

No. 854,724.

PATENTED MAY 28, 1907.

J. T. H. DEMPSTER.
THERMAL CUT-OUT.
APPLICATION FILED NOV. 7, 1904.

Fig. 1.

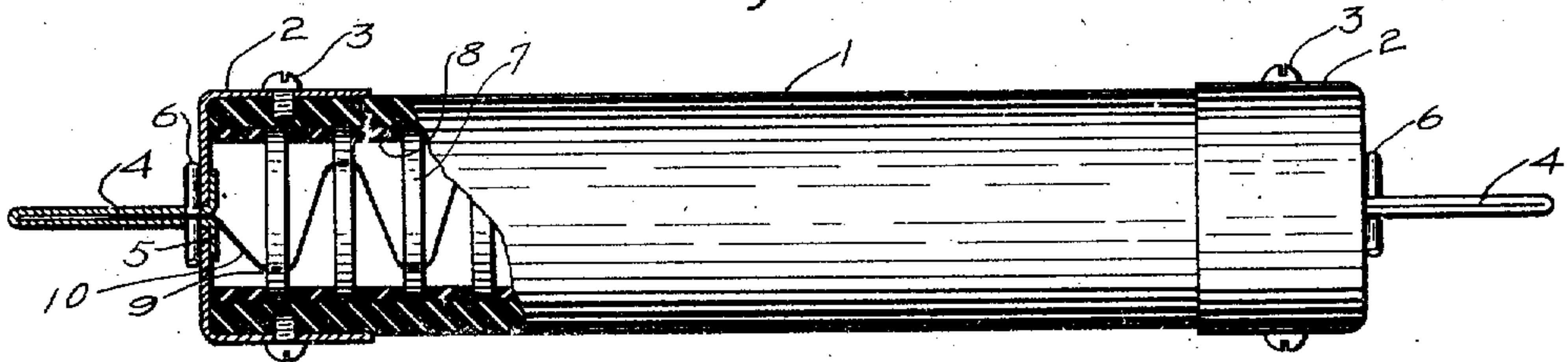
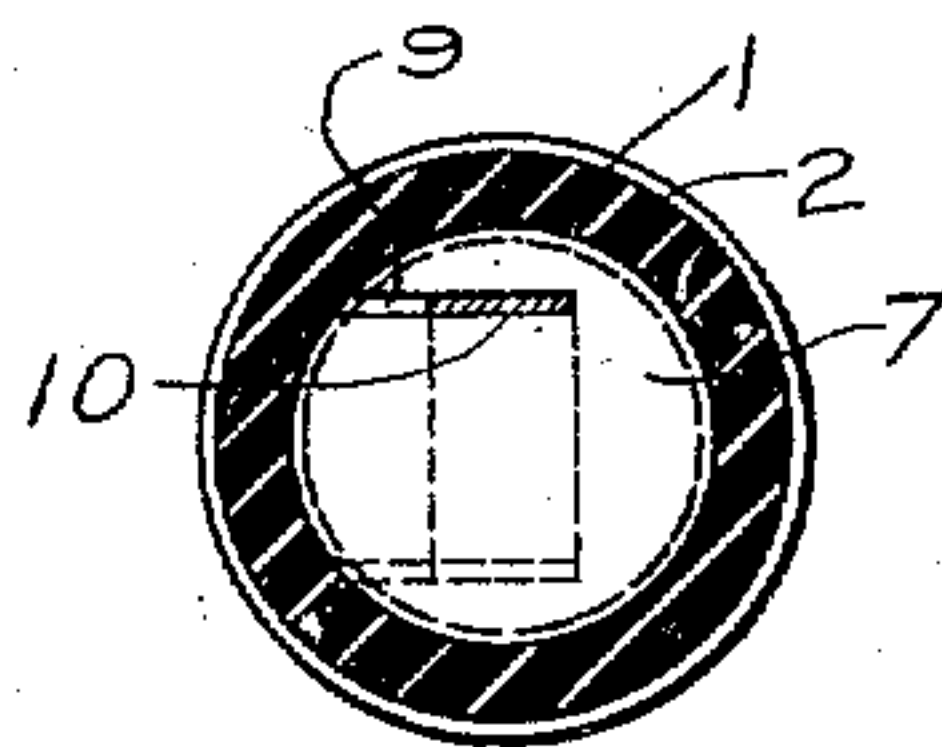


Fig. 2.



Witnesses.

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by *Albert B. Davis*
Att'y.

UNITED STATES PATENT OFFICE.

JOHN T. H. DEMPSTER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

THERMAL CUT-OUT.

No. 854,724.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed November 7, 1904. Serial No. 231,663.

To all whom it may concern:

Be it known that I, JOHN T. H. DEMPSTER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Thermal Cut-Outs, of which the following is a specification.

The present invention relates to cut-out devices for interrupting electrical circuits upon the passage thereof of abnormal or dangerous currents, and more particularly to that type of cut-outs known as inclosed fuses which consist of a strip of fusible metal adapted to be connected in the circuit to be protected and inclosed by a stout tube or box to prevent the volatile gases and the particles of molten metal from scattering and igniting combustibles in its vicinity.

In the fuses designed for the protection of circuits carrying currents of considerable volume the fusible strip is so large that upon "blowing" a very great volume of gas is evolved which frequently explodes the envelop, and in order to prevent this action numerous attempts have been made to condense the gases or to confine the fusion to a short section of the fuse strip so that the pressure, due to evolved gases, will not approach the bursting strength of the envelop.

The object of my invention is to provide an inclosed fuse in which the amount of metal fused upon blowing will be restricted to a minimum and the gases evolved therefrom quickly and effectually condensed.

In carrying out my invention I provide a suitable envelop with a plurality of insulated metal plates arranged in proximity to the fusible strip so that the arc which forms upon blowing will be subdivided into a number of smaller ones extending from plate to plate and the sum of the counter-electromotive forces of these small arcs thereby made effective in preventing the extension of the fused section beyond a limited number of plates, and the gases evolved by the fused section of the fuse strip will be condensed upon coming in contact with the surfaces of the heat conducting metal plates.

For a more complete understanding of my invention reference may be made to the following detailed description and the accompanying drawing forming a part of this specification, in which

Figure 1 is a side elevation with a portion broken away showing one form of my invention; and Fig. 2 is a transverse section thereof.

The casing is of ordinary construction consisting of an insulating tube 1 provided with metal end caps 2 secured thereto by screws 3 and having contact blades 4 extending through their ends and held in place by outwardly bent lugs 5 and pins 6 on opposite sides of the shell ends.

Extending through the base of the tube 1 is a series of transversely arranged metal plates 7 which are held equally spaced by insulating rings 8 fitting the inner periphery of the tube. These plates are each provided with a chordal slot 9 and when assembled they are arranged so that the slots in alternate plates will lie on opposite sides of the axis, as shown in Fig. 1.

The fusible strip 10 extends in a zigzag path across the spaces between the plates and through the slots 9 in them and the ends are connected to the respective contacts 4.

Upon the blowing of a fuse constructed as above described a short arc is first formed across the space previously occupied by the weakest point in the fuse strip and immediately extends itself in opposite directions by volatilization of the severed ends of the strip, and in passing from plate to plate it subdivides itself into a series of small arcs until the sum of the counter-electromotive forces of the small arcs is sufficient to oppose further extension of the arcing action, and the gases evolved from the section of the fused strip being brought into contact with the surfaces of the heat conducting plates 7 are quickly condensed so that the pressure on the walls of the shell is prevented from becoming excessive and the arc is quickly deprived of its supporting medium.

I do not desire to restrict myself to the particular form or arrangement of parts herein described and shown; since it is apparent that they may be changed and modified without departing from my invention.

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

1. An electric fuse comprising a fusible strip, and means to subdivide the electric arc and condense the gases of fusion arranged in proximity thereto.

2. An electric fuse comprising a fusible strip, and one or more independent metal pieces arranged in proximity thereto and adapted to subdivide the arc and condense
5 the gases of fusion.

3. An electric fuse comprising a fusible strip, and a series of independent metal pieces engaging said strip and supporting it in a sinuous position.

10 4. An electric fuse comprising a fusible strip, and a series of independent metal plates provided with slots in which said strip is supported.

15 5. An electric fuse comprising an inclosing shell, one or more independent metallic plates arranged therein, and a fusible strip extending through said shell in contact with said plates.

20 6. An electric fuse comprising an inclosing shell, a series of independent metallic plates provided with apertures and arranged to divide the interior of said shell into compart-

ments, and a fusible strip extending through and substantially filling said apertures.

7. An electric fuse comprising an inclosing 25 shell, a series of independent metallic plates provided with eccentric apertures and arranged transversely of said shell with said apertures disalined, and a fusible strip extending through said disalined apertures: 30

8. An electric fuse comprising an inclosing shell, a series of metal plates provided with eccentric apertures and arranged transversely of said shell with the apertures in alternate plates on opposite sides of the axis. 35 insulating rings separating said plates, and a fusible strip extending through said apertures.

In witness whereof I have hereunto set my hand this 4th day of November, 1904.

JOHN T. H. DEMPSTER.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.