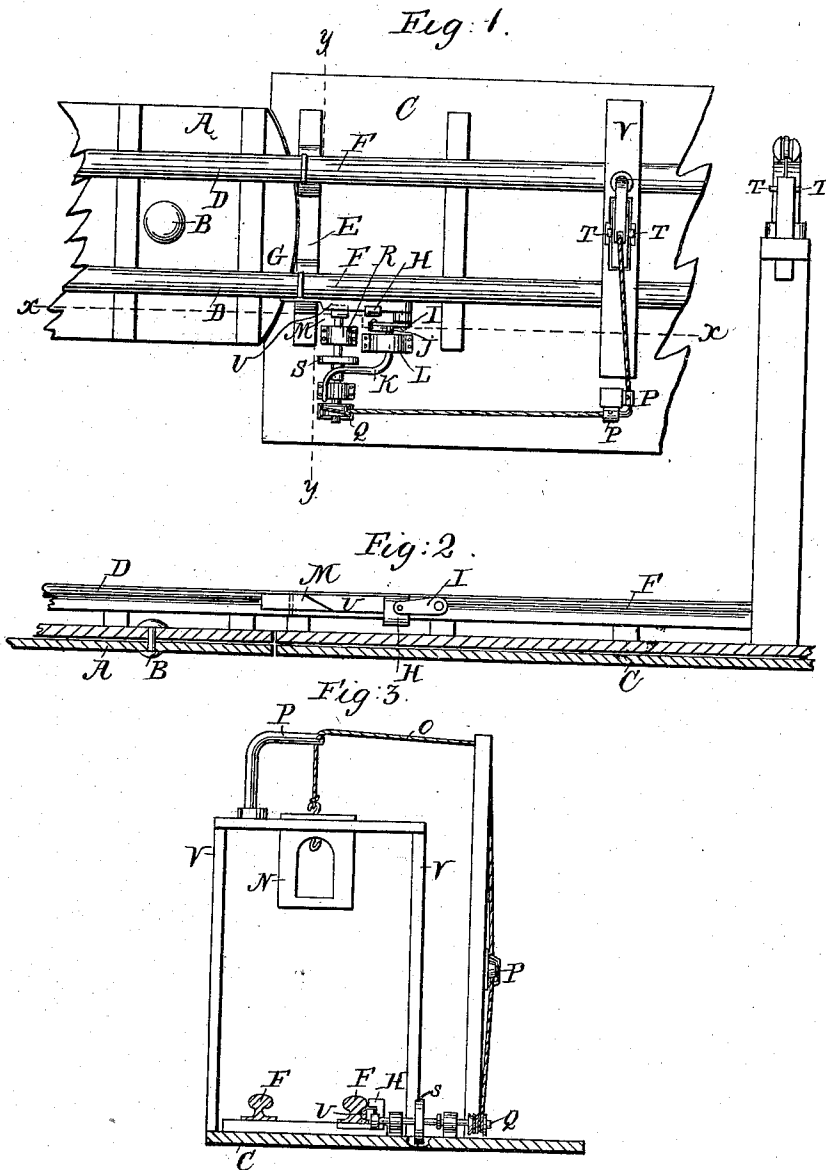


T. S. HALL.
Draw-Bridge Signal.

No. 113,425.

Patented April 4, 1871.



Witnesses.
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN RAILWAY-BRIDGE SIGNAL APPARATUS.

Specification forming part of Letters Patent No. **113,425**, dated April 4, 1871.

To all whom it may concern:

Be it known that I, THOMAS S. HALL, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Draw-Bridge Signals; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 is a plan view of my invention. Fig. 2 is a sectional elevation taken in the line *x x* of Fig. 1, showing the draw closed. Fig. 3 is a cross-section taken in the line *y y* of Fig. 1, the draw being supposed to be open and the signal displayed.

Similar letters indicate corresponding parts.

This invention relates to safety apparatus for draw-bridges; and consists in the combination of parts, whereby when the draw is locked the signal apparatus is also locked and prevented from being operated or exposed to view, and when the draw is open the signal apparatus is at the same time automatically released and the signal displayed, as will be hereinafter more fully described.

In this example of my invention I have shown it applied to a railway draw-bridge and in connection with a visible signal; but my invention is also applicable to draws for ordinary roadways.

The letter A designates one end of a draw, which turns on a center, B; and C is one of the stationary ends.

The rails of the track are placed on the draw-bridge in the ordinary manner, so that the ends of the rails D of the draw can swing over and be supported on the same chair E which supports the outer end of the rail F on the stationary part of the bridge, one side of said chair being cut away to allow the rail on the draw to be swung in and out over the chair, while the other side of the chair, at G, forms a stop to arrest such rail when it comes in line with the stationary rail F.

The draw is locked by a sliding key, U, fitted to the web or curved side of the rails, and is supported on rail F by the chair E and bracket H, in such a manner that it can be moved to and fro alongside of rail D to lock and unlock

the draw at pleasure. The key is moved by means of a crank, I, to whose end is pivoted one end of a link, J, whose other end turns on a pin projecting from the inner end of the key, the shaft of crank I having its bearings in a standard, L, and being provided with a hand-crank, K, by which it is operated to move the key. A portion of the key is cut away, as seen at M, to bring the signal into action, as will be hereinafter explained.

The draw-signal is intended to be brought into action or displayed when the draw is open. In this illustration the signal consists of a drop, N, suspended on a rope or chain, O, from the top of a frame, V, which I place at a distance from the bridge—say, a distance of fifteen hundred to two thousand feet—sufficient to insure safety to an approaching train. I arrange the signal in such a manner that when down it will be in the way of a train or vehicle or of the smoke-stack of a locomotive. The signal here shown has a central opening to contain a lamp for night use.

The signal moves in a slot made for it in a cross-beam of the frame V, and is prevented from passing through the slot by means of ears T T, which come in contact with the top of the beam and preserve the rope from being snapped by the fall of the signal.

The rope or chain O extends from the signal over pulleys P P P, arranged in such a manner as to bring the rope in line with a drum, Q, on which it is wound for the purpose of raising the signal out of sight.

The drum Q is placed on the stationary part of the bridge adjacent to the key, with its shaft at right angles thereto, one end of its shaft being extended toward the rail F, and being flattened, as at R, so that its flattened surface can reach under or past the key, and in close proximity thereto, by which means the drum-shaft becomes locked and is prevented from turning.

The locking of the drum-shaft takes place whenever its flattened surface or side R is turned toward the key and the key is moved outward to lock the draw, at which time the slotted or reduced part M of the key will have passed over and beyond the flattened surface R of the drum-shaft, and the wider portion of the key will have been moved

above or next to the drum-shaft, so as to lock the shaft, the end or place of the cut or slot M being located the same distance from the end of the key, or nearly so, as the distance from the drum-shaft to the end of the draw-rail D, so that whenever the key releases the draw the key will at the same time release the drum-shaft. Whenever such release or disengagement takes place the drum-shaft is free to turn, and the signal N, which in this example serves as a weight, turns the shaft and unwinds the rope or chain, and the signal drops to the full extent allowed by its stops or by the rope.

Whenever it is desired to relock the draw the drum-shaft is turned by means of its hand-wheel S until the signal is elevated, and the shaft is again in position to be engaged by the key, and the key is then pushed outward, thereby at the same time locking the draw and locking the drum-shaft and the signal or alarm.

It will be observed that by my invention the signal is set or put in action automatically by the act of unlocking the draw, and consequently the setting or bringing into action of the signal does not depend upon the attention of the draw-keeper, and the key or fastening of the draw retains the signal out of action so long as the key engages and locks the draw.

I do not wish to confine myself to the details here shown, as the signal apparatus can be connected with the key by other means—as for example, by means of a gear-wheel on the drum-shaft, which shall be engaged by a

rack formed on the key, and so arranged that the movement of the key in or out will bring the signal into or out of action, in that case dispensing with an independent crank for moving the key, as the same crank or wheel which turns the drum moves the key.

Accidents are now common or liable to occur where, as is now the case, the setting of a signal depends upon the draw-keeper at the time of opening the draw; but by means of my invention the signal apparatus is brought into action automatically, and safety is not dependent upon his carefulness or attention to duty.

It is obvious that this automatic apparatus can be arranged at both ends of a draw, so as to produce an alarm or make a signal at both approaches of a bridge.

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

1. The draw-bridge key U, having a slotted or reduced part, as set forth, in combination with the flattened shaft of the drum Q, to which the signal is connected, substantially as and for the purpose described.

2. In combination with the rails and the chair E, the sliding key U, standard H, and the hand-crank K and its connections, as herein set forth and shown, for the purpose specified.

This specification signed by me this 22d day of December, 1870.

THOMAS S. HALL.

Witnesses:

J. VAN SANTVOORD,

C. WAHLERS.