No. 656,584. Patented Aug. 21, 1900.

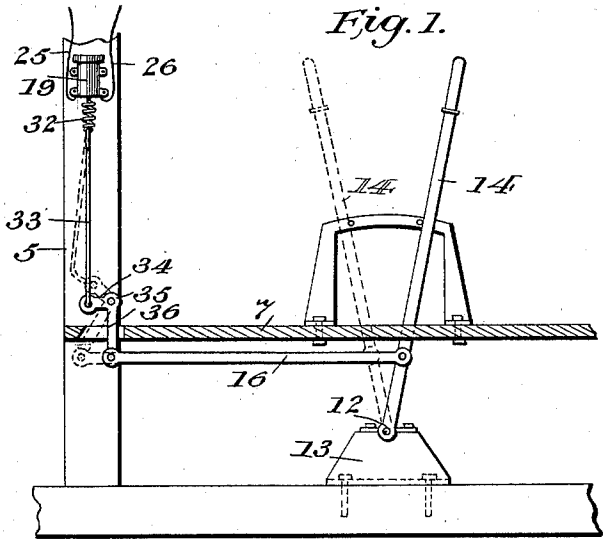
C. R. PERRINE.

SIGNALING APPARATUS.

(Application filed Apr. 10, 1899.)

(No Model.)

Fig. 1.



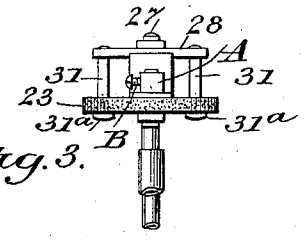


Fig. 3.

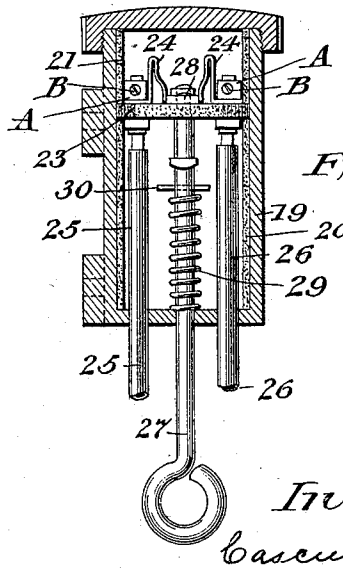


Fig. 2.

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UNITED STATES PATENT OFFICE

CASCIUS R. PERRINE, OF GOLDFIELD, COLORADO.

SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 656,584, dated August 21, 1900.

Application filed April 10, 1899. Serial No. 712,358. (No model.)

To all whom it may concern:

Be it known that I, CASCIUS R. PERRINE, a citizen of the United States of America, residing at Goldfield, in the county of Teller and State of Colorado, have invented certain new and useful Improvements in Electrical Signaling Apparatus; 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 characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in electrical signaling apparatus especially intended for use in connection with mining-shafts, but which may be employed in other relations.

The important feature of my invention consists of the switch or the mechanism for making and breaking the circuit, the said mechanism being provided with a water-tight casing. This is especially important in mines where water is generally dripping and liable to short-circuit the current where the mechanism is exposed.

My further object is to provide an apparatus of this class which shall be simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of my improved circuit-closer shown in connection with means for operating the same. Fig. 2 is a detail view, on a larger scale, of the switch mechanism, the casing and insulating-lining being shown in section. Fig. 3 shows the contacts and bridge-piece of the switch removed from the casing.

The same reference characters designate the same parts in the views.

As shown in the drawings, (see Fig. 1,) my improved switch mechanism is mounted on one of the timbers 5 at the mouth of the drift. The casing 19 is provided with a screw-cap 22 and has a cylindrical bore or chamber, which is lined with insulating material, composed of two parts 20 and 21. This casing is intended to keep a vertical position with the cap uppermost. Between the insulating parts 20 and 21 is supported an insulating-disk 23, which fits nicely within the bore of the casing. Upon this disk is secured two separated contacts 24, composed of suitable electrical conducting material, as copper. The circuit-wires 25 and 26 are connected with these contacts by means of metallic sleeves A, which pass through the contacts, the wires being inserted in these sleeves and held in place by binding-screws B. These wires pass downward and out through holes formed in the bottom of the casing and thence to the poles of any suitable electric source. (Not shown.) Located in this circuit are one or more lamps, (not shown,) but conveniently located with reference to the position of the engineer. Passing through the center of this disk 23 and movable therein is a rod 27, to the upper extremity of which is secured a metal piece 28, adapted to bridge the space between the contacts 24 and close the circuit. This bridge-piece is normally held above the circuit-closing position by a coil-spring 29, surrounding the rod 27. One extremity of this spring bears against the bottom of the casing, while the other extremity engages a stop 30, attached to the rod. The expansion of the spring raises the bridge to the position shown in Fig. 3.

To accurately maintain the bridge-piece in position and prevent it from moving upward too far in response to the action of the spring, guide stop-pins 31 are employed. These pins are made fast to the respective extremities of the bridge-piece and pass through holes formed in the disk 23, in which they slide freely. Their lower extremities are provided with heads 31^a, which engage the under surface of the insulating-disk and form stops against farther upward movement of the bridge-piece. The lower extremity of the rod 27 is provided with an eye 27^a, to which is secured one extremity of a coil-spring 32 of greater strength than the spring 29. To the lower extremity of the spring 32 is secured one extremity of an insulating-cord 33, whose opposite extremity is connected with the arm 34 of a bell-crank lever fulcrumed on the

timber 5 a short distance below the switch mechanism, as shown at 35. The vertical arm 36 of this lever is connected with one extremity of a rod 16, whose opposite extremity is connected with a hand-lever 14, which projects upward from the floor of the drift opposite the quadrant 15, in which are formed holes for the insertion of pins to hold the lever in the adjusted position.

When the apparatus is in the full-line position, (see Fig. 1,) the rod 27 is drawn downwardly sufficiently to close the circuit by forcing the bridge-piece 28 between the contacts 24, in which position it is held until the lever 14 is moved to the dotted-line position, in which event the bell-crank lever is actuated and the cord 33 slackened sufficiently to allow the spring 29 to raise the bridge-piece to the position shown in Fig. 3, breaking the circuit.

The lamps located in the circuit heretofore described are usually employed as a signal. These lamps are placed with reference to the position of the engineer and are normally burning because the circuit is normally closed.

It is evident that my improved switch mechanism may be employed to ring a bell as well as to control lamps. When used in a bell-circuit, the latter would be normally open and it would only be necessary to pull down on the cord connected with the rod 27, which would close the circuit and ring the bell. The cord 33 performs an important function, since it insulates the hand of the operator from the electric current. The spring 32 is a safety device to prevent undue strain on the switch mechanism in case the movement of the hand-lever or the pull of the arm should be greater than is necessary to bring the bridge-piece to the circuit-closing position. In this case the spring 32 will yield and prevent injury to the said parts.

By removing the screw-cap from the casing the upper insulating-section of the lining may be shoved out of the top of the casing, permitting the exposure of the disk for the purpose of connecting or disconnecting the circuit-wires or for other reasons, as may be desired.

Having thus described my invention, what I claim is—

1. In a switch, the combination of a closed casing having a detachable cap, and provided with a two-part lining of insulating material, an insulating-disk located in said casing between the two lining parts, metal sleeves passing through the disk, two contacts attached to said sleeves and mounted on the disk, circuit-wires passing through the sleeves and suitably connected thereto, a rod passing through the disk between the contacts, a bridge-piece attached to said rod and arranged to close the circuit by engaging the contacts, a spring surrounding the rod, one extremity of the spring engaging a stop on the rod while the other extremity bears against the casing and normally holds the bridge-piece in the open-circuit position.

2. In a switch, the combination of a closed casing having a detachable cap, and provided with a two-part lining composed of insulating material, an insulating-disk located in said casing between the two lining parts, metal sleeves passing through the disk, two contacts mounted on the disk and attached to said sleeves, circuit-wires passing through the sleeves and suitably connected thereto, a rod passing through the disk between the two contacts, two pins slidingly mounted on the disk and having stops to limit their movement, a bridge-piece attached to said pins and made fast to the rod, and arranged to close the circuit by engaging the contacts, a spring surrounding the rod and having one of its extremities engaging the stop on the rod while the other extremity bears against the casing and normally holds the bridge-piece in the open-circuit position.

3. In a switch, the combination of a closed casing having a detachable cap, and provided with a two-part lining composed of insulating material, an insulating-disk located in said casing between the two lining parts, metal sleeves passing through the disk, two contacts mounted on the disk and attached to said sleeves, circuit-wires passing through the sleeves and suitably connected thereto, a rod passing through the disk between the two contacts, two pins slidingly mounted on the disk and having stops to limit their movement, a bridge-piece attached to said pins and made fast to the rod, and arranged to close the circuit by engaging the contacts, a spring surrounding the rod and having one of its extremities engaging the stop on the rod while the other extremity bears against the casing and normally holds the bridge-piece in the open-circuit position, an insulating pull-cord connected with the rod, and suitable means connected with the cord for actuating the bridge-piece to close the circuit.

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

CASCIUS R. PERRINE.

Witnesses:
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A. J. O'BRIEN.