

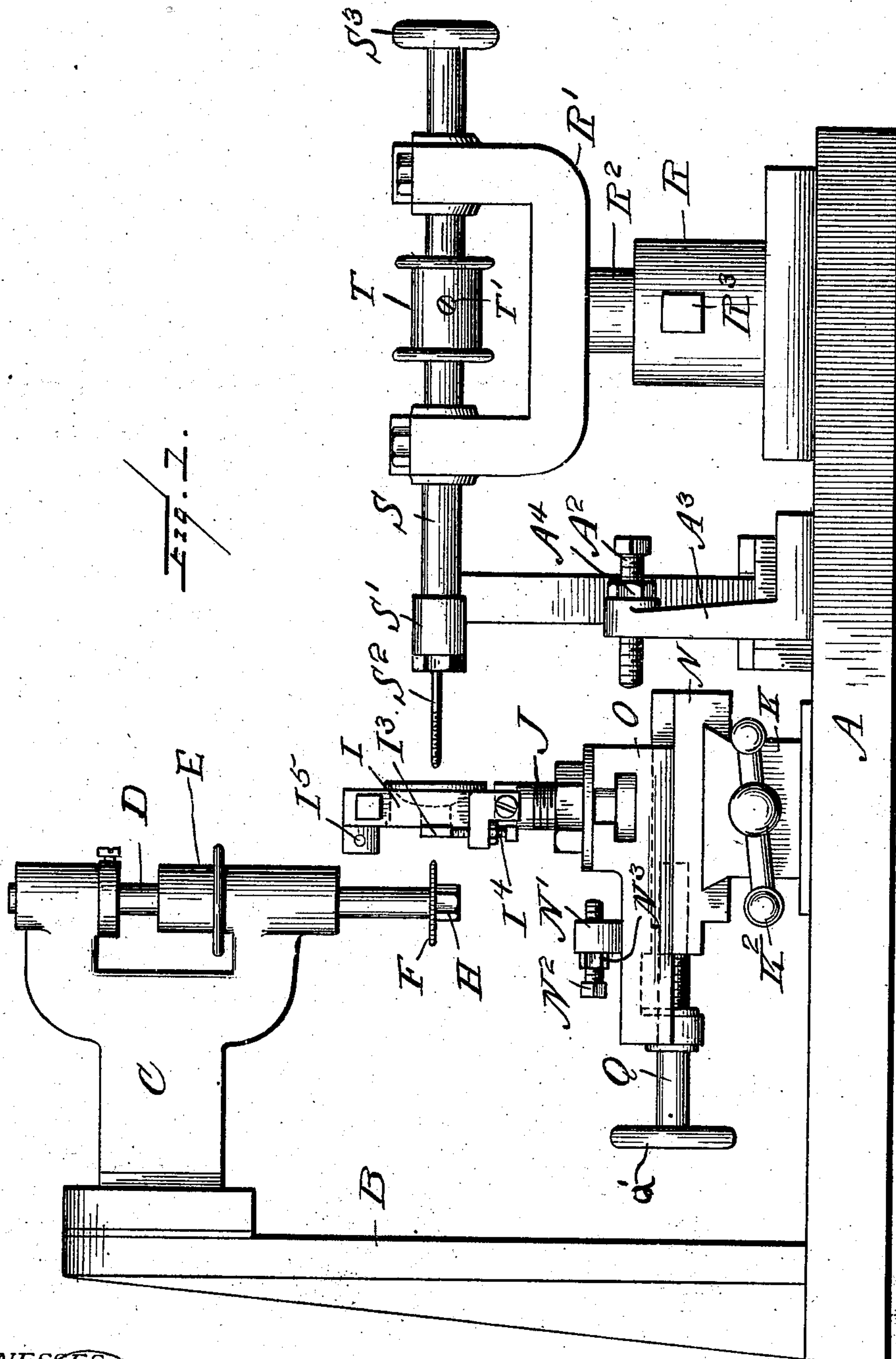
No. 881,352.

PATENTED MAR. 10, 1908.

C. S. STEWARD & W. T. LOWRY.
MACHINE FOR MAKING ACETYLENE GAS TIPS.

APPLICATION FILED. APR. 18, 1907.

3 SHEETS—SHEET 1.



WITNESSES:

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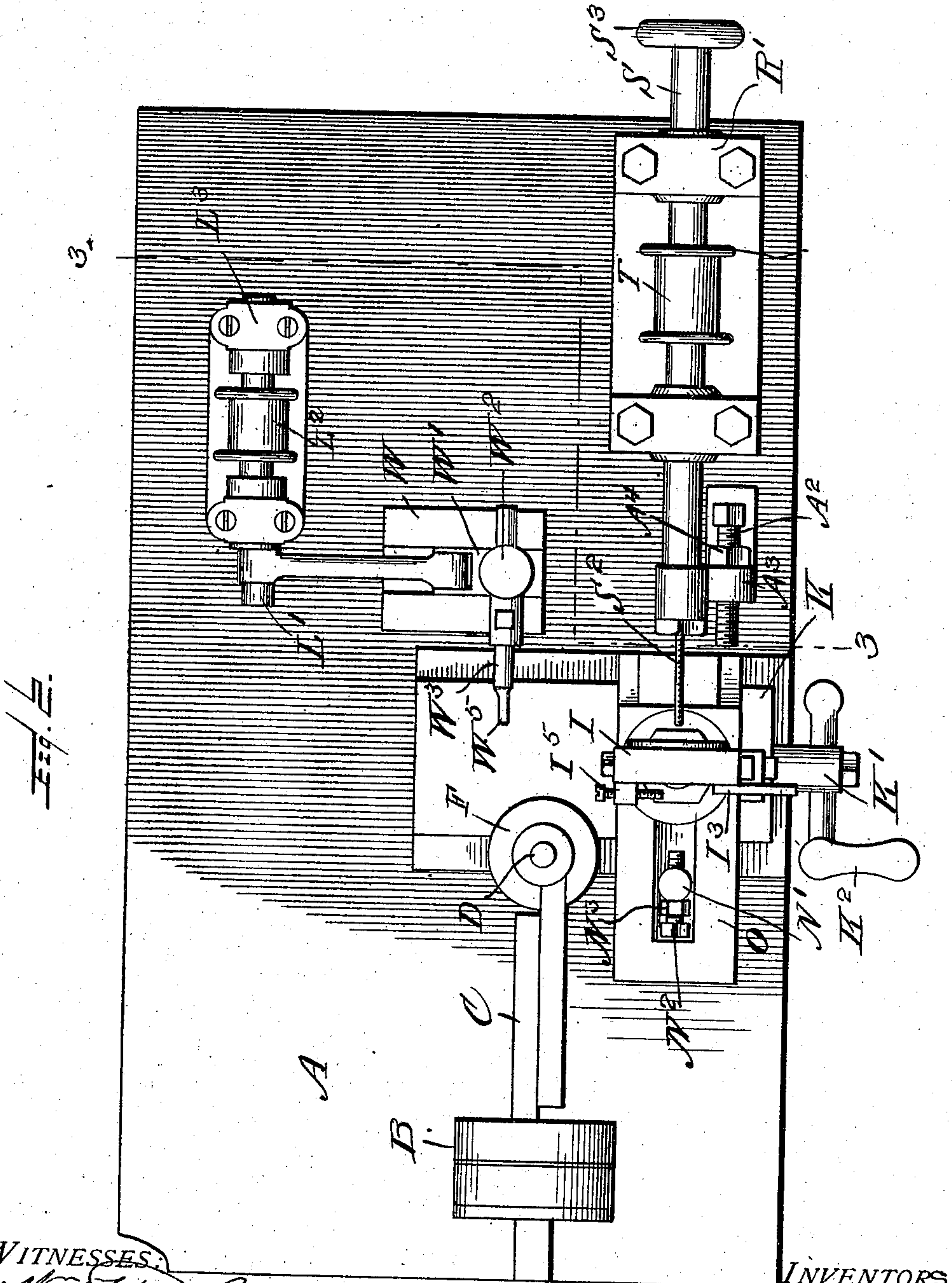
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WITNESSES.

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UNITED STATES PATENT OFFICE.

CLARENCE S. STEWARD AND WILLIAM T. LOWRY, OF CHATTANOOGA, TENNESSEE, ASSIGNORS TO THE D. M. STEWARD MANUFACTURING COMPANY, OF CHATTANOOGA, TENNESSEE.

MACHINE FOR MAKING ACETYLENE-GAS TIPS.

No. 881,352.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed April 18, 1907. Serial No. 368,946.

To all whom it may concern:

Be it known that we, CLARENCE S. STEWARD and WILLIAM T. LOWRY, citizens of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Machines for Making Acetylene-Gas Tips; and we 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 appertains to make and use same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in apparatus for making acetylene gas tips, and comprises means for holding the tip while forming an elongated spreading or pressure chamber in the end wall of the shell of the tip, and in the provision of means for forming a minute slot through the outer end of the tip into the spreading or pressure chamber and at right angles thereto.

The invention consists in various details of construction and combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

Our invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of the apparatus. Fig. 2 is a top plan view. Fig. 3 is a sectional view taken on line 3—3 of Fig. 2, showing parts of the apparatus in elevation. Fig. 4 is an enlarged detail view in elevation of the tip holding chuck. Fig. 5 is a sectional view taken on line 5—5 of Fig. 4. Fig. 6 is a detail perspective view of a tip which is to be chambered and slotted by the provision of our apparatus. Fig. 7 is an end view of the bottom of the tip. Fig. 8 is a similar view showing two holes formed in the end of the chambered portion of the tip. Fig. 9 is a detail end view showing the spreading chamber which has been formed within the end wall of the cylindrical chambered portion of the tip, and Fig. 10 is a side elevation showing a slight modification of means for slotting the tip in which a drill is utilized instead of a saw.

Reference now being had to the details of the drawings by letter, A designates the base of the apparatus having a standard B rising at right angles therefrom, and projecting

laterally from said standard is a bracket arm C, the end of which is yoke-shaped and supports a vertically mounted rotatable mandrel D, said mandrel being held in said yoke and provided with a pulley E whereby a rotary movement may be imparted by belted connection with any source or supply of power for rotating the mandrel. Fixed to said mandrel and at right angles thereto is a saw F which is held to the mandrel by means of a nut H.

K designates a block rising from the base A and has journaled therein a screw shaft K' with a handle K² fixed to the end thereof. Mounted upon and having dove-tailed connection with said block is a carriage N provided with a threaded aperture designed to receive the threads of the shaft K', whereby said carriage may be moved backward and forward as the screw shaft K' is moved in one direction or the other. Mounted upon the carriage N is a second carriage O having an angled portion which is provided with an aperture to receive the adjusting screw Q which is swiveled to said carriage O, and Q' is a hand wheel which is fixed to the screw Q. Said adjusting screw Q engages the threads formed in the wall of a hole formed in the carriage O, whereby as said screw Q is turned in one direction or the other, the carriage O may have a movement at right angles to the movement of the carriage N.

Rising from the carriage N and integral therewith is a post N' which is guided in a slot formed in the carriage O and carries a set-screw N² having a jam nut N³ thereon, said set-screw being provided for the purpose of limiting the movement of the carriage N in one direction, while its movement in the opposite direction is regulated by means of a set-screw A² which is mounted in a threaded aperture formed in the post A³, a jam nut A⁴ being mounted upon the screw A² in order to hold the same in an adjusted position. Mounted in the carriage O is a screw J which supports the swiveled chuck I, detail views of which are shown in Figs. 4 and 5 of the drawings. Said chuck is provided with a central aperture, the wall of which is slightly tapering, and is adapted to receive and frictionally hold a tip I² to be operated upon by our improved apparatus for the purpose of forming a spreading or pressure chamber within the tip and at the same time holding

the tip to be slotted through its end at right angles to the length of the spreading chamber. Said chuck has a lateral projection I^3 whereby the chuck may be swung from the position shown in solid lines in Fig. 4 to that illustrated by dotted lines in the same figure, whereby a rotary movement may be given to the tip so that the slot in the end thereof will be made at exact right angles to the length of the spreading chamber within the tip. Adjusting screws I^4 and I^5 are mounted in threaded lugs projecting from the casing in which the chuck is mounted, and serve as stops to limit the throw of the projection I^3 in one direction or the other.

Mounted upon a standard R , which rises from the base of the apparatus, is a yoke R' , the shank R^2 of which is held by means of a set-screw R^3 to said standard R , and S designates a longitudinally movable rotatable shaft which is mounted in suitable bearings in the arms of the yoke R' , and T designates a pulley which is provided with a set-screw T' adapted to hold the same in an adjusted position upon the shaft S , whereby the longitudinal movement of said shaft may be regulated. One end of said shaft S carries a socket member S' in which a drill S^2 is adapted to be held, and the opposite end of the shaft is provided with a handle S^3 , whereby said shaft may be given a longitudinal movement in one direction or the other.

Mounted in a suitable cross-head W , shown clearly in Fig. 2 of the drawings, is a carriage W' carrying a standard W^2 , shown in side elevation in Fig. 3 of the drawings, which standard carries a tool W^3 at right angles thereto, said tool being held in an aperture in the standard by means of a set-screw W^4 . It will be noted upon reference to Fig. 2 of the drawings that said tool W^3 has a serrated end W^5 , whereby as the carriage to which the tool is fixed is reciprocated rapidly, a grating or rasping effect will be produced upon a tip held in the path of said serrated end. Said carriage W' has a pitman L pivotally connected thereto, the other end of which is connected to a cam shaft L' which may be driven by belted connection with a pulley L^2 . Said cam shaft L' is mounted in suitable bearings L^3 upon the base of the apparatus.

In Fig. 10 of the drawings, we have illustrated a slight modification of a detail of our invention, showing a vertically rotating drill V which is mounted upon a mandrel V' held upon a yoke V^2 , said mandrel being spring-pressed and driven by means of belted connection with the pulley V^3 . In the modified form shown in Fig. 10 of the drawings, the mandrel is shown as being mounted in a suitable yoke, and this modified form may be substituted for the saw illustrated in Fig. 1 of the drawings, if desired, for the purpose of forming the transverse slot in the outer

end of the tip. By pushing down upon the mandrel V' under the tension of the spring thereon, when the tip is brought into the proper position so that as the drill is depressed it will bore a hole through the roof of the spreading chamber at right angles thereto, thereby forming an exit for the gas.

In operation, the tip to be chambered and slotted is inserted in the chuck with the open cylindrical shell portion toward the drill S^2 . The two carriages, one superimposed upon the other and having movements at right angles to each other, are so adjusted that when the drill S^2 , which first shall have been given a rotary movement and fed forward toward the tip, will cause a hole to be drilled in the roof of the cylindrical chambered portion of the tip, the wall of which hole forms one end of the spreading or pressure chamber. In order to regulate the depth at which it is desired to have the holes, designated in Fig. 8 by letter M , cut, the set-screws A^2 may be moved nearer to or farther from the carriage O and also the movement of the shaft S which carries the drill S^2 may be limited by the adjustment of the pulley T thereon which is held in an adjusted position by means of a set-screw T' . After the formation of the two holes M in the end of the roof of the cylindrical chambered portion of the tip, as shown in Fig. 8 of the drawings, the drill is withdrawn from the tip, the carriage N is moved horizontally to bring the tip opposite and centrally in alinement with the reciprocating rasping tool W^3 , and the carriage O is moved forward, being adjusted so that the spreading chamber may be cut out to the proper depth. As the rasping tool is given a rapid lateral movement in a horizontal plane, the operator, by turning the adjusting screw Q , gradually, may regulate the feeding forward of the tip and also regulate the rapidity with which the portion of the tip intermediate said holes may be cut away. After the spreading or pressure chamber has been cut to its proper depth, forming an elongated chamber, as illustrated in Fig. 9 of the drawings, the carriage O is drawn back free from the rasping tool and the chuck is given a rotary movement in order to bring the tip into proper position to receive the transverse slot in its top at right angles to the length of the spreading chamber. Said slot is formed preferably by means of the saw F which is caused to rotate in a horizontal plane against the top of the tip, and by the movement of the carriage O upon which the tip is mounted, toward the saw, the depth at which the slot is cut may be regulated by the screw N^2 which serves as a stop. This being adjusted, the carriage N is given a longitudinal movement, bringing the tip into contact with the saw, and as the carriage N^2 is driven forward and backward, the slot will be formed in the top of the tip cutting through

the roof of the spreading or pressure chamber at right angles to the length of the latter.

In Fig. 10 of the drawings, we have shown a slight modification of a detail of our invention, in which the saw may be dispensed with, if desired, and a drill V provided for drilling a hole transversely through the tip in which the slot is formed so as to intersect and cut through the roof of the spreading chamber, thereby forming a slot which will also be at right angles with the length of the spreading chamber.

From the foregoing, it will be noted that by the provision of an apparatus as shown and described, a simple and efficient mechanism is afforded for forming an elongated spreading chamber within a tip, with a slot as a gas orifice at right angles to the length of the spreading chamber. By the manner of holding the tip and the adjustments of the machine, it will be observed that the chamber and the slot may be accurately formed in order to produce a tip from which the best results may be obtained.

What we claim is:—

1. A mechanism for making acetylene gas burner tips, comprising a tip holder adapted to have an angular movement, a movable carriage upon which said holder is mounted, a movable rasping member mounted at right angles to the line of travel of said carriage and against which member a tip, engaged by said holder, is designed to be moved whereby an elongated chamber may be formed within the tip, and means positioned in the path of the tip for cutting a slot in the end and intersecting at right angles the chamber within the latter, as set forth.

2. A mechanism for making acetylene gas burner tips, comprising a tip holder adapted to have an angular movement, a movable carriage upon which said holder is mounted, a reciprocating rasping member mounted at right angles to the line of travel of said carriage and against which member a tip fixed to said holder is designed to be moved whereby an elongated chamber may be formed within the tip, and means positioned in the path of the tip for cutting a slot in the end intersecting at right angles the chamber therein, as set forth.

3. A mechanism for making acetylene gas burner tips, comprising a tip holder adapted to have an angular movement, a movable carriage upon which said holder is mounted, a reciprocating rasping member mounted at right angles to the line of travel of said carriage and against which member a tip adjustably held by said holder is adapted to be moved, whereby an elongated chamber may be formed within the tip, and means positioned in the path of the tip for cutting a slot in the end intersecting at right angles the chamber within the latter, as set forth.

4. A mechanism for making acetylene gas

burner tips, comprising a tip holder adapted to have an angular movement, a movable carriage upon which said holder is mounted, a rotatable drill, means for causing the latter to be actuated at right angles to the movement of said carriage and in the path of the tip, a movable rasping member mounted at right angles to the line of travel of said carriage and against which the tip is adapted to contact as said member is reciprocated, whereby an elongated member may be formed within the tip and intermediate the holes formed therein by said drill, and means positioned in the path of the tip for cutting a slot in the end intersecting at right angles the chamber within the tip, as set forth.

5. A mechanism for making acetylene gas burner tips, comprising a tip holder adapted to have an angular movement, a movable carriage upon which said holder is mounted, a rotatable drill movable in a plane at right angles to the movement of said carriage, a movable rasping member mounted at right angles to the line of travel of said carriage and against which the tip is adapted to contact as said member is reciprocated, whereby an elongated member may be formed within the tip and intermediate the holes formed therein by said drill, a rotatable saw mounted in the path of the end of the tip engaged by said holder and designed to cut a slot in the end of the tip intermediate the spreading chamber therein, as set forth.

6. A mechanism for making acetylene gas burner tips, comprising a movable carriage, a tip holder having an adjustable movement independent of the carriage and at right angles thereto and adapted to hold a tip and allow the same to have a limited angular movement, a movable rasping member positioned in the path of said tip engaged by said holder, whereby a chamber may be formed within the tip, and means positioned in the path of the tip for cutting a slot in the end intersecting at right angles the chamber within the latter, as set forth.

7. A mechanism for making acetylene gas burner tips, comprising a movable carriage, an adjustable tip holder designed to have an angular movement and adapted to engage a tip, a rotatable drill, means for limiting the movement of said holder toward said drill, a reciprocating carriage, a rasping member fixed thereto and adapted to contact with a tip engaged by the holder to form a chamber within the tip, and means for slotting the end of the tip intersecting at right angles said chamber, as set forth.

8. A mechanism for making acetylene gas burner tips, comprising a movable carriage, an adjustable tip holder designed to have an angular movement and adapted to engage a tip, a rotatable drill, means for limiting the movement of said holder toward said drill, a reciprocating carriage, a rasping member

fixed thereto and adapted to contact with a
tip engaged by the holder to form a chamber
within the tip, a rotatable saw mounted in a
plane at right angles to the movement of the
5 carriage and designed to cut a slot in the end
of the tip intersecting at right angles the
chamber therein, at set forth.

In testimony whereof we hereunto affix

our signatures in the presence of two wit-
nesses.

CLARENCE S. STEWARD.
WILLIAM T. LOWRY.

Witnesses:

A. E. WOODY,
JNO. H. WOODY.