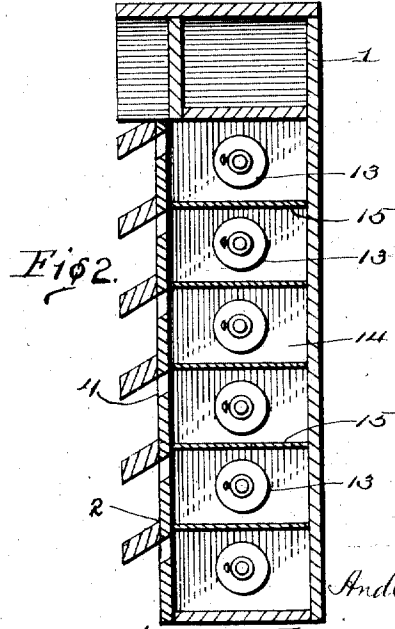
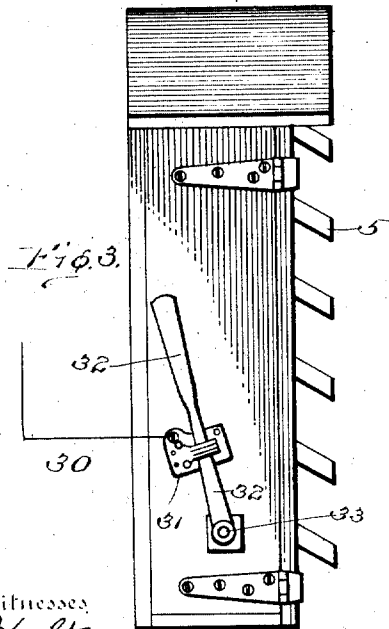
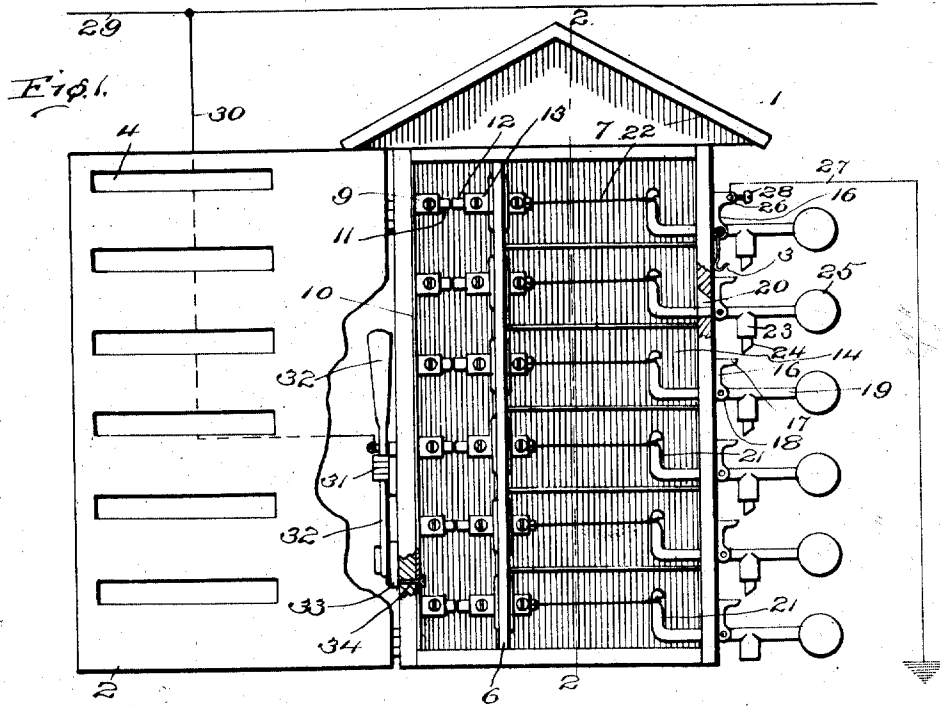


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 AUTOMATIC FUSIBLE LIGHTNING ARRESTER.
 APPLICATION FILED AUG. 6, 1909.

991,372.

Patented May 2, 1911.



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UNITED STATES PATENT OFFICE.

ANDREW REID, OF COLORADO CITY, COLORADO.

AUTOMATIC FUSIBLE LIGHTNING-ARRESTER.

991,372.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed August 6, 1909. Serial No. 511,607.

To all whom it may concern:

Be it known that I, ANDREW REID, a subject of the Kingdom of Great Britain, having resided in the United States of America since the year A. D. 1882, and now residing at Colorado City, in the county of El Paso and State of Colorado, have invented certain new and useful Improvements in Automatic Fusible Lightning-Arresters; and I do hereby 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.

This invention relates to improvements in lightning arresters, and particularly to lightning arresters that automatically reset.

The object in view is the arrangement in a lightning arrester, of means for permitting the free passage of high potential current, as lightning, but preventing low potential current from passing.

Another object in view is the arrangement in a lightning arrester, of a housing and a plurality of fuses arranged to conduct high potential electric current, as for instance lightning, to the ground, the fuses being associated with means for automatically re-establishing the line for the high potential after the same has been disrupted.

A further object of the invention is the arrangement in a lightning arrester, of a housing containing spark gaps, and a fuse connected with each of said spark gaps, whereby high potential current may pass from the line to the earth, each of the fuses being arranged with a weighted arm for closing the next succeeding fuse after the blowing of the first fuse.

A still further object of the invention is the arrangement of a lightning arrester so constructed that after one operation or one passage of lightning or other high potential current to the ground the same will automatically adjust itself for another operation or passage of current to the ground, thus maintaining the circuit or path complete at the instant of rupture.

With these and other objects in view the invention comprises certain novel constructions, combinations and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a front view of a lightning arrester embodying the invention, the door of the hous-

ing thereof being open for better disclosing the construction. Fig. 2 is a section through Fig. 1 on line 2-2 with the door closed. Fig. 3 is a side view of the structure shown in Fig. 2, the door being shown closed.

In constructing a lightning arrester embodying the invention, means are provided for protecting electric lines and apparatus from lightning and all static charges, the arrester being so constructed as to conduct any static charge to earth and across one or more sparking gaps without injuring the arrester by the lightning or static charge starting an abnormal flow of current from the line to the earth, and at the same time offering a path to earth of the least possible resistance for the static charge or lightning. In the particular construction of arrester a housing is provided having positioned therein a set of sparking gaps, one side of each sparking gap being connected to one side of the fuse wire, the other end or side of the fuse wire being connected to an indicating lever fulcrumed on hinged members on the outside of the housing. The levers are held normally in a horizontal position by a fuse stretched across the center of each fuse chamber. The fuses are arranged to blow successively from top to bottom, though of course the same could be arranged to blow in any other sequence desired. When for instance the top fuse blows the lever, being heavier on the end outside of the box, drops and makes contact with the next succeeding lever, whereby the next succeeding fuse is switched into line. When the second fuse blows the second lever will drop and switch in the third fuse. This is continued until all of the fuses have been blown, or until new fuses have been placed in the box and the levers reset.

In order that the invention may be more clearly understood an embodiment of the same is shown in the accompanying drawings in which 1 indicates a housing having a door 2 pivotally secured thereto and designed to be locked by a suitable catch 3. Door 2 is provided with a plurality of openings 4 which are protected by overhanging members 5 for preventing rain or other foreign matter from entering into the housing 1. Housing 1 is divided into two parts by a partition 6 which is preferably made from some insulating material, and also from material that is substantially non-combustible. Partition 6 divides housing 1 into compart-

ments 7 and 8. Compartment 8 is provided with a row of sparking gap sockets 9 connected together by a strip 10. Mounted in each of the sockets 9 is a carbon pencil or stick 11 which projects into proximity to a short carbon pencil or stick 12 positioned in sockets 13. The carbons 11 and 12 are provided in order that the spark jumping from one to the other will not injure the surrounding parts, but will expend its force upon carbon which largely resists the action of the same. The sockets 9, and consequently the carbons 11, are connected together electrically, but each of the sockets 13, and consequently each of the carbons 12, is insulated from each other. Compartment 7 is divided into a plurality of fuse chambers 14 by partitions 15 of non-combustible material, as for instance, asbestos. Secured to housing 1 are a plurality of brackets 16, each of which is formed with a flat upper surface 17 and a bifurcated portion 18, through which pass the respective levers 19. A suitable pin passes through the bifurcated portions 18 and through each of the levers 19 for pivotally mounting the levers to the respective brackets 16. Each of the levers 19 extends through an opening provided in the side of housing 1 in order that the turned up portion 21 may have secured thereto fuse 22. Fuse 22 is connected at the opposite end to one of the sockets 13 which extends through partition 6 into the respective fuse chambers 14. Each of the levers 19 is formed with a hollow depression 23 for receiving carbon stick 24 which is designed to rest against the surface 17 when the fuse 22, connected to the curved portion 21, has been broken. In order to cause a good contact between carbon 14 and shelf or portion 17, a weight 25 is provided at the end lever 19. The bracket 16, that is at the top of housing 1, is provided with an aperture 26 into which a ground wire 27 may be fitted, and also a set screw 28, for clamping the ground wire 27 in position.

In operation one or more lightning arresters are connected to a line wire 29, for instance near the point at which the wire leaves the source of current and at a point immediately before the line wire connects with the current using device. By having two arresters as mentioned, or even by having one arrester, the lightning or other static charges on line 29 will find a comparatively easy path to the earth, and yet be switched from either the source of current or the means using the current. In case lightning should strike wire 29 the same would pass therefrom to wire 30. From wire 30 the current passes to a switch plate 31, through lever 32, and from thence through plate 33 and pin 34 to strip 10. From strip 10 the current passes to the top or uppermost socket 9, to carbon 11, jumps the gap from

carbon 11 to carbon 12, passes from carbon 12 to socket 13, from thence to the top or uppermost fuse 22. From fuse 22 current passes through lever 19, bracket 16, and wire 27, to the earth. As the current passes over fuse 22 the same is fused or melted, and the circuit is therefore opened temporarily. Immediately upon the melting of fuse 22 lever 19 will drop down upon its pivotal support until carbon 14 engages the surface 17 of the bracket, whereby the circuit is again established through the second fuse 22. When a second charge of lightning passes from wire 29 through the lightning arrester the second fuse is melted and the second lever 19 is caused to drop for switching in the third fuse. This is continued until all of the fuses have been melted or until the melted fuses have been replaced by new ones. By this construction and arrangement it will be observed that automatic means are provided for connecting the line 29 to the earth and to keep such connections made with only temporary interruptions.

What I claim is:

1. In a lightning arrester, a housing, a plurality of fuses, a pivotally mounted weighted lever connected with one end of each of said fuses, means for connecting said fuses with a line wire, and means for connecting said levers to the earth, said means including a wire, a bracket pivotally connected with each of said levers, and a contact member connected with each of said levers arranged to engage said brackets respectively as said fuses are broken.

2. In a lightning arrester, a plurality of fuses, a pivotally mounted lever connected with each of said fuses, each of said levers being formed with a weighted end for moving said weighted end downward under the action of gravity when the fuse connected with the lever is broken, a contact member connected with each of said levers located in the path of movement of said levers when the same are pivotally moved downward under the action of gravity, means for connecting the top lever to the earth, and means for connecting said fuses to a line wire.

3. In a lightning arrester, a plurality of fuses arranged one above the other, a pivotally mounted lever connected with each of said fuses arranged in a vertical line and sufficiently near each other to permit any of the upper levers to engage the next succeeding lower lever upon the pivotal downward movement of the upper lever when the fuse connected therewith has been disrupted means associated with each of said levers for pivotally moving the same downward under the action of gravity when the fuse connected with said lever has been disrupted, means for connecting the top lever to the earth, and means for connecting said fuse to a line wire.

4. In a lightning arrester, a plurality of independent fuses, means for connecting one end of the same with a line wire, a lever for each of said fuses connected with the end thereof opposite to the end connected to said line wire, means for pivotally supporting said levers in substantially a vertical line so that the ends opposite to those connected to said fuses overbalance the levers when said fuses are disrupted for permitting any of the upper levers to move pivotally downward for electrically connecting the upper lever with the next succeeding lower lever, and means for electrically connecting the top lever with the earth.

5. In a lightning arrester, a plurality of fuses, means for connecting one end of said fuses to a line wire, a lever connected at one end to each of said fuses at the end thereof opposite to that connected with the line wire, each of said levers being formed with a contact member and a weighted end which overbalances the respective levers when the fuses connected therewith are disrupted, a bracket connected with each of said levers for pivotally connecting the same, said brackets being formed with contact surfaces designed to be brought into engagement with the contact member of the next succeeding upper lever when the next preceding upper lever has been pivotally moved downward

under the action of gravity, and electrical means for connecting the top bracket with the earth.

6. In a lightning arrester, a housing a partition for dividing said housing longitudinally into two chambers, a plurality of division plates for dividing one of said chambers into a plurality of compartments, a fuse arranged in each of said compartments, means for connecting all of said fuses with a line wire, and means for connecting said fuses with the earth.

7. In a lightning arrester, a plurality of fuses, means for connecting one end of each of said fuses with a line wire, a pivotally mounted lever connected to each of said fuses, a weight for each of said levers for causing the levers to move pivotally downward upon the breaking of the fuse connected therewith, means for connecting the end lever to the earth, and means associated with each of said levers for causing the levers to successively reestablish the circuit upon each opening thereof by the disruption of said respective fuses.

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

ANDREW REID.

Witnesses:

C. B. GARNETT,
A. ELLIOTT HART.