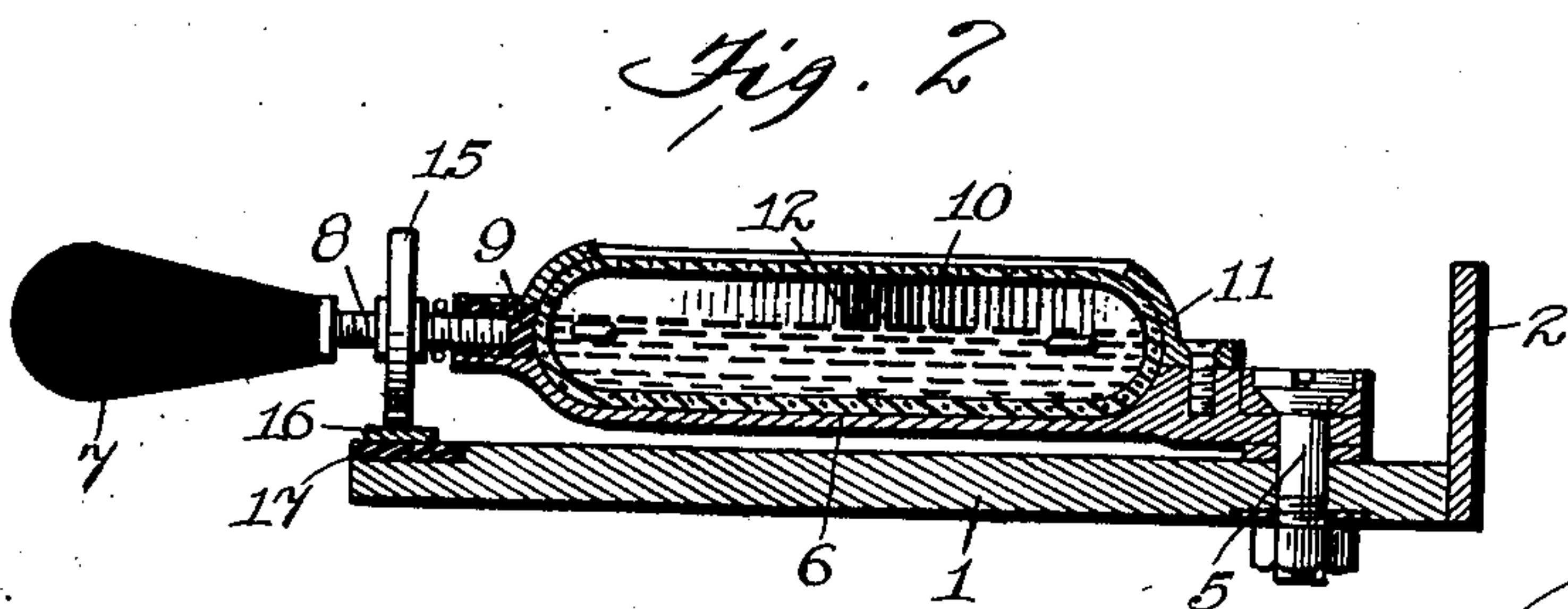
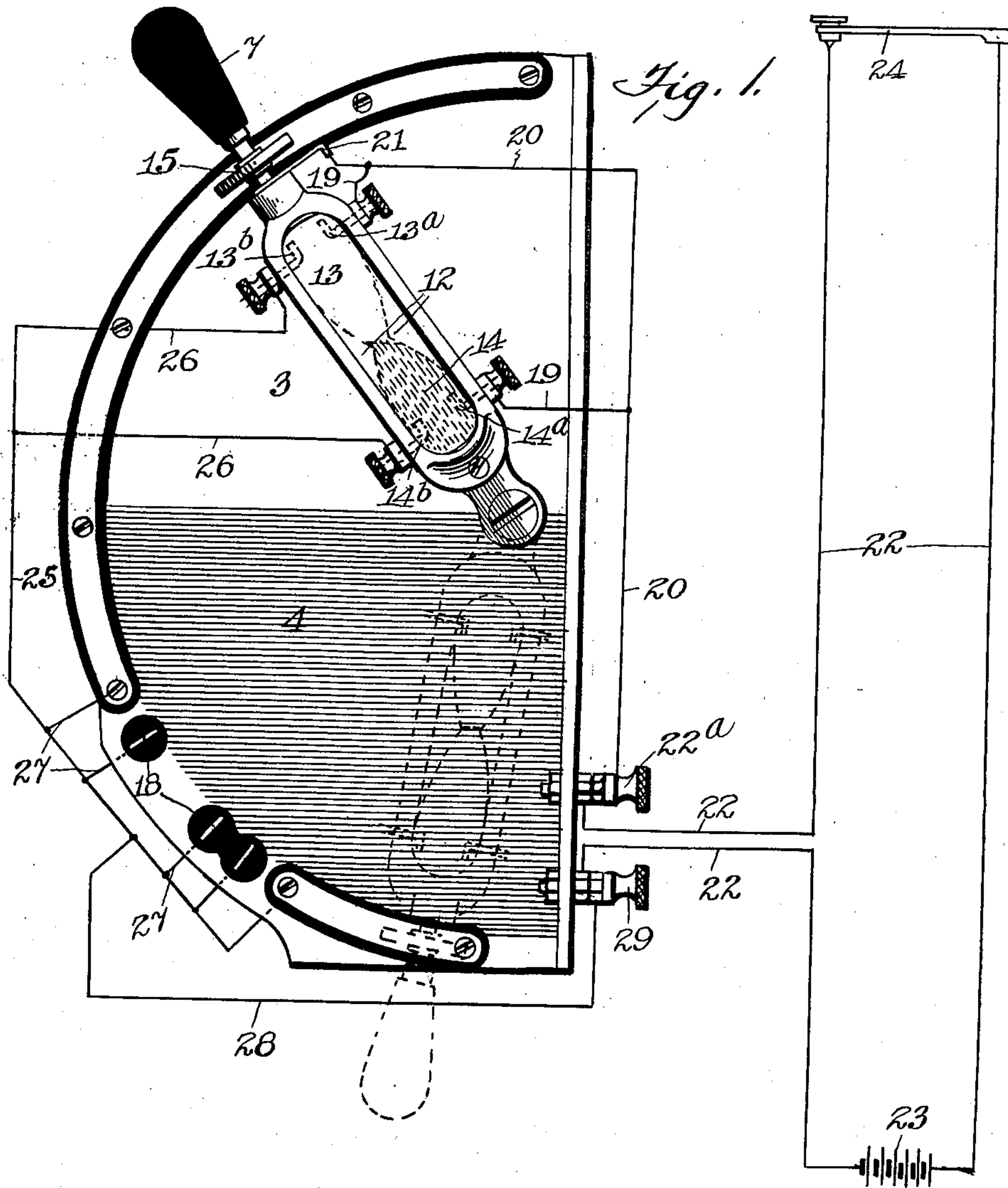


No. 877,464.

PATENTED JAN. 21, 1908.

J. C. LINK.
RAILWAY SIGNAL.
APPLICATION FILED MAR. 25, 1907.



Witnesses
Chas. T. Davies
Myron E. Clear

By

Inventor
J. C. Link,
C. L. Parker,
Attorney

UNITED STATES PATENT OFFICE.

JOHN C. LINK, OF HIGHBRIDGE, WISCONSIN.

RAILWAY-SIGNAL.

No. 877,464.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed March 25, 1907. Serial No. 364,484.

To all whom it may concern:

Be it known that JOHN C. LINK, a citizen of United States, residing at Highbridge, in the county of Ashland and State of Wisconsin, have invented certain new and useful Improvements in Railway-Signals, of which the following is a specification.

My invention relates to railway signals and particularly to an automatic safety signal as auxiliary to the train-order board now in use.

As is well known in railroading when a sub office is called for train movements from the main despatchers office it must reply at once "red out". As now used however the operator may telegraph "red out" and not have the danger signal out, or he may in a few moments shift to "clear" without either movement being known in the main despatcher's office except on his word that it is so. As provided in my improvements, however, when called on, the despatcher is obliged to move the handle of this signal into "red" and by doing so the board automatically telegraphs a certain letter or word letting the main despatcher know what the movement has been. Each station will of course, have a different signal and as all despatchers are well able to distinguish metallic or machine sending as distinguished from hand sending the main office will be kept in touch with the signals out at each station along the line.

The object of my invention is to provide a signal of this class which will be sure in its action, accurate in its automatic sending and which may be connected within the main line wires without disturbing the same.

With these objects in view my invention consists in the following features of construction and arrangement as hereinafter described and pointed out in the accompanying drawings, in which,

Figure 1, is an elevation of my improved signal board and apparatus, and Fig. 2, is a cross section through the signal board.

In the practical embodiment of my invention I provide a board 1 semi circular in shape and provided on its straight edge with a flange 2. The board 1 is preferably divided into an upper white field 3 and a lower red field 4 and is adapted to be connected in any suitable and known means to the semaphore or signal setting apparatus in such a manner that when the swinging arm is in the white field 3 the signal is white indicating "clear" and when said arm is in the red field the signal is red indicating "danger". Pivotally

mounted, midway of the board 1 and adjacent the flange 2, by means of a screw bolt 5, is a swinging signal arm 6 provided with an insulated handle 7, the stem 8 of which is screwed or otherwise fastened within an insulated portion 9 of said arm 6. Arranged within the swinging arm 6 is a mercury cup 10 held in position by means of a cap 11 and provided with central constrictions 12 dividing said cup into compartments 13 and 14. Mounted on the stem of the handle 7 is a contact wheel 15 arranged to travel when the arm 6 is moved, on the broken semi-circular strip 16 mounted on an insulated base 17 on the board 1. Arranged between the adjacent ends of the broken conducting strip 16 are a series of insulated contact pieces or points 18 which are adapted to make contact and complete a circuit with the wheel 15 when the arm 6 is moved downward.

Arranged within the chambers 13 and 14 of the mercury cup 12 are contact points 13^a and 13^b and 14^a and 14^b respectively, the upper contacts 13^a and 14^a being connected by wires 19 to the wire 20, to which the wheel 15 is also connected by a contact arm 21. The wire 20 is connected to the main line circuit 22 at the binding post 22^a, said main line circuit having arranged therein at 23, a battery and at 24 a telegraph sounder which is preferably located within the main despatchers office. The lower contacts 13^b and 14^b of the mercury cup 12 are connected to a wire 25 by means of the individual wires 26 and said wire 25 is also connected to the adjacent ends of the conducting strip 16 and to the contact pieces 18 by means of the individual wires 27. A wire 28 connected to the wire 25 and to the main line circuit 22 at the binding post 29 completes the board wiring.

It will be seen that I am able, by the means described, to maintain a complete circuit in any stationary position of the swinging signal arm, no matter in which direction the current flows. Taking the board as shown in Fig. 1 the circuit from binding post 22^a through the board to binding post 29 will be by wires 20 and 19 to contact 14^a; through the mercury within the lower chamber 14 to contact 14^b, thence through wires 26, 25 and 28 to binding post 29. When the swinging arm 6 is moved downward into the red field 4, the mercury in chamber 14 will draw away from the contact 14^a thus breaking the circuit and said mercury will be prevented from at once flowing into the chamber 13 by means of the con-

strictions 12. The circuit being thus broken while the arm 6 is in movement will be closed as the wheel 15 strikes the contacts 18, through the wire 20 from the arm 21, to
 5 cause vibrations to pass over the main line 22 and actuate the instrument 24, in circuit therewith to spell a word in the telegraphic alphabet. It will be seen that when the arm 6 is in the downward position the mercury
 10 will rest entirely within the chamber 13 thus maintaining a closed circuit through the contact 13^a and 13^b and on the upward movement of said arm said mercury will remain by gravity within the chamber 13 until after
 15 the passage of the wheel 15 over the contacts 18 thus preventing any vibrations passing over the main line.

It will be understood that each station on the line will be equipped with an apparatus
 20 such as described spelling different words so that the main despatcher will know just when each station shows a red or danger signal. It will also be seen that when the swinging arm is down, as shown in dotted lines in Fig.
 25 1, the contacts 13^a and 13^b will be connected thus taking the current from the wheel 15 so that there will be no actuation of the instrument 24 on the upward movement of the arm 6 over the contacts 18 to show "clear".

30 1. In a device of the character described, the combination with a main line circuit, of a swinging signal arm arranged in circuit therewith, means for maintaining a com-

plete circuit through said arm when the same is stationary, a rolling contact carried by
 35 said swinging arm, and a plurality of set contact pieces arranged in the path of travel of said rolling contact for the purpose described.

2. In a signal board arranged in circuit with the main line, a swinging signal mount-
 40 ed on said board and wired to maintain a complete circuit through said board when said arm is stationary, a rolling contact carried by said swinging arm, and a plurality
 45 of spaced set contact pieces arranged in the path of travel of and adapted to contact with said rolling contact for the purpose described.

3. In a signal board arranged in circuit with a main line, a swinging signal arm, a
 50 mercury cup carried thereon, contacts arranged within said cup and connected to said main line and adapted to maintain a complete circuit through said mercury when said
 55 arm is stationary, a contact wheel carried by said swinging arm, and a plurality of spaced set contact pieces insulated from one another and arranged on said board in the path of travel of and adapted to contact said contact wheel when said swinging arm is moved.

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

JOHN C. LINK.

Witnesses:

C. F. PETERSON,
 C. P. PECK.