To all whom it may concern:

Be it known that FRANK SAUCIER, a citizen of the United States, residing at Juneau, in the Territory of Alaska, has invented certain new and useful Improvements in Means for Attaching Caps and Fuses to Stick Explosives, of which the following is a specification.

This invention relates to stick explosives adapted to be exploded by concussion and it has for its object the provision of means for attaching to or associating with such stick of explosive the detonating cap commonly employed for bringing about the explosion of a stick.

An object of the invention is the provision of means for attaching the detonating cap and fuse to the stick of explosive without the necessity of forming a hole therein at the time of attachment.

A further object is to provide a wrapper or casing for the explosive whereby a channel is formed for the reception of the fuse.

A further object is to provide a casing or wrapper for the explosive, which casing is so formed as to provide a longitudinal passage or channel for the reception of the fuse, the walls of the channel being sufficiently strong to hold their shape during shipment.

A still further object of the invention is the provision of a stick of explosive having a hole formed in its end for the reception of the detonating cap, such stick being used in conjunction with a wrapper having a channel formed therein, whereby such fuse and cap may be attached to the explosive and held against displacement by a direct longitudinal pull.

Other important objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings:—

Fig. 1 is a side elevational view of a stick of explosive showing the invention applied thereto.

Fig. 2 is a similar view to Figure 1, but at right angle thereto.

Fig. 3 is a longitudinal sectional view of one end of the stick of explosive, taken on line 3—3 of Figure 4.

Fig. 4 is an end elevation.

Fig. 5 is a perspective view of one end of a stick of explosive showing the invention in use.

Fig. 6 is a view of the wrapper before it has been applied, and on a reduced scale, and,

Fig. 7 is a view similar to Figure 3, showing a slightly modified form of closure for the end of the wrapper or casing.

Like numerals are employed to designate like parts throughout the several figures of the drawing.

Referring to the drawings, the numeral 5 designates a stick of explosive, which in the present case will be called dynamite, although the invention is equally applicable to the more or less plastic explosive such as blasting powder. I form in the explosive at the time of manufacture a pair of holes 6, which extend inwardly from the opposite ends of the stick, and are of such depth as to receive the usual detonating cap.

A wrapper or casing 7 is provided for the dynamite. This casing is formed by a single sheet of heavy paper, preferably paraffined and this sheet before it is applied will have the appearance as illustrated in Figure 6, wherein sections 8, 9 and 10 are coated with an adhesive for applying the casing to the stick, and sections 8', 11 and 12 are free from such adhesive, for a purpose to be described. This wrapper may either be preformed and the dynamite poured therein, or same may be applied to the stick after it is formed. The purpose of this particular form of casing is to provide a longitudinal channel along one side of the stick of dynamite for the passage of the usual fuse. This channel is formed by the sections 11 and 12 which are held outwardly of the stick by a suitable tool at the time of wrapping, whereby such channel is given a shape and size approximately that of the usual fuse. As will be observed the channel is formed with a double wall, to give greater strength and to enable such channel to hold its shape during shipment and handling. A single thickness of the paper lies between the channel and the stick of dynamite. As shown, the wrapper is cut away at the points 13 and 14 and the section 10 tapers to a tab for completing the wrapper. Flaps 15 are formed on the wrapper and such flaps are adapted to be folded down over the ends of the stick for completing the casing. When it is desired to attach a cap and fuse to a stick of dynamite the flaps 15 are opened out.
wardly as shown in Figure 5. The single thickness of paper lying adjacent the channel is cut longitudinally to the top of the stick as indicated at 16. A section of fuse is then inserted through the channel a sufficient length and a cap secured thereto. The end of the fuse holding the cap is then given a return bend and the cap inserted in the hole 6, and the fuse is then given a pull at its opposite end, whereby it partakes of the position as illustrated in Figure 5, that of lying close against the end of the stick. The flaps 15 are then again folded inwardly over the end of the stick for covering the fuse connection. It will thus be observed that a direct pull from the opposite end of the fuse will prevent the fuse and cap from becoming disengaged. The stick of dynamite may then be lowered into the hole by holding to the fuse without the possibility of such fuse coming off. The forming of the fuse channel at the side of the stick causes the fuse to lie against the side of the hole, and will not interfere with the placing of additional sticks in the hole, or the tamping of the earth.

As shown in Figure 7, I may provide removable caps or closures 17, which enter the open ends of the casing and close the same, but which may readily and quickly be removed and replaced when it is desired to attach the fuse and cap to the explosive stick.

The purpose of providing two of the openings 6 and the channel extending the entire length of the stick is that the fuse may be inserted from either end of the stick and that there will still be an operative device, if the stick be cut in two transversely to form a half charge.

It will be seen that the present invention provides a very simple and economical construction for attaching a fuse and cap to an explosive stick whereby the use of strings, wires and like ties is eliminated. Furthermore, the attachment of the fuse and cap to the stick may be very rapidly effected. In the present practice, it requires the time of several men to attach the caps and fuses to the explosives, while with my arrangement one man can do the same amount of work in a comparatively short time. Furthermore the usual boring of the holes in the stick has been a source of great annoyance for the reason that the men employed to do this work are affected almost continually with headache. It is believed that the present arrangement possesses an advantage over my prior construction, which resulted in U.S. Letters Patent 1,446,604, for the reason that the detonating cap in the present case lies centrally of the stick, and is thought that the detonation will be more effective.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred one, but it should be understood that the invention is not limited to the particular construction shown, as other ways of arranging the holes will readily suggest themselves. The invention resides in providing holes into which the fuse and cap may be slipped which are of such configuration that a reverse pull upon the fuse will not serve to withdraw the fuse and cap.

Having described my invention, what I claim is:

1. An explosive stick having a hole formed therein at the time of manufacture, of a size to receive a detonating cap, a wrapper for said stick, and means formed by said wrapper for retaining a fuse adjacent the side of said stick.

2. An explosive stick and a wrapper therefor, said wrapper having a fuse opening formed longitudinally therethrough and by the material thereof, said stick having a pair of primer openings formed part way therethrough the openings of said pair extending inwardly from the opposite ends of the stick.

3. An explosive stick and a wrapper therefor, an opening formed longitudinally of said wrapper and by the material of said wrapper, said wrapper employing a plurality of turns for providing a plurality of thicknesses to the walls of the opening, said wrapper cut away adjacent the ends of the opening and the ends of the stick, and primer openings formed in the stick for the reception of a detonating cap.

4. An explosive stick and a wrapper therefor, said wrapper having a fuse opening formed longitudinally therethrough and by the material thereof and a pair of primer openings formed in the stick and extending part way therethrough, the openings of said pair extending inwardly from the opposite ends of the stick, and removable caps for the ends of the stick.

5. An explosive stick having a wrapper, said stick having an opening formed therein for the reception of a detonating cap, a fuse connected with said cap, said fuse given a return bend along the side of the stick for its entire length, said wrapper having a channel formed therein for the entire length of the stick, said channel adapted to receive the fuse and hold same against displacement with respect to the stick.

In testimony whereof I affix my signature.

FRANK SAUCIER.