

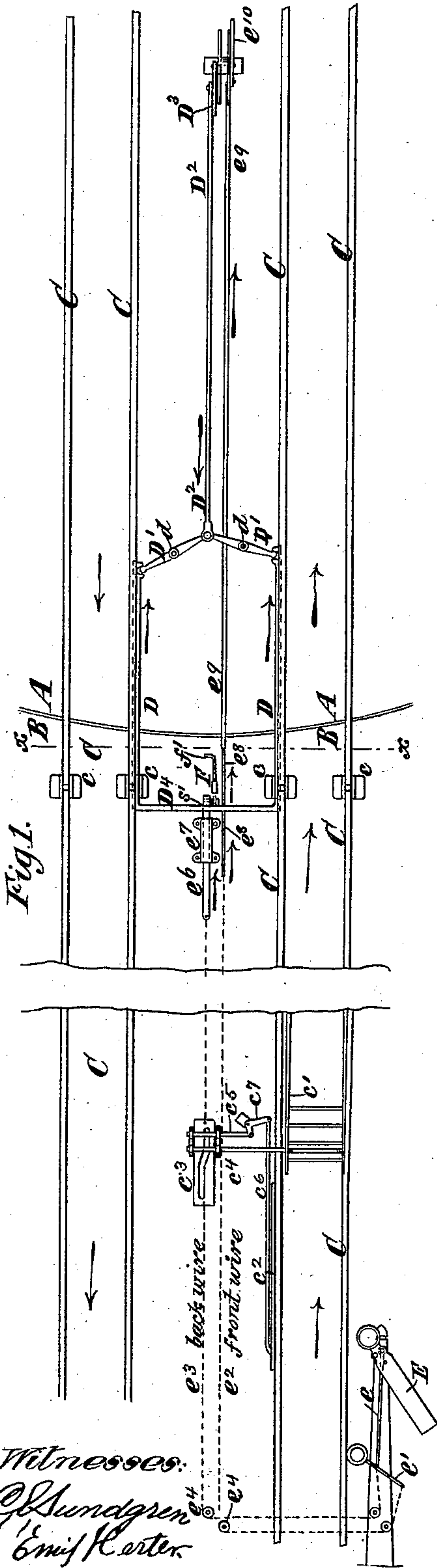
(No Model.)

C. R. JOHNSON.

MEANS FOR OPERATING SWITCHES, SIGNALS, &c. FOR DRAW BRIDGES.

No. 361,419.

Patented Apr. 19, 1887.



Witnesses:
O. Sundgren
Emil Carter

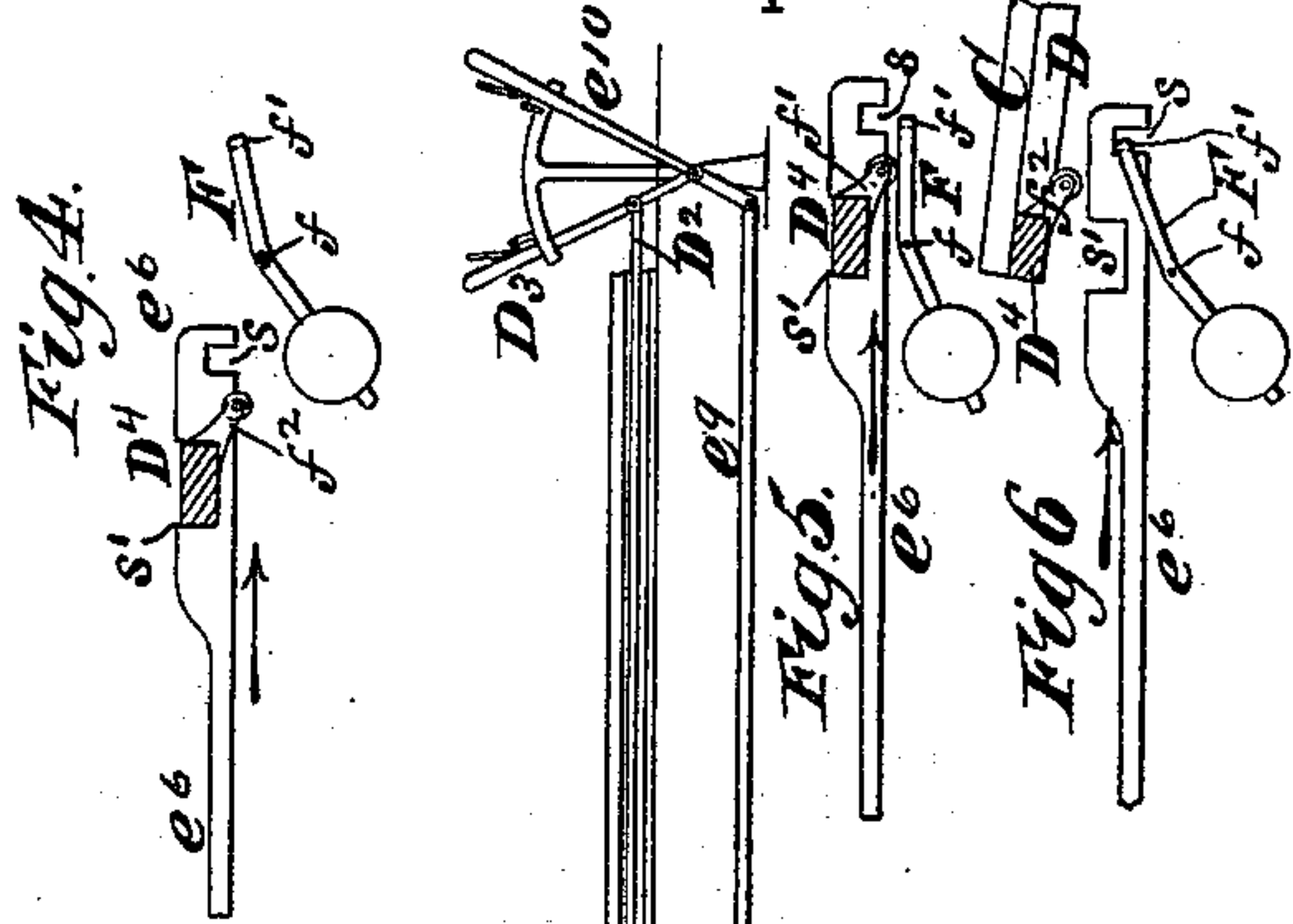


Fig. 2.

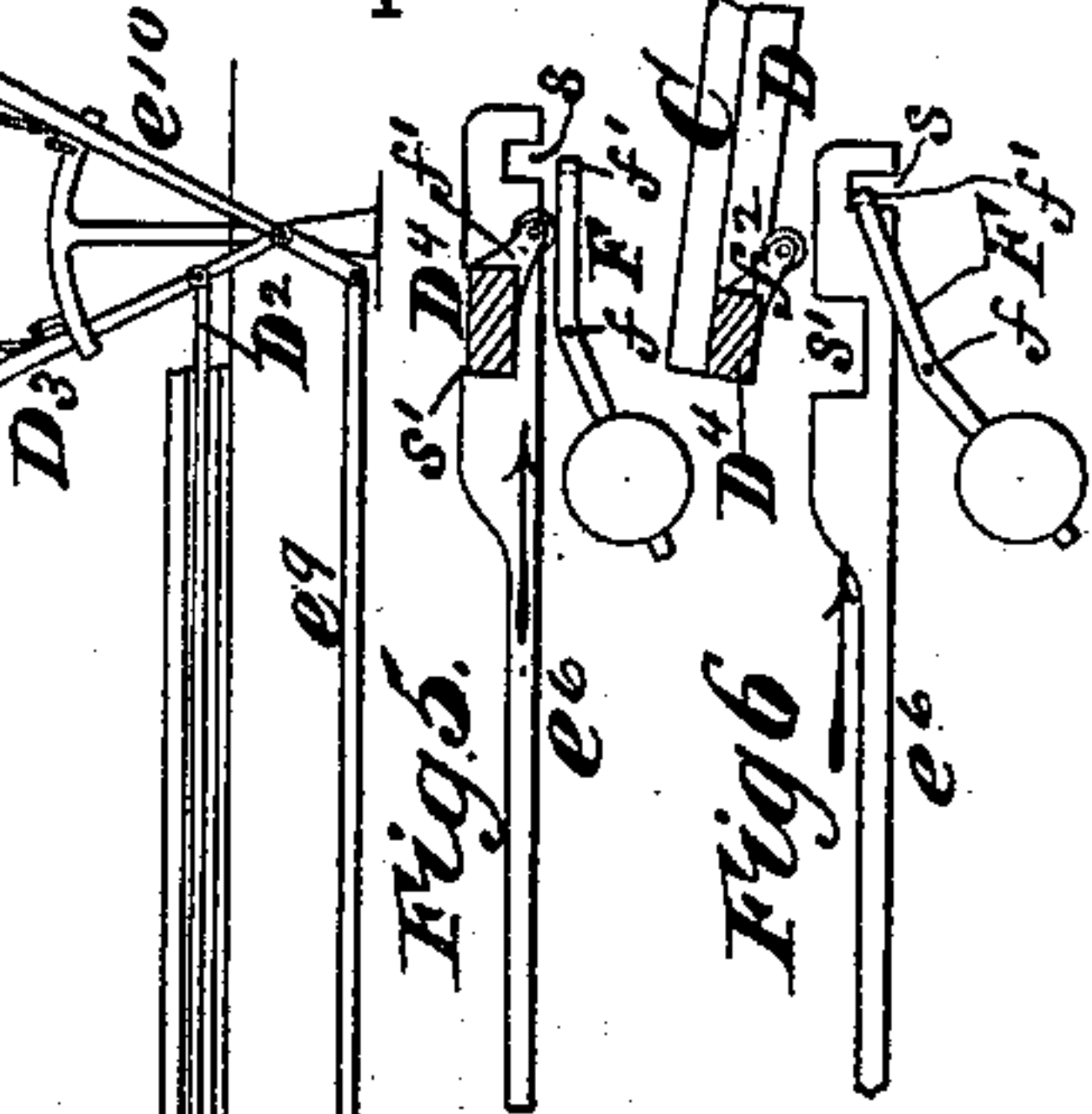
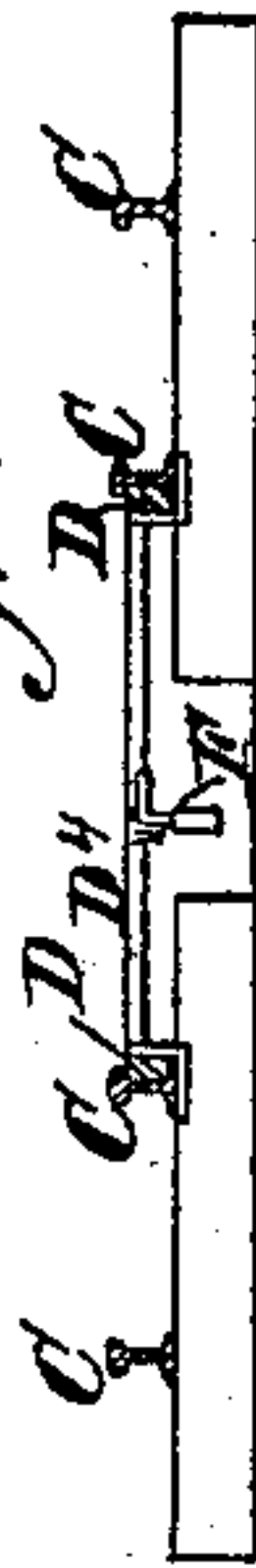


Fig. 3.



Inventor
Charles R. Johnson
by his attys
Brown & Hall

UNITED STATES PATENT OFFICE.

CHARLES R. JOHNSON, OF ALLEGHENY CITY, PENNSYLVANIA.

MEANS FOR OPERATING SWITCHES, SIGNALS, &c., FOR DRAW-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 361,419, dated April 19, 1887.

Application filed November 4, 1886. Serial No. 217,936. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. JOHNSON, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Means for Operating Signals and Switches for Draw-Bridges, of which the following is a specification.

My invention relates to mechanism for operating switches or signals in connection with draw-bridges, and which includes apparatus or mechanism by which the connections or transmitters of motion are broken or disengaged at the junction of the draw with the approach or shore section, to permit the draw to be readily turned without interference from the connections.

The invention consists, essentially, in the combination, in a switch or signal system for a draw-bridge, of two abutting bars or pushers, one upon the draw and the other upon the shore section, a signal connected with the bar or pusher on the shore section, and which is arranged to move to "danger" or normal position by gravity, and a locking device for holding the bar or pusher on the shore section against movement when the bar or pusher on the draw is swung out of line therewith, whereby the movement of the switch or signal either accidentally or surreptitiously is prevented.

In carrying out my invention the locking device for holding the bar or pusher upon the shore section may be applied to a second bar upon the shore section, which is connected by wire ropes, chains, or other suitable connections with the bar or pusher upon the shore section.

The invention also includes other combinations of parts, which are hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan of a portion of a draw-bridge having switch and signal operating mechanism embodying my invention. Fig. 2 is a side elevation of the mechanism for operating the switch and signal and the bridge-lock. Fig. 3 is a transverse section upon about the plane of the dotted line xx , Fig. 1; and Figs. 4, 5, and 6 are sectional elevations, upon a larger scale, showing a portion of the mechanism which is upon the shore section or approach in its several operative positions.

Similar letters of reference designate corresponding parts in all the figures.

A designates the draw, about one-half the length of which is shown; and B designates the shore section or approach thereto.

C designates the track-rails of two tracks for traffic in opposite directions, as indicated by the arrows in Fig. 1, and which meet when the draw A is closed.

In this example of my invention the lock whereby the draw A is held against swinging out of line with the shore section when it is closed consists of bars D, which are fitted to the inner sides of the track-rail webs C, and are operated by means of levers D', fulcrumed at d , and connected with a rod, D², which in turn receives motion from a hand-lever, D³, upon the draw. The locking-bars D are connected at their ends by a cross-rail, D⁴, for a purpose hereinafter described, and, as shown in Fig. 1, they are slid into engagement with the shore sections of the track-rails C, so as to hold the draw in closed position. When by the operation of the lever D³ the rod D² is moved in the direction of the arrow thereon in Fig. 1, the locking-bars D will be moved in the direction of the arrows in Fig. 1, and will be disengaged from the shore sections of the track-rails C. The sections of the rails C which are upon the draw A may then be lifted out of the chairs c , which support them, by means such as are ordinarily employed in draw-bridges, and which here need no illustration. As the bridge-sections of the track C are lifted the locking-bars D, which slide upon them and the cross-bar D⁴, connecting the locking-bars, will also be lifted.

E designates a shore-signal, which is shown in elevation in the plan view, Fig. 1, in order to more clearly illustrate my invention, and which is connected by the rod e with a weighted lever, e' . The lever e' being suitably weighted, the balanced signal E will be swung into normal or "danger" position by the weight of said lever as soon as the connections permit. From the lever e' of the signal E lead front and back connections, e^2 e^3 , which, as here represented, consist of wire ropes or other tension devices passing around pulleys e^4 , and these front and back connections lead, respectively, to a lever, e^5 , fulcrumed between its ends and to a bar, e^6 , capable of sliding in a suitable housing or

channel-way, e^7 . The connection e^2 leads to one end of the lever e^5 , and with the opposite end of said lever is connected a bar or pusher, e^8 , arranged upon the shore section or approach B, and which abuts against a corresponding bar or pusher, e^9 , carried upon the draw. The bar or pusher e^9 may be operated in one direction or the other by a suitable lever, e^{10} , which is upon the draw and adjacent to the lever D^3 , for operating the rod D^2 , which controls the locking-bars D.

F designates a weighted lever, which constitutes a locking device for engaging directly with the bar e^6 upon the shore section B, and which, through the connections e^2 e^3 , serves to hold the bar or pusher e^8 against movement after the bar or pusher e^9 upon the draw has been swung out of line therewith by the opening of the bridge. As here represented, this locking device consists of a lever pivoted at f , as best shown in Figs. 4, 5, and 6, and having its end f' bent transversely, as shown in Fig. 1, so as to engage a notch, s , upon the under side of the bar e^6 .

The cross-bar D^4 , which connects the two lock-bars D, is adapted to enter the notch s' in the top of the bar e^6 , as shown in Figs. 4 and 5, and is provided with a downwardly-extending arm, f^2 , which may carry a roller, and which rides upon the top of the locking device F, as shown in Fig. 5, so as to hold it out of the notch s as long as the bar D^4 is in engagement with the notch s' .

In the track C, which provides for traffic toward the right hand of Fig. 1, and upon the draw, I have represented a switch, c' , and that track is also provided with a detector-bar, e^2 . I have also shown in the back connection, e^3 , leading to the signal, a slotted motion-plate, e^3 , which, through a rod, c^4 , operates the switch, and through rods e^5 e^6 and a bell-crank, e^7 , operates the detector-bar.

In the position of parts shown in Fig. 1 the signal-bars e^8 e^9 abut against each other, and the signal is set to "safety" position for traffic across the bridge. Under these conditions the cross-bar D^4 engages the notch s' in the bar e^6 , and also connects the track-rails on the draw with the rails on the shore section B. If it be desired to open the draw, the rod e^9 is first moved in the direction of the arrow thereon in Fig. 1, thereby withdrawing its end from in front of the bar or pusher e^8 . If the signal only were to be operated, it would swing to its "danger" or normal position by gravity, and the bar or pusher e^8 would be moved in the direction of the arrows thereon in Figs. 1 and 2; but the resistance which the motion-plate e^3 offers to such movement may prevent it. Be that as it may, the bar D^2 is caused to move in the direction of the arrow thereon in Fig. 1, thereby withdrawing the lock-bars D from the rails C on the shore section, and through the cross-bar D^4 pulling the bar e^6 in the direction of the arrow shown thereon in Figs. 1, 4, and 5. The movement of this bar e^6 will, through the connection e^3 , shift the switch and detector-

bar and shift the signal to "danger" position if it has not already assumed such position by gravity.

In Fig. 5 I have represented the position of the bar e^6 and the cross-bar D^4 relatively to the locking device F when they have completed their movement toward the right hand of Fig. 1. When brought to this position, the notch s in the bar e^6 is immediately over the engaging tooth or projection f' of the locking device; but the latter is held down by the arm f^2 . The rail-sections C, which are upon the draw A, are now lifted to free them from the chairs c , and as the rails are raised they lift up the lock-bars D and the cross-bar D^4 , and thereby disengages said cross-bar from the notch s' . Before the cross-bar D^4 entirely leaves the notch s' the locking device F rises into its notch s , and by engaging with the bar e^6 locks the signal and switch against accidental or surreptitious movement, and through the connections described holds the bar or pusher e^8 upon the shore section against movement.

When the draw is again closed, the rails C are first dropped into the chairs c . The lever D^3 is then moved to slide the lock-bars D into engagement with the rails C on the shore section B, and by the downward movement and sliding movement of the bar D^4 the locking device F is disengaged from the bar e^6 , and said bar is moved toward the left hand of Fig. 1. The bars or pushers e^8 e^9 now being in line, the lever e^{10} is operated to move the bars e^8 e^9 toward the left hand of Figs. 1 and 2, and by exerting a pull upon the front connection, e^2 , the signal E is set to "safety" position, and the motion-plate e^3 is moved to shift the switch and detector-bar.

I do not claim, broadly, as of my invention the combination, in a switch or signal system for a draw-bridge, of two abutting bars or pushers, one upon the draw and the other upon the shore section, operating mechanism upon the draw for transmitting motion from one to the other of said bars or pushers when adjusted into line with the draw closed, and a locking device for holding the bar or pusher on the shore section against movement when the bar or pusher on the draw is swung out of line therewith.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a signal system for a draw-bridge, the combination of two abutting bars or pushers, one upon the draw and the other on the shore section, a signal connected with the bar or pusher on the shore section, and which is arranged to move to "danger" or normal position by gravity, and a locking device for holding the bar or pusher on the shore section against movement when the bar or pusher on the draw is swung out of line therewith, whereby movement of the signal either accidentally or surreptitiously is prevented, substantially as herein described.

2. In a switch or signal system for a draw-bridge, the combination of two abutting bars

or pushers, one on the draw and the other on the shore section, operating mechanism on the draw for transmitting motion from one to the other of said bars or pushers when swung into line with the draw closed, a second bar connected with the bar or pusher on the shore section, and a locking device for engaging said second bar to hold the bar or pusher on the shore section against movement when the bar or pusher on the draw is swung out of line therewith, whereby movement of the switch or signal either accidentally or surreptitiously is prevented, substantially as herein described.

3. In a switch or signal system for a draw-bridge, the combination of two abutting bars or pushers, one upon the draw and the other upon the shore section, a second bar connected with the bar or pusher upon the shore section, a sliding lock for holding the draw closed, and which engages with said second bar to shift the switch or signal positively, operating mechanism on the draw for transmitting motion from one to the other of said bars or push-

ers when adjusted into line with the draw closed, and for operating the draw-lock, and a locking device for preventing movement of the said bar or pusher and said second bar on the shore section when the draw is open, substantially as herein described.

4. In a switch or signal system for a draw-bridge, the combination of the abutting bars e^9 e^8 on the draw and shore section, the bar e^6 on the shore section, a system of connections between the bars e^8 e^6 , and which includes a signal or switch, a lock for the draw, adapted to engage the bar e^6 , operating mechanism on the draw, connected with the bar e^9 , and the draw-lock, and a locking device, F, for engaging the bar e^6 , to hold the bar e^8 and the switch or signal against accidental or surreptitious movement when the draw is open, substantially as herein described.

CHARLES R. JOHNSON.

Witnesses:

LOUIS KOELLE,
WM. K. GRAY.