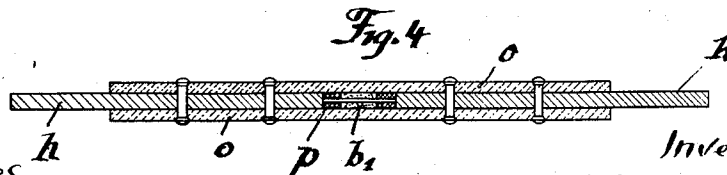
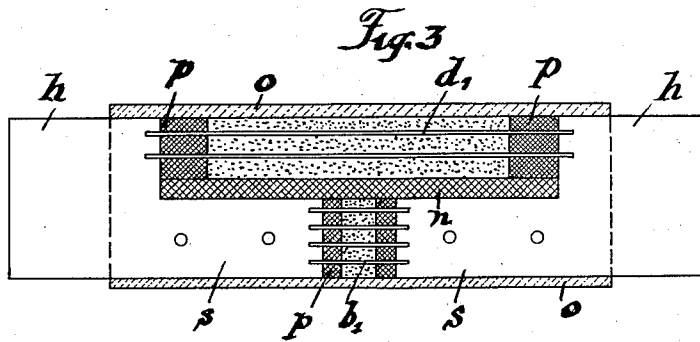
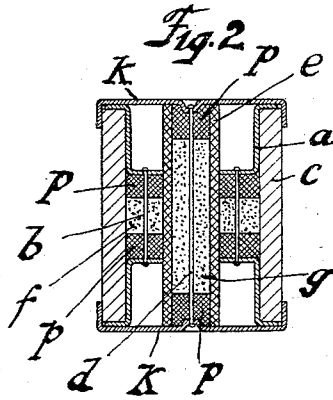
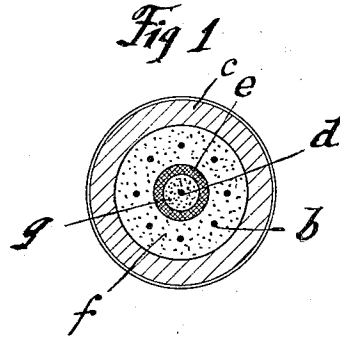


W. KLEMENT.
EXPLOSION PROOF CARTRIDGE CUT-OUT.
APPLICATION FILED AUG. 5, 1910.

1,007,876.

Patented Nov. 7, 1911.



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EXPLOSION-PROOF-CARTRIDGE CUT-OUT.

1,007,876.

Specification of Letters Patent.

Patented Nov. 7, 1911.

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To all whom it may concern:

Be it known that I, WILHELM KLEMENT, a subject of the German Emperor, and residing at Neu-Finkenkrug-Falkenhain, Germany, have invented certain new and useful Improvements in Explosion-Proof-Cartridge Cut-Outs, of which the following is a specification.

My invention relates to explosion-proof cartridge cut-outs having a plurality of fuses of various lengths connected in parallel.

In order to prevent the occurrence of an arc at the contacts of the fusible strips in the well-known open strip fuses it has been found advantageous to arrange in parallel with the principal fusible strip an auxiliary fusible wire of greater length and greater resistance which only carries a relatively small part of the current when the fuse is being used, but carries the entire current immediately after the main fusible strip has been destroyed. By applying this arrangement known in open fusible cut-outs to perfectly closed cartridges comprising fusible filaments and granular filling considerable advantages are obtained with regard to the cartridge cut-outs and their action. In the closed cartridge cut-outs the length and section of the fusible filaments must also be such that only a small portion of the total current is carried by the long fusible filaments.

When the electrical proportions of the main and auxiliary fusible filaments of closed cut-outs are correctly selected, the distance between the contacts for the short filaments can be made relatively very small on the one hand by embedding the fusible filaments in an indifferent filling material on the other hand by providing a fireproof closure between the places where the filaments are attached to the contacts for protection against the flame, and, lastly, by completely closing the entire cartridge. By shortening the length of the filaments in this manner the certainty of action of the cartridge is increased in consequence of its being possible to diminish the requisite masses of metal. These advantages can only be obtained, however, when, according to my invention, the fusible filaments of various length located in a common fuse chamber are separated in such a manner from one another by insulating material that the flame of the long filaments does not bridge over the contacts of

the short filaments and thereby cause a permanent arc. I may separate the fusible filaments either by the filling material itself or by a special partition.

The arrangement of the long fusible filaments in a special closed fuse chamber within the fuse insertion carrying the short fusible filaments is particularly advantageous.

Several illustrative embodiments of my invention are represented by way of example in the accompanying drawing, wherein:—

Figure 1 is a plan of a cartridge having end contacts, and Fig. 2 shows the same in cross-section; Fig. 3 shows a cartridge in the form of a strip in plan, the covering plates having been removed, and Fig. 4 shows the latter cartridge in longitudinal section.

Referring firstly to Figs. 1 and 2, eight short fusible filaments *b* are stretched between the pot-shaped recessed connecting members *a*. Within the body *c* of the cartridge is a special small tube *e* containing the long auxiliary filament *d*. The entire body, including the small tube *e*, is covered by end contacts *k* which are electrically connected with the metal pots *a* and the ends of the wire *d*. The fuse chambers *f* and *g* are provided in known manner with granular damping material, and are securely closed from the outside by fireproof stoppers *p*.

In the strip-shaped cartridge according to Figs. 3 and 4 the short fusible filaments *b*₁ and the long tensioned wires *d*₁ are stretched between the contact blades *h*, *h*. To this end, the contact blades have inwardly-directed lugs *s* so that distance between parts of the blades is long and that between other parts is short. The two groups of fuses of different length are separated by a fireproof partition *n*. In this arrangement also the places at which the fuses are connected to the contacts are protected by fireproof stoppers *p*. With the exception of the terminal contacts the cut-out is covered by stiffening closure plates *o* of insulating material and the fuse chamber filled with granular damping material.

I claim:—

1. In a cartridge cut out, the combination with an explosion-proof cartridge having terminal contacts; of a plurality of fusible filaments of various lengths connected in parallel between said contacts, the total resistance of the shorter filaments be-

ing smaller than the total resistance of the longer filaments.

2. In a cartridge cut-out, the combination with a closed cartridge having terminal contacts of a plurality of fusible filaments of various lengths connected in parallel between the contacts, the total resistance of the shorter filaments being smaller than the total resistance of the longer filaments, and insulating means between the shorter filaments and the longer for preventing the flame of the longer filaments touching the contacts of the previously fused shorter filaments.

3. In a cartridge cut-out, the combination with a closed cartridge having terminal contacts of a plurality of fusible filaments of various lengths connected in parallel between the contacts, the total resistance of the shorter filaments being smaller than the total resistance of the longer filaments, and solid insulating means between the shorter filaments and the longer for preventing the flame of the longer filaments touching the contacts of the previously fused shorter filaments.

4. In a cartridge cut-out, the combination with a closed cartridge having terminal contacts of a plurality of fusible filaments of

various lengths connected in parallel between the contacts, the total resistance of the shorter filaments being smaller than the total resistance of the longer filaments, and a solid insulating partition between the shorter filaments and the longer for preventing the flame of the longer filaments touching the contacts of the previously fused shorter filaments.

5. In a cartridge cut-out the combination with a closed cartridge having terminal contacts of a plurality of fusible filaments of various lengths connected in parallel between the contacts, the total resistance of the shorter filaments being smaller than the total resistance of the longer filaments, and a tubular insulating partition between the shorter filaments and the longer, for preventing the flame of the longer filaments touching the contacts of the previously fused shorter filaments.

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

WILHELM KLEMENT.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.