

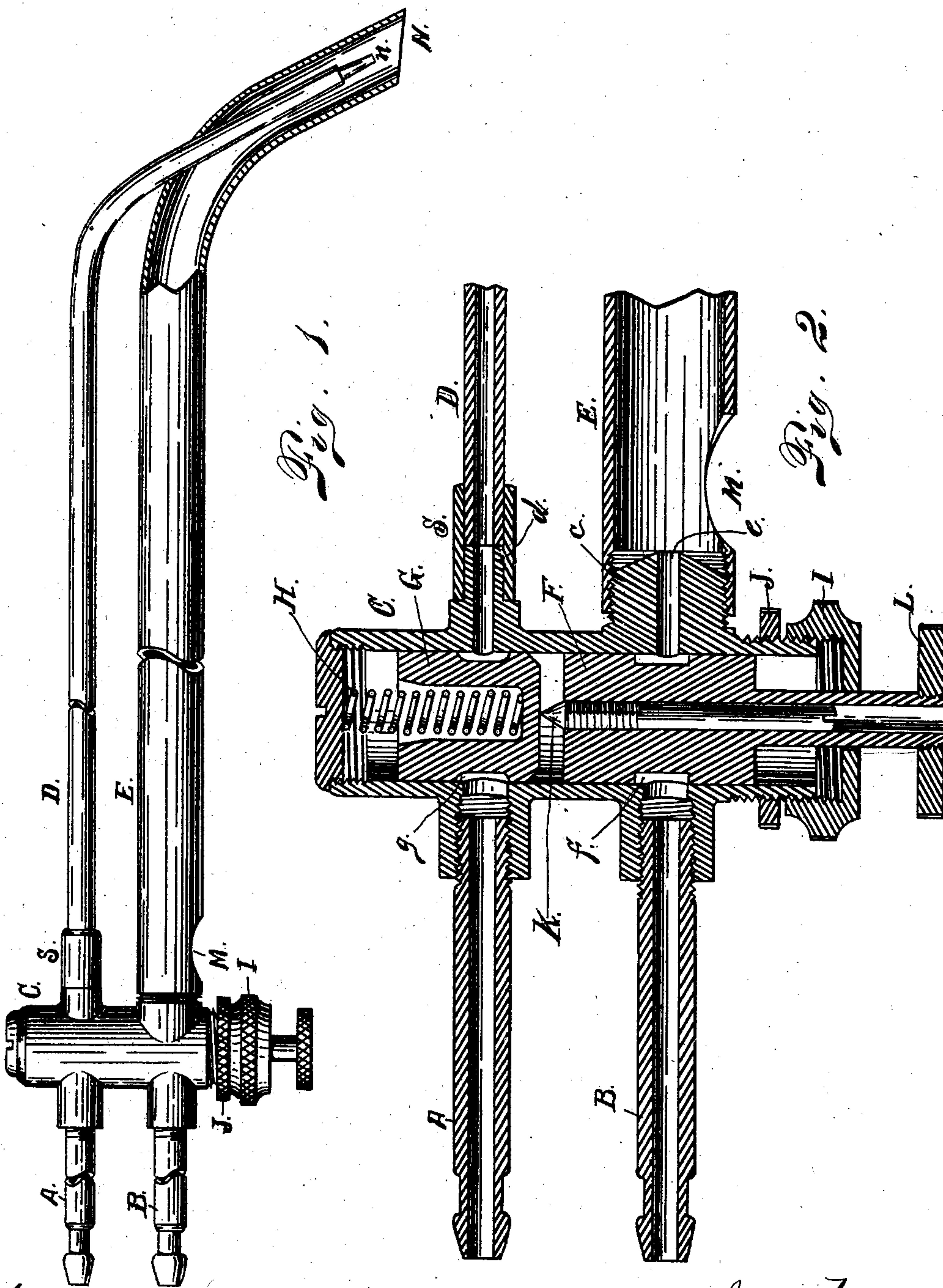
No. 709,830.

Patented Sept. 23, 1902.

G. B. SNOW.
GAS BLOWPIPE.

(Application filed July 27, 1900.)

(No Model.)



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GAS-BLOWPIPE.

SPECIFICATION forming part of Letters Patent No. 709,830, dated September 23, 1902.

Application filed July 27, 1900. Serial No. 24,985. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. SNOW, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Gas-Blowpipes, of which the following is a specification.

My invention relates to blowpipes used for soldering metals, and more especially to those in which natural gas is used as the fuel; and the object of my invention is to obtain an easy and certain method of changing the character of the flame from a large noisy brush-flame to a small pointed one. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of my improved blowpipe partially in section, the sectional part showing the manner in which the air-pipe passes through the side of the gas-pipe for the purpose of delivering the air-blast centrally in the gas-current as it is ignited. Fig. 2 is a vertical section of that part of the blowpipe not shown in section in Fig. 1 and presents a detailed view of the valves and other parts which embody my invention.

Similar characters refer to similar parts in both views.

An air-pipe A and a gas-pipe B, suitably formed for the attachment of rubber tubing, are attached to the side of a valve-casing C, being continued at its opposite side, as shown at D E. The continuation of the air-pipe D pierces the bent continuation of the gas-pipe E and terminates in a small jet *n* concentric with the end N of the latter pipe in the usual manner. For convenience in assembling and dismounting the blowpipe I show the tube E as threaded to a suitable projection *c*, forming part of the valve-casing C, and the tube D as abutting against a similar projection *d*, the joint being covered by the sleeve S. An ordinary screw-coupling may be used in lieu of the sleeve; but the latter is less expensive. Either construction will enable the tube E to be unscrewed if its removal is desired, as the sleeve S may be slipped from over the joint or the coupling unscrewed.

One of the difficulties attending the use of natural gas for blowpipe-work is the ease with

which its flame is blown out and extinguished by the strong blast of air required. I have found, however, that if it is mixed with air before it is ignited it will withstand the action of a blast much better, and I therefore make the tube E of large diameter, with an opening for the admission of air at M, and I contract the orifice through which the gas issues from the valve-casing C, as shown at *e*. Air is thus drawn into the tube E and mixed with the gas, and the mixture when ignited as it issues from the end of the tube E at N will continue to burn, notwithstanding the application of a strong blast; but when a small pointed flame is required the force of the air-blast is lessened and the mixture of air with the gas becomes disadvantageous. I therefore have but one aperture M for the admission of air to the tube E, and place that opening where it may be easily reached and closed by the finger when the blowpipe is held in the hand. It is evident that a valve may be applied to the tube E for the purpose of closing the opening M; but its additional advantage would not counterbalance its expense.

The valve-casing C contains two piston-valves—a gas-valve F and an air-valve G. The valves are represented in Fig. 2 as fully open, and it is evident that there is free communication between the pipes A and D and B and E through the grooves *f* and *g*. The valves are normally forced downward and closed by the pressure of the spring H, and the valve F then rests upon the inner surface of the screw-cap I, by which it is retained in the valve-casing, and the parts are so proportioned that if the screw-cap I be fully screwed upon the casing C the valve F will be partially opened. This affords the opportunity for adjustment of the flow of gas when a small flame is desired by partially unscrewing the screw-cap, and when the adjustment is made the jam-nut J is used to secure the screw-cap I and prevent it from turning. The valve G rests upon the point of a screw K, which is contained in a central cavity in the valve F. It is evident that the timing of the closing of the valves F and G with respect to each other can be varied by turning

the screw K, and thereby increasing or diminishing the space between them, and that by turning the screw-cap I the opening or closing of both valves may be effected simultaneously for the purpose of adjustment, a full opening of both valves being obtained by pressure of the finger upon the button L. When the pressure upon the button L is relaxed, the valves are returned to their first position by the action of the spring H, which is interposed between the air-valve G and the top of the casing 3. I am thus enabled to accurately adjust the delivery of gas and air for the production of a small pointed flame under widely-varying conditions of gas or air pressure, it being possible to time the closure of either valve independently of the other.

To operate the blowpipe with natural gas, it is held so that the upper portion of the valve-casing rests in the palm of the hand, with the middle or third finger in contact with the button L, the forefinger being used to open or close the aperture M, as may be required. Proper connections being made to supplies of air and gas under pressure, they will issue from the extremity N of the blowpipe when the valves are opened, and if lighted a large flame will be produced. Then if the aperture M be closed and the valves be immediately thereafter allowed to close the flame will change to a small pointed one. If the blowpipe is to be used with ordinary coal-gas, which is delivered under a low pressure, the mixture of air with it before its ignition is of no great advantage, as the flame is not blown out readily when a blast is applied to it, and in this case the opening M may be omitted, the diameter of the tube E lessened, and the size of the passage e enlarged, the construction and arrangement of the valve-chamber C and its contents, however, remaining unchanged, or if there is not likely to be a variation in the air-pressure the screw K may be omitted, the valves being allowed to touch. Adjustment would then be effected by cutting away the face of one of the valves where it touched the other or by interposing a small piece of sheet metal if it should be desired to separate them. So far as this part of my invention is concerned, (the simultaneous operation of separate gas and air valves contained in the one casing,) it is thus seen to be equally applicable to blowpipes using coal-gas or natural gas.

Having thus fully described my improved blowpipe, I claim as my invention—

1. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, a spring for closing said valves, and a screw-cap, threaded upon one end of the casing, whereby said valves are confined there-

in and suitably adjusted; substantially as described.

2. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, an adjusting-screw, whereby the distance between the two valves may be varied, and a spring for closing said valves; substantially as described.

3. A gas-blowpipe having a valve-casing, an air-valve and a gas-valve having a stem located therein and adapted to be opened by pressure of the finger, an adjusting-screw located in a central longitudinal hole in the gas-valve, a spring for closing said valves, and a screw-cap, threaded upon one end of the valve-casing, whereby said valves are confined therein and suitably adjusted; substantially as described.

4. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, a spring for closing said valves, a screw-cap threaded upon one end of said casing, whereby said valves are confined therein and suitably adjusted, and a mixing-tube attached to the gas-nozzle on the exit side of the valve-casing and having an air-inlet arranged to be conveniently opened or closed; substantially as described.

5. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, an adjusting-screw whereby the distance between the two valves may be varied, a spring for closing said valves, and a mixing-tube, attached to the gas-nozzle on the exit side of the valve-casing and having an air-inlet arranged to be conveniently opened or closed; substantially as described.

6. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein, said gas-valve having a projecting stem by means of which it may be opened by pressure of the finger, an adjusting-screw located in a central longitudinal hole in the gas-valve, a spring for closing said valves, a screw-cap, threaded upon one end of the valve-casing, and a mixing-tube attached to the gas-nozzle on the exit side of the valve-casing and having an air-inlet arranged to be conveniently opened or closed; substantially as described.

7. A gas-blowpipe having a valve-casing, an air-tube and a gas-tube joined together at or near the flame end of said gas-tube; one of said tubes being united to the casing by a screw-thread, the other by a butt-joint; substantially as described.

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