

(No Model.)

J. E. ZIMMERMAN.
BRIDGE SIGNAL.

No. 520,286.

Patented May 22, 1894.

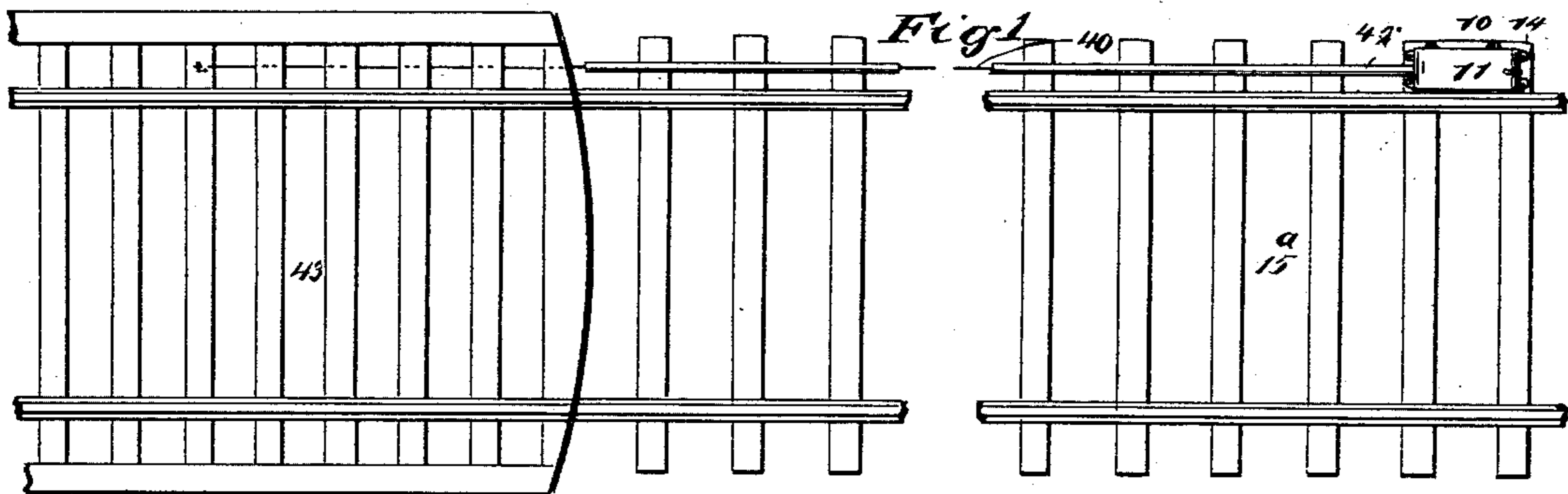


Fig. 1

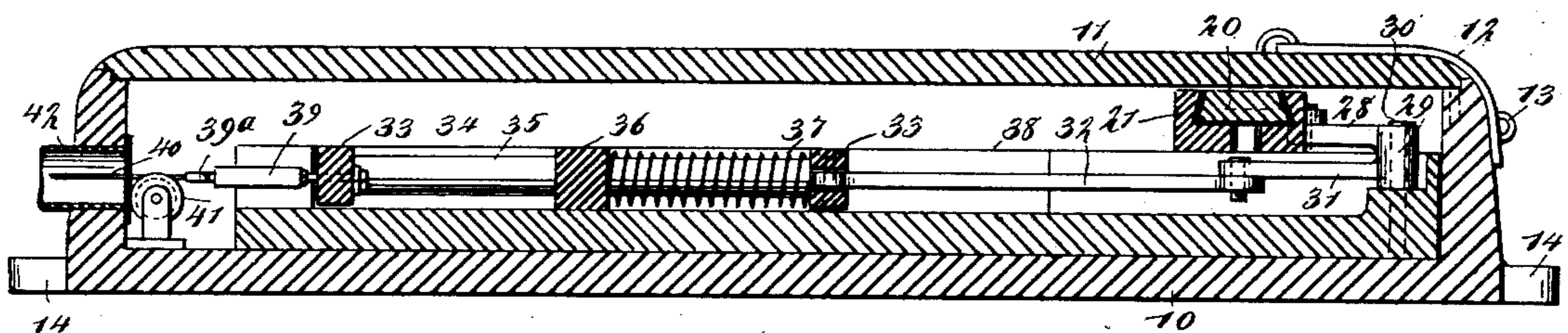


Fig. 2

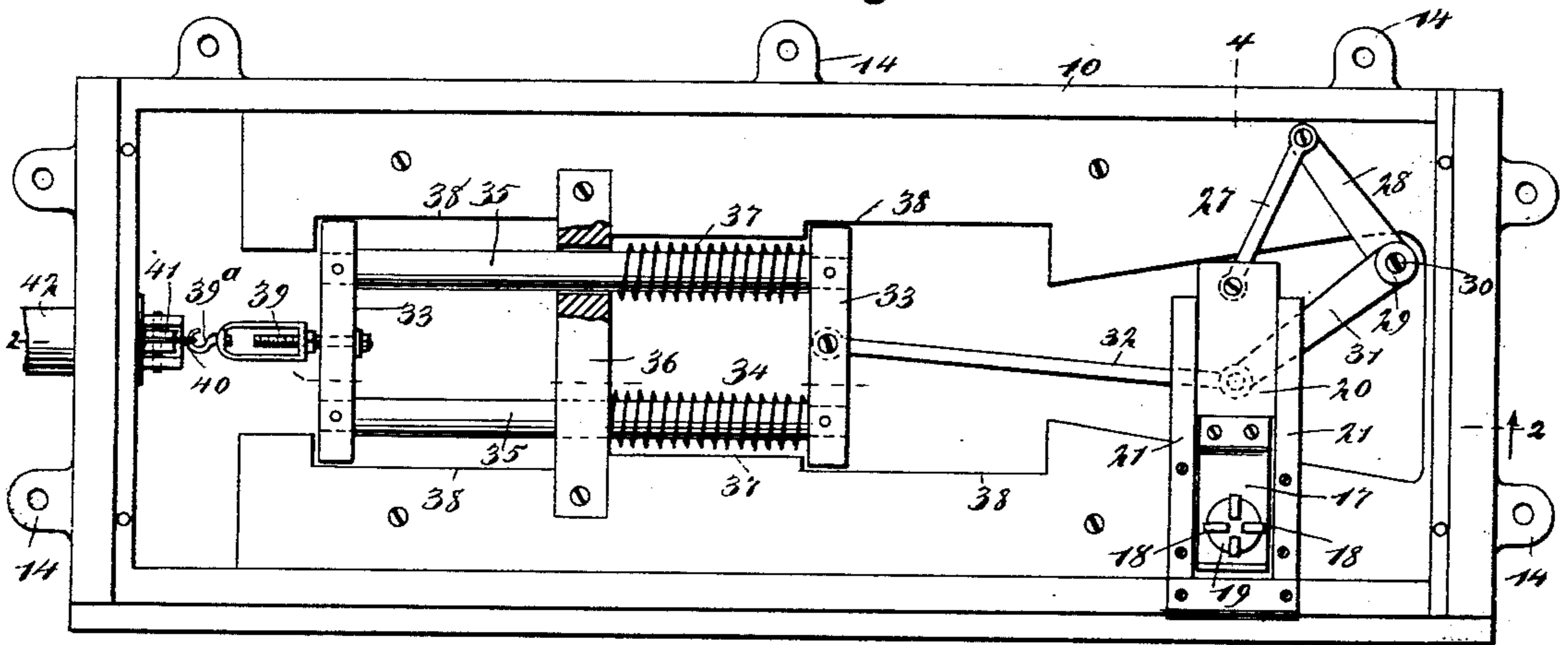
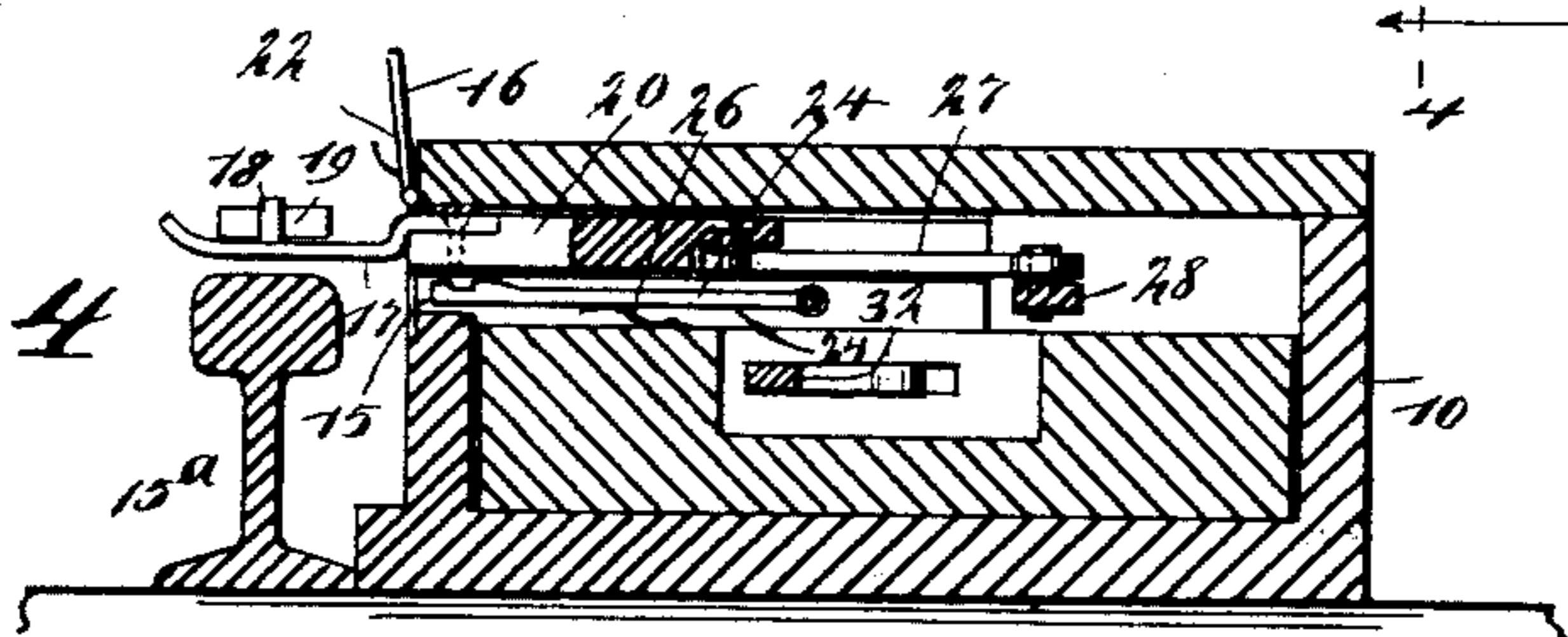
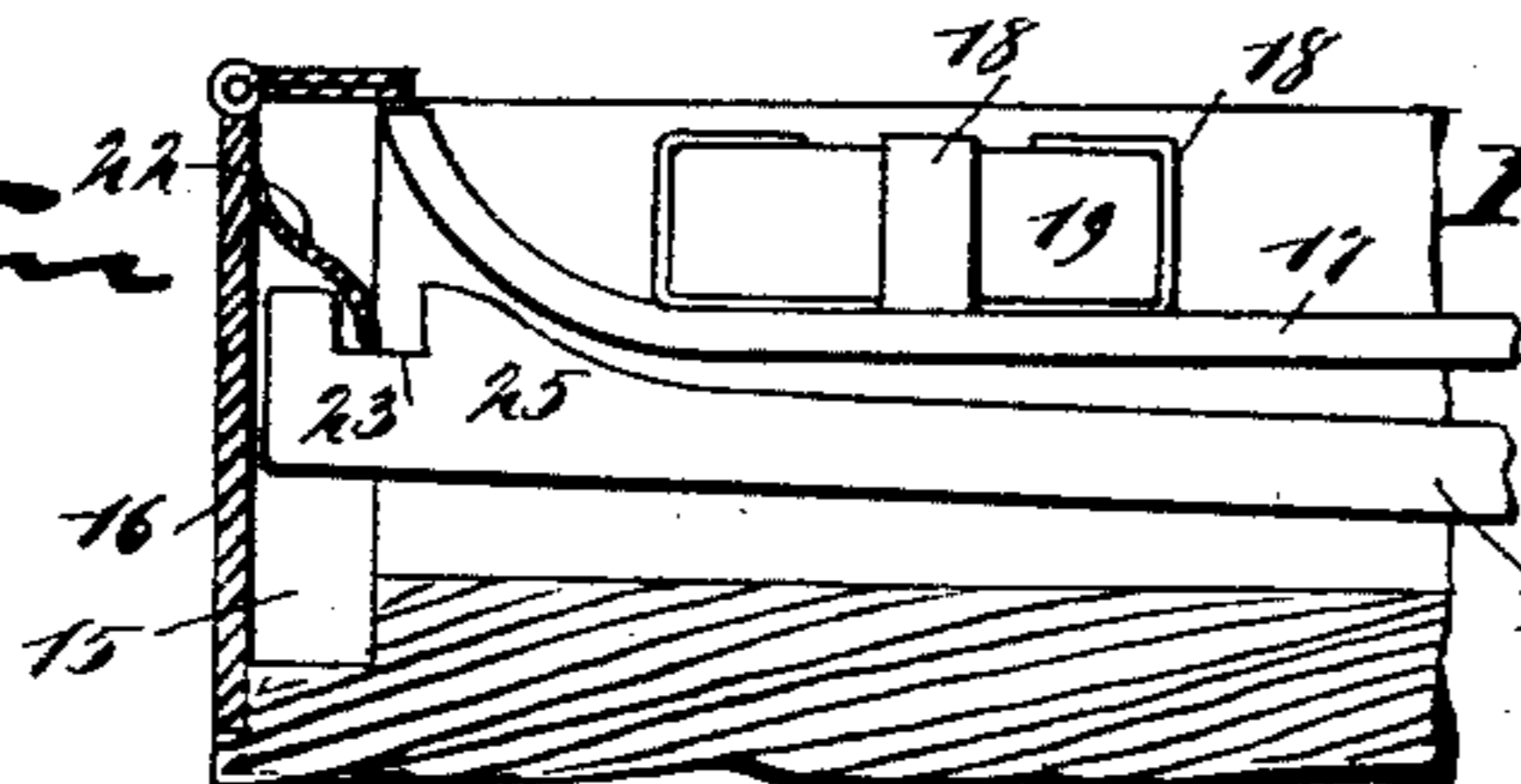


Fig. 3



WITNESSES:

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JOHN E. ZIMMERMAN, OF TRINIDAD, COLORADO.

BRIDGE-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 520,286, dated May 22, 1894.

Application filed June 23, 1893. Serial No. 478,585. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. ZIMMERMAN, of Trinidad, in the county of Las Animas and State of Colorado, have invented a new and Improved Bridge-Signal, of which the following is a full, clear, and exact description.

My invention relates to improvements in signals, and more particularly to such signals as are used in connection with railways to indicate danger, and especially to indicate when a bridge is washed away or in an unsafe condition, or when a culvert, trestle or other portion of the roadbed is broken away or out of repair.

The object of my invention is to produce an extremely cheap, simple and positive working apparatus, which may be arranged alongside of a railroad track at a suitable distance from a bridge or other structure which supports the track, and which is connected with some portion of the track-supporting structure, so that when the latter is displaced in any way the signal mechanism is operated and a torpedo moved outward upon the rail, so that a passing train will explode the torpedo and be warned of the danger.

To these ends my invention consists of certain features of construction and combinations of parts, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken plan view of a track and bridge provided with my improved signal. Fig. 2 is a longitudinal section on the line 2—2 in Fig. 3, through the mechanism which moves the torpedo, and through the case containing said mechanism. Fig. 3 is a plan view of the case and its mechanism, with the cover removed and with parts in section. Fig. 4 is a cross section on the line 4—4 in Fig. 3; and Fig. 5 is an enlarged detail cross section, showing the arrangement of the torpedo holder, the door in front of the holder, and the latch for fastening the door.

The mechanism for working the signal is contained in a closed case 10 which is adapted to lie alongside of the rail of a track and which has a removable cover 11, this, as shown,

being provided with a hasp 12 to engage a staple 13 to which it may be secured by a padlock, but the cover may be fastened in any convenient way. The case 10 is preferably provided at the bottom with lugs 14 which facilitate its attachment to the sleepers of the track 15 or to any other suitable support. The case is placed close to the side of one of the track rails, as is best shown in Figs. 1 and 4, and in the side of the case next the rail, is in opening 15, which is normally closed by a swinging door 16, preferably hinged to the case by the spring hinges and fastened on the inside so that it cannot be opened from the outside and the mechanism within tampered with.

A torpedo holder 17 is adapted to move horizontally outward through the opening 15 and above the track rail, as shown in Fig. 4, and this holder is of flat metal so that a car wheel may pass readily over it, and it is preferably curved upward at its outer end to guard against any possible displacement of the torpedo which it carries. It is provided on its upper side with flexible lugs 18 of the usual kind, which are adapted to be folded over the torpedo 19 which the holder carries. The torpedo holder 17 is carried by a transversely movable slide block 20 which is held to slide in a slideway 21 in the case 10, and which is movable in and out by mechanism to be described presently. In its normal position the torpedo holder is held within the case, as shown in Fig. 5, and the door 16 is closed. This door has a catch 22 on its inner side which is adapted to engage a notch 23 in the upper side and outer end of a vertically swinging latch 24 which is arranged beneath the torpedo holder 17 and has a thickened outer end 25. The latch is pivoted to an adjacent support and is normally pressed upward by a spring 26, as shown in Fig. 4. It will be seen that under ordinary conditions, the latch will hold the door 16 securely closed, but when the torpedo holder 17 moves outward it strikes the thickened end 25 of the latch thus forcing the latch down and releasing the door, which flies upward when struck by the outwardly moving torpedo holder. The slide block 20 which carries the torpedo holder has pivoted to its inner end a link 27 which is also pivoted to one arm 28 of a

swinging bell crank 29 which is fulcrumed at its elbow, as shown at 30, in one end of the case 10 and swings horizontally, its other arm 31 connecting by a pitman 32 with one of the cross bars 33 of a sliding cross head 34, which cross head has longitudinal guide bars 35 connecting the cross bars 33 and sliding in a stationary cross bar 36. The cross head 34 is normally pushed, by springs 37, toward the slide block 20, so as to tilt the bell crank 29 and throw the slide block and torpedo holder outward. The springs 37 are coiled around the guide bars 35 and abut with the cross bar 36. The cross head 34 is held in a suitable slideway 38 and its outer end is provided with a swivel or yoke 39 carrying a hook 39^a which is secured to a wire 40 or its equivalent, and the latter runs over a guide pulley 41 and out through a tube 42 which enters one end of the case. The tube 42 extends parallel with the rails of the track 15, and the wire projects from the outer end of the tube and is connected, as shown in Fig. 1, to some portion, such as a stringer, of a bridge 43 or similar structure. It will be seen then that when the bridge falls or is displaced in any way the wire 40, which is a light wire, will be broken, thus permitting the mechanism of the case to act as described presently. That part of the wire 40 which is contained in the tube 42 is preferably lighter than the part which is connected with the bridge, so that when the wire breaks it will break in the tube. When the wire 40 is connected to the bridge it is pulled tight and with sufficient force to draw out the cross head 34 to the limit of its stroke, as shown in Fig. 3, and this tilts the bell crank 29 so as to retract the slide block 20 and keep the torpedo holder 17 within the case. As soon as the wire breaks, however, the springs 37 force the cross heads 34 toward the slide block 20, and the tilting of the bell crank throws the slide block outward thus releasing the door 16, in the manner already described, and placing the torpedo 19 above a rail of the track 15^a and in the path of a car wheel.

I have shown the signal mechanism applied to one end only of a bridge, but in practice a signal should be placed on each side of the bridge so as to signal a train coming from either direction. The signals may be connected to the same or different wires.

It will be understood that branch wires may be attached to the main wire 40, and to

various low parts of the bridge or other structure, so that in case of the displacement of any of said parts the main wire will be pulled and the signal worked.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a railway track and a bridge or other structure connected therewith, of a case arranged alongside of the track, an outwardly movable slide block contained within the case, a torpedo holder carried by the slide block and adapted to move outward over a rail, a tilting bell crank fulcrumed in the case and having one arm pivotally connected with the slide block, a spring-pressed cross head pivotally connected with the second arm of the bell crank, and a restraining wire secured to the cross head and to the bridge or similar structure, substantially as described.

2. The combination with a railway track and a bridge connected therewith of a case arranged alongside of the track, a sliding block arranged in the case, a torpedo holder carried by the block and adapted to move out through the case over a rail, a bell crank lever having one arm connected by a link with the sliding block, a spring pressed cross head, a pitman connecting the cross head with the other arm of the bell crank, and a wire connecting the cross head with the bridge, said wire holding the cross head against the action of the springs and adapted to be broken by the destruction of the bridge, substantially as described.

3. In a device of the kind described, the combination of the case having a swinging door therein, the catch on the inner side of the door, the spring-pressed latch to engage the catch, and the outwardly moving torpedo holder arranged to engage and release the latch, substantially as described.

4. The combination with a case provided with a swinging door having a catch thereon, and an outwardly moving torpedo holder, of a latch pivoted below the torpedo holder and provided with a thickened and notched outer end, and a spring for pressing the latch upward, substantially as herein shown and described.

JOHN E. ZIMMERMAN.

Witnesses:

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