

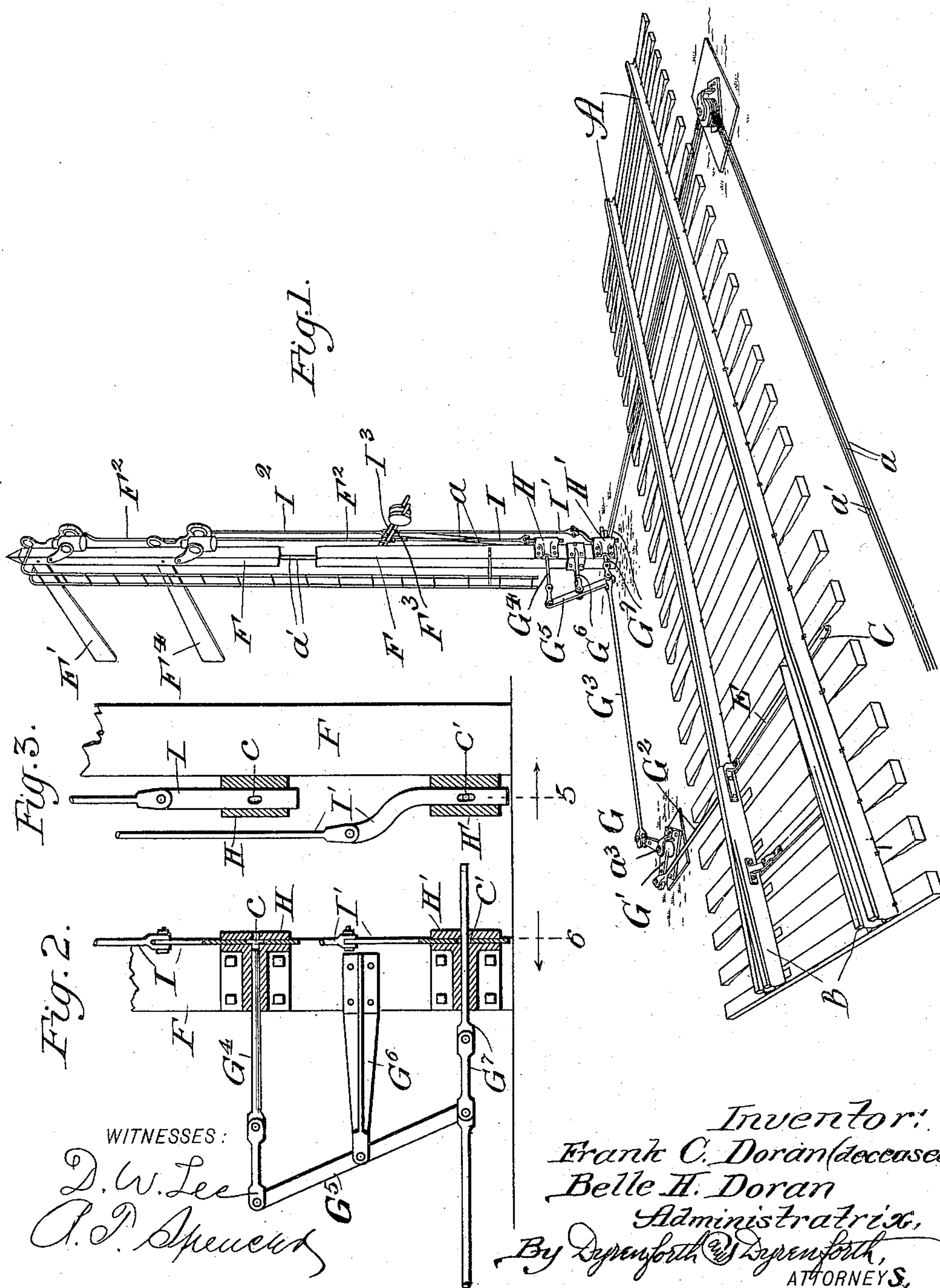
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F. C. DORAN, Dec'd.
B. H. DORAN, Administratrix.
SWITCH AND SIGNAL LOCK.

(Application filed Dec. 22, 1898.)

(No Model.)



Inventor:
Frank C. Doran (deceased)
Belle H. Doran
Administratrix,
by Depenforth & Depenforth,
ATTORNEYS,

UNITED STATES PATENT OFFICE.

BELLE H. DORAN, OF CHICAGO, ILLINOIS, ADMINISTRATRIX OF FRANK C. DORAN, DECEASED.

SWITCH AND SIGNAL LOCK.

SPECIFICATION forming part of Letters Patent No. 638,915, dated December 12, 1899.

Application filed December 22, 1898. Serial No. 700,056. (No model.)

To all whom it may concern:

Be it known that FRANK C. DORAN, deceased, late a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, did invent a new and useful Improvement in Switch and Signal Locks, of which the following is a specification.

This invention relates to improved interlocking mechanism for use particularly between the movable rails of railroad-tracks—such as switch-rails, derails, movable frogs, or the like—and the signals that govern the movement of engines or trains over said movable rails.

The object of the invention is primarily, in the practical operation of switches, derails, and signals, to prevent the possibility of giving an incorrect signal to an engine or train. The device serves also to securely lock the movable rail or rails in position for train-passage while the signal is at the safety position and releases the same only upon the signal being thrown to "danger." The interlocking mechanism shown is for use in connection with double-semaphore signals.

The above object is accomplished by extending directly between the switch, derail, or the like and the double signal an improved locking connection which is separate from and independent of the connections which extend from the counterweight-bar of the signal to the lever which operates the signal. This independent direct locking connection preferably consists of three principal parts, two of these being rigid movable members and one of them a fixed member. One movable part is connected to the movable rail of the track and is operated thereby, and the other movable part is connected to the signal or semaphore arm and is operated thereby, the two movable parts forming a junction and locking together at and through the fixed connection. The improvement relates particularly to the locking connection between the rail-actuated and the semaphore-actuated rigid members.

The accompanying drawings illustrate the application of the improved locking device to switch-rails.

In the drawings, Figure 1 is a view in perspective showing the locking device applied

to a switch and a signal having a double semaphore; Fig. 2, an enlarged broken vertical section parallel to the track, showing details of the connections at the base of the signal-standard; and Fig. 3, an enlarged broken section at right angles to the track.

A A represent the fixed rails of a track, B switch-rails attached to a shifting-bar C, which moves in suitable guides (not shown) and normally connects with the mechanism for throwing the switch, and E a connecting-bar (shown as an extension of the bar C) attached to the switch-rails, and, for the purpose of affording a connection for the locking device, extending beyond the farther rail, where it has pivotal connection (not shown) with a rod G².

F is a semaphore-standard of common construction, provided with semaphores F' F⁴, pivoted between their ends to the standard and connected at their short arms by means of rods F² I² to pivoted counterweight-arms F³ I³. The semaphores are raised and lowered by means of suitably-attached cables or wires *aa'*, running to the tower. (Not shown.)

The locking device comprises a movable part G, actuated by the bar E, stationary guide-blocks H H', secured to the standard F, and vertically-movable bars I I', (shown as downward extensions of the bars F² I²), actuated by the semaphores.

The part G consists of a bell-crank G', pivoted at *a*³, the link G², connecting one arm of the bell-crank to the adjacent end of the bar E, and a connecting-rod G³, pivotally joined at one end to the free arm of the bell-crank. F' represents the upper or main-track semaphore, and F⁴ the lower or side-track semaphore. The connecting-rod G³ is pivotally joined at its free end to the lower end of a rock-beam G⁵, which in turn is pivotally supported at its center on a bracket G⁶. The plunger G⁴, which serves to lock the upper or main-track semaphore, is joined by a link to the upper end of the beam G⁵, and a plunger G⁷, which moves in a guide-block H' and serves to lock the lower semaphore, is joined by a link to the lower end of the rock-beam. The normal position of the switch, as shown in the drawings, closes the main track. In this position, it will be observed, the plunger G⁴

is withdrawn, leaving the upper semaphore free to be dropped, while the lower semaphore is locked at "danger" by the plunger G^2 , which guards the side track. When the upper semaphore is dropped to "safety," a vertical face of the bar I (here shown in the form of two pivotally-connected rigid bars) engages the end of the plunger G^4 and locks the switch in the main-track position. Similarly when the switch is set for side track the upper semaphore is locked and the lower portion of the jointed bar I' in the guide-block H' locks the switch in the side-track position. In Fig. 1 the wires a are suitably connected to the counterweight-arms to serve for lowering them, thereby raising the semaphores, while the wires a' are suitably connected to serve for lowering the semaphores.

It will be understood that the bar C is actuated in the usual or any suitable manner. The usual method is to connect it with a bell-crank, which in turn has connection with a pipe or other rigid member extending to the tower. These parts are not shown, as they are well known in the art.

The important fact to be noted is that the semaphore to the track which chances to be open is always locked in the extended or danger position, while the switch is at the same time locked by the depending bar of the clear-track semaphore in a closed or safe position. Only by setting the clear-track signal at "danger" is the switch released to permit it to be shifted, and only by the actual shifting of the switch is the semaphore of the newly-cleared track unlocked to permit it to be lowered to a safety position.

Any suitable means for properly adjusting

the throws of the various movable parts may be provided. In the drawings the arms of the bell-crank G' are shown provided for the purpose with holes drilled a short distance apart, and the parts may be made adjustable throughout.

The device is usefully applied not only to an ordinary mechanical interlocking plant such as described, but also to electropneumatic interlocking plants and to ordinary plants lying anywhere along a railroad-track and operated by hand or otherwise. In other words, the device is usefully applicable regardless of means employed for shifting the switches or derails.

What is claimed as new is—

In switch and signal mechanism, the combination with a track, a double-semaphore signal, and means for raising and lowering semaphores, of a movable rail, means for shifting the rail, and a lock interposed between signal and rail, comprising vertically-movable rigid bars connected with and actuated by the semaphores and provided with perforations, guides for said bars, a pivoted bell-crank linked at one arm to the rail, a connecting-rod joined to the free arm of the bell-crank, a pivotally-supported rock-beam joined to said connecting-rod, and plungers joined to said rock-beam at opposite sides of its pivotal point for engaging said bars, substantially as and for the purpose set forth.

BELLE H. DORAN,

Administratrix of Frank C. Doran, deceased.

In presence of—

D. W. LEE,

R. T. SPENCER.