W. M. MACKINTOSH.

COMBINATION TOOL.

APPLICATION FILED SEPT. 3, 1910.

1,068,792.

Patented July 29, 1913.

2 SHEETS—SHEET 1.

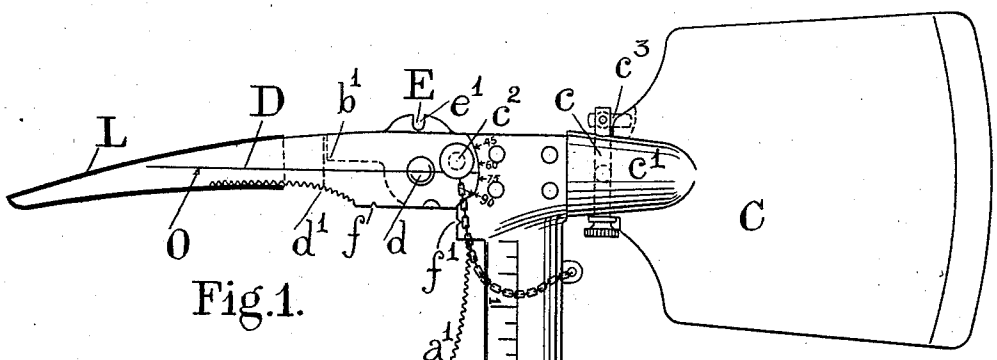


Fig.1.

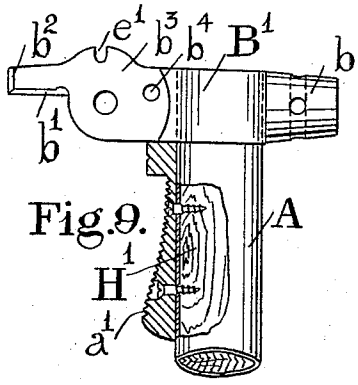


Fig.9.

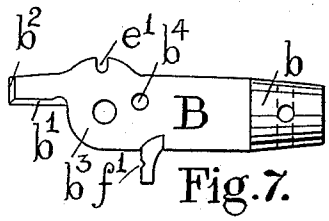


Fig.7.

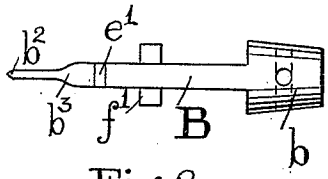


Fig.8.

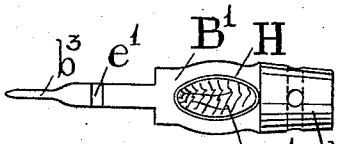
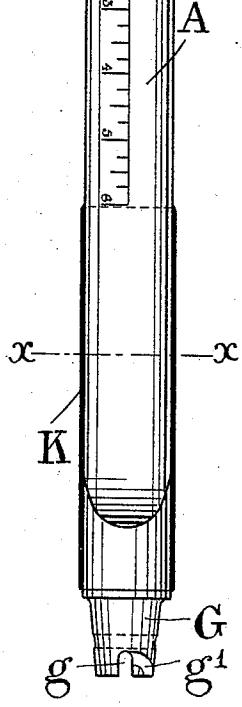


Fig.10.



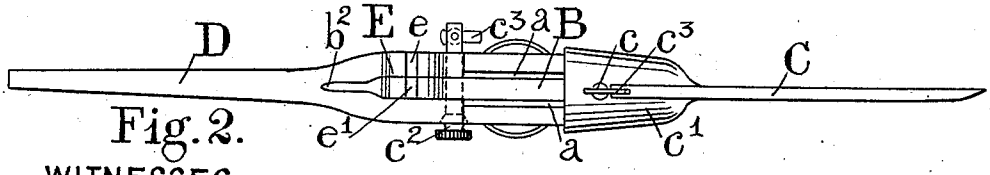


Fig.2.

WITNESSES.

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Fig.5.

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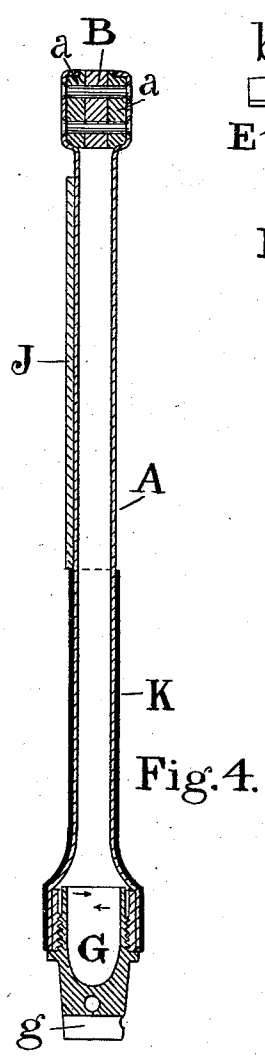


Fig. 4.



Fig. 6.

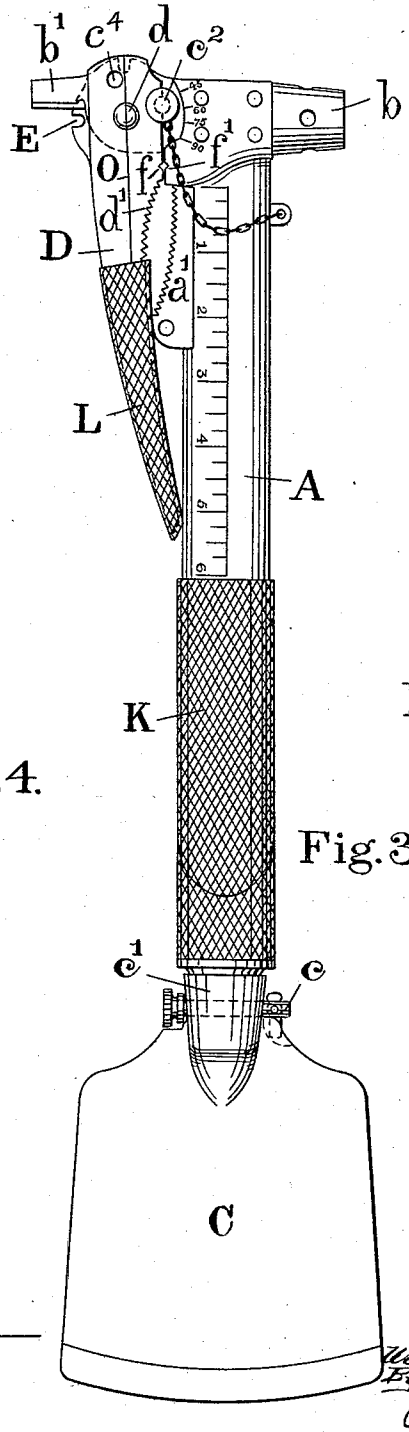


Fig. 3.

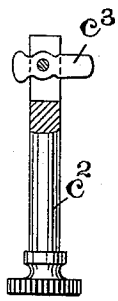


Fig. 11.

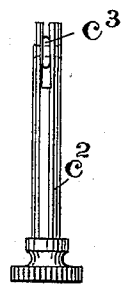


Fig. 12.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM MACDONALD MACKINTOSH, OF EGREMONT, ENGLAND.

COMBINATION-TOOL.

1,068,792. Specification of Letters Patent. Patented July 29, 1913.

Application filed September 3, 1910. Serial No. 580,434.

To all whom it may concern:

Be it known that I, WILLIAM MACDONALD MACKINTOSH, a British subject, residing at Egremont, county of Chester, England, have invented certain new and useful Improvements in Combination-Tools, of which the following is a specification.

This invention relates to a combination tool which will be found advantageous for many purposes by those for instance engaged in botany, mineralogy, prospecting, excavating, hunting, mountaineering, squatting, camping, scouting or trenching for military purposes, and it may on occasion be used as a weapon for self defense in case of emergency.

It is designed to provide a tool capable of being used as a spade, ax, pickax, hammer, wire cutter, pincers, and in many other ways and which can be stowed or folded up into a small compass so that it can be easily transported, and constructed also in such a manner that the handle can only be broken with very great difficulty.

The invention will be fully described in connection with the accompanying drawings.

Figure 1 is a side view showing the tool arranged for use as an ax and pick. Fig. 2 is a plan of same. Fig. 3 is a similar view to Fig. 1 showing the tool arranged for use as a spade. Fig. 4 is a longitudinal section through the tool and handle. Fig. 5 is a cross section of the handle on line *x*—*x* Fig. 1. Fig. 6 is an end view of wire twisting device. Fig. 7 is a detail view showing the side view of steel head block of the tool. Fig. 8 is a plan view of same. Fig. 9 is a side view of modified arrangement of head block. Fig. 10 is a plan view of same. Figs. 11 and 12 show side views at right angles to each other of securing pin.

The tool may be constructed from any suitable material or materials such as steel or other metal or alloy with the necessary parts suitably tempered or hardened. Portions of it or the whole of it may if desired be constructed of a light metal or alloy such as aluminium magnalium or the like. It is constructed with a preferably hollow or tubular handle or shaft A which may or may not be reinforced internally for the whole or a portion of its length with a core of wood or other suitable material.

At the head end between lugs *a* formed at the end of the shaft A a steel or other block B is fixed which at one end forms a hammer head *b* and at the other end a lug or projection b^3 to which a pick-point D is pivoted. The pick point D is pivoted to the steel block B by a steel pin *d* upon which it can turn from the position shown in Fig. 3 to the raised or working position shown in Fig. 1. In the latter position it is secured by a movable pin c^2 passed through holes c^4 in the socket of the pick point and a corresponding hole b^4 in the steel block B. The projection or lug b^3 is formed with an extension piece which when the pick is extended fits between the lugs of the pick socket and which when the pick is folded down extends and forms at its extremity b^2 a screw driver and at its edge b' a tin opener. The projection or lug b^3 is also formed with a groove e' and the pick point C with a corresponding groove *e* which together may be employed as a wire cutter E to cut entanglements or the like. Another groove *f* formed underneath the pick point D and a corresponding groove f' in the head block B form a pliers or gripping tool for holding or gripping wire. The underside of the pick section D is also preferably formed with a serrated portion d' which corresponds with a serrated block a' formed or fixed on the handle A and which together form a pipe or like grip.

If desired the end of the tool may be engraved with index numerals indicating angular dimensions (as shown) and the pick section D be engraved with a setting out line O so that the tool may form a protractor. To further facilitate the use of the tool for making measurements the handle may as shown be engraved with a rule showing linear measurements. To permit of the tool being used for dealing with electrically charged materials the handle A is provided with an insulating sheath K which may or may not be removable and the pick section D is also provided with a similar sheath L which is made removable. The pivoted section as described above consists of a pick, but it may form any type of tool, such, for instance, as a second hammer-head, or simply a hand-grip. The handle is also provided at one side with a file or rasp J.

The hammer head *b* preferably tapers somewhat and is adapted to receive the socket portion c' of a blade C which may serve either as an ax or a trenching head. The hammer head *b* and the socket c' are made a good fit so that they shall engage tightly and holes are preferably formed through the

sides of the socket c' and the hammer head b to receive a pin c adapted to retain the blade or head C in position. Two holes at right angles to each other are preferably formed in the hammer head b so that the tool C may be secured thereon in two positions either for use as an ax (see Fig. 1.) or as a trenching tool.

The securing pins c and c^2 one or both of which are preferably secured to the tool by means of a chain or the like preferably consist as shown in Figs. 11 and 12 of a short bar or rod formed at one end with a suitable head to prevent them passing their receiving holes or sockets and at the other end with a slot wider at the inner end than the outer. In this slot is pivoted a tongue c^3 which preferably tapers somewhat to the outer end. When the pin is to be inserted the tongue is turned lengthwise in the slot with the pin and after it is inserted through the hole the tongue is turned sidewise to lock the pin in the hole. The thicker inner end of the tongue when it is turned tends to press against the sides of the slot which are nearer together toward the end so that the pressure holds the tongue in the locking position. To further assist in retaining the pin in position as shown in Fig. 1. a small groove may be formed in the body of the tool section C into which the extremity of the tongue fits when it is turned down. This also prevents the pin turning in its hole.

The gripping end of the handle A is round in cross section and fitted with an internally screwed bushing to receive a plug G adapted to close the end of the handle, which may be arranged so as to hold internally a knife or other article.

The plug G is preferably formed of the same shape as the hammer head b so as to receive the socket c' of the blade C when removed from the hammer b so that it can form a spade or digging tool as shown in Fig. 3. The plug G is also formed with a transverse groove g and spiral grooves g' at the edges by which an extended wire may be gripped and twisted for the purpose of breaking it. The plug G may be made of metal and insulated from the handle A by making the bushing of a fibrous or other non-conducting material or the plug G may itself be made of a hard non-conducting material so that it may be used on live or electrically charged wires. The plug G is preferably made hollow to reduce weight and it can therefore if used form a drinking cup or liquid measure.

A tool of this character is especially adapted for use as an intrenching tool, one side of the head having a projection extending substantially at a right angle from its head formed at its extremity with a screw-driver and an adjacent cutting edge. The pick member which is pivoted on the right-angle projection is slotted so that said member will receive and thereby cover and protect the screw-driver and cutting edge, and the pivoted member and projection are formed with laterally-arranged recesses to receive wire to be cut when said member is at a right angle to the handle. The locking pin serves to retain the pivoted member in right angular relation to the handle, at which time the pivoted member is adapted to be used as a pick point, and the screw-driver and cutting edge are then protected. By removing the locking pin while the pivoted member is in right angular relation to the handle, a wire can be inserted in the wire-cutting recesses and force then exerted on the pivoted member to move it downwardly, whereupon the wire will be cut. Also, by bringing the pivoted member toward the handle, the gripping faces on the pivoted member and handle may be used as a pipe, nut wrench or a vise, the screw-driver is exposed and ready for use, and the cutting edge on the projection adjacent to the screw-driver may be brought into use as a can opener.

What I claim as my invention and desire to protect by Letters Patent is.

1. An intrenching tool, one side of its tool-carrying head having a projection formed with a wire-receiving notch and having a screw-driver on its extremity, a handle at substantially a right angle to said projection, a tool member in pivotal relation to said projection and slotted to receive and protect said projection and the screw-driver thereon when in right angular relation to the handle, said member also having a wire-receiving notch coöperative with that on the projection, said member movable toward the handle to expose said screw-driver, and means for locking said member in a position in right angular relation to the handle and also in a position toward and adjacent to the handle.

2. An intrenching tool having a handle and having its tool-carrying head provided with a projection extending from one side substantially at a right angle to the handle, said projection having a lateral wire-receiving notch, a screw-driver at its extremity and a cutting edge adjacent thereto, a tool member pivoted to said projection and slotted to receive and protect said screw-driver and cutting edge when in right angular relation to the handle and to expose said screw-driver and cutting edge for use when moved from said position into another position adjacent to the handle, said member having a wire-receiving notch to cooperate with that of the projection, and means for locking said member in right angular relation to the handle, and also in a position adjacent to the handle.

3. A tool comprising a fixed member hav-

ing a tool-carrying head provided with a projection extending at a right angle from one side thereof, said projection being formed with a laterally-arranged wire-receiving notch, a cutting edge along one side and having its extremity beveled to form a screw-driver, a tool member pivoted to said projection and slotted to receive and protect the screw-driver and cutting edge when said member is at a right angle to the fixed member, said member also having a wire-receiving notch coöperative with that of the projection, the screw-driver and cutting edge being exposed for use when the pivoted tool member is swung into a position adjacent to the handle, and means for locking said tool member in right angular relation to the handle and also in a position adjacent to the handle.

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

WILLIAM MACDONALD MACKINTOSH.

Witnesses:
ERNOLD SIMPSON MOSELEY,
MALCOLM SMETHURST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."