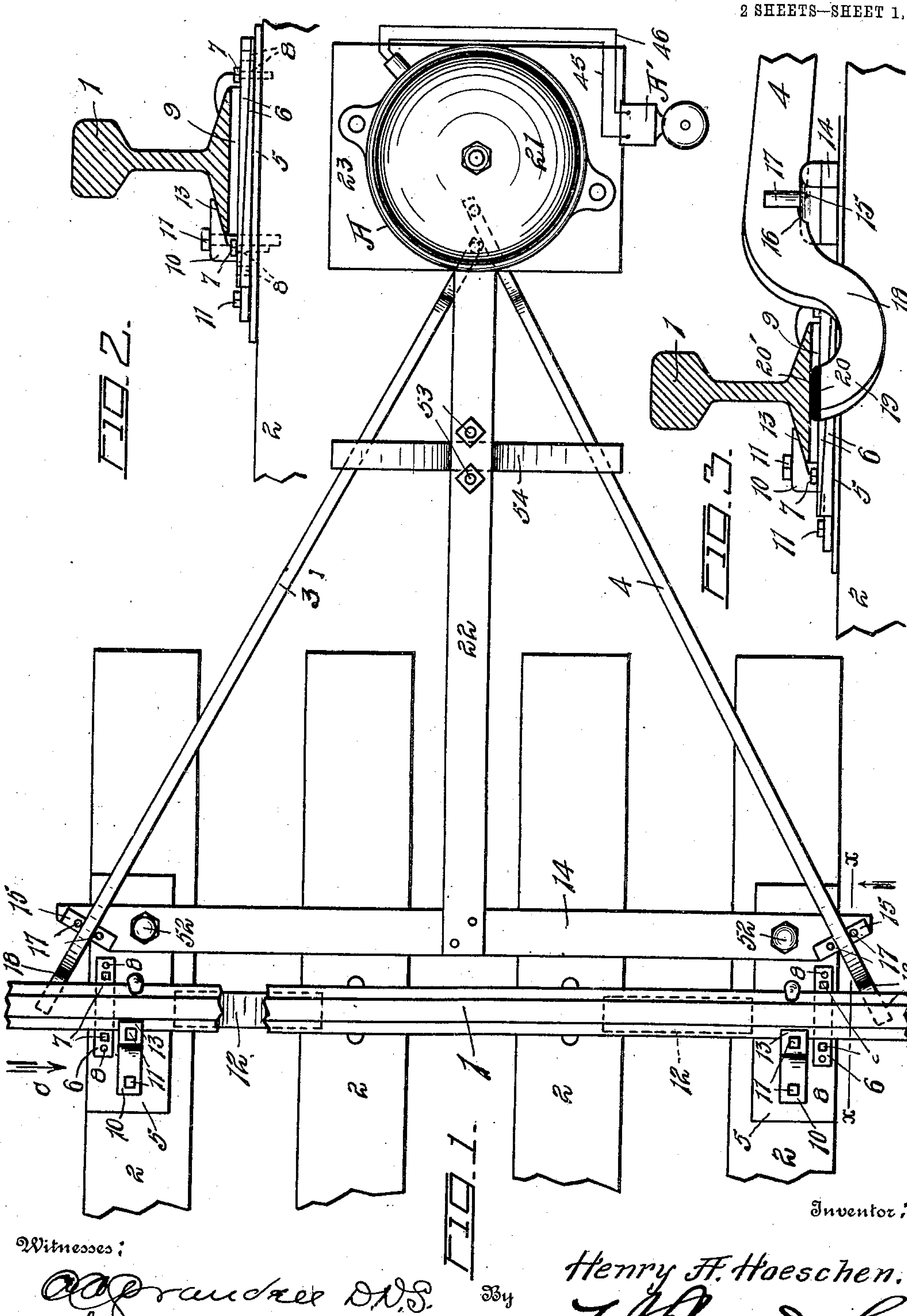
H. A. HOESCHEN.

RAILROAD SIGNAL.

APPLICATION FILED MAY 27, 1907.

914,412. Patented Mar. 9, 1909.

2 SHEETS—SHEET 1.



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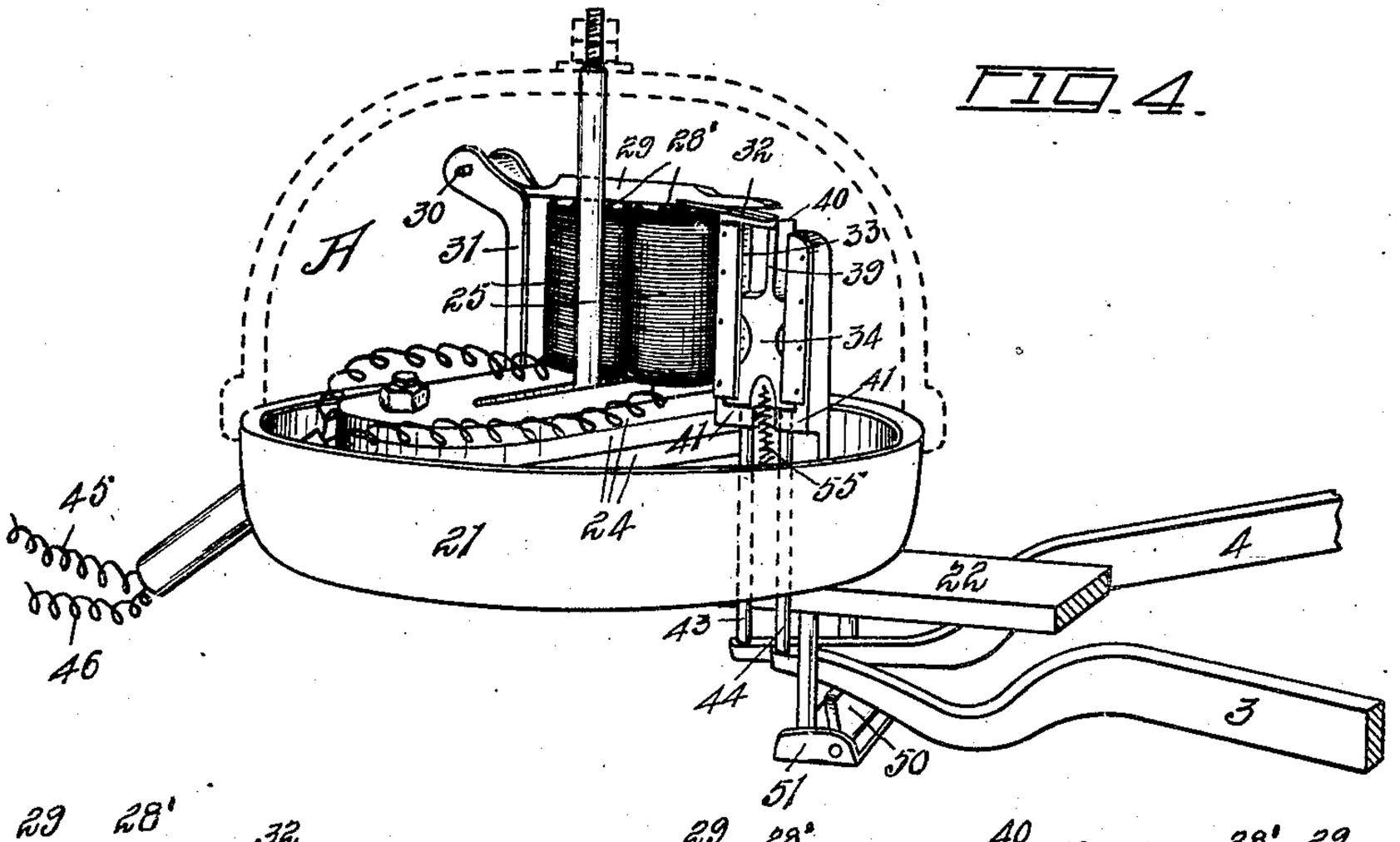
2 SHEETS—SHEET 2.

FIG. 4.



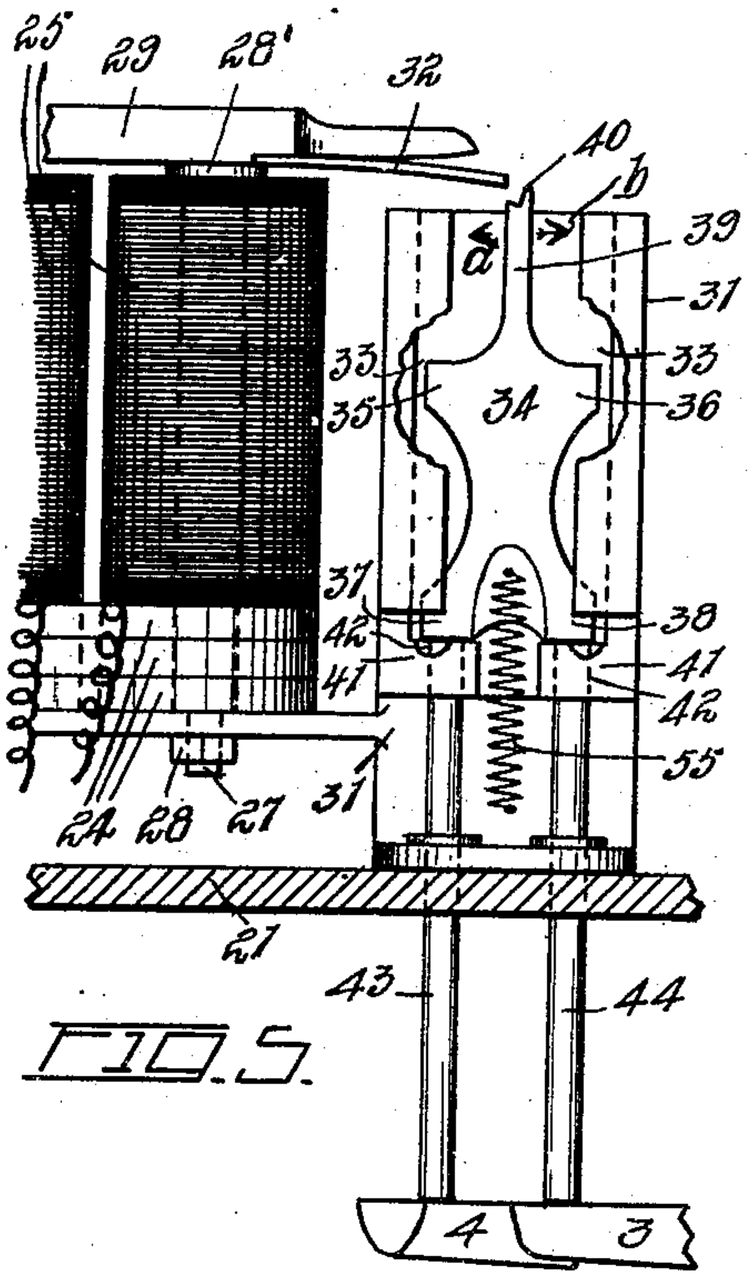


FIG. 5.

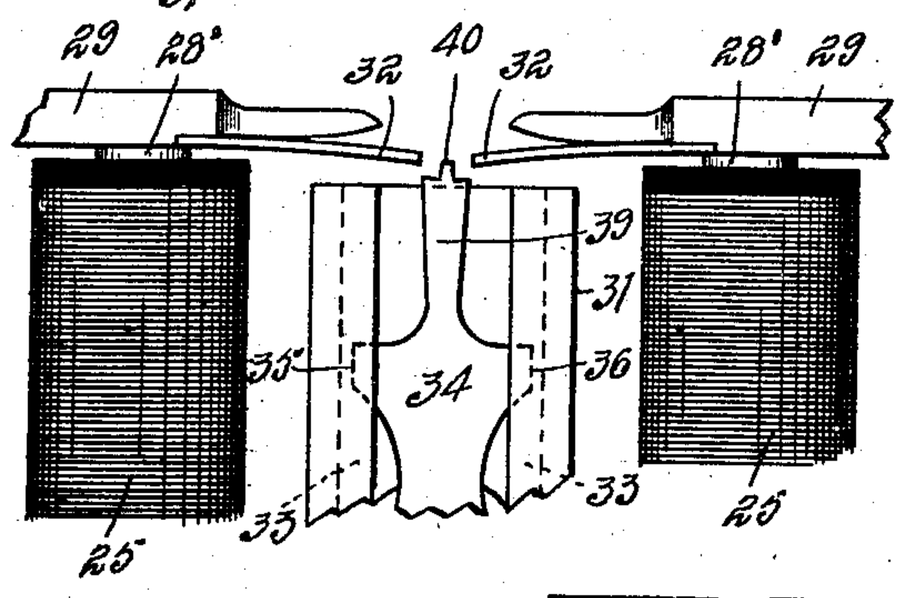


FIG. 6.

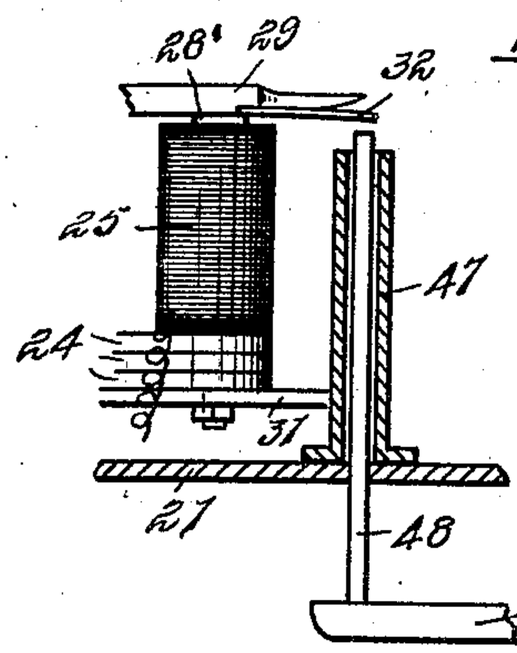


FIG. 7.

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UNITED STATES PATENT OFFICE.

HENRY A. HOESCHEN, OF OMAHA, NEBRASKA.

RAILROAD-SIGNAL.

No. 914,412. Specification of Letters Patent. Patented March 9, 1909.

Application filed May 27, 1907. Serial No. 376,038.

To all whom it may concern:

Be it known that I, HENRY A. HOESCHEN, a citizen of the United States, residing at Omaha, in the county of Douglas, and State of Nebraska, have invented a new and useful Railroad-Signal, of which the following is a specification.

My invention relates to railway signals, and has for its object to provide a signal adapted to be operated by the vibration or depression of the rail caused by the passage of a train or load.

Further objects and advantages of this invention will appear in the following specification, and the novel feature thereof will be finally pointed out in the appended claims.

Referring to the accompanying drawings forming a part of this specification wherein like characters of reference denote similar parts throughout the several views:—Figure 1, is a plan view of a railway signal constructed in accordance with my invention. Fig. 2, is a detail on line *x*—*x* of Fig. 1, looking in direction of arrow. Fig. 3, is a detail of one of the signal operating devices with a portion thereof broken away showing its relation with the rail. Fig. 4, is a perspective view of the signal mechanism showing the inner ends of the operating levers for actuating the same. Fig. 5, is a detail showing the means for reciprocating the armature of the signal mechanism. Fig. 6, is a modification of Fig. 5, while Fig. 7, illustrates a still further modification thereof.

Referring to the drawings 1, designates a rail and 2, a plurality of ordinary ties. The ties 2, adjacent the inner ends of the operating levers 3, and 4, are each provided with the tie plates 5, and mounted upon these plates 5, are a pair of wedge shaped rail adjusting plates 6, which are secured to the tie plates and ties by means of the bolts 7. These plates 5, are provided with a plurality of openings 8, so they may be adjusted for regulating the space 9, between the rail and wedge plates. The space 9, illustrates the distance the rail is allowed to sink for actuating the levers 3 and 4, whenever there is a load passing over the same. The angle plates 10, are employed to prevent the rail from rising too high, and are secured to the tie plates 5, by means of the bolt 11. I further employ a plurality of springs 12, which span the ties and assist to hold the flanges of the rail in engagement with the inner flange 13, of the angle plates 10, when there is no load upon the rail.

Suitably secured to the ties 2, adjacent the outer side of the rail 1, and running parallel therewith is an adjustable lever supporting bar 14, which is provided with the pivot bars 15, having their upper face rounded so as to form a support for the operating levers 3, and 4, which are each provided with the recessed lower edge 16, which receive the upper faces of the pivot bars 15. These bars 15, are further provided with upright pins 17, between which are held the operating levers 3 and 4, to prevent them from side play. By this arrangement of parts it will be observed I form a fulcrum for the operating levers which are allowed a rocking movement.

The operating levers 3 and 4, are each provided with the inner downwardly extending curved ends 18, which finally turn upward as at 19. The inner end extremity of the levers 3 and 4, forming the face 20, are provided with a resilient buffer 20′ adapted to engage the lower face of the rail 1, as clearly shown in Fig. 3, of the drawings. The opposite or outer ends of the operating levers 3 and 4, terminate at suitable points adjacent the lower surface of the casing 21, which incloses the signal mechanism A. This casing 21, is connected by means of a bar 22, to the adjustable lever supporting bar 14, and is further secured to a suitable foundation 23, as shown in Fig. 1.

In order to regulate the operating levers so they will always lie in the same plane I employ the pivotally held tongue 50, mounted in the suspended plate 51, as clearly shown in Fig. 4. This tongue when held in an upright position supports the inner ends of the operating levers and to adjust the levers the tongue is turned to a horizontal position, thus if the levers are not in the same plane throughout I regulate them by raising or lowering the lever supporting part 14, by means of the set screws 52, as shown in Fig. 1, of the drawings.

Secured to the connecting bar 22, by means of a U-shaped bolt 53, is a resilient means such as a spring or the like 54, the ends of which are adapted to engage the upper edges of the operating levers 3 and 4, as clearly shown in Fig. 1, to normally hold the end faces 20′, of the operating levers in

engagement with the lower surface of the rail 1.

The signal mechanism consists of a permanent magnet or magnets 24, and the induction coils 25, forming a magneto-generator. The lower end of the cores 27, of the induction coils 25, pass through the permanent magnet or magnets 24, and are held by securing nuts 28, as shown in Fig. 5. Formed by the upper end of the cores 27, are the soft iron pole ends 28′, against which the armature 29, is held, which armature is pivotally held by means of the pin 30, to the frame 31, as clearly shown in Fig. 4. This armature is further provided with the spring lip 32, which will cause the armature to be removed instantly from the pole ends whenever the pressure against same overcomes the strength of magnets thus the quick break of the magnetic circuit induces a stronger electric current in the coils.

Held within the ways 33, of the frame 31, is an armature actuating member 34, formed with the four projections 35, 36, 37, and 38, and the upwardly extending arm 39, having the notched end 40. The ends or projections 37 and 38, each rest upon the lugs 41, of the frame 31, as clearly shown in Fig. 5, and these lugs 41, are each provided with an opening 42, through which pass the pins 43, and 44, which rest at their lower end upon the inner end of operating levers 3 and 4, as clearly shown in Figs. 4 and 5. The lower end of the actuating member 34, it will be observed is normally held in engagement with the lugs 41, by the resilient means 55, which is connected at its upper end to the member 34, and at its lower end to the frame 31.

Extending from the inductive coils 25, are the wires 45, and 46, which lead to a suitable signaling device A′, adapted to be actuated by the current from a generator formed by the permanent magnet and induction coils.

When my invention is constructed in accordance with Figs. 1 and 4, of the drawings the signal is intended to be used on a single track as the train will only actuate the signal mechanism when going in direction of arrow *c*, of Fig. 1. Now, when the train approaches and passes over lever 3, the track is depressed at this point thus causing the opposite extreme end of lever 3, to raise pin 44, of Figs. 4 and 5, throwing arm 39, in direction of arrow *a*, (Fig. 5) causing same to disengage or release armature 29, from the pole ends of the coiled magnets, thus breaking the magnetic connection and inducing in the coils an electric current which operates a suitable signaling device, such as a bell, gate, switch or semaphore, etc. Now, should the train be coming in the opposite direction of arrow *c*, the inner end of lever 4, would rise first, causing pin 43, to rise in advance of pin 44, thus throwing arm 39, in direction of arrow *b*, which would clear the armature and not disengage the same from the pole ends, hence, no signal would be actuated.

The modification shown in Fig. 6, will sound an alarm or give a signal going in either direction, as one of the opposing armatures is released from the pole ends by a train going in either direction.

The modification shown in Fig. 7, of the drawings is preferable on double tracks where trains only run in one direction. Instead of using the member 34, and that portion of frame 31, which is provided with the ways 33, I substitute a suitable guide 47, through which the pin 48, passes and instead of using the operating levers 3 and 4, I only employ one lever 49, as illustrated.

It is of course understood that various slight changes might be made in the forms, constructions, and arrangements of parts described without departing from the spirit and scope of the invention. Hence, I do not care to be confined to the exact construction herein set forth, but consider myself entitled to all such slight changes or variations that may fall within the spirit and scope of my invention.

Having fully described my invention, what I claim is:

1. A railway signal, comprising a magneto-generator, an armature, a resilient lip connected to the free end of said armature, means fulcrumed adjacent the rail having engagement therewith at its one end and at its opposite end with means which when brought in contact with said armature will release the same from the poles of the aforesaid generator for actuating a suitable signaling device.

2. In combination with a depressible rail, a pair of levers having their inner ends widely spaced apart and engaging said rail and having their outer ends converging toward one another to a common point, a signal, and means to operate said signal connected to each of said outer ends of the levers.

3. In combination with a depressible rail, levers engaging said rail at one end thereof, a signal, and means to operate said signal from said levers including vertically movable pins seating on the outer ends of said levers, induction coils, an armature therefor, connections between said signal and said coils, and a spring held rocking armature operator engaged on opposite sides by said pins.

4. In combination with a signal, induction coils connected thereto, an armature for said coils, and means to actuate said armature including train-operated levers, vertically movable pins on the outer ends of said levers, and an oscillating member operable in opposite directions by said pins to engage said armature.

5. In combination with a signal, induction

coils connected thereto, an armature for said coils, a member to operate said armature, and a pair of pivoted train operated levers to actuate said member in opposite directions.

6. In combination with a signal, induction coils connected to said signal, an armature for said coils, a rocking member to actuate said armature, and means to operate said rocking member in opposite directions consisting of a pair of train operated levers having a V-shaped disposition and having their adjacent ends each connected to said rocking member.

7. In combination with a signal, and induction coils connected thereto an armature for said coils, a rocking part to actuate said armature, and train operated levers to rock said part, one of said levers rocking said part in one direction, and the other lever rocking said part in an opposite direction.

8. In combination with a signal, induction coils connected thereto, and an armature, means to operate said armature, and a pair of levers having their inner ends train operated spaced widely apart and having their outer ends converging and each engaging said armature operating means.

9. In combination with a signal, train operated means for actuating said signal consisting of a depressible rail and a pair of independent connections at opposite ends of said rail between the latter and signal whereby the actuation of said signal is dependent upon which end of said rail the train first depresses.

In testimony whereof I have signed my name to the specification in the presence of two subscribing witnesses.

HENRY A. HOESCHEN.

Witnesses:
ALICE MCSHANE,
JOHN A. SCHENK.