

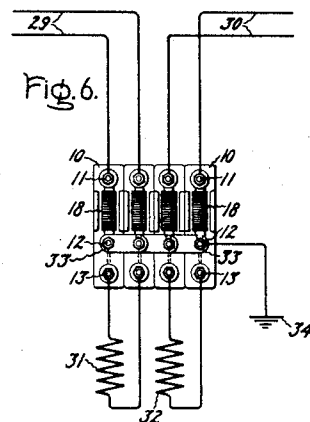
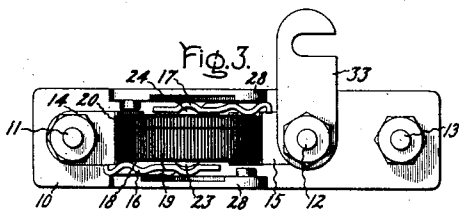
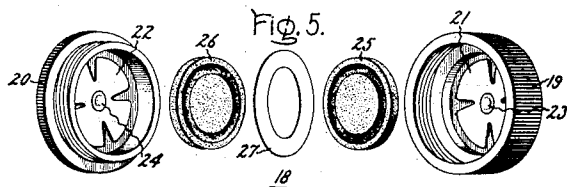
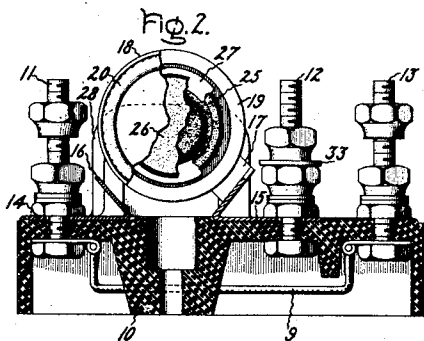
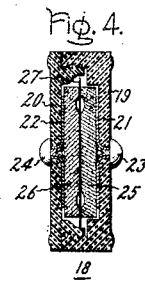
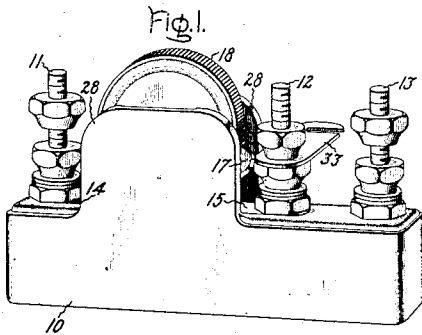
Feb. 28, 1933.

H. M. TOWNE

1,899,540

LIGHTNING ARRESTER

Filed Sept. 11, 1931



Inventor:
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UNITED STATES PATENT OFFICE

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LIGHTNING ARRESTER

Application filed September 11, 1931. Serial No. 582,317.

My invention relates to lightning arresters and particularly to arresters for the protection of low voltage electrical circuits such as may be used in connection with the operation and control of signals, relays and other small electrical apparatus. The general object of the invention is to provide a simple and reliable arrester of this type. Another object is to provide an arrester having an improved over-voltage discharge element which may be easily and quickly repaired or replaced after its efficiency has been impaired by an electrical discharge.

Other objects and advantages will appear from the following description taken in connection with the accompanying drawing in which Fig. 1 is a perspective view of a lightning arrester constructed in accordance with the invention; Fig. 2 is a longitudinal sectional view of the arrester; Fig. 3 is a plan view of the arrester; Fig. 4 is a sectional view of the discharge element of the arrester; Fig. 5 is an exploded view showing the various component parts of the discharge element, and Fig. 6 is a view of several arresters showing how they may be mounted in a group and connected to the circuits which they are to protect.

Like reference characters indicate similar parts in the different figures of the drawing.

The arrester, as shown in the drawing, has an elongated base 10 of insulating molded material on which is mounted a row of three binding posts 11, 12 and 13, the posts 11 and 13 being mounted near opposite ends of the base 10 and the post 12 being mounted between the two posts 11 and 13. The bases of two springs 14 and 15 are secured by the posts 11 and 12 respectively in depressions in the upper surface of the base 10. These springs 14 and 15 have resiliently spaced blades 16 and 17 respectively which extend on both sides of the space between the binding posts 11 and 12. A discharge unit 18 is removably held between the blades 16 and 17 of the springs.

The discharge unit 18 includes a hollow insulating casing formed in two sections 19 and 20 which have peripheral rims on their ad-

jacent faces, the rims being threaded so that the two sections may be screwed together and held rigidly with their inner faces in desired spaced relation. Two springs 21 and 22 are secured at their centers by rivets 23 and 24 respectively to the inner faces of the two sections 19 and 20 of the casing 18, and a discharge element is held between these two springs. This discharge element may be of any desired type, but is shown in the drawing as including two carbon blocks 25 and 26 separated by a thin mica spacer 27 to provide a small air gap between the two blocks. The outer ends of the two rivets 23 and 24 are rounded and project slightly to form contacts which fit in depressions in the adjacent faces of the spring blades 16 and 17 to hold the discharge unit in place. The outer binding posts 11 and 13 are connected by a conductor 9 in the base 10 of the arrester. Thus, the binding posts 11 and 13 are connected conductively with the carbon block 25 and the center binding post 12 is connected conductively with the other carbon block 26. When the arrester is in use, the binding post 12 is grounded as shown in Fig. 6.

A circuit to be protected may be connected either to the binding post 11 or to the binding post 13, or to both. If the voltage of the protected circuit becomes excessive and unsafe, a discharge will take place through the binding post 11 or 13, the spring 14 and its blade 16, the rivet 23 and its spring 21, the carbon blocks 25 and 26 and the air gap between them, the spring 22 and its rivet 24, the spring 15, and the binding post 12 to ground. The air gap between the two carbon blocks 25 and 26 normally insulates the protected circuit from ground but is broken down by the excessive voltage to permit the discharge to ground.

Arresters such as have been described may be mounted side by side in a group, as shown in Fig. 6, for the protection of one or more circuits. Integral thin extensions 28 may be provided at the sides of the spring blades 16 and 17 to insulate the blades of each arrester from those of adjacent arresters. The circuits 29 and 30 are connected to the binding posts 11 and instruments, represented by

the windings 31 and 32 in Fig. 6, may be connected to the corresponding binding posts 13. The binding posts 12 are connected together by the conductive links 33 and connected to the ground 34. One side of each circuit is thus grounded through the spring blade 17 and the other side is connected to the spring blade 16 so that the discharge unit 18 will prevent excessive potentials across the windings 31 and 32.

The invention provides an arrester with a simple discharge unit which may be very easily and conveniently inspected and cleaned or replaced in case it becomes short circuited.

The invention has been explained by illustrating and describing a particular form thereof, but it will be apparent that changes may be made without departing from the spirit of the invention or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a discharge unit for an arrester, an insulating casing formed in two sections, and a spring secured to the inner face of each casing section by a rivet, whereby a discharge element may be held between said springs, the rivets extending through the casing sections to form external contacts.

2. In a discharge unit for an arrester, an insulating casing formed in two sections with peripheral rims, said rims being threaded together to secure said casing sections in spaced relation, and a spring secured to the inner face of each casing section by a rivet, whereby a discharge element may be held between said springs, the rivets extending through the casing sections to form external contacts.

In witness whereof, I have hereunto set my hand.

HAROLD M. TOWNE.

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