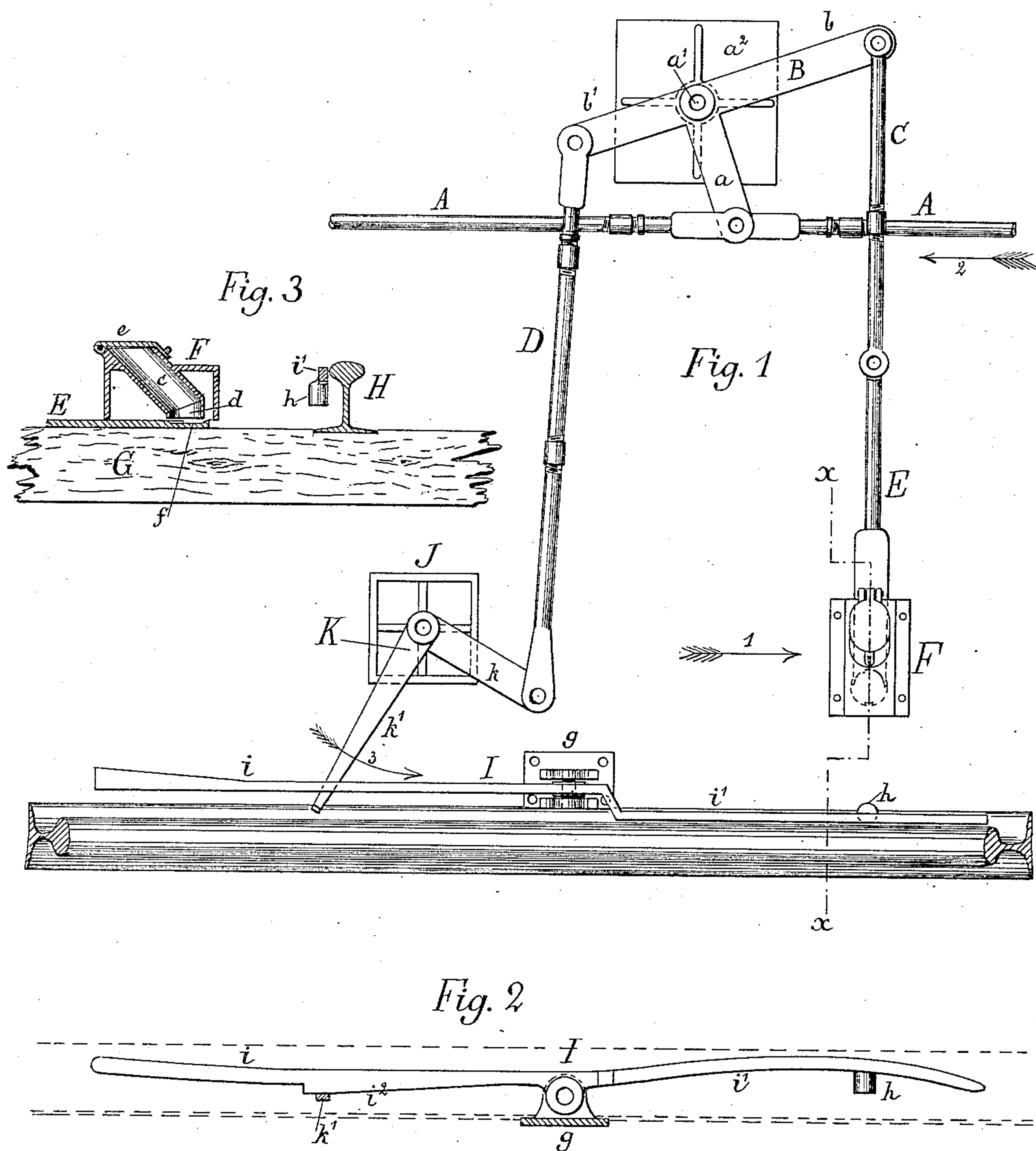


(No Model.)

J. A. BONNELL.  
RAILWAY TORPEDO SIGNAL.

No. 341,399.

Patented May 4, 1886.



*Witnesses:*

H. Sarnander  
C. V. Holmström

*Inventor:*

James H. Bonnell  
by A. W. Almqvist  
Attorney



# UNITED STATES PATENT OFFICE.

JAMES A. BONNELL, OF BROOKLYN, NEW YORK.

## RAILWAY TORPEDO-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 341,399, dated May 4, 1886.

Application filed January 5, 1885. Serial No. 152,237. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES A. BONNELL, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Railway Torpedo-Signals, of which the following is a specification.

My invention relates to a sound-signal apparatus in which the slide carrying the torpedo-cartridge is pushed forward, presenting the said torpedo in position to be exploded by impact from the first passing wheel of an approaching train. A device of that kind was patented to me December 18, 1883, by Letters Patent No. 290,391, to which I refer as showing the previous state of the art.

The object of my present invention is to make the feed of the torpedoes onto the slide automatic, and so improve the construction that the slide will not have to sustain any of the weight of the passing locomotive or train, but the torpedoes will be exploded by the momentum of a hammer receiving its impulse from the wheel of a passing train.

The invention comprises the combination, with the torpedo-presenting slide, of an inclined feed box vertical at its lower end, automatically supplying torpedoes or cartridges, upon the said slide; also, the combination, with a torpedo-carrying slide arranged to operate at the side of the rail above its flanges of a weighted lever pivoted at the side of the rail, and provided at its lighter end with a suitable nipple or other projection for exploding the torpedo when hit by the wheel of a passing train, and a lever which is moved, simultaneously with the withdrawal of the slide, laterally underneath the heavier end of the lever-hammer to raise it sufficiently for lowering the lighter nipple-carrying end underneath the tread of the rail, and thus in position not to be touched by the wheels.

In the accompanying drawings, Figure 1 represents a plan view of a torpedo-signal apparatus constructed according to my present invention. Fig. 2 is a side view of a lever-hammer corresponding with its position in Fig. 1 relative to the rail, which latter, for the purpose, is shown in dotted lines. Fig. 3 is a section through the torpedo box and slide and a cross-section of the hammer and rail, the

section being taken on the line *xx* of Fig. 1, and seen in the direction of arrow 1.

A is the rod leading from the signal-house, by which the torpedo and other signals are operated. This is connected by suitable pivoted jaws to an arm, *a*, projecting at right angles from a lever, B, of the first class, which lever is fulcrumed at *a'* upon a casting, *a''*, embedded in the ground.

To the ends of the respective arms *b b'* of the lever B, at opposite sides of its fulcrum, are connected by movable jaws the rods C D. The rod C is connected at its other end, by a movable jaw, to one end of the torpedo-slide E, which is guided in a box, F, bolted upon a timber, G, on the ground in such a manner that the slide E rests and moves upon the said timber. The box F is provided with an inclined tube, *c*, vertical at its lower end, *d*, and provided on top with a lock-cover, *e*. The free end of the slide E has a suitable recess, *f*, to receive a torpedo-cartridge, the recess being of such depth that the upper surface of the torpedo, when placed therein, will be flush with the upper surface of the slide E, and the lower end D of the feed-tube is in so close proximity to the upper surface of the slide that when the tube *c* is filled with torpedoes only one at a time can be deposited in the recess *f*, the one next above it resting upon the slide as the latter moves. When the slide E is withdrawn, it is in the position shown in Fig. 3, with the recess *f* directly underneath the lower end of the tube *c*, in consequence whereof, if the said recess is empty, the torpedoes in the tube *c*, descending by their own weight, will cause one of their number to be deposited in the said recess *f*, the others being supported upon the one just deposited, or upon the surface of the slide when the latter is moved. One of the rails, H, of the track is set down with its flange in the upper surface of the timber G in such position that the slide E, when at the outer end of its throw, rests with its end upon the upper surface of the rail-flange.

I is the hammer-lever. This is fulcrumed between lugs, upon a suitable bracket, *g*, arranged at the side of the rail. The end *i* of the lever I is heavier than the end *i'*, and is farther away from the rail, the lighter end



having an offset near the fulcrum, as shown in Fig. 1, to allow of keeping it in close proximity to the rail. The heavier end *i* has an incline, *i'*, on its under edge, or increases in depth a distance from its fulcrum; and the lighter end *i'* is curved upon its upper surface, as shown in Fig. 2, and has underneath a nipple or hammer, *h*, in position to be directly above the recess *f* of the slide E, when the latter is in position to present the cartridge for being exploded. The aforesaid rod D is connected by a movable jaw to one arm, *k*, of a bell-crank, K, which is pivoted upon a casting, J, embedded in the ground, and the other free end, *k'*, of the lever K projects underneath the heavier end *i'* of the lever I, and when moved into the position shown in the drawings it travels along the surface of the incline *i'* until it gets in the position shown in Fig. 2, thereby elevating the end *i* of the lever, so as to cause its forward lighter end, *i'*, to drop a little below the upper surface of the rail, in the position in which it cannot be touched by a passing wheel. If the rod A is pulled with the proper throw in the direction of arrow 2, the slide E will be thrust forward to present a torpedo directly underneath the hammer *h*. At the same time the arm *k'* of the lever K will move in the direction of arrow 3, thus withdrawing from the deepest part of the incline *i'*, where it supported the heavier end *i* of the lever I, thereby allowing that end of the lever to drop and the lighter curved end *i'* to rise above the level of the tread of the rail. When in this position it will receive a sudden blow from the wheel of a passing train, and thus acquire momentum, which causes the hammer *h* to strike the torpedo with sufficient velocity and force to explode it, thereby warning the engineer of danger. If, again, the approaching train has the right of

way, the danger-signals are "off," and switches arranged accordingly, the parts will be in the position shown in Figs. 1 and 2, with the hammer-lever out of the way of the wheels, and the slide E withdrawn with the unexploded torpedo still remaining in the recess *f*.

The object of making the feed-tube *c* inclined is to lessen the downward pressure by the weight of the torpedoes, and thus reduce the friction between the undermost torpedo and the upper surface of the slide E; and the object of making the lower end *d* vertical is to cause the undermost torpedo in the tube to fall flat and evenly into the recess *f*.

Having thus described my invention, what I claim as new in a railway torpedo-signal device, and desire to secure by Letters Patent, is—

1. The combination of the slide E, having a suitable recess, *f*, with the inclined feed-tube *c*, vertical at its lower end *d*, and arranged with the said lower end immediately above the said slide, for automatically depositing torpedoes in the said recess *f*, substantially as and for the purpose set forth.

2. In combination with the torpedo-slide E and with the hammer-lever I, arranged at the side of the rail, the lever K, arranged to elevate the weighted end *i* of the lever and to drop the lighter end *i'* below the tread of the rail when the slide is withdrawn, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 1st day of October, 1884.

JAMES A. BONNELL.

Witnesses:

A. W. ALMQVIST,  
C. V. HELJESTRAND.