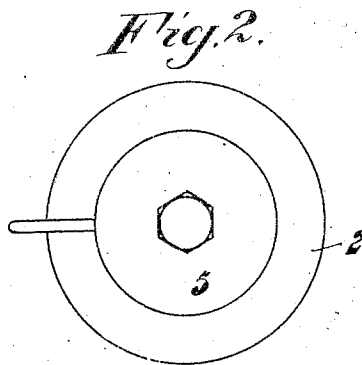
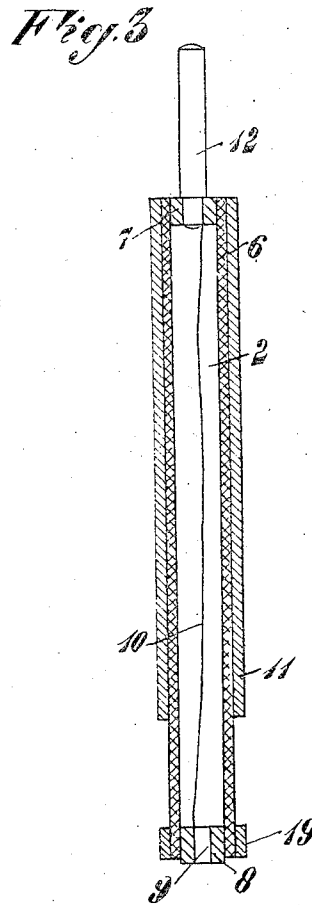
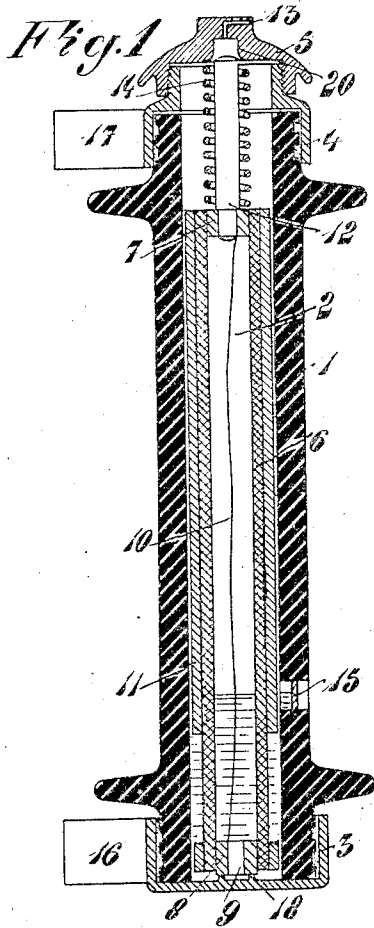


E. WEISSBERG.
ELECTRIC SAFETY FUSE.
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1,092,805.

Patented Apr. 7, 1914.



Witnesses:
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UNITED STATES PATENT OFFICE.

ERNST WEISSBERG, OF CASSEL, GERMANY.

ELECTRIC SAFETY-FUSE.

1,092,895.

Specification of Letters Patent.

Patented Apr. 7, 1914.

Application filed June 4, 1913. Serial No. 771,834.

To all whom it may concern:

Be it known that I, ERNST WEISSBERG, a subject of the Emperor of Russia, residing at 95½ Holländischestrasse, Cassel, in the Empire of Germany, have invented a new and useful Electric Safety-Fuse, of which the following is a specification.

My invention relates to an electric safety fuse with a closed melting space, in which the melting spark is extinguished by means of an insulating liquid, such as for example oil.

According to the invention the electric safety fuse consists of two upright tubes of insulating materials put one within the other, two metallic caps closing the outer tube above and below and forming contacts, an annular stopper closing the lower end of the inner tube and bearing on the lower cap, a metallic spindle closing the upper end of the inner tube, a thin wire electrically connecting the annular stopper with the spindle and forming a safety fuse, means for electrically connecting the spindle with the upper cap and for pressing the inner tube downward, and an insulating liquid filling the lower part of the two tubes, so that in case of a violent short-circuit the inner tube is thrown upward and thus opened, while the melting spark is safely extinguished in the liquid.

I will now proceed to describe my invention with reference to the accompanying drawing, in which—

Figure 1 is a vertical longitudinal section through the electric safety block, Fig. 2 is an upper view of the same, and Fig. 3 is a vertical longitudinal section through the inner tube with the safety fuse.

Similar characters of reference refer to similar parts throughout the several views.

1 is a tube of insulating material which is below closed by means of a metallic cap 3 cemented on it and provided with a contact 16, while a tubular cap 4 provided with a contact 17 is cemented on the upper end of the tube 1. The parts 1, 3, 4 form a vessel for the reception of an inner part illustrated at Fig. 3, and this vessel can be closed with a metallic cover 5 screwed on the upper cap 4. The inner part consists of a small tube 2 of tough insulating material and closed at both ends by means of two tubular metallic stoppers 7 and 8. The lower cap 3 is on the bottom provided with an annular projection 18, on which the lower

stopper 8 of the inner part is normally made to rest. In the upper stopper 7 the set-off end of a spindle 12 is secured, which is electrically connected with the lower stopper 8 by means of a thin metallic wire 10 serving as a safety fuse. In order to protect the inner tube 2 from destruction by a high pressure produced by a violent short-circuit, the tube 2 is preferably surrounded with a metallic tube 11 extending from the upper end to a point above the lower end and also with a ferrule 19 at the lower end. The cover 5 is provided with a central cylindrical recess 20, in which the spindle 12 engage. A helical spring 14 surrounding the spindle 12 and inserted between the upper stopper 7 and the cover 5 serves for normally pressing the inner tube 2 downward, so that the lower stopper 8 bears against the annular projection 18 of the lower cap 3, and it will be now understood, that in this manner the two contacts 16, 17 are electrically connected by means of the safety fuse 10. The cover 5 is provided with a small bent vent-hole 13 leading from the recess 20 to without. The spindle 12 serves at the same time as a handle for easily handling the inner tube 2 during the introduction and removal.

The outer tube 1 and the inner tube 2 are partly filled with oil, the level of which can be observed by means of a window 15 provided in the wall of the outer tube 1.

Should the safety fuse 10 from some reason melt, a violent pressure will be produced in the inner tube 2, so that, as the lower stopper 8 is downwardly checked by the annular projection 18 of the lower cap 3, the upper stopper 7 with the inner tube 2 will be thrown upward while compressing the helical spring 14, whereby the central opening 9 of the lower stopper 8 is uncovered and consequently the whirling oil will be forced out of the inner tube by the high pressure. Thus the contact between the lower stopper 8 and the lower cap 3 is broken, so that the melting spark is safely stopped in the oil in a manner similar to a maximum oil-switch. The overpressure produced in the outer tube 1 will be balanced through the vent-hole 13, which is not closed by the upper rounded end face of the spindle 12. This equalization of the pressure may be utilized for producing visible marks or signs, which indicate the operation of the device.

I claim:

1. In an electric safety fuse, an upright
outer tube of insulating material, two me-
tallic caps closing said outer tube above and
below and forming contacts, an inner tube
of insulating material extending from the
lower end to a point beneath the upper end
of said outer tube, an annular metallic stop-
per closing the lower end of said inner tube
and adapted to come in contact with the
lower cap, an upper metallic stopper clos-
ing the upper end of said inner tube, a thin
wire electrically connecting said annular
stopper with said upper stopper and form-
ing a safety fuse, a spring inserted between
said upper stopper and the upper cap for
electrically connecting them, and an insulat-
ing liquid filling the lower part of said outer
tube and said inner tube.
2. In an electric safety fuse, an upright
outer tube of insulating material, two me-
tallic caps closing said outer tube above and

below and forming contacts, an inner tube
of insulating material within said outer tube
and surrounded with a metallic tube, said
inner tube extending from the lower end to
a point beneath the upper end of said outer
tube, an annular metallic stopper closing
the lower end of said inner tube and adapt-
ed to come in contact with the lower cap,
a metallic spindle closing the upper end of
said inner tube, a thin wire electrically con-
necting said annular stopper with said spin-
dle and forming a safety fuse, a helical
spring surrounding said spindle for electri-
cally connecting same with the upper cap
and for pressing said inner tube downward,
and an insulating liquid filling the lower
part of said outer tube and said inner tube.

ERNST WEISSBERG.

Witnesses:

ANDREAS BITTER,
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