E. O. CARLSON.

ELECTRIC SIGNAL.

APPLICATION FILED DEC. 29, 1917.

1,285,934. Patented Nov. 26, 1918.

Fig. 1

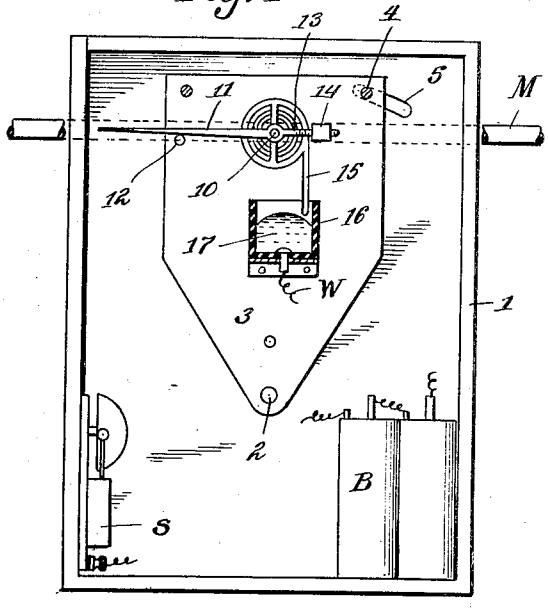
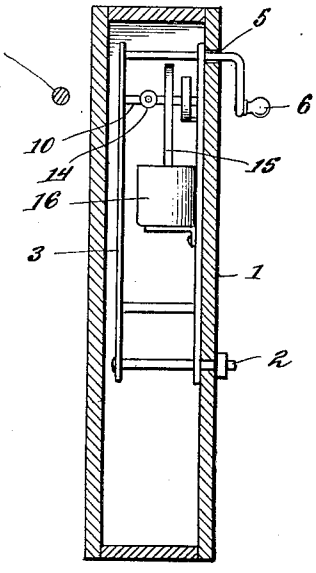


Fig. 2



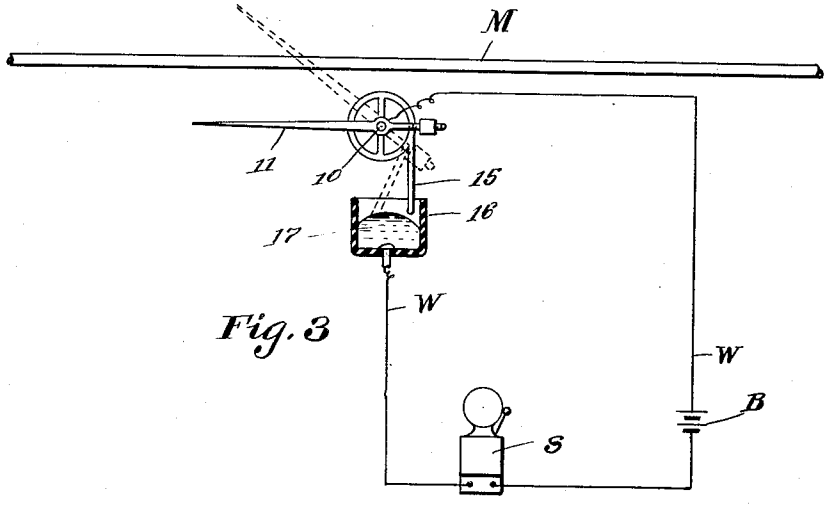


Fig. 3

Witnesses
C. F. Rudolph
N. L. Ollamer

Inventor
Eric O. Carlson,
By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

ERIC O. CARLSON, OF CLEVELAND, OHIO.

ELECTRIC SIGNAL.

1,285,934. Specification of Letters Patent. Patented Nov. 26, 1918.

Application filed December 29, 1917. Serial No. 209,534.

To all whom it may concern:

Be it known that I, ERIC O. CARLSON, a subject of the King of Sweden, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Electric Signals, of which the following is a specification.

This invention relates to electric signaling, and more especially to single variation annunciators which close a circuit and actuate a signal when an overload occurs on the line wire or apparatus adjacent.

The object of the invention is to improve signals of this type by simple means for permitting their adjustments so that the alarm is sounded only when the overload reaches a desired maximum.

It is also the object of the invention to provide a device which may be placed in any position where stray currents are set up which will be acted upon by said currents to close an alarm circuit. This is especially useful where workmen are engaged in repairing wires or instruments which must be "dead" to permit of such repairing, the device acting to automatically send an alarm should the current be inadvertently turned into the wires.

Details are set forth in the following specification, and reference made to the accompanying drawing wherein:—

Figure 1 is a front elevation of this device,

Fig. 2 is a vertical section through the same, and

Fig. 3 is a diagram showing the wiring through the signal proper.

In the drawings let us assume that the letter M designates a main wire on which flows a heavy current from a generator through instrumentalities which are supplied with the current thereby. It is well known that when one or more of these instrumentalities cease to work, or perhaps when they are purposely cut out of circuit, the voltage on the main line M increases with the result that damage is likely to be done to the remaining instrumentalities by the overload of current with which they are supplied. Under ordinary circumstances the attendant at the power station regulates the generator to the volume of current needed, but occasions may occur when he is perhaps momentarily absent from his post, and it is the purpose of the present invention to provide an audible alarm to call his attention to the fact that his presence is needed. It is well known that a magnetized needle placed adjacent a line wire or other apparatus along which a strong current is flowing has a tendency to assume a position at right angles to the wire when acted upon by the magnetic flux which circulates around the wire, and I make use of this tendency in the apparatus now to be described.

The numeral 1 designates a suitable casing in which in the present instance is stored a battery B and a signal S—here shown as a bell. Within the casing at the point 2 is pivoted a frame 3, and a rod 4 in the frame passes through a slot 5 in the casing and has a handle 6 by means of which the entire frame can be adjusted on its pivot from side to side. Pivotally mounted at 10 within the frame is a magnetized hand or index 11 resting normally on a stop 12 and standing normally in a position about in alinement with the main wire M which passes near the casing as shown. The rear or other arm of this index is herein shown as threaded as at 13, and adjustable thereon is a small weight 14. To the shaft of the index is fastened a finger 15 which descends into a cup 16 containing mercury, and as the cup is carried by and fast in the frame 3 it swings from side to side as said frame is adjusted. A wire W connects the mercury with the signal S and battery B, and leads thence to the frame as best seen in Fig. 3. The mercury is indicated by the numeral 17.

The action of this device is as follows: Let us assume that the parts are adjusted in Fig. 1 with the weight so disposed on the short arm of the index that the long arm thereof is balanced and barely touches the stop 12, while the finger 15 depends into the cup 16 but is out of contact with the mercury 17. When now an overload flows along the wire M, the tendency of the index if properly magnetized is to rise, and the finger 15 descends and makes contact with the mercury 17, so that current flows through the wire W and actuates the signal S which in the present instance is a bell. An alarm thus being given, the operator or attendant is immediately advised that there is an overload on the wire M and takes steps at once to relieve it. By grasping the handle 6 and adjusting the frame 3 to the left in Fig. 1, it will be obvious that the mercury cup is moved with the index and its finger, but the mercury 17 assumes a new level in the cup,

according to which way the frame is adjusted. The adjustment of the counter-weight or small nut 14 is mainly for the purpose of accurately counter-balancing the index 11 and the pendant finger 15. The parts are of the desired materials and proportions, and details other than are set forth in the following claims are not essential.

What is claimed as new is:—

1. In an electric signal, the combination with a frame pivot in a support, and means for swinging the same; of a magnetized needle pivotally mounted in the frame and having a pendant finger, a mercury cup carried by the frame and into which the finger depends, and a circuit whereof the terminals are connected with the mercury and the needle, for the purpose set forth.

2. The herein described electric signal comprising a frame pivoted to move in a plane parallel with a main conductor, means for adjusting the position of said frame in its plane, a cup mounted fixedly on the frame and containing mercury, an index pivoted between its ends in the frame and having its long arm resting normally on a stop, counter-balancing means on its short arm, a finger depending from the index into said cup, the index being magnetized, and a circuit including said mercury and the index.

3. In an overload signal for electric lines, the combination with a magnetized needle pivotally mounted between its ends alongside said lines, means for causing it to stand normally parallel with such lines, and a finger depending from the needle; of a cup into which the finger extends, mercury therein, a circuit connecting the mercury and the index, and means for adjusting the angle of the cup and therefore changing the level of the mercury therein, for the purpose set forth.

4. In a signal of the type described, the combination with a pivotally mounted magnetized needle or index, a finger depending therefrom, and means for holding the index normally horizontal; of a cup containing mercury and into which cup said finger depends, a circuit wire connecting the mercury and the needle, and means for adjusting the position of the cup and therefore the level of the mercury therein, for the purpose described.

5. The herein described electric signal comprising a frame mounted for pivotal movement and located within the zone of magnetic flux, means for adjusting the frame upon its pivot, a magnetized element mounted for pivotal movement of said frame, a cup mounted fixedly on the frame and containing mercury, a finger depending from the magnetized element into the cup but normally out of contact with the mercury and a circuit including said mercury and magnetized element.

In testimony whereof I affix my signature.

ERIC O. CARLSON.