

UNITED STATES PATENT OFFICE.

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MINER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 582,112, dated May 4, 1897.

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To all whom it may concern:

Be it known that I, JAMES WM. BRAY, a citizen of the United States, residing at Aspen, in the county of Pitkin and State of Colorado, have invented certain new and useful Improvements in Miners' Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-

10 pertains to make and use the same.

My invention relates to mining implements, and has particular reference to a tool for the use of miners when preparing a shot or blast, having for its object to associate or combine

15 in one instrument several devices and accessories designed, arranged, and adapted to facilitate the operation, render it most effective, and obviate the likelihood of personal injury.

More particularly stated, the invention con-
20 templates and includes a candlestick or holder, suitable supports therefor, a fuse-cutter, powder and fuse splitters, a cap-crimping attachment, and a tamping spike or rammer. In absence of the devices enumerated,
25 or any of them, miners are likely to resort to dangerous expedients while loading holes for blasting purposes and when firing the shot, often resulting in premature explosions and the loss of life or limbs. For instance, they
30 sometimes carelessly attempt to crimp a cap upon its fuse by aid of their teeth or to split powder upon the blade of a shovel, a drill, or other edged tool, and to overcome such tendencies the present invention has been made,
35 combining in a simple single tool all devices and appliances necessary to the rapid and accurate loading and firing of a shot.

The invention will be hereinafter described, and particularly pointed out in the claims fol-
40 lowing.

In the accompanying drawings, which form part of this specification and whereon similar letters of reference indicate like parts wherever employed, Figure 1 is a perspective view
45 of my invention. Fig. 2 is a plan view of same; Fig. 3, a side elevation thereof, and Fig. 4 a transverse section taken on the line 4 4, Fig. 2.

Reference being had to the drawings and letters thereon, A indicates the body of tool,
50 provided at one end with a projecting pointed tamping spike or rammer B and at its opposite end with a suitable handle C, the latter

being formed of the metal looped, as most clearly shown by Fig. 2, having its free end *a* overlapping and folded upon body A, of
55 which it is a continuation. Upon the extremity *a* of looped handle C is affixed a cylindrical candlestick or holder D, of relatively stiff spring material, broken by a longitudinal slit *b*, permitting of expansion to accommo-
60 date candles of varying size, such expansion being effected by the aid of a thumb-lever *c*, integral with and projecting in a tangential direction from the cylindrical holder D at one side of slit *b* therein.

On its upper surface adjacent to the terminus *a* of handle C the body A is provided with an upstanding lug E, divided by a continuous channel *d* through its longitudinal center. In the walls of this channel and in
70 register with each other are flaring depressions *e e*, serving the purposes of a fuse-cutter and a cap-crimper, as will later appear, while between same walls upon pivot *f* is journaled a supporting-hook F, having an integral knife-
75 blade G, sheathed, when closed, by the lower portions of said walls. Hook F, near its base, is enlarged, as at *g*, and indented by a depression *h*, the converse in form of depressions
80 *e e*, with which it is adapted at times to register, while forward of its pivot *f* knife G carries an additional short blade H, also sheathed by the walls of lug E when in its normal position, as shown in dotted lines by Figs. 1 to 3.

At the rear end of lug E its central channel *d* is obstructed by a stop or bridge I, arranged to be engaged by the back of knife G,
85 thus limiting its upward movement when hook F is raised, and the forward end of same lug contains a longitudinal pocket *i*, intersected
90 by channel *d* and intended to receive the end of a fuse during the operation of splitting.

J indicates a leaf-spring secured to the inside of looped handle C and engaging at its free end the hilt of knife G to retain it with
95 its integral supporting-hook F normally in the position shown by Fig. 1 of the drawings.

This being substantially a description of my invention, its use in the simplest and most ordinary methods of blasting is as follows:
100 A fuse is first cut in the required length by placing same in the depressions *e e* of lug E and forcibly lowering the hook F until its coacting depression *h*, descending between

the depressions aforesaid, shears or severs the fuse, thus resting transversely across the tool. One end of the fuse is then presented to the action of short blade H near the hilt of knife G by inserting same in the open end of pocket *i* at the front of lug E, whereupon the return of hook F to its normal position, Fig. 1, causes said blade H to descend and in so doing to split the fuse at its end for the purpose of receiving a grain of powder or other fulminate to facilitate action of the fuse at instant of firing.

Blasting-powder or other explosives being selected may, if desired, be split when occasion requires upon the cutting edge of knife-blade G, capable of being projected from its sheath in the lower part of channel *d* each time the hook F is depressed. The material having then been loaded into the hole properly drilled and prepared surrounds and embeds the split primed end of the firing-fuse, the latter projecting at its opposite end from the hole, which is then ready for tamping or ramming. Tamping-spike B is now called into action, serving as a simple rammer to pack suitable tamping material, such as clay, soft stone, or earth, into the hole above its charge and around the projecting fuse. This accomplished, the protruding end of fuse is furnished with a percussion-cap crimped thereon by the depressions *e* and *h* in the walls of lug E and the shank of hook F, respectively, said depressions coacting to compress the edges of cap, when placed therein, as the hook F is gently lowered. The cap is then exploded in the usual manner, serving through the agency of its embedded fuse to ignite the blasting material, and the shot is fired.

At all times the holder D may contain a candle for lighting purposes, held therein by the spring action of its cylindrical walls and projecting below, adapted to be fed up as it is consumed, thus keeping its center of gravity low. When thus serving only as a candlestick and not actually employed in the process of loading a hole, the device may be supported

either by the hook F, hung upon the wooden timbers or rocks of the mine, or by the pointed tamping-spike inserted in a crevice of rock or the earth; but in either event it is obvious that a miner working in the breast of a drift may thus receive light from one side or the other, as best suits his purposes.

This being substantially a description of my invention, it will be understood that the foregoing statement of operation is merely by way of example, that the various steps enumerated may be greatly varied and changed in their order and manner of execution, and the arrangement of parts herein shown and described may be varied to suit different forms and conditions without in the least departing from the spirit of my invention, which is as follows:

1. In a miner's tool the combination with a body portion bearing a channeled lug, a tamping-spike and a handle, of a folding support pivoted in the channeled lug, and a knife-blade integral with said support adapted to be sheathed within the channeled lug, substantially as described.

2. In a miner's tool the combination with a body portion bearing a channeled lug, a tamping-spike and a handle, of a folding support pivoted in the channeled lug, and knife-blades upon said support at each side of its pivotal point, substantially as described.

3. In a miner's tool the combination with a body portion bearing a tamping-spike and handle, of a channeled lug upon said body having a longitudinal pocket in its forward end, a hooked folding support pivoted in the channeled lug and knife-blades upon said support, both sheathed by the walls of said lug and one adapted to bisect the aforesaid pocket, substantially as described.

In testimony whereof I subscribe my signature in presence of two witnesses.

JAMES WM. BRAY.

Witnesses:

WILLIAM MASON,
JAS. MCSKINNING.