S. P. BLACKMORE.

FUSE TOOL.

APPLICATION FILED MAR. 27, 1919.

1,361,301. **Patented Dec. 7, 1920.**

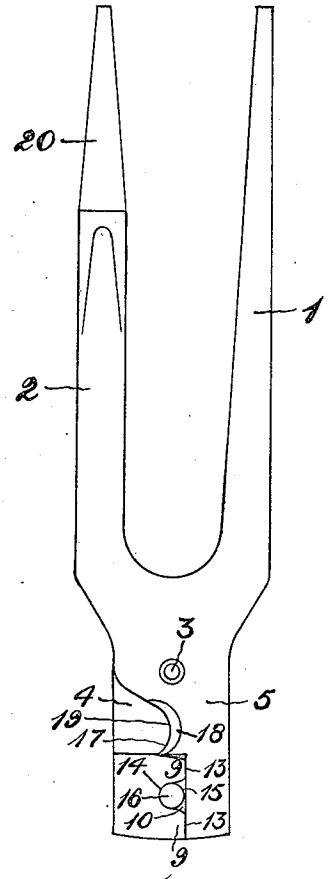


Fig. 1.

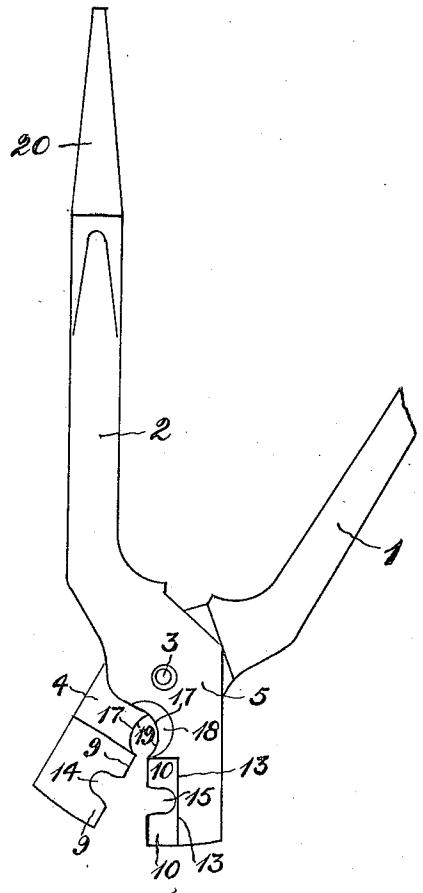


Fig. 2.

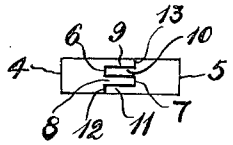


Fig. 3.

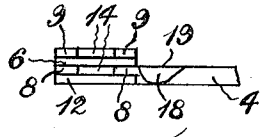


Fig. 4.

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UNITED STATES PATENT OFFICE.

SIDNEY PRATT BLACKMORE, OF VAALHOEK, TRANSVAAL, SOUTH AFRICA.

FUSE-TOOL.

1,361,301. Specification of Letters Patent. Patented Dec. 7, 1920.

Application filed March 27, 1919. Serial No. 285,628.

To all whom it may concern:

Be it known that I, SIDNEY PRATT BLACKMORE, a subject of the the King of Great Britain, and resident of Vaalhoek, Transvaal Province, Union of South Africa, have invented a certain new and useful Improved Fuse-Tool, of which the following is a specification.

This invention has reference to an improved tool or device suitable for the use of miners, quarrymen and other persons who, in the pursuit of their trades or occupations, are required to employ and prepare dynamite or other explosive charges for blasting and similar operations, either in mines, quarries or elsewhere.

The invention has for its object to produce a simple and efficient means for securing the detonator to the time fuse, without damaging the coverings, or separating or dividing the powder core, of the fuse—which arrangements, as is well known, are responsible for frequent mis-fires with explosives—and to effect this in such a way as to exclude moisture, by making a water-tight connection between the detonator and fuse.

The improved tool, which is substantially in the form of pliers, is adapted to secure the detonator to the fuse by crimping, or otherwise contracting or decreasing the diameter of, the detonator tube around the end of the fuse, thereby securely connecting the same together in the operation of preparing the primers for firing the explosive. The jaws of the tool are compounded or constructed in such a manner that the crimping or contracting of the tube is effected by forming a plurality of approximately semi-circular depressions in two opposite sides of the tube, the depressions on the one side alternating with those on the other side.

The tool preferably also includes or combines in its construction a convenient means for cutting the fuse, and a part in the form of a tapered piece or rod, which is applicable for penetrating the gelatin in order to form a hole therein into which the detonator can be readily inserted. Said piece or rod is preferably made of copper. This piece or rod can be conveniently attached to one of the handles of the pliers, and constitutes the outer or end portion of said handle.

The invention will be more fully explained with the aid of the acompanying drawings wherein—

Figure 1 represents the tool in side elevation with the jaws closed.

Fig. 2 is a side elevation of the same with the jaws open.

Fig. 3 is a plan view of the jaws closed and

Fig. 4 is an elevation of one of the jaws as seen from the inside or looking on the inner face.

As will be seen on reference to Figs. 1 and 2, the tool or device is in the form of pliers, the handle parts 1, 2 being appropriately shaped to serve that purpose, and being connected by the pivot pin 3.

The jaws 4, 5, see more particularly Figs. 3 and 4, are each fashioned with a groove 6, 7, respectively, on the inner face, which grooves are formed at right angles or substantially at right angles to the fulcrum or pivot pin 3 of the pliers. The parts 8 9, of the one jaw 4, and the parts 10, 11, of the other jaw 5, which form the sides of their respective grooves 6, 7, are so disposed in relation to each other that when the pliers are closed the one part 8 of the one jaw 4 projects into the groove 7 in the other jaw 5, and the one part 10 of the other jaw 5 projects into the groove 6 in the other jaw 4. The parts 8, 10, of the jaw, which enter the grooves 7, 6, of the opposing jaw, are each provided at the outer side with a recess 12, 13 respectively, into which the other part 11, 9, respectively, of the opposite jaw fits or projects when the jaws are closed—see Figs. 1 and 3. As will be understood on reference to Fig. 3, the edges of the parts 8, 9, 10, 11, are practically square, and the grooves 6, 7, and recesses 12, 13, are of corresponding shape. The said grooves and recesses operate to limit the inward movement of the jaws 4, 5, the opposing edges of the grooved parts engaging therewith when the jaws are closed, as shown in Fig. 3. The manner in which the jaws 4, 5, interlay when closed is obvious from Figs. 1 and 3 of the drawings; in that sense the jaws are compounded.

The opposing inner grooved edges of the jaws 4, 5, are bifurcated, or have each a semi-circular or approximately semi-circular recess or gap 14, 15, respectively, which are made at right angles or substantially at

right angles to the grooves 6, 7, and are so positioned, relative to one another, that when the jaws 4, 5, are closed a circular or substantially circular hole 16, is formed between, and at or about the center of the grooves 6, 7,—see Fig. 1.

The means for cutting the fuse may be provided by inwardly curving or recessing portions of the jaws between the inner ends of the grooved parts 8, 9, 10, 11, and the fulcrum or pivot pin 3, as indicated at 17, and beveling the said portions, as indicated at 18, to form the cutting edges 19.

The tapered piece or rod 20 of copper, for forming the hole in the gelatin to receive the detonator, is shown forming the outer or end part of the handle 2.

In using the tool or device, the pliers are first opened to receive the detonator, which is placed in the gap 16, formed between the jaws 4, 5, by the bifurcations or recesses 14, 15, and lies in a direction parallel to the fulcrum of the pliers. As the pliers are closed the grooved bifurcated parts engage with and press upon the tube of the detonator at opposite sides. The bifurcated and grooved portion of each jaw tends to force the detonator tube into the groove of the opposing jaw. In the act of closing the pliers each part thereof contacting with the tube will form a semi-circular or substantially semi-circular depression in the surface of the detonator tube. By the combined action of the bifurcated grooved parts of the two jaws contacting with the tube the said semi-circular depressions will alternate or be staggered at opposite sides; that is to say, they will be formed at both sides of the detonator tube, and those at the one side will be positioned intermediate or between those at the other side. In this way the detonator tube will be caused to tightly encircle the fuse, by means of a series of the staggered, approximately semi-circular, depressions, the surplus metal being shaped into a "fin" by being forced into the groove due to the action of the projecting parts of the opposing jaw. In this manner the detonator is tightly banded or secured around the time fuse.

The effect of banding or securing the detonator tube around the fuse in the manner explained is to destroy the capillary action of the cotton covering of the fuse and at the same time obviate the "skewing" action common to other types of pliers, which is so detrimental and causes buckling of the tube. It is, of course, obvious that the edges of the jaws must be so shaped as not to cut or perforate the metal of the tube, as for example by slightly rounding the same.

What I claim as my invention, and desire to protect by Letters Patent is:—

A tool of the class described comprising a pair of coöperating jaws in which the inner face of each jaw comprises two parallel projecting parts forming a groove between them, and one of said parts being recessed at the outerside, the parts forming the sides of the longitudinal groove in the one jaw being staggered in relation to those of the other jaw, so that they project into each other or interlay, and a transverse recess in the projecting parts of each jaw, said recesses being opposite each other.

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

SIDNEY PRATT BLACKMORE.

Witnesses:
GUSTAV LOMBARDS,
GEORGE EDWIN TORZELL.