No. 781,347. PATENTED JAN. 31, 1905

C. KRÄMER.

SAFETY FUSE FOR ELECTRIC CIRCUITS.

APPLICATION FILED JAN. 6, 1904.

Fig. 1.

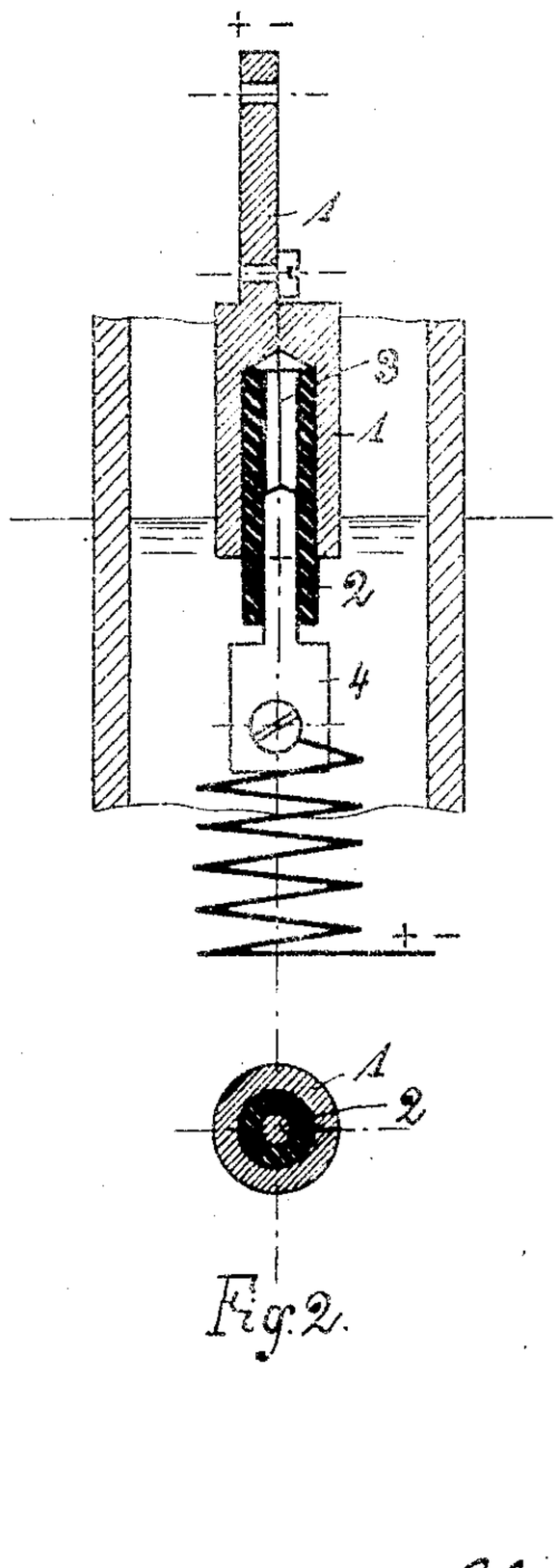

Fig. 2.

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UNITED STATES PATENT OFFICE.

CHRISTIAN KRÄMER, OF NEU ISENBURG, GERMANY, ASSIGNOR TO SOCIETY OF ELEKTRIZITATS-AKTIEN-GESELLSCHAFT VORM. W. LAHMEYER & CO., OF FRANKFORT-ON-THE-MAIN, GERMANY.

SAFETY-FUSE FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 781,347, dated January 31, 1905.

Application filed January 5, 1904. Serial No. 187,818.

To all whom it may concern:

Be it known that I, CHRISTIAN KRÄMER, a subject of the German Emperor, residing and having my post-office address at Kaiserstrasse 56, Neu-Isenburg, Hessia, Germany, have invented certain new and useful Improvements in Safety-Fuses for Electric Circuits, of which the following is a specification.

This invention relates to safety-fuses for electric circuits, and is especially adapted for use in high-potential circuits.

The object of the invention is to provide a fuse-holder which resists the most powerful force exerted on disruption of the fuse proper, the resulting gases, which might cause the formation of an arc, passing into oil or other insulating liquid. The wire or strip constituting the fuse proper is protected against contact with the oil or other insulating liquid, and the parts of different polarity are after the disruption of the fuse separated by such oil or other insulating liquid.

The nature of this invention will be more fully understood by the following description, with reference to the accompanying drawings, illustrating a manner in which the invention can be performed.

Figure 1 is a vertical section, and Fig. 2 is a transverse section, of the improved safety-fuse.

The fuse-chamber consists of a hollow cylinder or like container 1 of any suitable thickness. The inner walls of this container 1 are lined with a tube 2, of any suitable insulating substance, and within this insulating-tube 2 is the wire or strip 3, constituting the fuse proper, which is soldered at its lower end to a contact-piece or electrode 4, its upper part being passed through a fine hole in the container 1, which is formed with a piece constituting the other contact-piece or electrode, to which the upper end of the wire or strip is secured. The device constituted by the fuse and its container thus constructed are introduced into a vessel containing oil or other insulating liquid so that the fuse wire or strip 3 does not dip into the oil or other insulating liquid. If the container be made air-tight at the part where the wire or strip 3 passes through it, the device can be dipped any distance into the oil or other insulating liquid without the said oil or insulating liquid coming into contact with the wire or strip 3, as the contained air will exclude the oil or other insulating liquid.

The contact-piece or electrode 4 may be connected to the conductor by means of a spiral spring, a flexible cable, or the like.

When the fuse wire or strip 3 melts, the pressure created forcibly propels the contact-piece or electrode 4 into the oil or other insulating liquid, the explosion-gases passing through the tube 2 into the oil or other insulating liquid, whereby they are cooled. The two poles of the fuse become thus separated by a layer of oil or other insulating liquid as soon as the fuse is melted. If desired, the action of the explosion may be assisted by suitably proportioning the spring connected to the contact-piece or electrode 4.

I claim—

1. The combination with a bath of insulating liquid of a fuse, a movable electrode, and means whereby the pressure created by the fusing of said fuse operates to force said electrode beneath the surface of said liquid, substantially as described.

2. The combination with an insulating-bath, of a container opening beneath the surface of said bath, said container being otherwise closed, and a fuse mounted in said container, substantially as described.

3. The combination with an insulating-bath, of a container forming an electrode, said container opening beneath the surface of said bath but being otherwise closed, and a fuse mounted in said container, substantially as described.

4. The combination with an insulating-bath, of a container forming an electrode, said container opening beneath the surface of said bath but being otherwise closed, an insulating-lining for said container, and a fuse mounted within said container, substantially as described.

5. The combination with an insulating-bath,

of a container forming an electrode, said container opening beneath the surface of said bath but being otherwise closed, an insulating-lining for said container, a contact-piece engaging with the interior of said container, and a fuse mounted within said container and connected to said contact-piece, substantially as described.

6. The combination with an insulating-bath, of a container forming an electrode, said container opening beneath the surface of said bath but being otherwise closed, an insulating-lining for said container, a movable contact-piece engaging with the interior of said container, and a fuse mounted within said container, and connected to said movable contact-piece, substantially as described.

7. The combination with an insulating-bath, of a container, said container opening beneath the surface of said bath but being otherwise closed, an insulating-lining for said container, a movable contact-piece projecting above the surface of said bath within said container and engaging with said insulating-lining, a fuse mounted within said container and connected to said container and said movable contact-piece said fuse being wholly without the bath, substantially as described.

8. The combination with a bath of insulating liquid, of a container opening beneath the surface of said liquid, said container being otherwise closed, a movable contact-piece projecting into said container above the surface of said liquid and a fuse mounted in said container the whole being so constructed and arranged that the pressure created by the fusing of said fuse forces said electrode beneath the surface of said bath, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHRISTIAN KRÄMER.

Witnesses:
ERWIN DEPPEL,
JEAN GRUND.