

Jan. 23, 1945.

L. S. WINCAPAW

2,367,915

FUSE LIGHTER

Filed July 9, 1941

Fig. 1.

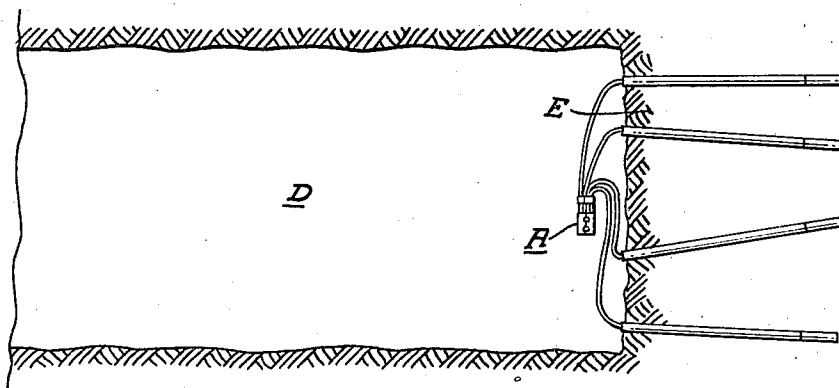


Fig. 3.

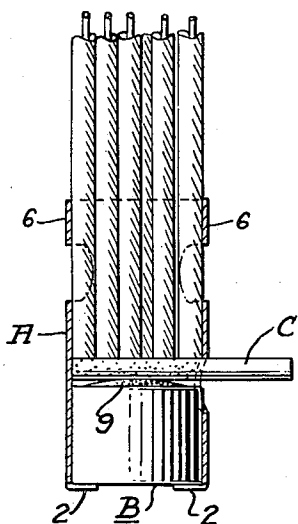


Fig. 2.

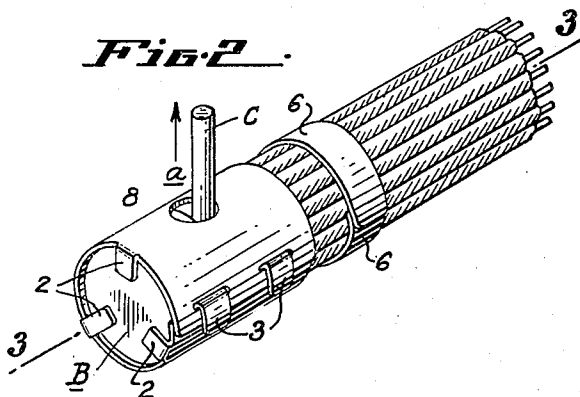


Fig. 4.

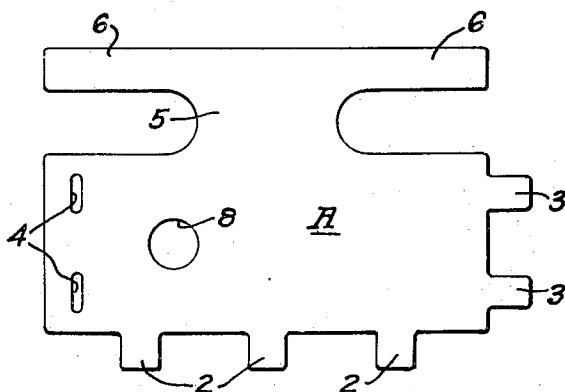


Fig. 5.

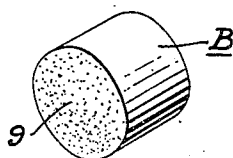


Fig. 6.



INVENTOR.

LELAND S. WINCAPAW, DECEASED

EDWINA ROYCE WINCAPAW, ADMINISTRATRIX

BY *Castberg & Roemer*

ATTORNEYS

UNITED STATES PATENT OFFICE

2,367,915

FUSE LIGHTER

Leland S. Wincapaw, deceased, late of Grass Valley, Calif., by Edwina Royce Wincapaw, administratrix, Grass Valley, Calif.

Application July 9, 1941, Serial No. 401,595

3 Claims. (Cl. 102—27)

This invention relates to a device for igniting or spitting powder fuses.

In mining and quarry work, and in blasting in general, whether it is underground or surface work, it is common practice to set off or fire the explosive charges employed, such as powder or dynamite, by a detonating cap and a connected powder fuse. Where comparatively few charges are to be fired, the operator can ignite or spit the projecting fuse ends with a match or a miner's lamp and still have plenty of time to reach a place of safety; but where the fuses to be lighted are numerous, say ten, fifteen, twenty or more, so much time is required to spit them all that one or more charges are likely to go off before the operator can reach a place of safety. In fact, so many men have been killed or badly injured from this cause that the Industrial Accident Commission, in considering the mine safety orders, was seriously considering whether or not fuse blasting should be prohibited.

The object of the present invention is to provide a device whereby fuse blasting can be conducted in perfect safety. The invention, more specifically stated, embodies a device whereby a plurality or group of fuses may be simultaneously spit or ignited, thereby leaving ample time for the operator to reach a place of safety.

The invention is shown by way of illustration in the accompanying drawing, in which—

Fig. 1 is a longitudinal vertical section of a tunnel showing the manner in which the invention is used;

Fig. 2 is a perspective view showing the manner in which the fuse ends are gathered and secured with relation to each other, and the ignition mechanism employed in conjunction therewith;

Fig. 3 is a longitudinal section taken on line III—III of Fig. 2;

Fig. 4 is a plan view of the sheet which is wrapped about the fuse ends to gather and secure them during the ignition period;

Fig. 5 is a perspective view of a fusee; and

Fig. 6 is a perspective view of a striker pin.

Referring to the drawing in detail, and especially to Fig. 4, A indicates a wrapper or retainer constructed of a thin sheet of lead or a similar readily fusible material. One longitudinal edge of this sheet is provided with three prongs indicated at 2, one end with a pair of prongs 3, and the opposite end with slots 4 to receive the prongs 3. The other longitudinal edge has a neck portion 5 and a pair of laterally extending arms 6,

the function of which will hereinafter be described.

In connection with this sheet or wrapper a fusee is employed. It is composed of ordinary slow-burning powder, with which is combined strontium to produce a red flame or light when it is burning. The fusee is molded or otherwise made to form a cylindrical section, such as shown in Fig. 5, and it may be wrapped in waterproof paper to protect it against wet and moisture. One end of the fusee is provided with a match head to permit ignition thereof, and while the match head or surface may be made of any suitable material, antimony sulphide and potassium nitrate containing lead oxide or similar material, and a binder of gum arabic or the like, may be employed. Ground glass may also be added to insure friction when a striker is used.

A striker pin is also used, as shown in Fig. 6. This is nothing more or less than a round stick of wood, faced with lead phosphorous, tin sulphide, carbon, and dextrine as a binder. Other materials may obviously be employed.

The fusee is generally indicated at B and the striker pin at C.

In actual practice let it be supposed that a tunnel, such as indicated at D in Fig. 1, is being driven; that the inner face E has been drilled; and that the powder and fuses have been placed and tamped into their respective holes; and if that is the case, the fuse ends will be gathered and the sheet shown in Fig. 4 will then be wrapped around the ends thereof and is secured by passing the prongs 3 through the slots 4 and bending them over, as is clearly shown in Fig. 2, the sheet being further secured by bending the arms 6 around the fuses, as also shown in Fig. 2. The sheet, when thus wrapped and secured around the ends of the respective fuses, becomes cylindrical in shape, and if proper care is taken when wrapping or applying the sheet, space will be left in the outer end for the striker pin and fusee. The striker pin is inserted through a hole shown at 8 and the fusee is slipped in through the outer end so as to contact the striker pin, and it is there secured by bending the lugs 2 over the end of the fusee, as shown in Fig. 2.

When thus applied, the fuses may be ignited. That is accomplished by merely pulling the pin C outwardly or in the direction of arrow a (see Fig. 2). In doing so, the surface of the striker pin rubs against the match head surface 9 of the fusee; this becomes ignited and in turn ignites the slow burning powder. An exceedingly intense heat is thus developed and all the fuse ends

are set on fire, thus insuring ignition of the powder train within each fuse. In fact, the heat is so intense that the fuse ends are burnt for a considerable distance and the lead retainer is completely melted away. When this happens, the fusee drops to the ground and burns with a red flame, thus giving warning that a blast has been ignited.

At the same time that the retainer is melted, the fuse ends are released and will spread out over the surface to be blasted. This liberation of the fuses is important, as it eliminates any chance of the earlier blast pulling out the fuses of the later blasts.

Many advantages are insured by employing a lighter of the character described. It insures positive and simultaneous ignition or lighting of all the fuse ends; it eliminates spitting of the fuse ends to expose the powder train within each fuse, as the intense heat of the fusee actually sets the ends of the fuses on fire; it insures fusing or melting of the retainer and thereby liberation of the individual fuses so that they may spread out over the face to be blasted. It liberates the fusee itself, permitting it to drop to the ground and thereby serve as a danger signal. In addition thereto, the device contains all that is required to ignite the fuses in the striker and the fusee, thereby permitting the device to be used anywhere in the open, underground, or otherwise. The device may be made in different sizes, for instance, to take care of fuses arranged in multiples of five, ten, fifteen, etc.

While these and other features of the invention have been more or less specifically described for purposes of illustration, it is to be understood that various changes may be resorted to, all within the scope of the appended claims.

Having thus described the invention, what is

claimed and desired to be secured by Letters Patent is:

1. A fuse spitter comprising a readily fusible retainer adapted to receive and secure in one end thereof a plurality of fuse ends, a fusee adapted to be inserted and secured in the opposite end of the retainer, a match head surface on the end of the fusee adjacent the fuse ends, and means for igniting said match head surface to light the fusee and thereby the fuse ends to fuse the fusible member to permit release and separation of the fuses after lighting them.

2. A fuse spitter comprising a readily fusible retainer adapted to receive and secure in one end thereof a plurality of fuse ends, a fusee adapted to be inserted and secured in the opposite end of the retainer, a match head surface on the end of the fusee adjacent the fuse ends, and a striker insertible in the retainer to engage and light the match head surface and thereby the fusee and the fuse ends to fuse the fusible member to permit release and separation of the fuses after lighting them.

3. A fuse spitter comprising a readily fusible member adapted to be wrapped around the gathered ends of a plurality of fuses, means for securing the fusible member when wrapped, said fusible member being substantially cylindrical in shape when wrapped about the fuse ends and said fuses projecting from one end thereof, a fusee insertible in the opposite end of the fusible member, means for securing the fusee when inserted, and means for igniting the surface of the fusee adjacent the fuse ends to ignite the fuses to fuse the fusible member to permit release and separation of the fuses after lighting them.

EDWINA ROYCE WINCAPAW.

Administratrix of the Estate of Leland S. Win-
capaw, Deceased.