

C. D. McPHEE & J. GILLIES.
ELECTRIC TIME FUSE.
APPLICATION FILED JAN. 14, 1909.

939,155.

Patented Nov. 2, 1909.

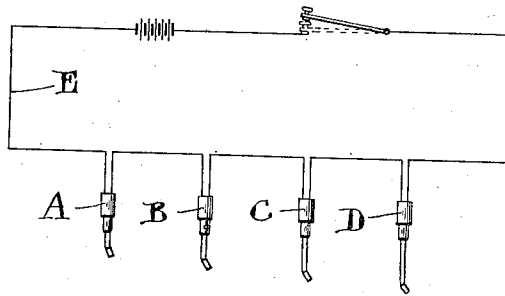


FIG. 3.

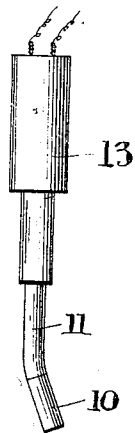


FIG. 1.

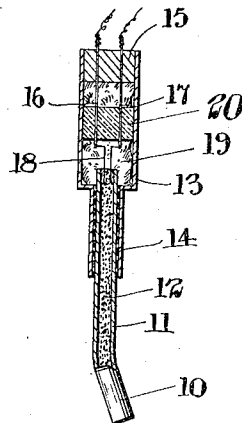


FIG. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

CLAUD DANIEL McPHEE, OF ARNPRIOR, AND JOHN GILLIES, OF BRAESIDE, ONTARIO, CANADA.

ELECTRIC TIME-FUSE.

939,155.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed January 14, 1909. Serial No. 472,249.

To all whom it may concern:

Be it known that we, CLAUD DANIEL McPHEE, of Arnprior, and JOHN GILLIES, of Braeside, both in the county of Renfrew, Province of Ontario, Canada, have invented certain new and useful Improvements in Electric Time-Fuses, of which the following is a specification.

Our invention relates to improvements in electric time fuses and the objects of our invention are to provide a simple and safe form of fuse which will be positive in its action and by means of which a number of detonations may be successfully made with absolute surety and by a single electric circuit.

In its construction the invention includes a detonating cap, a cartridge of powder and an electric igniting wire extending into the powder and adapted to be brought to an incandescent state by the current, suitable terminals for the igniting wire and a packing of inflammable material about the terminals, and a casing inclosing the end of the cartridge and the inflammable material.

In the drawings, Figure 1 is a side elevation of the fuse. Fig. 2 is a vertical section of the same. Fig. 3 is a diagrammatic view showing the connections for igniting successfully a plurality of the fuses.

Referring to the drawings, 10 represents a detonating cap of any ordinary usual construction which fits within the end of the cartridge 11 having a filling 12 of slow burning powder, this cartridge is held within a cylindrical casing 13, the said casing having an annular ring 14 which fits closely around the cartridge and is cemented or otherwise attached to the same.

The upper end of the casing 13 is closed by a water-proof cap 15 of inflammable material such as cork, wood or paper. Through this cap, conducting wires 16 and 17 extend, and are supported by an insulating block 20, and have their ends connected by an igniting wire 18 which extends into and has direct burning contact with the powder in the cartridge 11.

The interior of the upper part of the casing 13 is filled with a packing 19 of inflammable material such as a compound of wax with a combustible such as chlorid of potash.

In using the fuse when the current is passed through the conducting wires 16 and 17, the wire 18 is raised to incandescence and maintained in an incandescent state by the current. This ignites the powder and the spitting and burning of this soon makes a clearance through the wax compound, destroying the cap and permitting the escape of the gas from the burning fuse. The explosion will force out both the insulating block and the cap 15.

It will be observed that this fuse is readily defined from any employing spark or spit-spark ignition, as such cannot always be depended on to ignite the detonating cap. The incandescence in this cap is produced by a continuous incandescence of the wire 18 which burns and ignites the powder. As soon as the powder burns to the detonating cap 10, the same is exploded and the charge will then be exploded.

It is purposed to make the fuses a number of different sizes having various lengths of powder cartridges, as it is evident that the time which the fuse will take to burn is dependent on the length of the cartridge. In this way, as shown in Fig. 3, a number of the fuses A, B, C, D having different lengths of cartridge may be connected in a single circuit E and then when the current is sent through the circuit the fuses will be successively exploded at intervals determined by the length of their powder cartridges.

As many changes could be made in the above construction, and many apparently widely different embodiments of the invention, within the scope of the claims could be made without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What we claim as our invention is:

1. A time fuse including a detonating cap, a powder cartridge in communication therewith, a casing surrounding the end of the powder cartridge and having a packing of inflammable material therein, a destructible cap closing the end of the casing and an electric igniting wire in contact with the powder, and terminals connected to said wire extending externally to the cartridge.

2. An electric time fuse including a deto-

nating cap, a powder cartridge in contact therewith, a casing inclosing the end of the powder cartridge, and inflammable means within the casing adapted when ignited to
5 open the casing to permit the escape of gases from the burning powder, and electric means for igniting the powder in the cartridge.

In witness whereof, we have hereunto set our hands in the presence of two witnesses. 10

CLAUD DANIEL MCPHEE.
JOHN GILLIES.

Witnesses:

JAMES MCPHEE,
EDWIN FARMER.