

No. 672,503.

Patented Apr. 23, 1901.

C. T. WILLSON.
ACETYLENE GAS BURNER.

(Application filed Feb. 21, 1901.)

(No Model.)

Fig. 1.

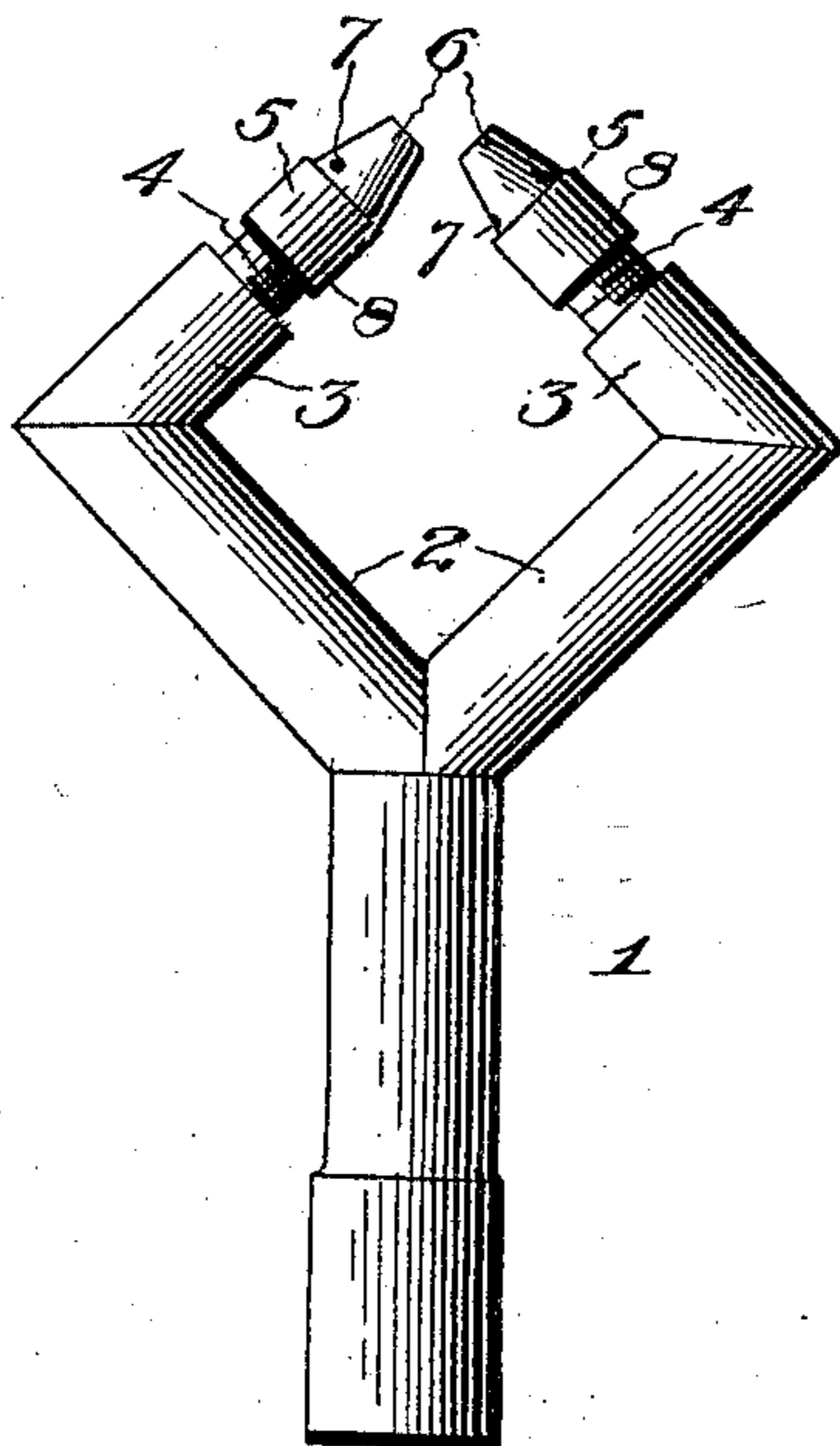
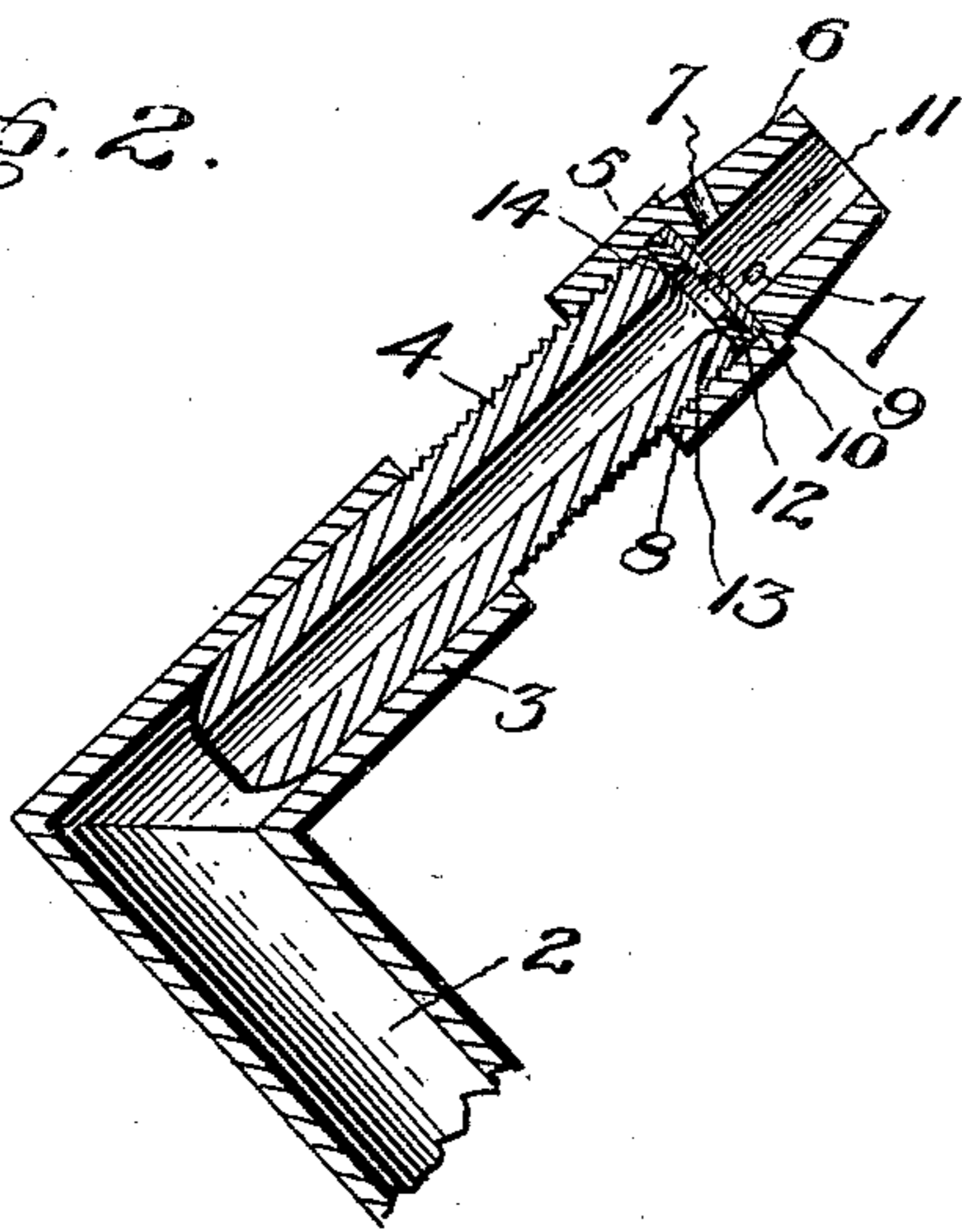


Fig. 2.



Witnesses

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ACETYLENE-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 672,503, dated April 23, 1901.

Application filed February 21, 1901. Serial No. 48,277. (No model.)

To all whom it may concern:

Be it known that I, CHARLES THERON WILLSON, a citizen of the United States, residing at Amenia, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Acetylene-Gas Burners; and I do 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 the same.

My invention relates to burners for acetylene gas. Burners for this purpose are ordinarily made with two converging tips, forming two converging jets, which impinge upon each other and make a flat flame at right angles to the plane of convergence. The tips have generally been made of some heat-resisting substance, like clay, formed with a fine duct of appreciable length, terminating into a larger open mixing-chamber, into which air-ducts lead. These gas-ducts, however, being necessarily of very small diameter and some length, soon become clogged with the products of decomposition of the acetylene gas, with the result that the flame speedily grows smoky and loses its illuminating power. In experimenting to remedy this serious objection to the burners in use I discovered that by using as a jet-orifice instead of the fine duct a pin-hole or minute aperture in a thin sheet of mica the orifices, being of inappreciable length, effectually prevented any accumulation of products of decomposition therein and produced a flame which did not in any wise deteriorate after long and continuous use. This feature of employing the perforated mica sheet or diaphragm forms the subject-matter of and is broadly claimed in a prior application for Letters Patent filed by me February 1, 1900, Serial No. 7,674; and the object of the present invention is to simplify and improve upon the construction of burner shown in said application and to provide for the more effective and secure mounting of the mica disk in place.

In order that my invention may be fully understood, I shall first describe in detail the mode in which I carry the same into practice and then point out its various features in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which the same parts are designated by like numbers in both figures.

Figure 1 is a side elevation of an acetylene-gas burner embodying my invention; and Fig. 2 is a detail longitudinal sectional view, on a greatly enlarged scale, of one of the tubular arms of the burner-frame and the parts of my invention attached thereto.

Referring now more particularly to the drawings, the numeral 1 represents the stem of an acetylene-burner frame of the usual construction, having the divergent arms 2 terminating in the convergent extremities 3, in which fit the burner-tips, which, as usual, are arranged to make a flat flame at right angles to the plane of convergence.

In carrying my invention into practice I form each converging extremity 3 of the burner-frame with interior screw-threads and fit within said extremity an exteriorly-threaded nipple 4, which forms a chamber, through which the gas passes on its way to the burner-tip 5, which is fitted upon the outer end of said nipple 4. The tip 5 is formed with a tapered or frusto-conical mixing-chamber 6, having lateral openings 7 for the inlet of air thereto, and has an enlarged cylindrical base 8, which is interiorly screw-threaded to receive the outer screw-threaded end of the nipple 4. This cylindrical base 8 is in open communication with the mixing-chamber 6, and at its point of junction therewith is formed with an interior shoulder 9. Against this shoulder is fitted the mica disk or diaphragm 10, having one or more minute apertures 11, forming jet-orifices for the passage of the gas from the gas-chamber formed by the nipple 4 to the mixing-chamber 6. A washer 12 bears against the under side of the mica disk or diaphragm, and with this washer contacts the outer end 13 of the nipple 4, which is formed with a blunt or rounded surface 14 to fit snugly against the under side of said washer and press the same and the disk firmly against the shoulder 9, so as to provide a tight joint. The gas flows through the stem 1, divergent arms 2, and convergent extremities 3 of the burner-tip to the gas-chambers formed by the nipples 4, and thence through the jet-orifices in the

5 mica disk to the mixing-chambers of the burner-tips, where it is mixed with the air and forms two upwardly-converging jets, which impinge upon each other and form when lighted a flame of perfect character and high illuminating power.

10 The jet-orifices in the mica diaphragm being of practically no length give no place or opportunity for the accumulation of the products of combustion, which is so detrimental to the burners in common use, wherein the jets issue from ducts of some length. By mounting the mica disks in the manner herein shown and described it will be seen that said disks will be firmly clamped in position, while they are readily accessible for removal and the substitution of new disks whenever required. The purpose of employing the washer and rounding or blunting the cooperating end of the nipple is to adapt the mica disks to be firmly clamped without danger of injury thereto or causing the disks to buckle and throw the jet-orifices therein out of proper line.

25 If desired, the nipple 4 may be formed by exteriorly threading the outer portion of the converging extremity 3 of each burner and directly connecting the tip thereto. The threaded end of the extension 3 will in this case serve, like the nipple, as a coupling member, acting to connect the tip to the burner-frame and to clamp the mica disk in place.

30 Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A burner for acetylene gas provided with a gas-supply chamber, an air-mixing chamber, a shoulder at the junction of said chambers, and a mica diaphragm clamped between said shoulder and the gas-supply chamber and formed with a jet-orifice, substantially as described.

2. A burner for acetylene gas provided with an air-mixing chamber having at the base thereof a shoulder, a mica diaphragm bearing against said shoulder and formed with a jet-orifice, and a coupling connection form-

ing a gas-chamber and acting as a clamp to hold the diaphragm in place, substantially as described.

3. A burner for acetylene gas, comprising a gas-supply chamber, an air-mixing chamber detachably connected thereto, and a perforated mica diaphragm clamped between said chambers, substantially as described.

4. A burner for acetylene gas, comprising a tip having an air-mixing chamber and a shoulder at the base thereof, a mica diaphragm bearing against said shoulder and provided with a jet-orifice, a washer bearing against said diaphragm, and a coupling connection upon which the tip is fitted, said coupling connection being formed with a rounded end for clamping the washer and diaphragm in place, substantially as described.

5. A burner for acetylene gas, comprising a burner-frame formed with converging extensions, burner-tips provided with air-mixing chambers and shoulders at the bases thereof, mica diaphragms bearing against said shoulders, washers bearing against the mica diaphragms, and coupling connections between said tips and the convergent extensions of the burner-frame and acting to clamp the washer and diaphragm against said shoulders, substantially as described.

6. A burner for acetylene gas, comprising a tip formed with an air-mixing chamber and an enlarged cylindrical base exteriorly screw-threaded and provided with a shoulder, a perforated mica diaphragm resting against said shoulder, a washer resting against the diaphragm, and an exteriorly-threaded nipple fitted within said cylindrical extension and formed with a rounded end for clamping the washer and disk against the shoulder, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

C. T. WILLSON.

Witnesses:

C. H. DAVIS, Jr.,
J. L. BARRETT.