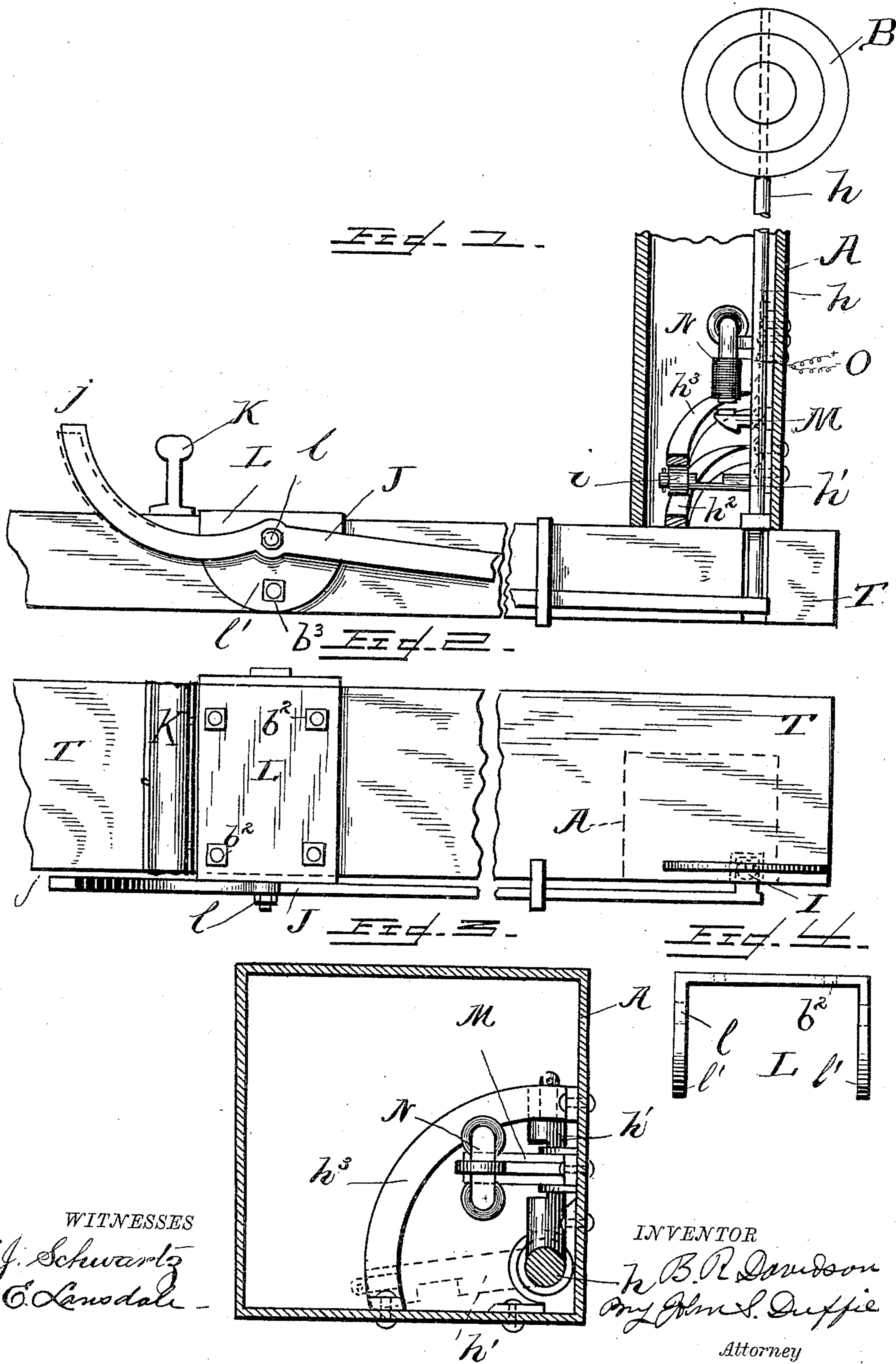


(No Model.)

B. R. DAVIDSON.
MECHANICAL AND ELECTRICAL RAILWAY SIGNAL.
No. 436,777.
Patented Sept. 23, 1890.



UNITED STATES PATENT OFFICE.

BENJAMIN R. DAVIDSON, OF FAYETTEVILLE, ARKANSAS.

MECHANICAL AND ELECTRICAL RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 436,777, dated September 23, 1890.

Application filed March 29, 1890. Serial No. 345,871. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN R. DAVIDSON, a citizen of the United States, residing at Fayetteville, in the county of Washington and State of Arkansas, have invented certain new and useful Improvements in Mechanical and Electric Railway-Signals; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has relation to railway-signals; and it consists in a signal elevated on a rod operated by proper mechanism and an electromagnet, as hereinafter described.

In the accompanying drawings, Figure 1 is a front elevation of my invention with the column A in section. Fig. 2 is a top view of a railroad-tie with my lever and attachments secured thereto. Fig. 3 is a ground plan view of that portion of my invention included in the column A. Fig. 4 is an edge view of a casting to fulcrum the lever to the cross-tie.

My invention is described as follows:

I lay a cross-tie T to conform with the other ties, but longer than the ordinary tie, so that one of its ends will project farther than the other ties on one side of the track. It is so long that the signal attached to it does not interfere with the operation of the trains nor is interfered with by them. To the end of this tie T is securely fixed a square, octagonal, or cylindrical upright or column A about six inches in diameter and three or four feet high. The exact size and length are not material. This column A is made of wood or metal and fixed to the cross-tie T by heavy nails, bolts, or screws. Running vertically through said column is a rod *h*, having secured to its upper end a target B, similar to those used on switches; but it may be of a different form or of different colors. The rod *h* passes down through said column and its lower end is pivoted in the seat I on the inturned end of a lever J. The inner end *j* of said lever passes under the rail K, and is turned up in such manner that said end is about even with the top of said rail and is about six inches from the inside face of the same. Said lever

is securely pivoted to the side of the said cross-tie by means of a casting L and bolt and nut *l*. The inner end *j* of said lever is so adjusted that a wheel of extra width, or a flange to a wheel, or an extra wheel attached to the trucks, or a runner so attached, will come in contact with it when the train passes, pressing it down and thereby raising the rod *h*, pivoted in the seat I on the other end of said lever. The casting L is made to fit on the top face of the said cross-tie T and has ears *l'* extending down on either side of said tie, and is secured to said tie by vertical bolts *b*² and a horizontal bolt *b*³. The lower end of the said rod *h* turns in its seat I easily. From the lower end of said rod extends an arm *h'* horizontally and at right angles to the rod, for the purpose of turning it ninety degrees. At the outer end of said arm is a circular inclined pathway having the lower and upper planes *h*² and *h*³, the lower ends starting from the surface of said tie T and running around to the right ninety degrees for the arm *h'* to traverse, and on the outer end of said arm is journaled a small wheel *i*, which runs between the said two planes *h*² and *h*³. At the upper end of this parabolic pathway is hinged an armored catch M, and when said arm *h'* reaches said catch it presses it up until it passes behind the catch-notch, when said catch-notch drops down and holds said arm from returning. When the inner end of the said lever J is pressed down by a passing train, the outer end of said lever is raised and consequently the rod *h*, to which is affixed said target B. The said rod being raised causes the wheel *i* to press against the lower surface of the upper plane *h*³ of said circular pathway and to traverse the same to the right, which causes the said rod *h* to turn ninety degrees to the right, at which moment of time said arm *h'* is caught under the catch M and held. Before said rod is raised said target B is at right angles to the railway-track; but when raised it is parallel to it and not observable from an approaching train. Thus a passing train sets the target parallel to the track. To throw the target at right angles to the track, it is only necessary that the catch M be raised, for when raised the weight of the rod *h* causes the wheel *i* to run down the plane *h*² of said parabolic pathway, thus causing the said tar-

get to assume its former position at right angles to the track. To raise said catch any distance in advance of the train, I have an electro-magnet N secured immediately above
 5 said catch M and animated by an electric current. This is done by insulated wires O, connected with this magnet, conducted to the telegraph or other poles, thence to any point on the track desired, at which point a battery
 10 carried on the train or located at such point is brought in contact with the other end of said wire, thus establishing an electric current.

The battery may be kept in a station-house and so arranged that the passing train would
 15 press a button or spring, bringing the end of said wire in contact with a wire from the battery, or such battery may be carried on the train and the current connected as just above described. The current may be as easily es-
 20 tablished fifty miles away as one, and as many signals may be attached to the same wire as desired. It may be so arranged that as soon as a train leaves one station the battery will throw every target between that and the next
 25 station, thus showing that the train is coming on that division.

A signal of this kind may be placed at every road-crossing and so arranged that the coming train will connect the current, as above
 30 shown—say one mile from the crossing—and the target B, with suitable words thereon, made to swing across the wagon-road, and may as it swings be made to sound a bell or other alarm. Said target B will be again re-
 35 set by the passing train parallel to the track.

Having described my invention, what I claim

as new, and desire to secure by Letters Patent, is—

1. A base, a curved guide mounted on the base, a rotary vertically-movable standard op- 40
 erating a semaphore and carrying an arm engaging with the curved guide, and mechanism operated by a train for raising said standard.

2. A base, a curved guide mounted on the base, a rotary vertically-movable standard op- 45
 erating a semaphore and carrying an arm engaging with the curved guide, mechanism operated by a train for raising said standard, a catch for holding the arm, and electro-magnet for raising the catch and thereby releasing 50
 the arm.

3. The combination, with the railroad-tie T, of the casting L, fitting on the top of and against either side of said tie, lever J, ful-
 crumed to said casting and along the side of 55
 said cross-tie and having in its outer end the seat I, the vertical rod *h*, provided with the target B, arm *h'*, and wheel *i*, box A, having secured on its inside a parabolic inclined path-
 way having the lower and upper planes *h*² 60
 and *h*³, armored catch M, and electro-magnet N, provided with suitable wires adapted to be brought in contact with a magnetic battery, substantially as shown and described, and for
 65 the purposes set forth.

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

BENJAMIN R. DAVIDSON.

Witnesses:

P. F. DAVIDSON,
 W. S. POLLARD.