

(No Model.)

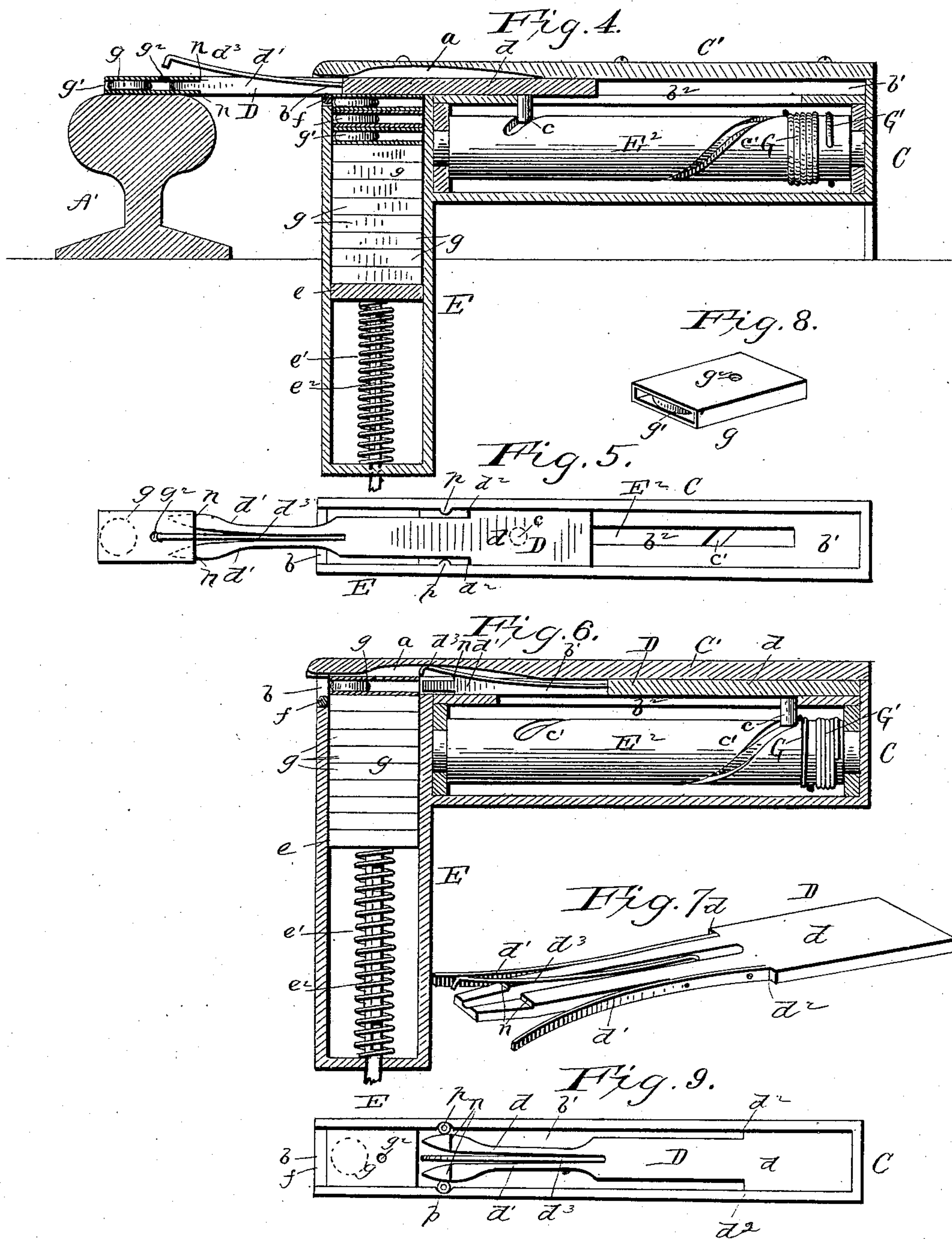
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J. FOX.

DETONATING RAILROAD SIGNAL.

No. 387,506.

Patented Aug. 7, 1888.



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DETONATING RAILROAD-SIGNAL.

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To all whom it may concern:

Be it known that I, JAMES FOX, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Detonating Railroad-Signals, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in what are denominated "torpedo safety-signals" for use on railroads; and the nature of my invention and improvements consists in certain novel and valuable improvements in this class of audible signals, which will be fully understood from the following description, taken in connection with the annexed drawings, in which—

Figure 1 is a plan view of a portion of a railway-track having my improvements applied to it and indicating a torpedo held on the surface of one of the rails. Fig. 2 is a side elevation of a railroad-car truck and section of a rail, showing my improved device for rotating the rollers which actuate the torpedo placer and retractor. Fig. 3 is a vertical cross-section, enlarged, taken through Fig. 1, as indicated by dotted line *xx* thereon, showing the yielding bearings of one of the actuating-rollers. Fig. 4 is an enlarged vertical cross-section through the case of the torpedo placer and retractor, showing the spirally-grooved roller therefor and indicating the same holding a torpedo on a rail in a position to be exploded by the wheels of a passing train. Fig. 5 is a plan view of said case uncovered with its placer and retractor in the position shown in Fig. 4. Fig. 6 is a vertical section showing the torpedo-placer retracted in its case and a torpedo in position to be protruded. Fig. 7 is a perspective view of a modification of the placer and retractor. Fig. 8 is a perspective view of a torpedo and its shell. Fig. 9 is a plan view of the placer and retractor of Figs. 4, 5, and 6 and the uncovered case thereof, showing anti-friction roller-bearings for the spring-jaws which engage the torpedo-shells.

Referring to the annexed drawings by letter, A A' designate the rails of a railway-track, which may be constructed and spiked down to cross-ties B in the usual well-known manner. At a suitable locality on the outside

of the track, and sufficiently remote from point X, which I denominate the "safety-point," I locate the following device:

C designates a horizontal case, and E a vertical case, which are preferably of metal, and water-proof, and connected together, as shown in Figs. 4 and 6. The horizontal case is constructed with a removable cover, C', recessed at *a*, for a purpose hereinafter described, which cover extends over the upper end of the vertical case, leaving a slot or aperture, *b*, for the passage of a combined torpedo placer and retractor, D. This device D is free to be moved horizontally and to assume the two positions shown by Figs. 4, 5, and 6. It slides in a recess, *b'*, in case C, the bottom of which recess is slotted at *b*² to allow play to a stud, *c*, which is fixed to the bottom of the device D, and which enters a spiral groove, *c'*, in the periphery of a horizontal drum, E², which is journaled in case C below the slotted partition therein. The said device D consists of a body or shank, *d*, provided with two spring gripping-jaws, *d'* *d'*, shoulders *d*² *d*², and a spring-hooked retracting-tongue, *d*³, which latter is located between the spring-jaws *d'* *d'*.

I prefer to construct the device D, as shown in Figs. 4, 5, 6, and 9, with externally rounded and shouldered jaws formed integral with the shank; but I may construct the device, as shown in Fig. 7, with a grooved and beveled tongue having outwardly-curved gripping springs or jaws secured to its edges. The hooked or retracting tongue *d*³ is secured in the groove of the tongue portion, which latter has its end beveled and shouldered for the purpose of entering the end of the torpedo-shells *g*, hereinafter described.

The vertical case E is provided with a vertically-movable follower, *e*, which is forced upward by a spring, *e'*, guided by a rod, *e*², which is allowed to play vertically through the bottom of said case, and upon the said follower is supported a number of torpedoes, which, respectively, consists of a rectangular shell, *g*, having open ends and a perforation, *g*², and inclosing a suitable torpedo compound, *g'*, preferably in the form of a button, which will be exploded with a loud report and burst the shell *g* when struck by a car-wheel.

The open-ended torpedo-shells are all of an

equal size, corresponding to the aperture *b* at the upper end of case E, which aperture is horizontally in line with the device D, and is provided with an anti-friction roller, *f*, to ease the
5 torpedoes during the act of projecting them from their case and retracting them therein.

When the device D is fully retracted, as shown in Figs. 6 and 9, the top shell, *g*, of the
10 series is pressed by spring *e'* gently against the under side of the cover, *C'*, and is free of the device D, but in the same horizontal plane with the ends of the spring-jaws *d' d'* of this device.

When a torpedo shell is protruded from its
15 case by the device D and lies on the top of a rail, *A'*, as shown in Fig. 4, the topmost torpedo-shell of the series in case E is pressed by spring *e'* against the bottom of the device D.

F F' designate rollers keyed on shafts *h h'*,
20 which are journaled in boxes *i i*, supported in suitably housed-in frames upon springs *j j*, as shown in Fig. 3. The roller-shaft *h* has attached to it one end of a wire or other suitable flexible connection, *G*, the opposite end of
25 which is attached to and wound several times around the spirally-grooved drum *E²*. To the shaft *h'* is also attached a flexible connection, *G'*, which is wound around the shaft *E²* in a direction opposite to the flexible connection *G*.
30 The said rollers *F F'* are arranged outside the rail *A'*, and their frames are supported upon or between the cross ties *B*. These rollers should be aligned with respect to and so that they will be rotated by a shoe, *H*, which is ap-
35 plied by means of short hangers and interposed springs *J* to the tie-bar *K* of a car-truck, as shown in Fig. 2. The shoe *H* may or may not be shod with a friction-surface, and the rollers *F F'* may or may not have their periphery
40 roughened.

In practice the shoe *H* is allowed to yield by reason of its attachments *J*, and the shafts of said rollers *F F'* are allowed to yield by reason of the springs *j j* when the shoe contacts
45 with said rollers.

The rollers *F F'* are arranged at a proper distance apart and at a proper distance from the torpedo placer and retractor.

The operation of my invention is as follows:

50 The shoe *H* will be attached to the truck of the caboose or to the baggage-car of a train, or to the last truck of a train approaching the point of "safety," in the direction indicated by the arrow on Fig. 1, and if a torpedo be
55 not on the rail *A'* it will pass on, without a signal being given, until the shoe *H* impinges on the roller *F*, when this roller will be turned by contact with said shoe and cause the connection *G'* to rotate drum *E²*, which in turn
60 thrusts outward the torpedo placer and retractor and with it one of the torpedoes, which latter is held upon the rail *A'* in the position shown in Figs. 1 and 4. In the act of thrusting out the device D the ends of its jaws *d' d'*
65 enter a shell, *g*, as far as their shoulders *n n*, and are allowed to expand so as to firmly grip

and hold said shell, so that it will be properly placed by them upon the rail *A'*. As the train passes onward and no other train follows it too
70 closely for safety, its shoe *H* will actuate the drum *E²* through the medium of roller *F'*, its shaft and flexible connection, and rotate said drum in a direction opposite to that first given to it, thus retracting the device D and with it
75 the attached shell. During the retraction of the device D the retracting-hook *d³* will be pressed down by contact with the end of the cover *C'* and caused to enter the aperture *g²* in the torpedo-shell *g*, thus positively engaging
80 this case, after which the free ends of the jaws *d' d'* will contact with small lugs or, preferably, anti-friction rollers *p p* in the sides of case *C*, thus compressing said jaws and freeing them from the torpedo-shell. When this shell has
85 been fully drawn into the case *E*, the hooked retracting-spring *d³* will automatically spring up into the recess *a* and free itself from the torpedo-shell *g*. It will thus be seen that an
90 advancing train will first cause a torpedo to be placed upon the rail *A'* and afterward cause the torpedo to be retracted free from the track if there is no danger from a following train; but if the train does not reach the safety-point
95 *X* or roller *F'* before the following train reaches the torpedo-placer the latter train will pass over the torpedo and explode it, thus notifying this train that a train in advance has not
100 reached said safety-point, that there is danger ahead, and that this train should stop or slow up. When the torpedo is exploded, its case will be expanded and freed from the jaws of the device D.

It is obvious that my improved torpedo device may be operated by a train backing in the direction of the arrow, with the shoe *H* on the
105 same side of the track as the rollers, as well as by one moving forward; also, that it may be operated by suitable connections with the actuating devices of a draw-bridge or switch; also, that trains moving on different roads and cross-
110 ing each other at any angle can throw danger-torpedoes on each other's tracks at safe distances.

Having thus fully described my invention, I claim—
115

1. In a torpedo safety-signal, the combination, with a torpedo placer and retractor applied to a railway-track, of the rollers *F F'*, their connections with said device, as described, and a spring-yielding shoe on a truck-frame
120 adapted to actuate said devices, substantially as described.

2. The combination, with a horizontal case, of a reciprocating torpedo placer and retractor, *D*, a spirally-grooved drum for moving said device, a vertical case for containing
125 torpedoes in open-ended shells, and a spring-actuated follower for feeding the torpedoes to said device D, substantially as described.

3. The combination, with a suitable case, of a spirally-grooved drum, a sliding torpedo
130 placer and retractor actuated by said drum,

and having spring gripping-jaws, the lugs or rollers *p p*, for contracting said jaws, and a torpedo-feeder, substantially as described.

5 4. The combination of the case E and its spring-actuated follower, the case C, with its recessed cover, the spirally-grooved drum, the reciprocating device D, having spring gripping-jaws, and a hooked retracting-spring, *d*³, between said jaws, substantially as described.

10 5. The combination, with a torpedo-button, of an open-ended shell, perforated as described.

15 6. The combination, with a suitable case having a vertical torpedo-cartridge chamber provided with a spring-actuated follower, of the reciprocating torpedo placer and retractor D, having spring-jaws, and a hooked retracting-

tongue, *d*³, adapted to engage with the shell *g*, and cover for the horizontal portion of said case, recessed at *a*, for the purpose described.

7. The combination, with a suitable case, of 20 the reciprocating placer and retractor D, having spring-jaws, the closing projections *p p* therefor, and a hooked spring-tongue, *d*³, substantially in the manner and for the purposes described. 25

In testimony whereof I affix my signature in presence of two witnesses.

JAMES FOX.

Witnesses:

ALEX. K. YOUNG,
C. HERBERT FOX.