T. F. CODY.

RAILWAY SIGNAL.

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1,033,989. Patented July 30, 1912.

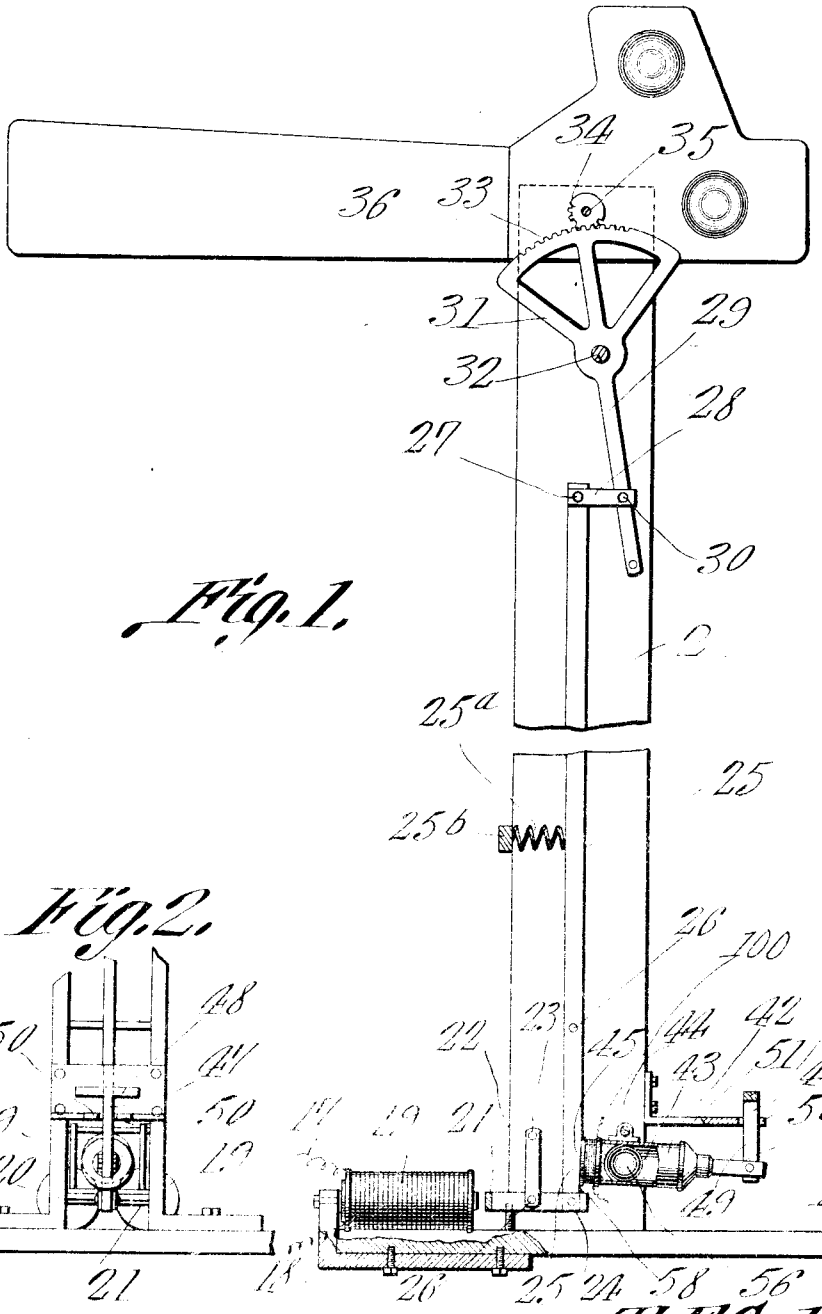

Fig. 1.

Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

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RAILWAY-SIGNAL.

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To all whom it may concern:

Be it known that I, THOMAS F. CODY, a citizen of the United States, residing at North Yakima, in the county of Yakima and State of Washington, have invented a new and useful Railway-Signal, of which the following is a specification.

It is the object of the present invention to provide novel means whereby a semaphore or other signal, may be electrically operated, the construction of the device being such that, should an electrical current, normally actuating the semaphore to a danger position, fail, the semaphore will, nevertheless assume such danger position.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings,—Figure 1 shows the invention in side elevation; and Fig. 2 is a fragmental end elevation.

In carrying out the invention there is provided a base 1, from which rises a standard 2. Journaled for rotation in the standard 2, is a shaft 35, to which is rigidly secured a semaphore 36. Upon the shaft 35 there is fixed a pinion 34, meshing into a rack 33, formed in a segment 31, located at one end of a lever 29, the lever 29 being fulcrumed, intermediate its ends, as shown at 32, upon the standard 2.

One end of a link 28 is pivoted, as shown at 30, to the lever 29. The other end of the link 28 is pivoted, as shown at 27, to an operating member, preferably taking the form of a lever 25, the lever 25 being fulcrumed intermediate its ends, as shown at 26, upon the standard 2. The lower end of the lever 25 is pivoted, as shown at 24, to one end of an armature 21, the armature 21 being pivoted, intermediate its ends, as shown at 26, to an upright link 22, the upper end of which is pivotally connected, as shown at 23, with the standard 2. Located upon the base 1, is an electro-magnet 19, to which the armature 21 is responsive, the winding terminals of the magnet 19 being indicated at 17—18.

Located upon the opposite side of the lever 25 from the magnet 19, is a bracket 51, between the arms 50 of which, slides the shank 49 of a counterweight 47, the counterweight 47 having a transverse head 48, located above the arms 50 of the bracket 51. The lower end of the counterweight 47 is pivotally connected with a projection 46 carried upon one end of a cylinder 43, the cylinder 43 being pivotally supported, intermediate its ends, as shown at 44, upon the standard 2. That end of the cylinder 43 which is disposed toward the lever 25, is equipped with an electro-magnet 45, the winding terminals of which are denoted by the numeral 100. The electro-magnet 45 and the cylinder 43 constitute a casing, the cylinder 43 of this casing constituting a support for a rolling armature 56, preferably taking the form of a ball.

A suitable projection 25^b, upon the standard 2, may serve as a support for a spring 25^a, adapted to bear against that edge of the lever 25 which is disposed toward the magnet 19, the spring 25^a engaging the lever 25, above the fulcrum 26 of the lever.

The winding terminals 17, 18 and 100, may be made a part of a signal operating circuit, the construction being such that when dangerous conditions exist, the magnets 19 and 45 will be energized. Under such conditions, the rolling armature 56 will be attracted by the electro-magnet 45, the cylinder 43 being positioned as shown in Fig. 1, to serve as a stop for the lower end of the lever 25. The magnet 19, at the same time, will be energized, and the armature 21 will be attracted, the armature 21 in Fig. 1 being shown in the position which it will assume, when about to be attracted by the energized magnet 19. Therefore, when dangerous conditions along the line of track occur, causing an energization of the magnet 19, the armature 21 will be attracted, tilting the lever 25, upon its fulcrum 26. Through the instrumentality of the link 28, the tilting of the lever 25 will effect a tilting of the lever 29, the rack 33 of which, meshing into the pinion 34, will cause a rotation of the shaft 35, and a consequent movement of the semaphore 36, thus indicating the presence of dangerous conditions.

It is to be noted that after the semaphore 36 has been manipulated, in the manner hereinbefore described, to indicate dangerous conditions, a failure of the current

which is supplied to the magnet 19, due to a break in the line or the like, will effect a deënergization of the magnet, the semaphore moving into a position indicating safety, although dangerous conditions may still exist. However, at the same time that the magnet 19 is deënergized, the magnet 45 will be deënergized also. The ball armature 56 will thereupon be released by the electro-magnet 45, the ball armature rolling along the cylinder 43, and effecting a tilting of the cylinder 43 upon the pivotal mounting 44. This tilting of the cylinder 43 will cause that part of the electro-magnet 45 to which the numeral 58 is applied, to engage the lever 25, thus tilting the lever 25 in the same manner as though the electro-magnet 19 were still acting upon the armature 21. Therefore, when both of the magnets 19 and 45 are deënergized, due to the cutting off of the current to the magnets 19 and 45, the semaphore 36 will assume the danger position.

Without specific illustration, it will be understood that the circuits may be so arranged that the current supply into the windings 100 of the magnet 45 will continue, except when there is a break in the line, or a failure of current, from any other accidental cause, the magnet 19 exercising its usual function in throwing the semaphore 36. Therefore, the magnet 45 will engage the lever 25 to throw the semaphore 36 only when there is a total loss of current, rendering the magnet 19 inefficient to indicate the presence of danger.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a pivotally supported electro-magnet; an armature having a common pivotal support with the magnet and responsive to the magnet to change the center of gravity of the pivoted parts and thus effect a tilting of the magnet; a movable operating member adapted to be engaged by the magnet when the same is tilted; and a signal controlled by the operating member.

2. In a device of the class described, a pivotally supported electro-magnet; an armature having a common pivotal support with the magnet, the armature being adapted to be attracted by the magnet when the latter is energized, the armature being movable when the electro-magnet is deënergized, to change the center of gravity of the pivoted parts and thus effect a tilting of the magnet; a movable operating member adapted to be engaged by the magnet when the same is tilted; and a signal under the control of the operating member.

3. In a device of the class described, a pivotally supported casing including a support and an electro-magnet; a rolling armature within the casing, responsive to the magnet, the rolling of the armature serving to change the center of gravity of the casing and parts supported thereby and thus tilt the casing; a movable operating member adapted to be engaged by the casing when the latter is tilted; and a signal connected with the operating member.

4. In a device of the class described, a pivotally mounted casing including a support and an electro-magnet; a rolling armature within the support, responsive to the electro-magnet, the armature, when released from the magnet, serving to change the center of gravity of the casing and parts supported thereby and thus effect a tilting of the casing; and a signal with which the casing is operatively connected.

5. In a device of the class described, a movable operating member; an electro-magnet located upon one side of the operating member and adapted to move the same in one direction; another electro-magnet pivotally supported upon the other side of the operating member and adapted to serve as a stop therefor; an armature having a common pivotal support with the last named magnet, the armature being movable when attracted by the last named magnet, and when released therefrom, to change the center of gravity of the pivoted parts, and thus to effect a tilting of the last named magnet in both instances, the operating member being engageable by the last named magnet, when the same is tilted due to a release of the armature, to duplicate the movement in the operating member, produced by the energization of the first named magnet; and a signal with which the operating member is connected.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

THOMAS F. CODY.

Witnesses:
GEORGE SCHLAGEL,
F. W. TUCHMANN.