H. CAVE.

CUTTING TOOL.

APPLICATION FILED AUG. 9, 1913.

1,098,613. Patented June 2, 1914.

Fig. 1.

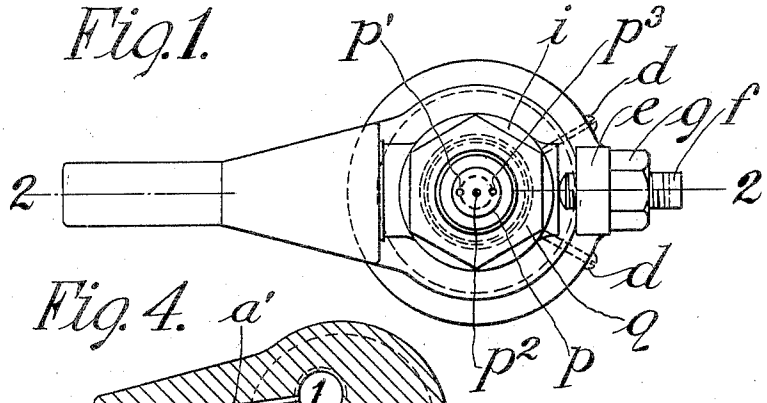



Fig. 4.

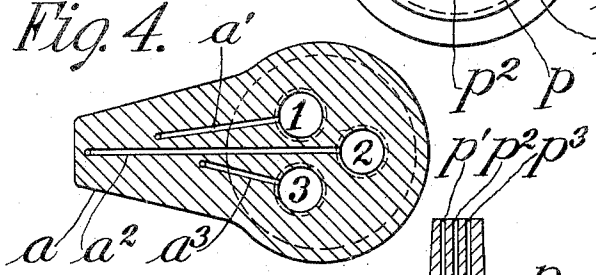



Fig. 2.

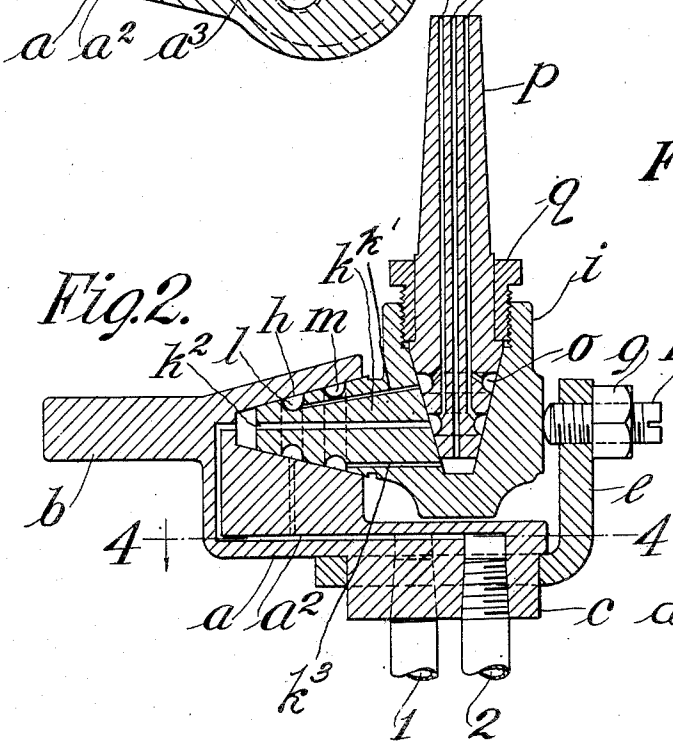
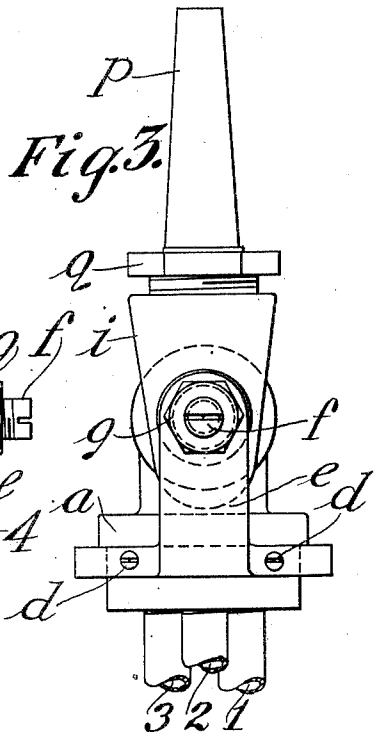



Fig. 3.




WITNESSES:

H. E. Hartwell.

Caroline N. Willis

INVENTOR.

Henry Cave.

BY Chapin & Co.

ATTORNEY.

# UNITED STATES PATENT OFFICE.

HENRY CAVE, OF SPRINGFIELD, MASSACHUSETTS.

## CUTTING-TOOL.

1,098,613. Specification of Letters Patent. Patented June 2, 1914.

Application filed August 9, 1913. Serial No. 783,970.

*To all whom it may concern:*

Be it known that I, HENRY CAVE, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Cutting-Tools, of which the following is a specification.

This invention relates to a torch or burner for gases and more specifically to a cutting torch or tool for the oxy-fuel-gas cutting process.

Among the objects of the invention is the production of a torch which may be readily disassembled and in which new parts may, therefore, be easily substituted; and the production of a torch in which a plurality of gases may be led through the pivot point of a pivoted nozzle in a manner whereby the nozzle may be turned at will upon its pivots in the nozzle carrier without confusing the gases.

It is obvious that by the construction I have adopted and arranged, it would be equally possible and practicable to discharge more or less than three gases, but I have shown the instrument as designed for discharging three gases, a fuel gas such as acetylene, oxygen for burning the acetylene, and an independent oxygen supply for oxidizing the metal to be cut.

In the drawings:—Figure 1 is an end view of my new cutting nozzle; Fig. 2 is a cross-section thereof on the line 2—2 of Fig. 1; Fig. 3 is an end view of the instrument; and Fig. 4 is a cross-section thereof on the line 4—4 of Fig. 2.

The instrument comprises a carrier member $a$ provided at one side with a spur $b$ to form a handle or bearing and provided further at its bottom with circular projecting boss $c$ having screw threaded apertures for the reception of the various gas pipes 1, 2, and 3. Sleeved upon the boss $c$ and secured thereto by the set-screws $d$ is an upstanding arm $e$ carrying a set-screw $f$ and jam-nut $g$. Drilled in the member $a$ are three ports, one leading from each of the screw threaded recesses which receive the pipes 1, 2, and 3. These ports are designated by $a'$, $a^2$, and $a^3$ (see Fig. 4) and being bent at right angles discharge into the cone-shaped recess $h$ in the member $a$. The nozzle as a whole comprises a carrier portion $i$ and a tip portion $p$, as clearly shown in the drawings. The carrier $i$ is provided with a cone-shaped projection $k$ which accurately fits the cone-shaped recess $h$ and is moreover cut away as shown at $l$ and $m$ and provided with three ports $k'$, $k^2$, and $k^3$ corresponding with the ports $a'$, $a^2$, and $a^3$. The member $k$ is further provided with a cone-shaped recess such as $o$ in which accurately fits the tip $p$ secured therein by the jam-nut $q$, the said tip being provided with three parallel ports $p'$, $p^2$, and $p^3$ communicating with the ports $k'$, $k^2$, and $k^3$ of the member $k$. It will be clear from the drawings in the illustrative form there disclosed the tip $p$ is so constructed as to mix two of the gases, thus gases from the ports $k'$ and $k^2$ each flow into the ports $p'$ and $p^3$, while on the other hand the gas from the pipe 3 goes through port $k^3$ and out from the nozzle to the port $p^2$ without being intermingled with other gases. It will thus be seen that the member $k$ carrying the discharge tip $p$ is pivotally mounted between the two arms of the substantially U-shaped securing head formed by the members $a$ and $e$ and that it may be turned at will upon these pivots without disturbing the uninterrupted flow of each gas through its appointed channel from the pipe 1, 2, or 3 to the discharge ports $p'$, $p^2$, or $p^3$ and thus, while independent gases may be brought to bear upon the metal to be cut, the nozzle which discharges these gases may be turned upon its pivots at will.

It is obvious that the device may be readily disassembled merely by loosening set-screws $f$ and $d$ and that therefore anyone of the parts $a$, $e$, $p$, or $k$ may be made and sold separately. It is obvious moreover that various changes may be made in the precise manner here shown of drilling the ports, the gist of the invention being rather the production of a cutting torch involving three independent gases which may be adjusted at will while being used.

Having now particularly pointed out my invention but well knowing that many departures and modifications may be made from the specific form in which I have chosen here to illustrate it without departing from the scope of the invention which is more truly bounded and defined by the claims hereto appended, I claim:—

1. In a cutting tool and in combination, a head comprising a substantially U-shaped frame, one arm of said U being provided with a plurality of gas ports and the other with a set screw, a nozzle provided with a

gudgeon having a plurality of gas ports to correspond with the gas ports of the head, said nozzle being pivotally mounted between the arms of the U, and a supply pipe secured to the base of the U-shaped frame, whereby the angle of the nozzle may be varied without interrupting the flow of the gases.

2. In a cutting tool, a head comprising a substantially U-shaped member, a pivot pin in one arm thereof, a cone-shaped recess in the other arm thereof, a nozzle having a cone-shaped projection adapted to fit said cone-shaped recess, said nozzle being pivotally mounted on said cone-shaped projection and said pivot pin, said head and said nozzle being provided with three coöperating gas ports leading from the base of the U-shaped member to the tip of said nozzle whereby three independent gases may be discharged from said nozzle and the angle of said nozzle varied at will without interrupting the flow of any of said gases.

3. In a cutting torch, a head member having two bearings for a nozzle and a plurality of gas ports in one of said bearings, and a nozzle having a plurality of gas ports to correspond with the gas ports in said bearing, whereby the nozzle may be turned in said bearings without interrupting the flow of gases through said ports.

4. In a cutting torch, and in combination with a nozzle, said nozzle having a plurality of pivots, a mounting for said nozzle including means whereby said nozzle is pivoted in said mounting, and including gas ports in said mounting whereby a plurality of independent gases may be fed through the mounting and into one of the pivots of the nozzle.

5. As an article of manufacture, a tip carrier having a recess therein for the reception of the tip, a conical boss thereon at right angles to the recess, and a plurality of independent gas ports communicating from the exterior of said boss to said recess.

HENRY CAVE.

Witnesses:
SEBASTIAN HINTON,
MINNIE A. HUNTER.