

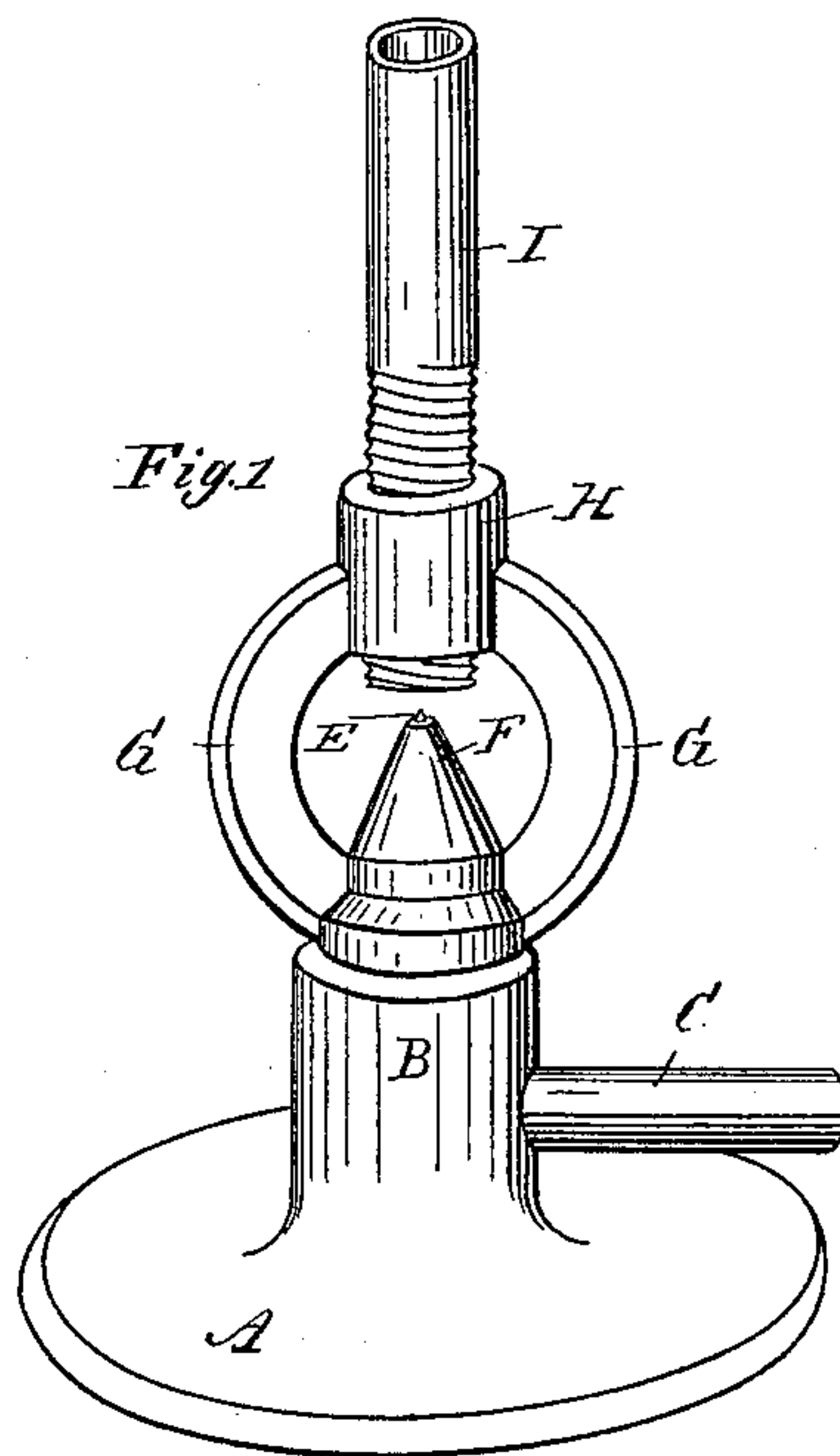
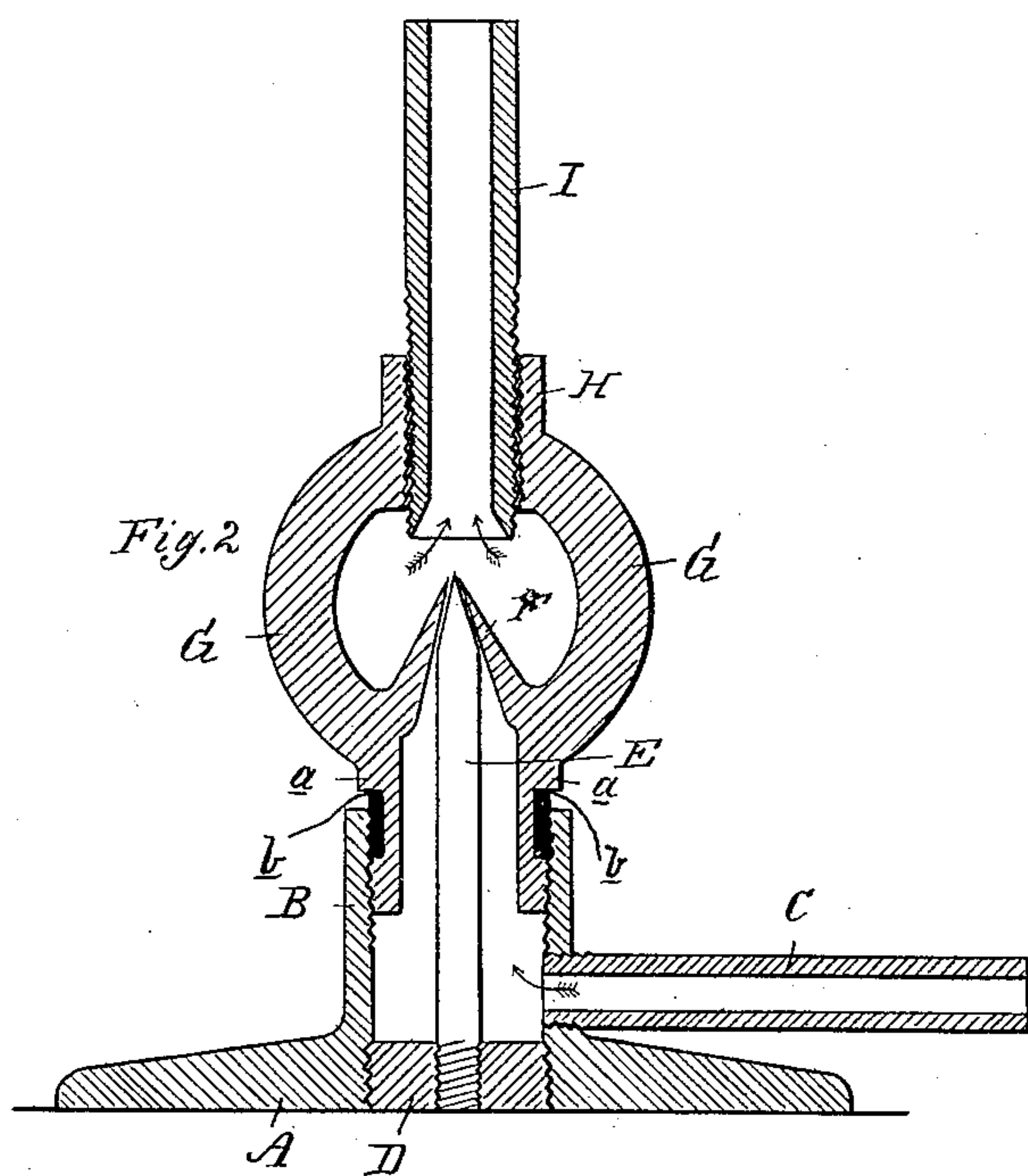
(No Model.)

H. ALLENDER & A. T. HENDERSON.

LABORATORY BURNER.

No. 350,796.

Patented Oct. 12, 1886.



Attest:  
John Schuman.  
*[Signature]*

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Henry Allender,  
and  
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by Atty.  
*Thos. S. Sprague*

# UNITED STATES PATENT OFFICE.

HENRY ALLENDER AND ALEXANDER T. HENDERSON, OF DETROIT, MICHIGAN, ASSIGNORS TO THE COMBINATION GAS MACHINE COMPANY, OF SAME PLACE.

## LABORATORY-BURNER.

SPECIFICATION forming part of Letters Patent No. 350,796, dated October 12, 1886.

Application filed January 14, 1886. Serial No. 188,548. (No model.)

*To all whom it may concern.*

Be it known that we, HENRY ALLENDER and ALEXANDER T. HENDERSON, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Laboratory-Burners; and we hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction of laboratory-burners, which are especially designed for laboratories using gasoline gas or machine gas, which day by day varies so much in quality, such variation being caused by changes of temperature, by radical differences in the gravity of the gasoline employed, and other causes.

The construction of this device is such that the air and gas supplied can be regulated so as readily to give any size and color of flame desired, and to furnish the necessary amount of air to produce the desired combustion entirely above the jet and between it and the mixing-tube.

The invention consists in the peculiar construction of the various parts and their combinations, as more fully hereinafter described.

Figure 1 is an elevation in perspective of our improved burner. Fig. 2 is a vertical central section of the same.

In the accompanying drawings, A represents a stand or base cast integral with the stud B, which is centrally located with relation to the base, these two parts being preferably cast together in iron or other suitable metal and solid. After this casting is made a vertical central bore is made through the base and stud, which is interiorly threaded near the upper end of the stud, as shown in Fig. 2, while a section of piping, C, is tapped into the side of the stud to afford means for the entrance of gas into the interior thereof. A plug, D, carrying a needle-valve, E, is then inserted in the lower end of the bore in the base A, and secured therein in any suitable way, so that the point of the needle is vertical to the exact center of the bore.

F is a jet-tube, the lower end of which is

threaded to engage with the thread in the stud B, and above the threaded portion of such jet-tube, and upon the neck thereof, between the upper end of such threaded portion and the shoulder *a*, there is secured in an annular recess, *b*, the necessary packing to prevent the escape of gas. The upper end of the jet-tube is conical in form, as shown, with a centrally-located small aperture for the escape of gas, and these parts are so constructed and arranged that if the jet is screwed home until the shoulder is in contact with the upper end of the stud B the point of the needle-valve will entirely close the gas-escaping orifice in the jet-tube. It will readily be seen that by this construction, so far as described, the flow of the gas is regulated by the fixed needle-point and the vertical adjustment of the jet-tube.

Two circular arms, G, are cast upon opposite sides of the jet-tube, and integral therewith, and with the collar H, which latter is internally threaded to engage with the threaded end of the mixing-tube I, and so arranged that the axial center of such tube I is in vertical line with the point of the needle-valve and gas-escaping orifice in the jet. By this construction all the oxygen necessary to produce combustion of the gas is supplied to the gas at the mouth of the jet-tube, and between it and the lower end of the mixing-tube I, so that the vertical adjustability of the latter by the means described will furnish the necessary and adjusted amount of air to produce the desired colored flame at the upper end of this tube I.

The amount of gas required for various kinds of laboratory work is obtained by the vertical adjustability of the jet-tube, thereby changing the relative position of the opening therein to that of the needle-valve, the latter of which is fixed. While the necessary amount of air to produce the required flame is obtained by the adjustability of the mixing-tube I, and while this device has been described as more especially designed for utilizing the gas which is the product of the various machines in use, it will be found equally serviceable where gas is employed which is produced by destructive distillation.

It will be observed that the mixing-tube I



is so constructed that, if necessary, it may be lowered to such an extent as to cover the jet-tube F and completely cut off the supply of air to the flame, and to this we attach importance.

What we claim as our invention is—

1. The combination, with the base provided with stationary needle-valve, of the jet tube F, vertically adjustable on said base, and provided with conical aperture controlled by said valve, the arms G and threaded collar H, formed integral with said tube, and the mixing-tube I, vertically adjustable in said collar, and constructed to close the upper end of the jet-tube when desired, substantially as and for the purpose specified.

2. The combination, with the base A, provided with internally-threaded stud B, and stationary needle-valve E, located centrally in said stud, of the jet-tube F, having conical aperture controlled by said valve, externally threaded to engage the thread of the stud, and provided with annular recess b and shoulder a, and the packing in said recess, all substantially as shown and described, and for the purpose specified.

HENRY ALLENDER.

ALEXANDER T. HENDERSON.

Witnesses:

NORMAN BELL,

JAMES H. MASON.