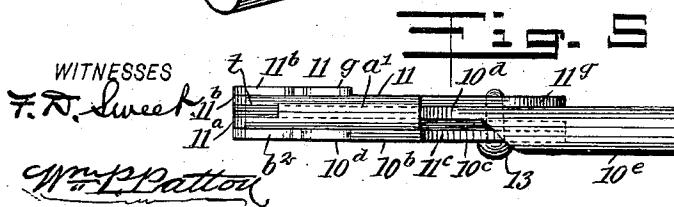
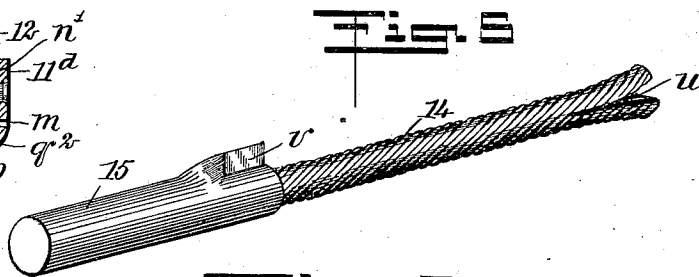
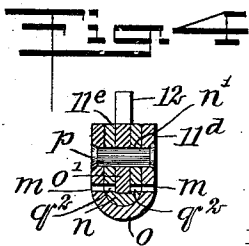
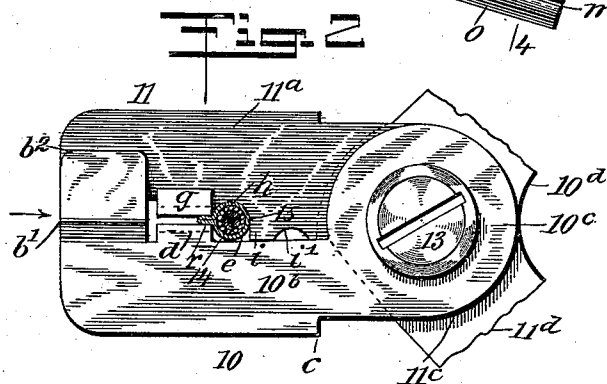
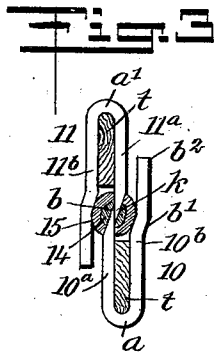
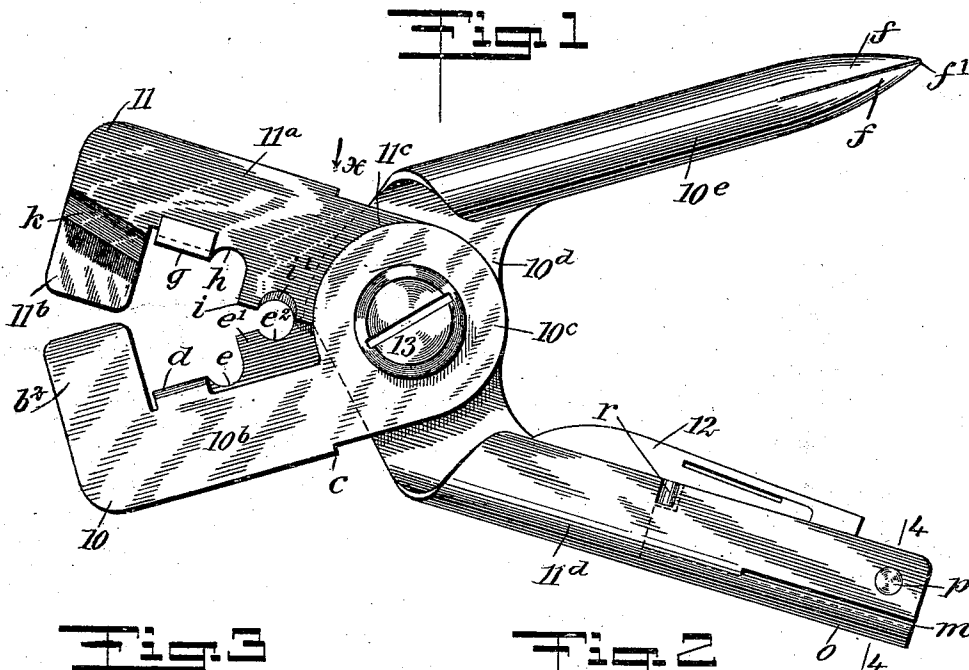


A. V. DES MOINEAUX.
COMBINATION TOOL FOR MINERS' USE.
APPLICATION FILED JULY 2, 1908.

947,020.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.



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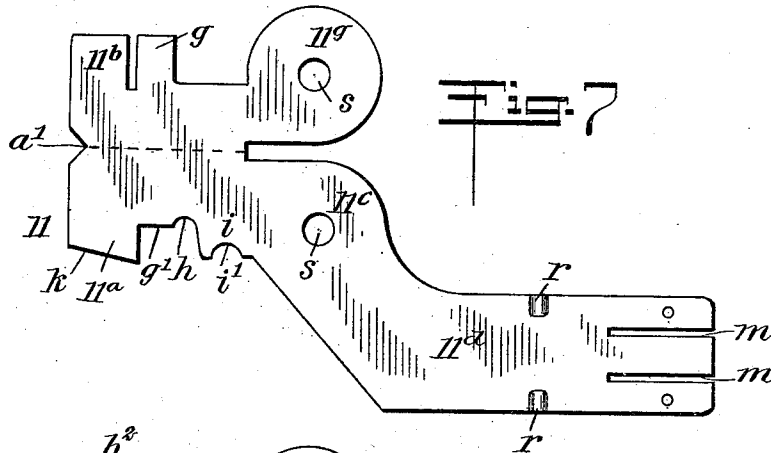
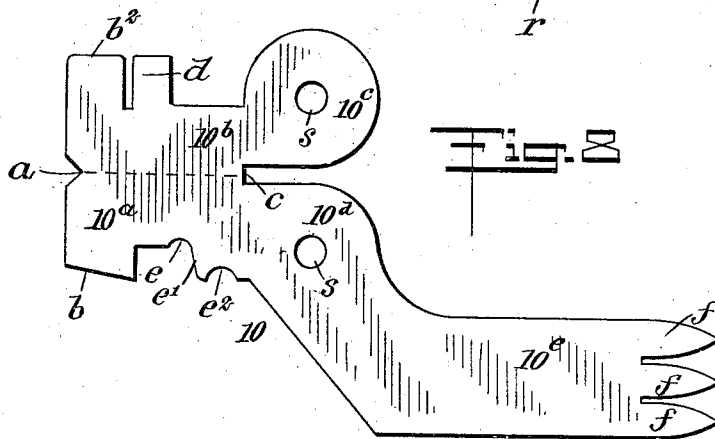


Fig. 7



UNITED STATES PATENT OFFICE.

ALFRED VICTOR DES MOINEAUX, OF DENVER, COLORADO, ASSIGNOR TO HELEN DES MOINEAUX, OF DENVER, COLORADO.

COMBINATION-TOOL FOR MINERS' USE.

947,020.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed July 2, 1908. Serial No. 441,543.

To all whom it may concern:

Be it known that I, ALFRED VICTOR DES MOINEAUX, a citizen of the United States, and a resident of Denver, in the county of Denver and State of Colorado, have invented a new and Improved Combination-Tool for Miners' Use, of which the following is a full, clear, and exact description.

The purpose of this invention is to combine and arrange in a novel manner a plurality of implements that are necessary for preparing explosive blasts, wherein dynamite in stick form is the explosive agent that is to be fired by electricity or other means.

The cooperating tools comprising this improvement are cut and bent from plate metal and so constructed that sharp corners are avoided, cutting edges covered and all details so relatively arranged and proportioned that a light, small, practical and convenient combination tool is provided, which, without incumbrance, may be carried in the pocket ready for use.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of the improved combination tool in completed condition, the parts thereof being in open adjustment; Fig. 2 is a side view of the device, the handle portions being broken away, and the remaining parts shown in closed condition; Fig. 3 is an end view of the improvement, seen in the direction of the arrow in Fig. 2; Fig. 4 is a transverse sectional view of details, substantially on the line 4—4 in Fig. 1; Fig. 5 is an edge view of novel details, seen in the direction of the arrow *x* in Fig. 1; Fig. 6 is a perspective view, showing a fuse split at one end for ignition by electricity or other means, and a fulminate charged cap crimped on the other end thereof; Fig. 7 is a plan view of a flat plate metal blank cut into shape, and in complete form comprising one main portion of the improvement; Fig. 8 is a plan view of a flat blank cut from plate metal and when bent into shape constituting a complementary main portion of the combination tool; Fig. 9 is a side view of a plate

metal spring liner that is a detail of the invention; Fig. 10 is a plan view of the part shown in Fig. 9 flattened out, and Fig. 11 is a side view of a knife-blade that is a detail of the invention.

Briefly stated, the improvement embodies in compact and convenient form and adapted for consecutive use, a fuse-cutter, a fuse-splitter, a cap-crimper, whereby to secure a fulminate charged cap on an end of the fuse, and that also serves as a pair of pliers for bending wire, a stylus for producing a cap-receiving chamber in a powder stick, that is subsequently placed in a blast hole, and a knife-blade pivoted in a handle member of the tool, all the parts of the implement being preferably constructed of steel plate cut and bent into form by any suitable means.

Two main sections 10, 11 are provided, that are cut into the forms respectively shown in Figs. 8 and 7, said sections, that are complementary portions of the multi-part implement and that are cut and bent from steel plate, each being shaped as follows: The section 10, at or near the normally forward end thereof, comprises two members 10^a, 10^b, that are produced by bending the plate metal material at *a*, as shown in Figs. 3 and 8. The member 10^a is of less width than the member 10^b, and at its upper edge *b* is beveled on the outer side thereof, thus producing a cutting edge thereon. The member 10^b is offset at *b'* (see Fig. 3) and above said offset projects upward in a plane parallel with that of the member 10^a, thus forming a guard-flange *b*². The integral web *a*, that joins the two members 10^a, 10^b, extends from the forward ends of said members to a point *c*, where it terminates, as shown in Figs. 1, 2 and 8, and the member 10^b extends a short distance therefrom and is enlarged, and said enlargement, which has a nearly circular edge, forms a joint leaf 10^c.

A flange *d* is formed on the upper edge of the member 10^b, adjacent to the guard-flange *b*², and is bent transversely so as to dispose it horizontally over the upper edge of the member 10^a near the rear termination of the cutting edge *b*, and near its free end the flange *d* is again bent, so as to project its free end portion downward, thus forming a flat hook that loosely embraces the upper edge of the member 10^a.

A concavity *e* is formed in the upper edge

of the member 10^a adjacent to the hook *d*, and rearward of said concavity a cutter-blade *e'* is upwardly extended, having a concave cutting edge *e''* formed thereon, as shown in Figs. 1 and 8. From the cutter-blade *e'* the member 10^a is extended in a plane parallel with the joint leaf 10^c and spaced therefrom, the portion 10^d opposite said joint leaf being enlarged in area and peripherally shaped so as to produce a mating joint leaf. From the leaf 10^d, the plate material is projected edgewise at an angle, and is bent into cylindrical form, as is clearly shown in Fig. 1.

Before bending the extended portion into the form of a cylindrical handle member 10^e, the material at or near the end thereof is longitudinally slitted, thus producing three end portions *f* that are tapered, so that each terminates in a point, as is clearly shown in Fig. 8.

In a suitable die, the portions *f* are shaped to form a tapering point *f'*, thus adapting the handle member to serve as a stylus, which is available for producing cavities in the end portions of explosive sticks, such as dynamite, in the preparation of the latter for insertion of a fuse.

As shown in Figs. 3 and 7, the forward portion of the section 11 embodies a cutter blade 11^a having a shear cutting edge *h*, and a guard flange 11^b, that are spaced apart and held parallel with each other by a web flange *a'*, a distance equal to that separating the members 10^a, 10^b, on the section 10, as best shown in Fig. 3, the web portion being defined by the dotted line in Fig. 7, where the section 11 is shown in flat blank form. On the section 11, near the guard flange 11^b, a flat hook member *g* is formed on the upper edge thereof, which is bent similarly to the flange *d* and in a like manner is hooked over the spaced member 11^a at *g'*. From the hook-shaped flange *g* on the section 11, the latter is extended rearward and is enlarged at its rear end, forming a joint leaf 11^e, which is clearly shown in Fig. 7. Near the cutting blade 11^a, a concavity *h* is formed in the upper edge of the member 11, and is disposed opposite the similar concavity *e* when the sections 10, 11, are arranged for service. Similar to the cutter blade *e'* on the section 10, a cutter blade *i* having a concave edge *i'*, is formed on the member 11 adjacent to the concavity *h*, this concave cutting edge being disposed opposite the cutting edge *e''* when the sections 10, 11, are pivoted together as will be hereinafter described.

The member 11^a of the section 11 is extended at an obtuse angle edgewise from the cutter blade *i* and increased in area, thus providing a joint leaf 11^e thereon, which is disposed opposite the leaf 11^e, as is indicated in Figs. 7 and 5. From the leaf 11^e, a por-

tion 11^d extends, having parallel edges, said portion being bent into U-shape in cross section, forming a handle member.

The open side of the U-shaped handle member 11^d is disposed toward the other handle member 10^e when the tool is completed, and as shown in Fig. 4, the closed convex edge *o* thereof is outermost. In the handle member 11^d, a U-shaped reinforcing spring plate 11^e is fitted. Said plate, which is best shown in Figs. 9 and 10, consists of a planchet of steel plate that is of suitable length and width, having parallel side edges, and at one end rectangular notches *q* are formed that remove the corners thereof.

At the opposite end of the flat planchet, which forms the spring plate 11^e, the corners are rounded as at *q'*, and two slots *q''* are extended from said end toward the opposite one, said slots being parallel with each other and with the side edges of the spring plate, from which they are spaced an equal distance. The slots *q''* leave a central spring tongue *n* remaining integral with the body of the spring plate, that is completed by bending it into U-shape in cross section, as shown in Figs. 4 and 9.

The handle member 11^d while in blank form is slotted from the free end inwardly, as shown in Fig. 7, these similar slots *m* being disposed parallel with each other and with the side edges of the handle member in which they are formed. After the portion 11^d is shaped to serve as a handle, as before explained, a spring tongue *o* is formed on the convex back thereof, at the free end, due to the production of the slots *m* therein. The spring plate 11^e, after it is bent into form, is embedded within the handle member 11^d, their slotted ends being flush with each other, which will dispose the tongue *n* parallel with the tongue or back spring *o* which it reinforces.

A knife-blade 12 is fitted neatly in the channel afforded by the spring plate 11^e, said blade having the form shown (see Fig. 11) or any other preferred shape. Through the heel *o'* of said blade and through the side walls of the handle member 11^d and reinforcing spring plate 11^e, aligned perforations *n'* are formed for the reception of a rivet *p* that is also the pivot whereon the knife blade rocks when manipulated for its open or closed adjustment, which will be enforced by the spring tongues *n* and *o*, this connection of the parts appearing in Fig. 4.

The notches *q* in the spring plate 11^e are disposed oppositely when said spring plate is bent into form, and in the straight edges of the handle member 11^d, two opposite indentations *r* are formed, which produce inward projections against which the shoulders formed by the notches *q* will impinge, thus locking the inner end of the spring plate from outward rocking movement.

The provision of the knife blade 12 is of manifest advantage, as it may occur that a fuse of greater diameter than can be freely cut between the blades e^2 and i' is to be used, and then the blade 12 will afford convenient means for severing it from a coil of fuse.

In assembling the main sections 10 and 11, as shown in Fig. 5, the joint leaf 11^c on the member 11^a of the section 11 is inserted between the spaced joint leaves 10^c and 10^d , which will dispose the joint leaf 10^d between the spaced joint leaves 11^c , 11^e , so that they lap upon each other. Centrally in the four joint leaves 10^c , 10^d , 11^c and 11^e , perforations s are formed, these having an equal diameter as shown in Figs. 7 and 8, and when the main sections 10, 11, are fitted together so that said perforations are all alined, a pivot-bolt 13 is inserted there-through and secured from displacement, thus adapting these sections for rocking movement that will open and close the cutting blades k and l by manipulating the handle members 10^e , 11^d .

It will be noted that the sharp beveled edges of the blades 10^a , 11^a , and the corresponding slopes given thereto, will insure said blades having shear cutting action.

In Fig. 6 a fuse 14 of ordinary character is shown, and upon one end thereof is mounted the usual percussion cap 15, that is adapted for loosely receiving the end portion of the fuse, which is subsequently clamped thereupon by the use of the improvement.

It will be noted that the relative positions of the hook flanges d and g on the sections 10 and 11 adapt said flanges to form opposed jaws, which will impinge upon each other or upon material that may be placed between them when the handle members 10^e , 11^d are closed, thus adapting them to serve as pliers.

It will be seen that when the end of the shell of the cap 15 that receives the fuse 14 is placed between the opened jaws d , g , and these jaws are compressed thereon, a crimp v is formed in the thin wall of the cap, which will bind it water-tight upon the inserted end of the fuse. The jaws d , g will also be available for connecting wires or other material of a like character.

The concave cutting edges e^2 , i' on the cutters e' and i , afford means for shearing the end of the fuse so as to render it true, and said end is now split by placing it longitudinally between the cutting edges of the blades b and k , the guide members 11^b and b^2 serving to hold the fuse central, while the splitting operation is being effected, as is indicated in Fig. 3. The splitting of the fuse, as at u , is necessary for the introduction of a suitable explosive thereinto to insure its combustion.

When electricity is employed as a means for igniting the fuse after the cap has been placed in a powder charge that has been tamped in a blast hole, the flanges or jaws d and g enable the connection of battery wires in preparing the blasts.

The handle member 10^e is especially well adapted for the purpose of forming a socket-like perforation in the end of a powder stick, such for example as a stick of dynamite, before it has been inserted into a drilled hole; the point f' thereon serving as a stylus for the purpose mentioned.

As shown in Fig. 3, the spaces between the cutter blade and guard wall of each section 10, 11, are preferably filled with liners t , of hard wood or other slightly yielding material, which receive the edges of the cutter blades 10^a , 11^a , and limit their closure.

As before stated, the improved combination tool embodies all the implements necessary for preparing and placing in position a fuse for the explosion of a charge of dynamite or powder, and all arranged in a very compact manner for convenient service, as may be required.

From the peculiar formation of the complete combination tool, cut and bent from plate metal, so as to give it form, it will be evident that by the employment of suitable means, the device may be rapidly manufactured at a moderate cost, and dispense with a plurality of separate tools that are all embodied in the improvement.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A combination tool comprising overlapping pivoted sections each comprising a blade portion and a handle portion, the blade portion being bent upon itself to form a cutting edge and a parallel guard extending beyond the edge.

2. A combination tool comprising overlapping pivoted sections each comprising a blade portion and a handle portion, the blade portion being bent upon itself to form a cutting edge and a parallel guard extending beyond the edge, said guard being off set outwardly beyond said cutting edge.

3. A combination tool comprising overlapping pivoted sections each comprising a blade portion and a handle portion, the blade portion being bent upon itself to form a cutting edge and a parallel guard extending beyond the cutting edge, a portion of each of the blade portions being bent at substantially right angles to said blade portions for engaging each other when the blade portions are closed to limit the closing movement of the cutting edges.

4. A combination tool comprising overlapping pivoted sections each comprising a blade portion and a handle portion, the blade portion being bent upon itself to form

a cutting edge and a parallel guard extending beyond the edge, and means for limiting the closing movement of the cutting edges.

- 5 lapping pivoted sections each comprising a blade portion and a handle portion, the blade portion being bent upon itself to form a cutting edge and a parallel guard extending beyond the edge, the adjacent edges of the
10 blade portions being concaved, the concaved portions coöperating to form a circular re-

cess when the blades are closed, said blade portions having coöperating jaws at one side of the concaved recesses for the purpose set forth.

15

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

ALFRED VICTOR DES MOINEAUX.

Witnesses:

W. N. ROGERS,
GEO. E. RUMSEY.