

No. 860,599.

PATENTED JULY 16, 1907.

F. T. FORBES & C. P. HOGAN.
AUTOMATIC TORPEDO SIGNAL APPARATUS.

APPLICATION FILED MAR. 8, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

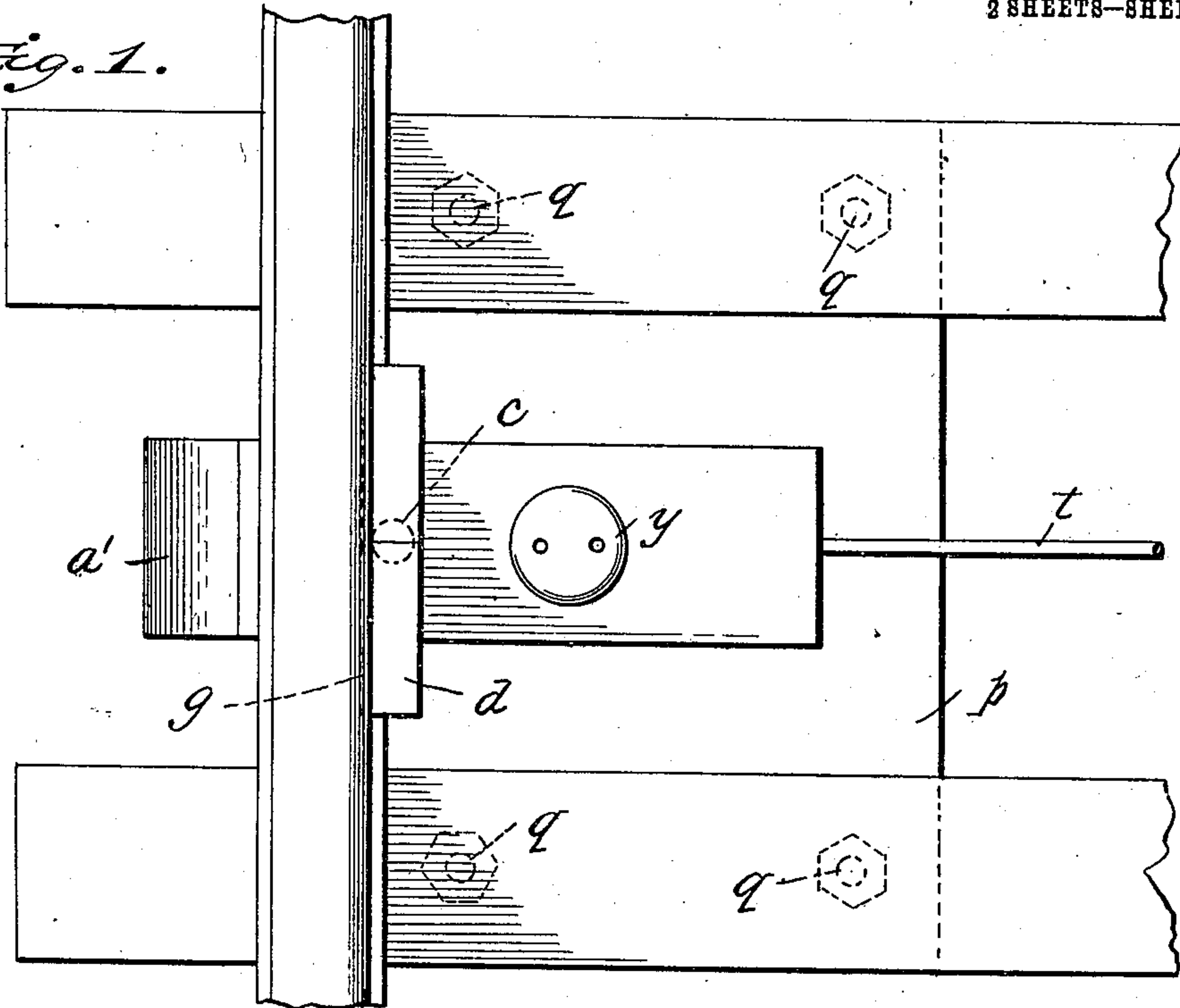
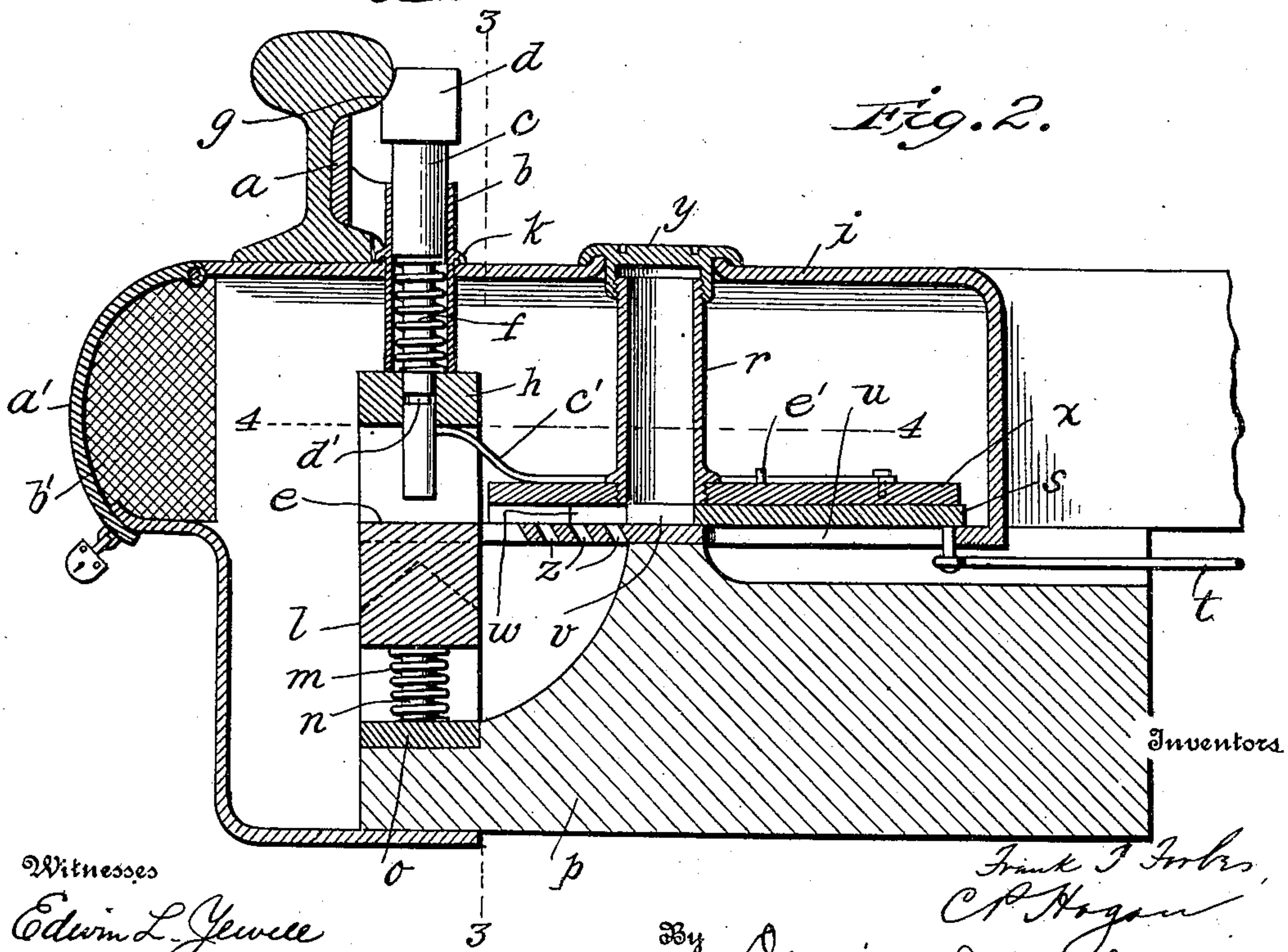


Fig. 2.



Witnesses
Edwin L. Jewell
A. R. Bridgman

Frank T. Forbes,
C. P. Hogan
By Davis & Davis,
Attorneys

No. 860,599.

PATENTED JULY 16, 1907.

F. T. FORBES & C. P. HOGAN.
AUTOMATIC TORPEDO SIGNAL APPARATUS.

APPLICATION FILED MAR. 8, 1907.

2 SHEETS—SHEET 2.

Fig. 3.

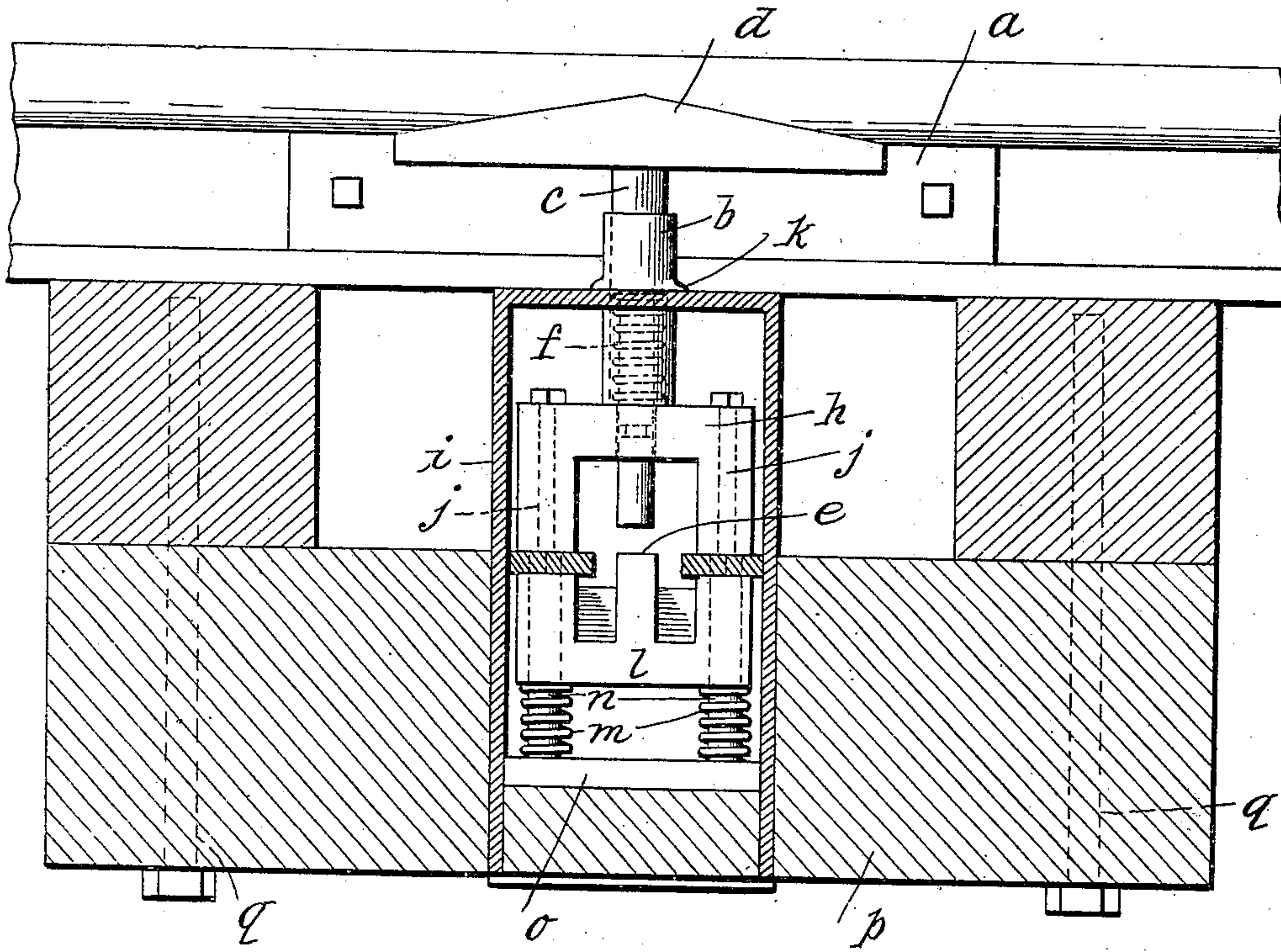
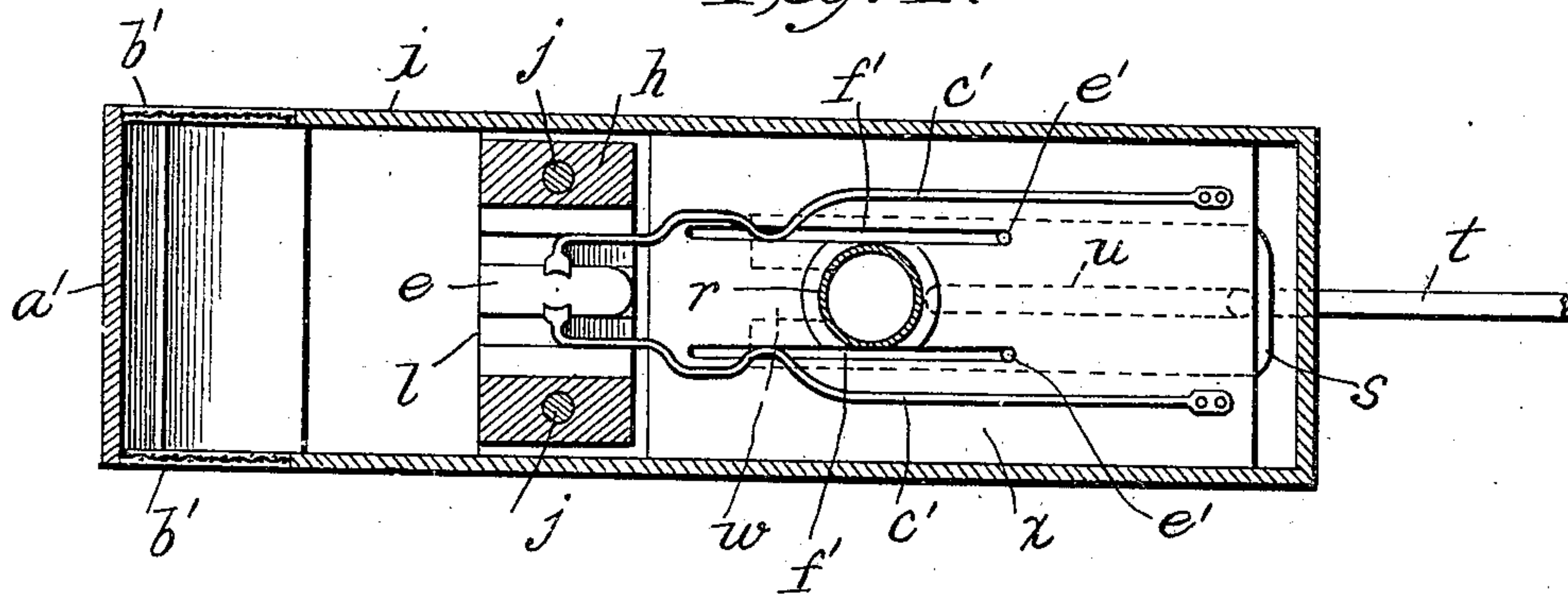


Fig. 4.



Inventors

Frank T. Forbes
C. P. Hogan

Witnesses

Edwin L. Jewell
L. R. Bridges

By Davis & Davis

Attorneys

UNITED STATES PATENT OFFICE.

FRANK T. FORBES AND CHARLES P. HOGAN, OF ROANOKE, VIRGINIA, ASSIGNORS OF ONE-THIRD TO DAVID E. ARGENBRIGHT, OF ROANOKE, VIRGINIA.

AUTOMATIC TORPEDO SIGNAL APPARATUS.

No. 860,599.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed March 8, 1907. Serial No. 361,262.

To all whom it may concern:

Be it known that we, FRANK T. FORBES and CHARLES P. HOGAN, citizens of the United States of America, and residents of Roanoke, county of Roanoke, State of Virginia, have invented certain new and useful Improvements in Automatic Torpedo Signal Apparatus, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a roadbed showing our device applied thereto; Fig. 2 a vertical sectional view taken transversely through the rail and longitudinally through the mechanism; Fig. 3 a vertical sectional view on the line 3—3 of Fig. 2; and Fig. 4 a horizontal section on the line 4—4 of Fig. 2.

The object of this invention is to provide a simple and durable apparatus for placing railway torpedoes in position to be exploded by the flange of one of the wheels of a passing train, the invention being especially adapted for use with railway semaphore signals or other railway track appliances such as switches and drawbridges, the apparatus being connected up to such appliances in such manner that the torpedo will be set automatically by the operation of the semaphore or switch or drawbridge, etc.

Referring to the drawing annexed by reference letters, *a* designates a fish-plate-like bar which is adapted to be clamped anywhere along the rail against the web portion thereof and which carries midway its end a depending tube *b* through which works a hammer rod *c*, the upper end of the hammer rod projecting above the tube and being attached to a horizontal bar *d* having a double incline on its upper surface. With this construction it will be observed that a car wheel approaching the device from either direction will strike the upper inclined surface of one or the other end of the bar *d* and thus depress the pin *c* and explode the cartridge upon the anvil *e*, the pin being normally held up by means of a spring *f* inclosed in the lower end of the tube *b*. The upward movement of the bars *d* is limited by having their inner edges extend in under the adjacent shoulder of the rail as at *g*. The lower end of the spring *f* bears against a block *h* and its upper end against a suitable shoulder on the pin, the spring being inclosed and protected its entire length.

The yoke like brace of block *h* is secured to the bottom of a box *i* by means of bolts *j*, said box lying between the ties and being located directly under the bottom surface of the rail and having a round hole in its top for the passage through it of the stationary tube *b*, said tube being provided with an annular flange at *k* which overhangs a marginal flange around the hole to thereby shed water away from the hole. The anvil *e* is formed integral with an anvil block *l* and at each side of the anvil the upper edges of this block is sloped away for the purpose of insuring the discharge away from the

anvil of the fragments of the torpedo casing. This anvil block is supported on strong springs *m* which surround the rods *n* which pass through vertical holes in the anvil block and are formed integral with the heads of the bolts *j*, being practically elongations of said bolt-heads. The lower ends of these rods bear against a plate *o*, which is fastened to a suitable block or beam *p* extending across under the ties and bolted thereto by long bolts *q*. The anvil block *l* and the base block *o* are, as shown, set in a recess cut in the edge of the beam or block *p*. This block or beam *p* being bolted to the ties insures the device remaining in the proper position with reference to the rail and thus prevents creeping of the ties or roadbed from disarranging it. The box is suitably fastened to this block or beam and is sufficiently large to inclose the vertical magazine tube *r* as well as the ejecting slide *s* and the other parts of the mechanism above described. The slide *s* is operated by a rod *t* which is connected to the slide by a pin working in a slot *u* in the bottom of the box, and said rod *t* is adapted to be operated by any suitable means, preferably by a connection with the semaphore or switch-setting mechanism, this connection being such that the slide will be actuated to place the torpedo when the semaphore or other appliance is at danger.

The feed slide is provided with a hole *v* in its forward end which is adapted to register, when the slide is drawn back, with the magazine, and when the slide is pushed forward the torpedo which has dropped into its hole will be pushed forward onto the anvil and there held until it is exploded or is drawn back out of the way. The forward end of the slide is provided with a slot *w* so that in case the hammer pin is down when the slide is moved forward its movement will not be interfered with by said pin, and likewise when the pin is held down against the anvil the slide may be withdrawn. It will be observed that the anvil is elongated, its forward edge being extended; this is for the purpose of affording the cartridge a base of sufficient area to prevent it tilting when it is on the anvil, there being sufficient space around the rear or inner end of the anvil to permit the fragments of the casing to be discharged out of the way.

The magazine tube is screwed at its lower end into a guide plate or cover *x* fastened down on the bottom of the box, and on its upper end is screwed a cover *y* whose annular flange overhangs a marginal flange around an opening in the top of the box, thus permitting ready access to the magazine and at the same time excluding water from the box. The bottom of the box is provided with transverse slots at *z* to permit fragments of the shell to pass down through the bottom into a recess in the bed block should such fragments be drawn back with the slide. The outer or forward end of the box is provided with a suitable cover *a'* whereby access may be had to the box to

clean out the fragments of torpedoes, and in order that the sound of the exploding torpedo shall not be muffled suitable side openings *b'* are formed in the forward end of the box for the emission of the sound, these openings being preferably covered by a suitable wire netting.

It will be observed that the box is practically pivotally connected to the depending end of the tube *b*, which connection enables it to be swung around toward either adjacent tie and thus permit the apparatus to be placed at the most convenient angle to the rail for connection with the semaphore or other appliance. Of course when the apparatus is adjusted to the proper angle the bed block or beam will be properly cut out to receive the bearing plate *o* and the anvil *e*, or the bed block of the beam itself may also be angularly adjusted to suit the position of the appliance. This is a very desirable feature in an apparatus of this sort as it is frequently desirable to arrange the operating rod *t* at other than a right angle to the rails. In fact this construction enables the apparatus to be swung entirely around so that the inner end of the box will extend outwardly instead of inwardly as shown, thus enabling the operating rod *t* to be extended toward the opposite side of the road-bed. It will be observed also that by arranging the box in the manner set forth and providing it with openings adjacent to the exploding point, the sound of the torpedo will be greatly increased. In other respects the apparatus has many advantages as to reliability and practicability.

It may be desirable to provide the apparatus with simple means for holding down the firing pin after it is depressed by the first wheel flange of the train so that subsequent wheels will not actuate the parts. This will eliminate a great deal of wear and danger of disarranging the mechanism. To thus hold the pin down we provide a pair of spring arms *c'* covering plate *x* and extending forwardly and terminating directly under the guide yoke *h*. The normal tendency of these arms is to clasp the firing pin, and this pin is provided with an annular groove *d'*, so that when it is depressed to the anvil by the wheel flange the springs will engage in said groove and prevent the return of the pin. The springs are spread apart by means of pins *e'* carried by the feed slide and working up through slots *f'* in the plate *x*, and the springs are cam-shaped so that they will be spread apart not only on the feed stroke of the slide but also on its withdrawal stroke. With this construction it will be observed that the firing pin will always be down on the anvil but that when a torpedo is placed the forward movement of the slide will release the firing pin and permit it to rise to firing position, that is "cock" it, and that when the feed slide is drawn back the springs will be permitted to normally clasp it so that the next car wheel that comes along will depress the pin and permit the springs to again knock it down, these springs holding it down until the feed slide is again actuated.

It will be observed that the anvil block *l* is slidably mounted on the rods *n* but that in view of the fact that the supporting springs *m* are strong enough to prevent any appreciable movement of the anvil block under the usual blow this anvil block will afford a

sufficient abutment against which to explode the torpedo, but should a wheel with a larger flange than usual pass over the firing-pin this anvil block will yield and thereby prevent destruction of the parts.

Having thus fully described our invention, what we claim and desire to secure by Letters Patent, is:—

1. In an apparatus of the class set forth, a vertical guide tube and means whereby it may be attached rigidly to a rail, a firing-pin in said tube and a spring for normally elevating it, said spring being provided at its upper end with a wheel-flange contacting shoe lying along side the rail and engaging under the shoulder thereof, and an anvil and torpedo-holding devices. 75
2. In an apparatus of the class set forth, a firing pin and means for supporting it adjacent to a rail, said means embodying a vertical cylindrical tube in which the pin slides, an anvil, torpedo-feeding devices, and a casing inclosing the anvil and torpedo-feeding devices and the lower end of said tube, said casing having a lateral pivotal adjustment on said tube, for the purpose set forth. 80 85
3. In an apparatus of the class set forth, a firing pin and means for slidably supporting it adjacent to a rail, an anvil, torpedo-feeding devices, and a casing inclosing said devices and supported under the rail and having a lateral pivotal adjustment with respect to said firing pin, whereby the casing may be set at various angles and at either side of the rail without disturbing the location of the firing pin. 90
4. In an apparatus of the class set forth, a firing pin and means for rigidly supporting it at one side of a rail, said means embodying a depending cylindrical tube, an anvil, means for normally elevating the firing pin, a casing and means for supporting it under the rail and between the ties, said tube passing down through the hole in the top of the casing, whereby the casing and its support may be adjusted laterally at various angles to the rail, a magazine and a slide for feeding the torpedoes therefrom under the firing pin, a rod connected to the slide and extending out of the casing, substantially as set forth. 95 100
5. In an apparatus of the class set forth, a vertically movable firing-pin and means for supporting it adjacent to a rail, a torpedo-feeding means, an anvil below the firing-pin and having a vertical movement independently of said feeding means and firing-pin, and resilient means for supporting the anvil. 105 110
6. In an apparatus of the class set forth, a firing pin and means for supporting it adjacent to a rail, means for normally elevating it, means for guiding it, said means embracing a stationary yoke, an anvil below the firing pin, stationary bolts connecting the anvil and the yoke, the anvil being capable of independent movement on the bolts, springs supporting the anvil, and torpedo feeding devices. 115
7. In an apparatus of the class set forth, a firing pin and means for normally elevating it, an anvil and torpedo feeding devices, and means for automatically holding down the firing pin after it is depressed by the first wheel of a train, and means for releasing the firing pin actuated by the feeding means. 120
8. In an apparatus of the class set forth, a firing pin and means for normally elevating it, means for automatically locking it in its depressed position, and torpedo feeding means, and means actuated by the re-setting or withdrawal of said feeding means to release the firing pin. 125
9. In an apparatus of the class set forth, a firing pin and an anvil, means for normally elevating the firing pin, devices for locking the firing pin down when it is depressed, and means whereby said locking means is released both by the feeding action and by the re-setting action of the feeding devices, for the purpose set forth. 130

In testimony whereof we hereunto affix our signatures in the presence of two witnesses this 7th day of March 1907. 135

FRANK T. FORBES.
CHARLES P. HOGAN.

Witnesses:

D. P. MAGANN,
S. H. WILSON.