

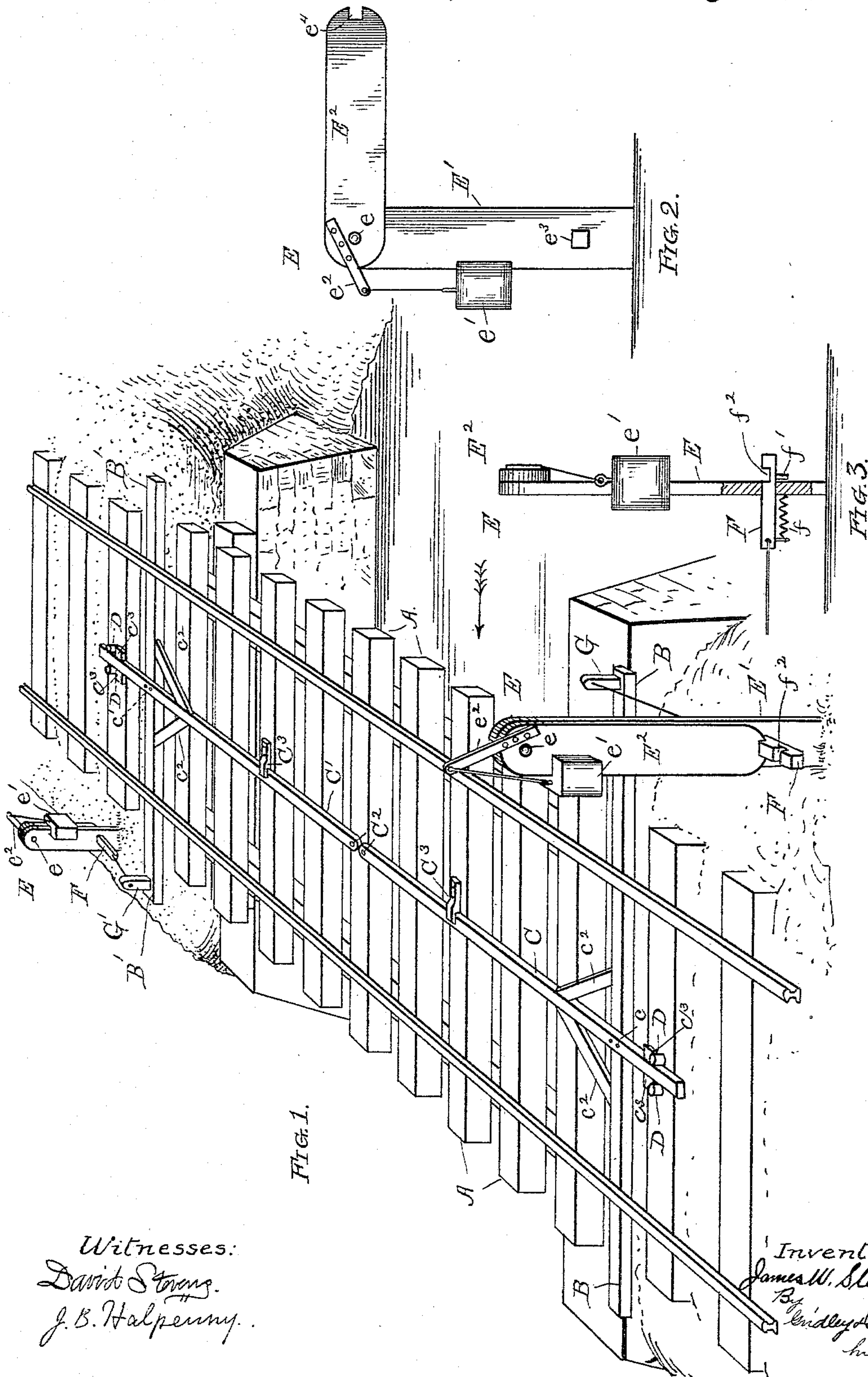
(No Model.)

J. W. STEELE.

RAILWAY BRIDGE DANGER SIGNAL.

No. 387,748.

Patented Aug. 14, 1888.



Witnesses:
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UNITED STATES PATENT OFFICE.

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RAILWAY-BRIDGE DANGER-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 387,748, dated August 14, 1888.

Application filed September 16, 1887. Serial No. 249,835. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. STEELE, of Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful
5 Improvements in Railway-Bridge Signals, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of a railway-
10 bridge having my improved device applied thereto and in operative connection with semaphores at the respective ends of the bridge. Fig. 2 is a detail view of one of said semaphores as it appears when in an abnormal po-
15 sition, and Fig. 3 is an edge view of the same.

Like letters of reference indicate like parts in the different figures.

The purpose of my invention is to provide a device in connection with railway-bridges,
20 which may be so constructed as to operate a signal to warn approaching trains in the event of the displacement or destruction of the bridge resulting from floods or other similar causes.

To this end my invention consists in provid-
25 ing a tripping mechanism or trigger in operative connection with one or more semaphores or signals, and so attached to the bridge as to release the semaphore upon either a lateral or vertical displacement of the bridge, or a por-
30 tion thereof, from any cause, substantially as hereinafter described and claimed.

In Fig. 1 is shown a perspective view of a railway-bridge, in which A indicates the usual cross-ties, which serve as the immediate sup-
35 port for the rails. At the respective ends of the bridge I place planks or timbers B B', which are loosely inserted beneath the rails, and are preferably made somewhat longer than the ties, as shown. Bars C C', of wood or iron, but
40 preferably of ordinary two by four scantling, are placed midway between and parallel with the rails upon the top of the ties and bolted or spiked to the cross-bars B B' respectively at c
c'. Braces c² c² are also rigidly secured to the
45 bars C B and C' B', substantially as shown, so that a lateral movement of the inner end of the bar C, for example, must move the bar B, to which it is attached. Each of the bars C C' ex-
tends back from the abutment over the next
50 succeeding tie beyond the bars B B', and pins D D are placed in the ties at the outer ends of

said bars and upon each side thereof, to serve as fulcrums or points of bearing for the ends of said bars. The inner or meeting ends of the bars C C' are loosely attached, by means of pins
55 or bolts C², to a tie or ties at or near the middle of the bridge. Blocks C³ C³ are also spiked to the cross-ties, preferably near the meeting ends of the bars C C', and arranged to project loosely over said bars, as shown, so as to permit a
60 lateral movement of the latter and to draw the same down with the bridge in case it should settle or sag in the middle. To prevent the bars C C', or either of them, from slipping back between the pins D D, I cause blocks or cleats
65 c³ c³ to be nailed upon the sides of said bars, as shown in Fig. 1.

At the respective ends of the bridge I place semaphores E E, of any well-known construction, but preferably consisting of a post, E', to
70 the top of which, at e, is pivoted a signal-arm, E², which is provided with a counterpoise-weight, e', loosely attached to a short arm, e². The post E' is mortised at e³, Fig. 1, through which mortise is inserted a sliding block, F,
75 designed to engage with a notch, e⁴, in the end of the arm E², and thus normally retain said arm in the position shown in Fig. 1. A spiral spring, f, Fig. 3, attached to the post and block
80 respectively, serves to retain the latter in normal engagement with the notch e⁴, while a pin, f', limits its movement in an opposite direction. A notch, f², when brought into align-
ment with the arm E² by the sliding of the block F, serves to release the arm F². G G' are
85 small upright posts or pins rigidly attached to one end of each of the cross-bars B B'. Wires G² serve to connect the tops of said posts with the sliding blocks F.

The arrow shown in Fig. 1 indicates the di-
90 rection of the current of the stream. Assuming the bridge to be moved by a freshet in the direction of the arrow, the end of the bar C, attached to the middle of the bridge, is carried with it, and the opposite end being held by the
95 pins D D, the end of the bar B, carrying the post G, is caused to swing in the arc of a circle of which the pins D D form the axis, and thus the block F is withdrawn and the semaphore actuated. A lateral movement of the bridge
100 in an opposite direction, resulting, for example, from a severe wind-storm, actuates the bar

C' in a similar manner and moves the signal upon the opposite side of the stream.

In case the middle supports of the bridge should be carried away, thus causing a portion of the bridge to fall or sag in the middle, the inner ends of the bars C C', one or both, would sag therewith, and thus tilt the posts G and actuate the signal; hence it is apparent that a displacement of the bridge by falling, or by lateral movement from any cause, would serve to automatically operate the signal and give warning to approaching trains.

For culverts or short bridges it is obvious that but one bar or tripping mechanism and one semaphore would be sufficient, though in longer bridges I prefer to use two.

Having thus described my invention, I claim—

1. A danger-signal for railway-bridges, consisting of a semaphore provided with a releasing device, as the block F, in combination with a tripping mechanism, as the bars B and

C, attached to the bridge and in operative connection with the semaphore, whereby a displacement or destruction of the bridge may serve to automatically operate said semaphore, substantially as shown and described. 25

2. The combination, with a railway-bridge, of a semaphore or signal, means, as a sliding block and spring, for maintaining the same in a normal position, and a tripping mechanism, as the bars C B, attached to each other and to the bridge and in operative connection with the semaphore, substantially as shown and described. 30

3. The combination, with a railway-bridge and a semaphore or signal, of the cross or trigger C B, attached to said bridge and in operative connection with said semaphore, substantially as shown and described. 35

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