWK.