No. 615,960. Patented Dec. 13, 1898.

H. DOCK.

BLOWPIPE.

(Application filed June 4, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

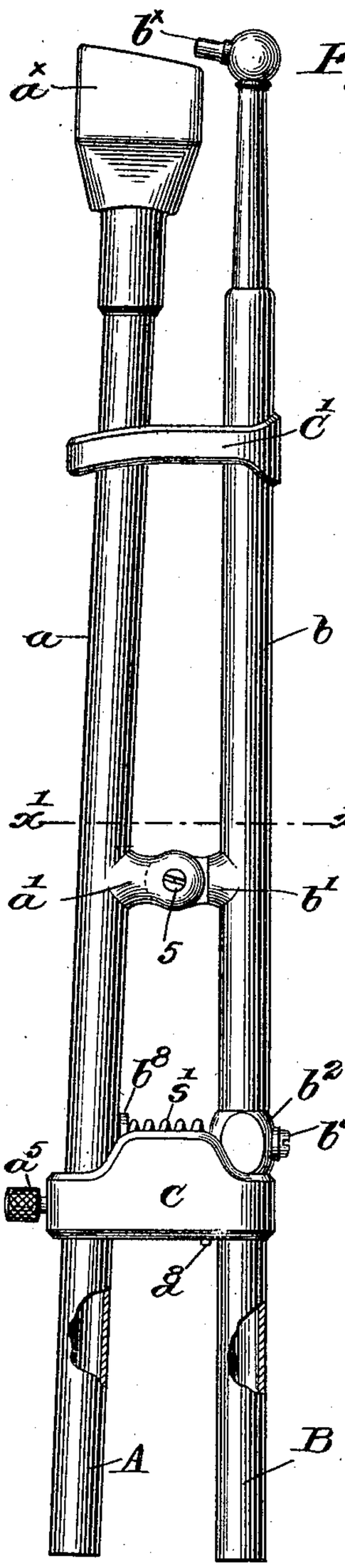
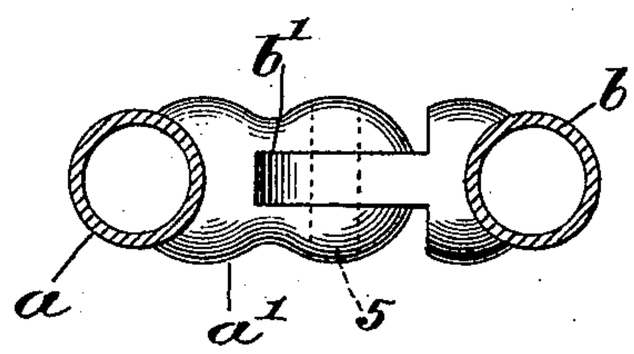


Fig. 4



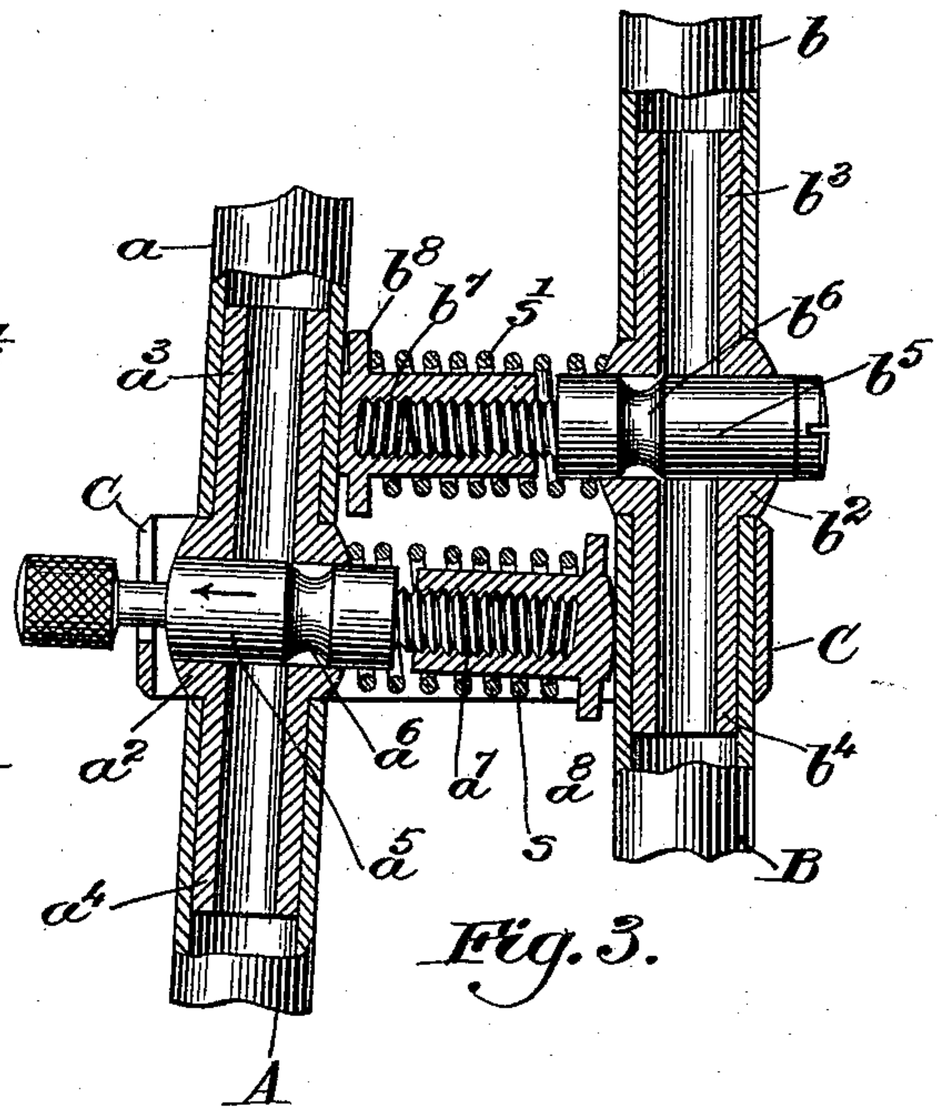
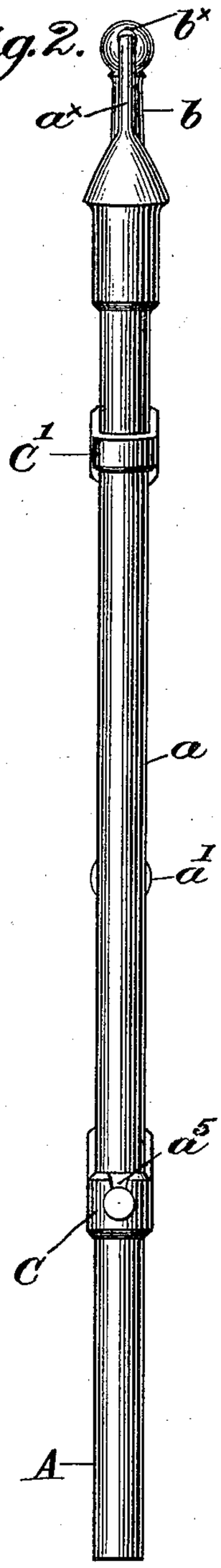


Fig. 3.

Fig. 2.



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No. 615,960. Patented Dec. 13, 1898.

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BLOWPIPE.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 5

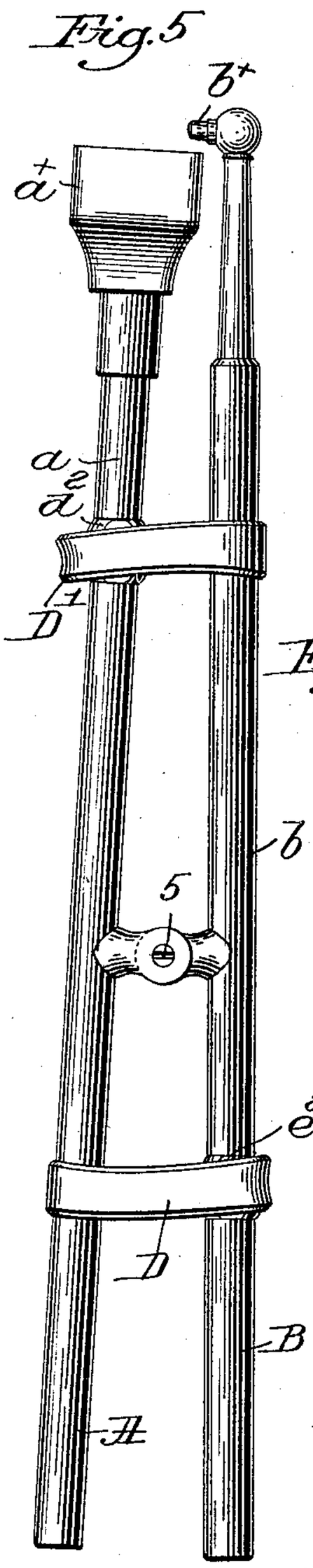

Fig. 6.

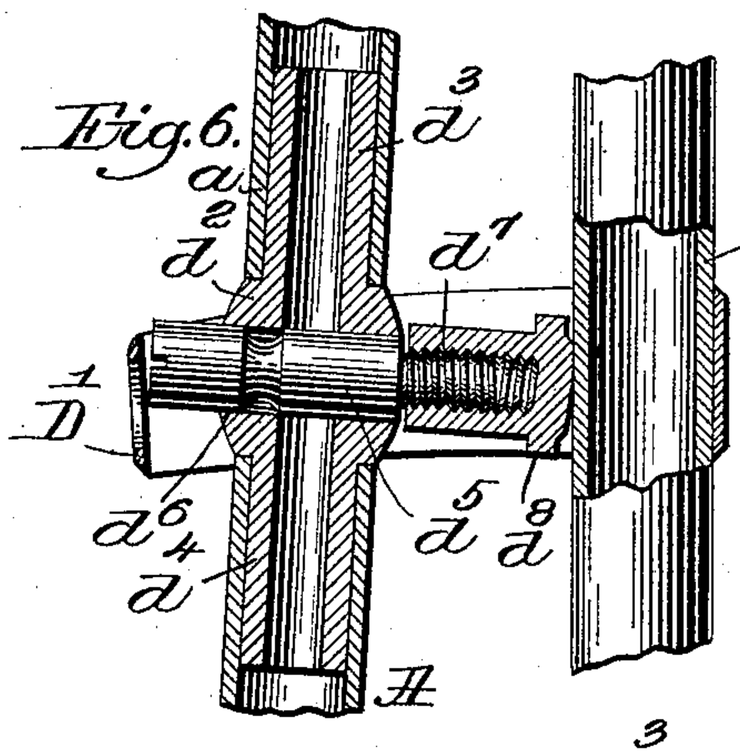

Fig. 8.

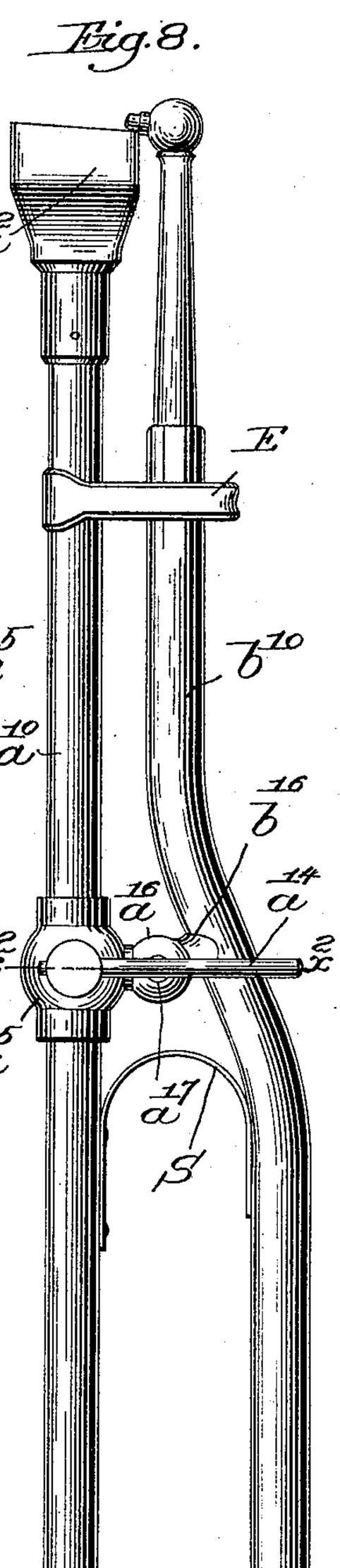

Fig. 7.

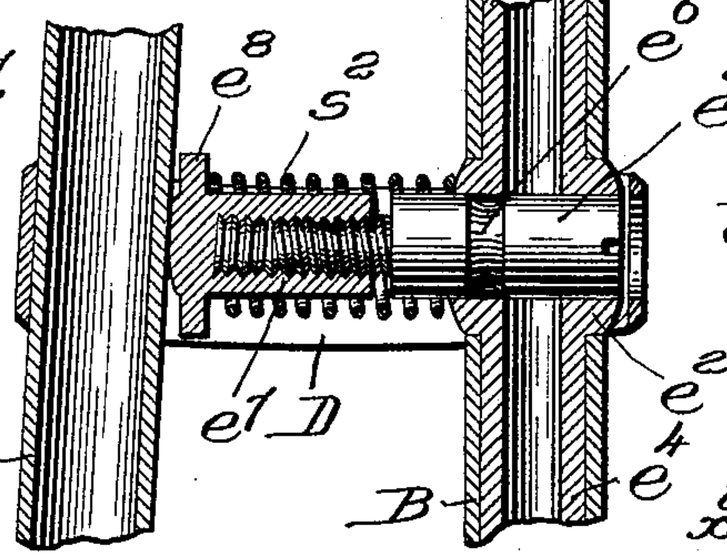

Fig. 10.

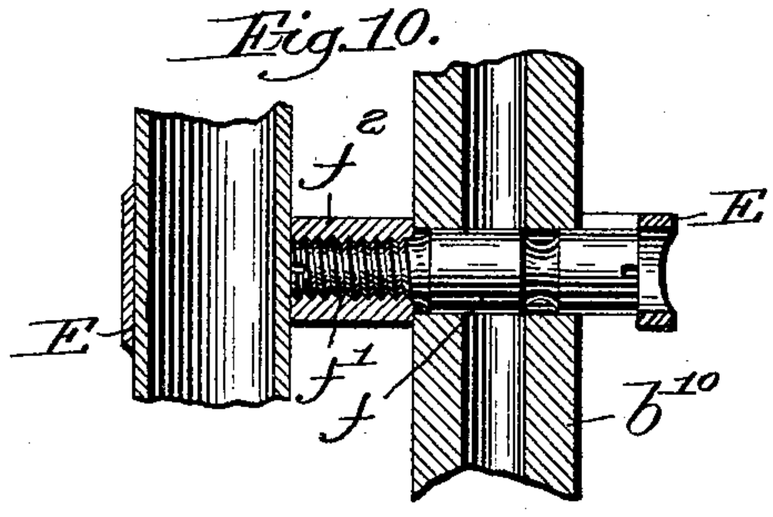

Fig. 9.

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UNITED STATES PATENT OFFICE.

HERMAN DOCK, OF PHILADELPHIA, PENNSYLVANIA.

BLOWPIPE.

SPECIFICATION forming part of Letters Patent No. 615,960, dated December 13, 1898.

Application filed June 4, 1898. Serial No. 682,516. (No model.)

To all whom it may concern:

Be it known that I, HERMAN DOCK, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Blowpipes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to blowpipes used by jewelers, dentists, and others for soldering, brazing, &c.; and it has for its object the production of a novel form of blowpipe of simple construction and high efficiency.

Blowpipes of various forms are now in use; but so far as I am aware in all of these the air-blast is delivered in the center of the gas-flame or has its exit from the same opening, resulting in defective operation and annoyance to the user. So, too, considerable manipulation is necessary in order to operate such devices, and with many of them the pressure must be maintained substantially constant and very low or the air will blow out the flame, such pipes failing to operate if the pressure exceeds one pound or falls below half a pound to the square inch.

I have aimed to produce a blowpipe which may be readily and effectively operated and which will operate properly under widely-varying pressure.

I have herein shown several practical embodiments of my invention, the novel features of which will now be described, and particularly pointed out in the claims.

Figure 1, in side elevation, represents one form of blowpipe embodying my invention, the parts being shown in position when not in use. Fig. 2 is a left-hand end elevation thereof. Fig. 3 is an enlarged vertical sectional view of the valve-controlling mechanism, taken on the line $x\ x$, Fig. 2. Fig. 4 is an enlarged transverse section on the line $x'\ x'$, Fig. 1. Fig. 5 is a side elevation of another form of blowpipe embodying my invention. Figs. 6 and 7 are enlarged vertical sectional details of the controlling valves for the air and gas. Fig. 8 is a side elevation of yet another modification of my invention. Fig. 9 is an enlarged transverse sectional detail thereof on the line $x^2\ x^2$, Fig. 8; and Fig. 10 is a vertical section of the air-valve to be described.

Referring to Fig. 1, the plowpipe, tool, or device comprises two tubular members a and b, pivotally connected at 5 and adapted to be connected, as will be described, with suitable sources of supply of gas and air, respectively, preferably by flexible tubes or piping. The member a is shown as provided at its upper end with a suitable burner $a^\times$, flattened to leave an elongated exit opening or slit for the gas, while the adjacent end of the member b is provided with an air-nozzle $b^\times$, laterally extended in the direction of the length of the burner.

By reference to Fig. 4 it will be seen that the member a has attached thereto a laterally-extended slotted bracket a' to receive a lug or ear b', attached to the member b, pivotally connected by the transverse pin or stud 5, the comparatively large coöperating faces of the bracket and ear preventing any tendency of the members to twist.

Referring now to Fig. 3, a valve-case a^2, having opposite tubular extensions $a^3\ a^4$, is secured to the member a below the joint 5, the extension a^3 fitting tightly therein, a plug-valve a^5 sliding transversely in the case and having an annular groove a^6 therein. The stem a^7 of the valve is threaded to receive a check-nut a^8, which abuts against the tubular handle B, secured to the extension b^4 of the valve-case b^2, attached by its extension b^3 to the member or air-tube b, a like handle A being attached to the extension a^4. The plug-valve b^5 is similar to the valve a^5, and it is oppositely turned to the latter, so that the check-nut b^8 on the threaded stem b^7 abuts against the adjacent part of the gas tube or member a. Springs s and s' surround the check-nuts between their heads and the corresponding valve-cases, the springs tending to separate the members a and b and maintaining the valves in substantially the position shown in Fig. 3, nearly closed, to produce a needle-flame. A yoke C, attached to one member, embraces the other member, as shown, and limits the separation of said members due to the springs, and by adjusting the check-nuts the valves can be adjusted independently to vary the amount of air or gas, or both, passing through the tool when not in use. A second yoke C′ above the joint 5 serves to limit the throw or swing of the mem-

bers when in use, and it also acts as a guide to retain said members in alinement.

When in use, the operator grasps the handles A and B and by the pressure of the hand presses them together, thereby automatically moving the valves oppositely in the direction of the arrows, Fig. 3, to admit more air and gas to the nozzle and burner, respectively, the degree of pressure determining the amount, while at the same time the proper relative position of the air nozzle and burner is effected. It will thus be seen that the tool is held in one hand and the valves controlled by simple pressure thereof, the other hand of the operator being entirely free.

The outer ends of the valves may be either slotted or provided with knurled heads for the purpose of adjustment, both forms being shown.

The yoke C serves as a protection to the valve mechanism and also prevents accidental rotation of the check-nuts on the valve-stems.

In Fig. 5 the gas and air conducting members a and b, with the burner $a^{\times}$ and air-nozzle $b^{\times}$, are, substantially as hereinbefore described, pivotally connected at 5, and yokes D and D′ guide and limit the relative movement of said members; but the gas and air valves are located at opposite sides of the pivot 5.

The gas-controlling valve d^5 is shown in Fig. 6 and the air-valve e^5 in Fig. 7 oppositely turned and movable in opposite directions by the relative movement of the members a and b, due to pressure of the hand of the operator on the handle portions A and B, as before. Inasmuch as the valves and their cases and the coöperating check-nuts are substantially the same as the corresponding parts described in the foregoing specification, they need not be described in detail. A spring s^2 controls the separation of the air and gas conducting members and returns the air-valve e^5 to normal position, the free end of the yoke D′ engaging the gas-valve d^5 to open it when the tool is in use.

In the modification shown in Fig. 8 the gas-conducting member a^{10}, having a burner a^{12}, is provided with a plug-cock a^{13}, (see Fig. 9,) operated by a handle a^{14}, the valve-case a^{15} having screwed thereinto a slotted stud a^{16}, to which is pivotally connected by a pin a^{17} a lug b^{16}, secured to the air-conducting member b^{10}. The member b^{10} is shown as bent slightly below the pivot a^{17} to separate it sufficiently from the member a^{10}, a suitable spring S maintaining the separation, while a yoke E above the pivot prevents undue pivotal movement of said members and also keeps them in alinement. A grooved slide-valve f, Fig. 10, is movably seated in the air duct or member b^{10}, its threaded shank f' being provided with a check-nut f^2 to adjust the throw of the valve, said nut being moved in one direction by engagement with the free end of the yoke E and in the opposite direction by pressure of the nut against the gas-duct a^{10}, thus dispensing with a second spring.

In the tools shown in Figs. 1 and 5 the valve-cases are practically bushings enlarged between their ends to form suitable valve-seats, and said valve-cases may be either pressed or soldered into the air and gas conducting members. Obviously, however, the conducting members could be made in one piece, the air-tube b^{10} in Fig. 8 being so constructed and the valve-seat formed directly in the tube.

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

1. In an apparatus of the class described, relatively-movable, connected gas and air conducting members, the former being provided with a burner, an air-directing nozzle on the latter, movable toward and from the burner by relative movement of said members, an air-controlling valve and actuating means therefor operated by such relative movement, substantially as described.

2. In an apparatus of the class described, relatively-movable, connected gas and air conducting members, a burner having an elongated exit-opening, on the gas-conducting member, an air-nozzle on the other member, movable toward and away from the burner in the direction of the length of its opening by relative movement of the main members, an air-controlling valve, and actuating means therefor operated by or through such relative movement, substantially as described.

3. In an apparatus of the class described, relatively-movable, connected gas and air conducting members, the former being provided with a burner, an air-directing nozzle on the latter, movable toward and from the burner by relative movement of said members, an air-controlling valve, actuating means therefor operated by such relative movement, and means to limit the relative movement of the gas and air conducting members, substantially as described.

4. In an apparatus of the class described, tubular gas and air conducting members pivotally connected between their ends, a burner on the gas member and an air-directing nozzle on the other member, a spring to normally retain said burner and nozzle in juxtaposition, and valve mechanism to control the flow of air and gas, said mechanism being automatically operated by relative movement of the conducting members, substantially as described.

5. In an apparatus of the class described, a gas-conducting member having at one end a burner, an air-conducting member provided with an air-nozzle adjacent the burner, a pivotal spring-controlled connection between said members, and independently-adjustable gas and air valves, and actuating means therefor operated by relative movement of the conducting members, substantially as described.

6. In an apparatus of the class described,

relatively-movable and connected inflexible tubes for gas and air, said tubes at one end being provided respectively with a burner and an air-directing nozzle, the other ends of the tubes forming handles, controlling-valves in said tubes, and means operated by relative movement of the tubes to open the valves as the burner and nozzle are separated, substantially as described.

7. In an apparatus of the class described, relatively-movable, connected gas and air conducting members, the former being provided with a burner, an air-directing nozzle on the latter, movable toward and from the burner by relative movement of said members, gas and air controlling valves, a spring to normally maintain the valves closed and the burner and nozzle in inoperative position, and means operated by relative movement of said conducting members to effect automatically a corresponding opening of the valves, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMAN DOCK.

Witnesses:
JOHN E. ROBERTS,
R. H. WINTER.