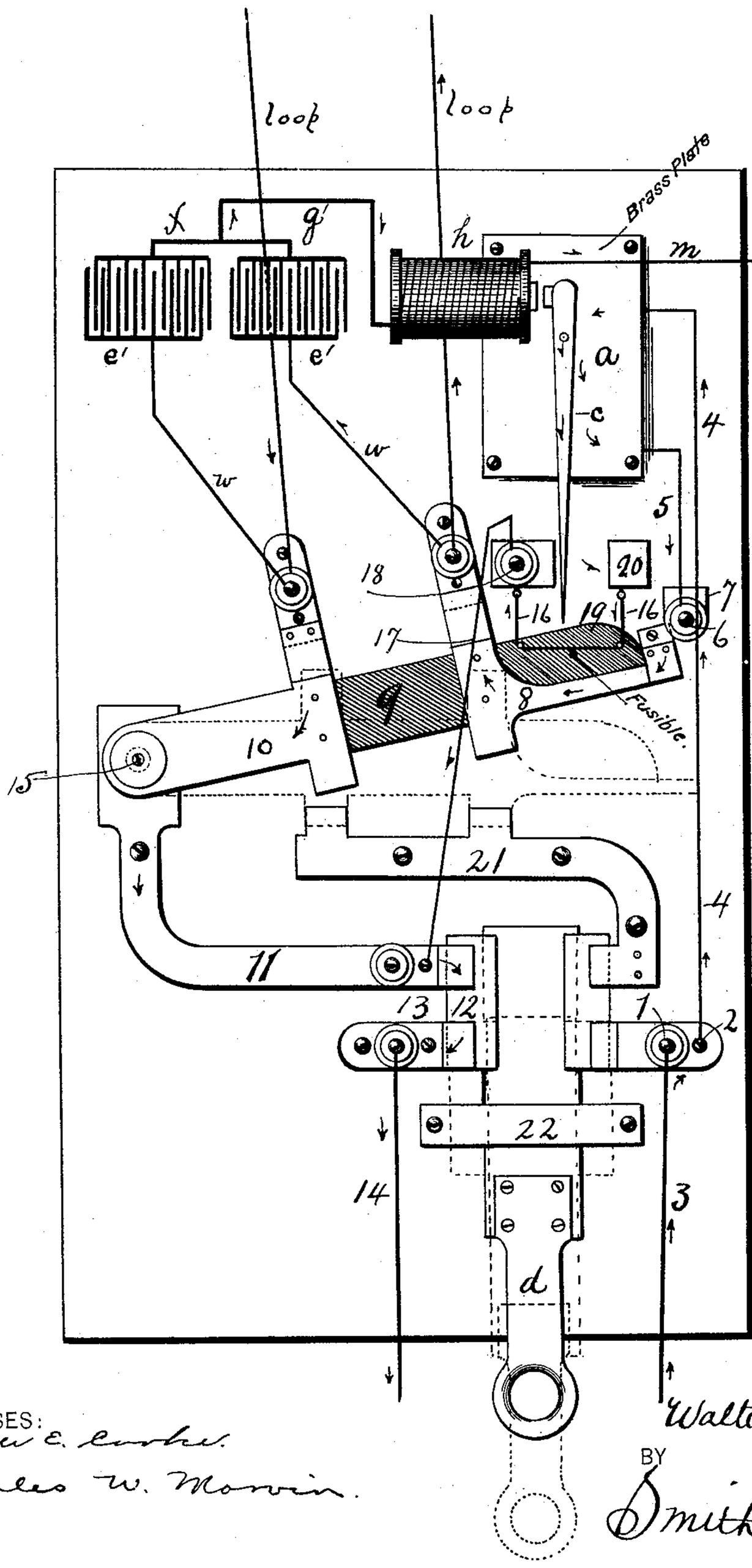
No. 613,046. Patented Oct. 25, 1898.

W. L. PRATT.

AUTOMATIC LEAK OR GROUND CUT-OUT.

(Application filed May 20, 1896.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WALTER L. PRATT, OF ADAMS, NEW YORK.

AUTOMATIC LEAK OR GROUND CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 613,046, dated October 25, 1898.

Application filed May 20, 1896. Serial No. 592,350. (No model.)

To all whom it may concern:

Be it known that I, WALTER L. PRATT, of Adams, in the county of Jefferson, in the State of New York, have invented new and useful Improvements in Automatic Leak or Ground Cut-Outs, of which the following, taken in connection with the accompanying drawing, is a full, clear, and exact description.

This invention relates to an automatic safety circuit-closer or cut-out, having more especial reference to a device for automatically cutting out or shunting from the electric circuit a loop used either in carrying a current for light or power in case there is a leak caused from poor insulation or any other cause.

The object of my invention is to produce a leak-detector, so that should a leak occur upon the loop the leakage of the current would accumulate in condensers which I employ to receive the leakage until the potential becomes so high that a discharge to the ground would occur; and to that end my invention consists in several new and novel features of construction and operation herein described, and which I specifically set forth in the claims hereunto annexed.

This invention is intended as an improvement upon Patent No. 600,743, granted to me March 15, 1898, all of the mechanism shown being the same, with the exception of the condenser and the magnet used in connection therewith.

The accompanying drawing represents a mechanism which embodies my invention, the arm being shown in an operative position in solid lines and in a cut-out position in dotted lines.

1 and 2 are ordinary binding-posts holding the circuit-wires 3 and 4, the wire 4 connecting brass plate *a*, and from the brass plate *a* the current passing out the wire 5, which is secured by a binding-post 6 to the conducting-bracket 7, being held normally in circuit with the bracket 8, which is mounted upon the insulating-arm 9, the current then passing out through the bracket 8 around the loop and again connecting the conducting-bracket 10, thence down through the plate 11 to the plate 12, thence to the bar 13, and finally out through the wire 14. The plate *a* acts merely as a conductor and has electrical connection with the lever *c*, by which a portion of the current is diverted through the fusible wire 16 when the lever is attracted by the magnet *h* upon the occurrence of a ground. The brackets 8 and 10, which convey the current to the loop, being mounted upon the arm 9, are pivoted at 15 and are insulated from each other. The arm 9, holding the said brackets, is held in the position shown in the drawing by a continuous fuse-wire 16, connecting at one end the bracket 8 with the wire 17, which is held by a binding-post 18, the upper side of the bracket 8 being insulated by the part 19, and the opposite end of said fuse-wire is connected to the plate 20.

To each binding-post of the loop I attach a wire *w*, which is connected at its outer end to the condenser *e'*, so that in case a leak occurs upon the loop the condensers will receive the leakage.

The two condensers are connected by the wire *f*, to which is connected the wire *g*, connecting the magnet *h*. *m* is a wire connecting the magnet to ground, and *c* is an armature pivoted upon the conducting-plate *a*. The condenser is of ordinary construction, such as is used in a repeating system in a telegraph-line, and receives the leakage and serves to accumulate the electricity until its charge becomes sufficiently great to operate the magnet *h*.

Should a leak occur upon the loop, the current would accumulate in the condenser until the potential becomes so high that a discharge would occur, and although the current might be very minute yet its passage would be sufficient in passing through the magnet to operate the pivoted armature, throwing the lower end over to the right and bringing it into engagement with the right-hand end of the fuse-wire 16, fusing it and allowing the arm 9, carrying the bracket 8, to drop down and take the position shown in the dotted lines, thus allowing the current to pass along through the bracket 8, across the plate 21, which is in contact with the bracket 10, and out through the plate 11 and wire 14, as hereinbefore stated.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An automatic leak cut-out comprising a hinged arm carrying loop connections, said arm being held normally in circuit by a fuse-

wire, a branch circuit to ground, condensers included in said branch circuit a magnet and an armature adapted to fuse said fuse-wire when the leakage of current has sufficiently accumulated in the condensers so that a discharge to ground would occur.

2. An automatic leak cut-out, comprising a hinged arm carrying loop connections, said arm being held normally in circuit by a fuse-wire, a branch circuit to ground extending from one side or branch of the line, condensers included in said branch circuit a magnet and an armature adapted to fuse said fuse-wire when the leakage of current has sufficiently accumulated in the condensers so that a discharge to ground occurs.

3. An automatic leak cut-out comprising a hinged arm, a loop connection carried thereby, a double-armed fuse-wire normally in circuit holding said arm, a branch circuit to ground, condensers and a magnet included in said branch circuit and an armature adapted to fuse said fuse-wire, when the leakage of current has sufficiently accumulated in the condensers so that a discharge to ground will occur.

In witness whereof I have hereunto set my hand this 13th day of May, 1896.

WALTER L. PRATT.

In presence of—
H. H. WAITE,
R. F. STEELE.