

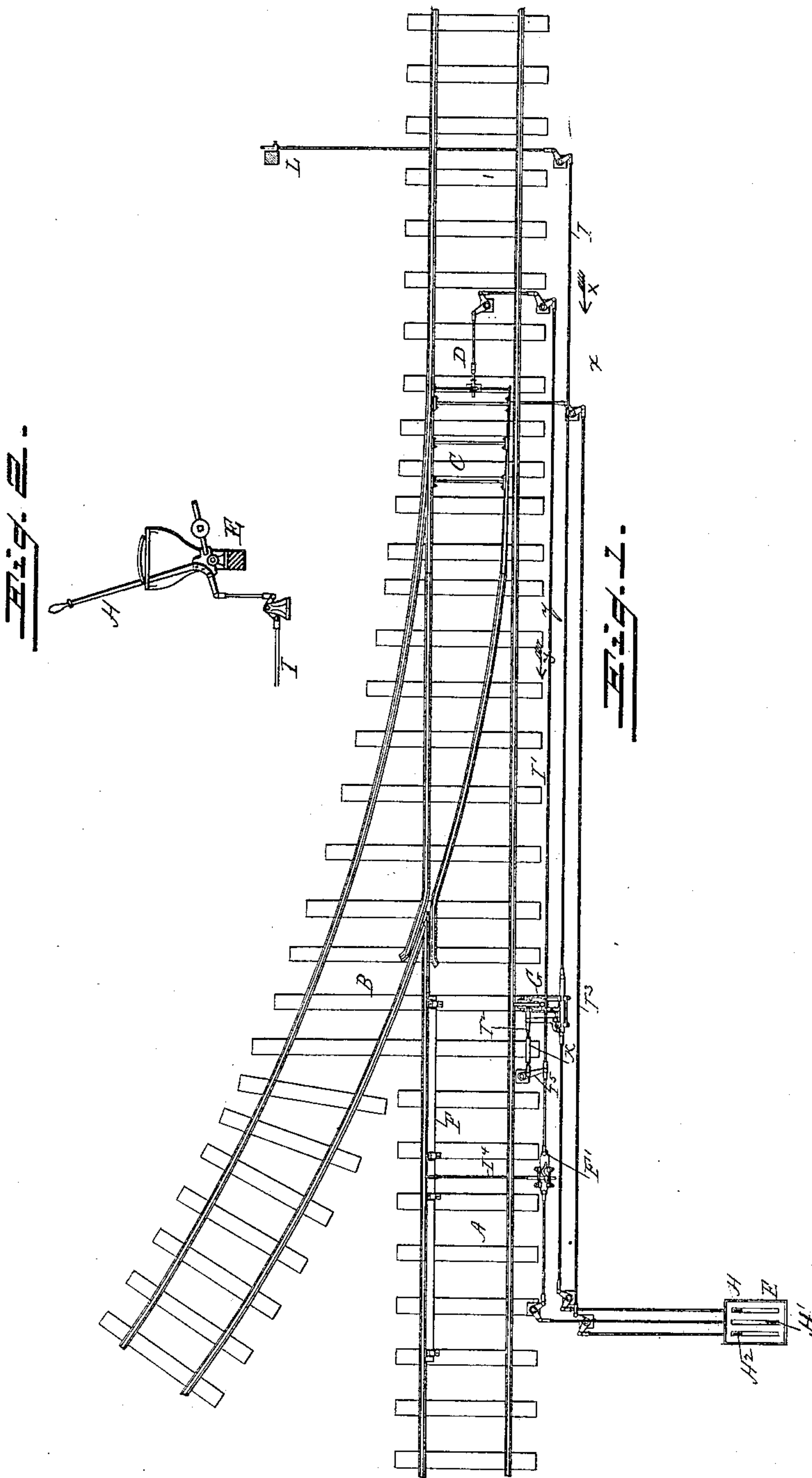
(No Model.)

2 Sheets—Sheet 1.

F. S. GUERBER.
SAFETY APPLIANCE FOR RAILWAYS.

No. 365,003.

↓ Patented June 14, 1887.



WITNESSES
Willd Powell.
J. B. McElin.

INVENTOR
Frederick A. Guerter,
By Connolly Bros.
Attorneys.

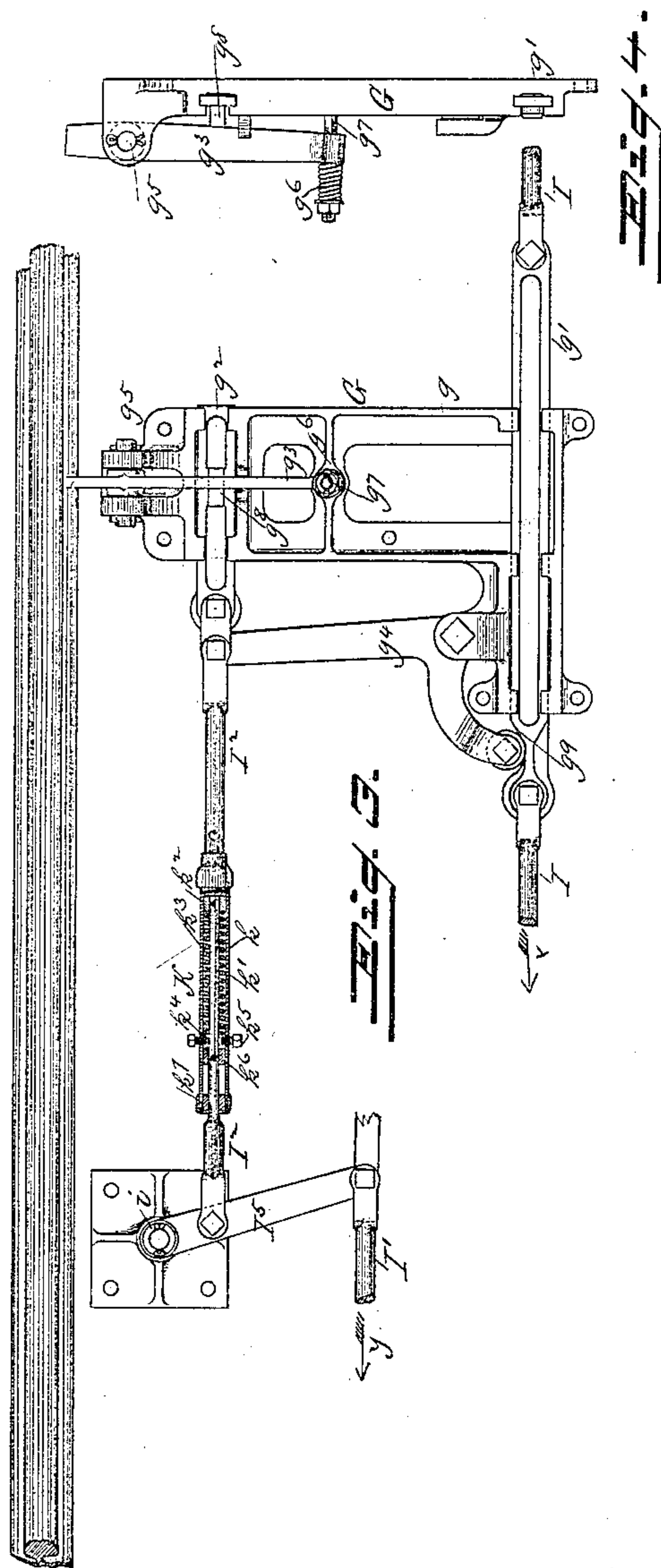
(No Model.)

2 Sheets—Sheet 2.

F. S. GUERBER.
SAFETY APPLIANCE FOR RAILWAYS.

No. 365,003.

Patented June 14, 1887.



WITNESSES
Willde Powell.
J. B. McGirr.

Inventor:
Frederick S. Guerber,
By Connolly Bros.
Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK S. GUERBER, OF ALLENTOWN, PENNSYLVANIA.

SAFETY APPLIANCE FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 365,003, dated June 14, 1887.

Application filed July 28, 1886. Serial No. 209,308. (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 plan of a railway-track with my improvements applied thereto. Fig. 2 is a side elevation, partly in section, of lever apparatus shown in plan in Fig. 1. Fig. 3 is an enlarged plan, partly in section, of track-instrument, spring appliance, and connections, and showing an adjoining rail. Fig. 4 is a side elevation of track-instrument.

My invention has relation to safety appliances for railways.

My improvements have for their object to provide a simplified construction and combination of interlocking appliances whereby safety is secured, as hereinafter fully described and specifically claimed.

In two applications of even date herewith I have shown, respectively, a track-instrument of novel construction and a combination comprising such track-instrument, an interlocking apparatus, and a safety-bar with a weighted lever, a dog-bar, and a separate connection therefor, whereby, after the track has been "cleared," neither the switch nor switch-lock can be moved until a train has passed and effected an automatic unlocking.

My present improvements include the said track-instrument (or an equivalent therefor) and a lever apparatus for a switch and signal, as well as a safety-bar, and provide a construction whereby a spring is substituted for the weighted lever, and the track-instrument, instead of operating upon the interlocking apparatus, operates directly upon the connection of the switch-lock or safety-bar, and whereby the latter connection interlocks the signal-connection, so that the signal is locked at "danger" while the switch-lock is unlocked.

Referring to the accompanying drawings, A indicates the main track of a railway; B, a

siding; C, a switch to said siding; D, a switch-lock; E, a lever apparatus; F, a safety-bar, and L a signal post or stand, all of which parts may be of the usual or any suitable construction. Connections are made between said parts as shown, the levers of the apparatus being connected as follows: lever H with the signal on stand L by connection I; lever H' with switch-lock by connection I', and lever H² with switch by connection I³. The safety-bar F has a connection, I⁴, with a motion plate, F', in the connection I'.

G is the track-instrument, which comprises a bed-piece or base, *g*, two slides, *g'* *g''*, thereon, a lever, *g'*, which forms a dog for said slide *g''*, and another lever, *g'*, which forms a connection between said slides. The lever *g'* is fulcrumed at *g'* and has its tilting or rocking motion resisted in one direction by a spring, *g'*, on a bolt, *g'*, which passes through said lever. The slide *g''* has a shoulder, *g'*, by means of which the lever *g'* operates to dog said slide when said lever is in front (to the left in the drawings) of said shoulder. The slide *g'* is in the signal-connection I, and the slide *g''* is in or attached to a connection, I², whose opposite end is fastened to a lever, I⁵, fulcrumed at *i* and secured to the lock-connection I', so that said lever I⁵ will be thrown when the lock-connection is moved; or, conversely, the lock-connection I' cannot be moved when said lever I⁵ is held fast against movement.

K is a spring appliance in the connection I², whereby the lever I⁵ is held and released under certain conditions, hereinafter specified. Said spring appliance comprises the following parts: a tube, *k*, a piston, *k'*, fitted in said tube and having an end collar, *k'*, a spiral or equivalent compression-spring, *k'*, and a collar, *k'*, secured in and fastened to the tube *k* by screws *k'*. The slide *g''* is secured to the tube *k* and the lever I⁵ to the piston *k'*; hence, when said tube and piston are pulled in opposite directions, respectively, or one is moved and the other held, the effect is to compress the spring *k'*, and, conversely, after compression and upon release the reaction of the spring tends to move said tube and piston in opposite directions; or, if one be held, the other will move upon it.

k^6 is a collar secured to the piston between the collar k^4 and the end or head k^7 of the tube or cylinder k . The limitation of the movement of the piston in the tube is the distance between the collar k^6 and head k^7 .

Operation: To clear the main track, the connection I must be moved in the direction of arrow x by a movement of lever H, (the switch and switch-lock having been previously duly put in position by levers H² and H' acting on connections I³ and I'.) The movement of said connection I imparts movement to lever g^4 , and the latter moves slide g^2 until its shoulder g^8 passes lever g^3 , whereupon the latter moves down in front of said shoulder and prevents the return of said slide g^2 until the lever g^3 is lifted, which will not occur until a passing car or engine strikes it. The movement of said slide g^2 produces a compression of the spring k^3 , the connection I' and lever I⁵ being rigidly held. Now the connection I may be freely moved, (to change the signal from "safety" to "danger," and vice versa;) but the connection I' cannot be moved at all, as it is held by lever I⁵, connection I², spring appliance K, slide g^2 , and lever g^3 . Now, when a passing car or engine strikes the outer end of lever g^3 , it raises the other arm of said lever high enough to enable slide g^2 to be moved by the action of spring k^3 , if the latter be free to act. It will not be free if the signal is set to "safety," as then slide g^2 bears against lever g^4 , and thereby prevents movement of slide g^2 . As soon, however, as the signal is moved to "danger," shoe g^2 is free to move and spring k^3 to expand, and then, if lever g^3 is tilted by a passing train or engine, shoulder g^8 moves beneath lever g^3 and holds said lever in such position that it will not be struck by succeeding wheels. The switch-lock might now be unlocked were it not for the safety-bar F, which, by its connection I⁴, prevents the switch-lock connection I' from being moved until the passing car or train has completely gone over or left said safety-bar. Now the switch-lock may be unlocked. To unlock the switch-lock, the connection I' is moved in the direction of arrow y , producing a movement of the piston k' in the same direction, both of said connections being fastened to the same lever, I⁵, and on the same side of its fulcrum. The pull of the lever I⁵ on the piston k' , which results from movement of connection I' to unlock the switch, compresses the spring k^3 , the piston k' moving in the tube k , the latter remaining stationary, the lever g^4 abutting against shoulder g^8 of slide g^2 . The result of this is that the signal (now at "danger") cannot be moved until the switch-lock is moved to the locked position, an interlocking thus taking place between the lock and signal, (apart from any interlocking which may be effected by the apparatus E;) but as soon as the switch is locked (or in the act of locking it) the spring k^3 expands, giving liberty of movement to the connection I and lever g^4 .

I have shown a switch, switch-lock, and signal; but it will be readily seen that other appliances may be used in their stead, my invention consisting, essentially, in the construction of mechanism for the direct locking of a connection, I', by the movement of another connection, I, through the medium of a track-instrument and spring appliance, K, and for the automatic releasing of this locking by the action of a train on the track-instrument after said connection I has been restored to its normal condition, and which mechanism effects the further locking of the connection I in its normal condition by movement of the connection I' after the latter has been released.

The lever I⁵ may be dispensed with and connection I² connected directly with connection I', said lever being employed to limit or reduce the extent of movement of connection I², and therefore the extent of compression and expansion of spring k^3 .

What I claim as my invention is as follows:

1. The combination, with a switch-lock or other connection, I', and a track-instrument, of a spring appliance comprising two oppositely-movable parts, k k' , and a spring, k^3 , which is compressed when either of said parts k k' is moved oppositely to the other, substantially as shown and described.

2. The combination, with a signal and a switch-lock connection, I I', and a track-instrument, G, which automatically locks said switch-lock connection, of a spring appliance, K, whereby the switch-lock connection is locked when the signal-connection is moved to "clear" the track and is so held until the signal has been set to "danger" and the track-instrument tripped by a passing train, substantially as set forth.

3. The combination, with a main track, switch, switch-lock, and signal, of a lever apparatus, E, for moving such switch, switch-lock, and signal, connections between said apparatus, switch, switch-lock, and signal, a safety-bar, F, having a connection with the switch-lock connection, a track-instrument, G, and intermediate connections between said track-instrument and the signal-connection and switch-lock connection, substantially as shown and described.

4. The combination, with a track-instrument, of two connections, as I and I', and a spring appliance, K, whereby said connections are interlocked, substantially as shown and described.

5. In interlocking mechanism for railways, a spring appliance, K, comprising two oppositely-movable parts, k and k' , and a spring, k^3 , in combination with a track-instrument, 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:

WILLIAM HOWELL POWELL,
R. DALE SPARHAWK.