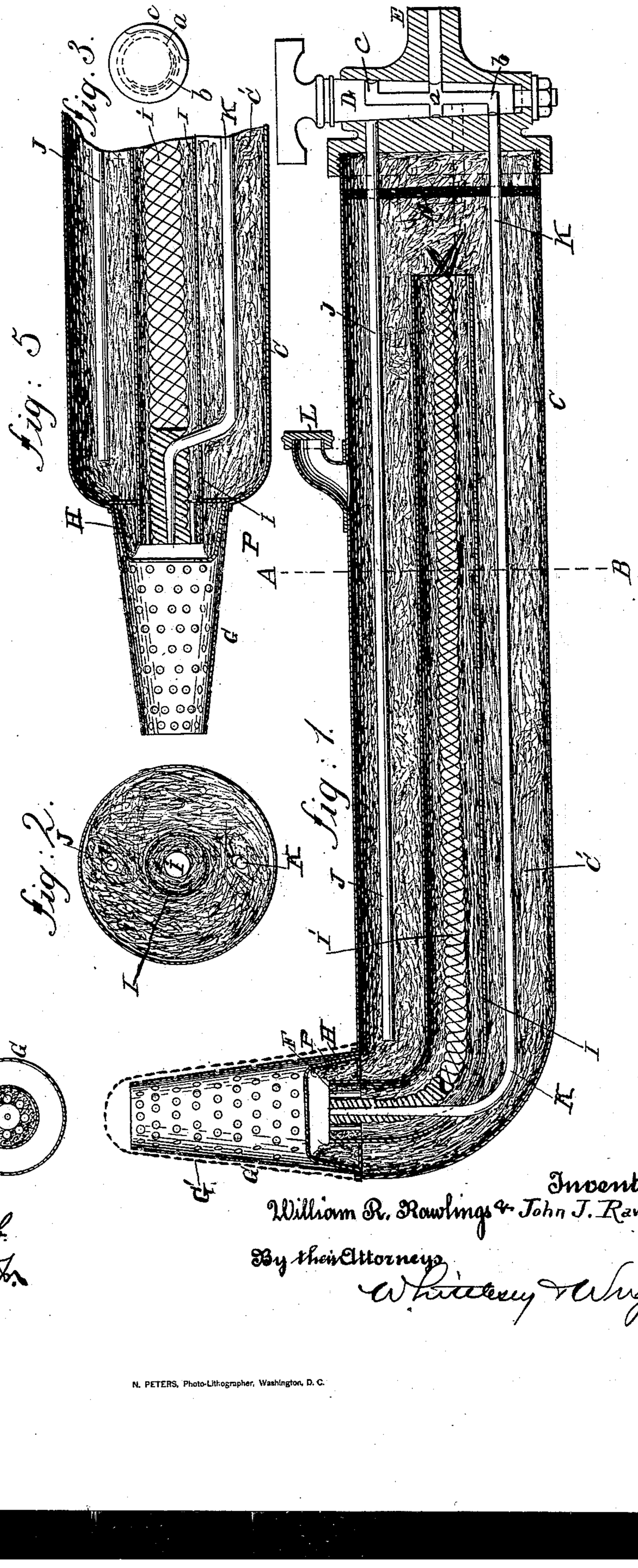
(Model.)

W. R. & J. J. RAWLINGS.

BLOW PIPE.

No. 424,024. Patented Mar. 25, 1890.



Witnesses
Arthur A. Orb.
L. A. Sommer Jr.

Inventors
William R. Rawlings & John J. Rawlings
By their Attorneys
Whittemore & Wright

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM R. RAWLINGS AND JOHN J. RAWLINGS, OF SOUTH KENSINGTON, COUNTY OF MIDDLESEX, ENGLAND.

BLOW-PIPE.

SPECIFICATION forming part of Letters Patent No. 424,024, dated March 25, 1890.

Application filed May 29, 1888. Serial No. 275,450. (Model.) Patented in England April 21, 1888, No. 5,950.

To all whom it may concern:

Be it known that we, WILLIAM R. RAWLINGS and JOHN JOSEPH RAWLINGS, citizens of the United Kingdom of Great Britain and Ireland, and residents of South Kensington, county of Middlesex, England, have invented certain new and useful Improvements in Blow-Pipe Apparatus, of which the following is a specification.

This invention relates to blow-pipe apparatus; and it has for its object the construction of an apparatus which may contain a supply of liquid fuel, in which a flame which cannot be easily extinguished by wind may be kept burning in the intervals of use—as a pilot-light—and in which the volume and intensity of the flame may be easily controlled at will by a single cock or valve.

There is appended hereto a sheet of drawings, to which reference is hereinafter made, and in which—

Figure 1 represents a longitudinal view, and Fig. 2 a cross-section at A B, Fig. 1, of a blow-pipe constructed according to our improvements. Fig. 3 is a diagram of the ways or channels in the plug of the cock. Fig. 4 is a plan of the jet-nozzle, and Fig. 5 represents a modified form of the front end of the apparatus.

In each of the figures similar elements and details are indicated by similar letters.

C is a tubular casing, at one end of which is the valve or cock D and the air-inlet E.

At the opposite end of the apparatus is the nozzle F, which is inclosed by a perforated metallic tube or truncated cone G, within which and around the nozzle is a deflecting-cone H.

Within the casing there is a curved wick-tube I, an air-tube J, and a jet-tube K, which passes through the center of the wick-tube to the nozzle F, where it is terminated by the jet in the center of the nozzle.

The nozzle for filling the liquid fuel into the apparatus may be formed in any convenient position; but we prefer to form it in the outer casing and between the mid-length of the apparatus and the cock, as at L. This nozzle is closed when the apparatus is not being filled with the liquid fuel, and it is shaped to point toward the cock or valve, as shown in Fig. 1.

The wick-tube I terminates with an open end at a short distance from the valve end of the apparatus, and the air-tube similarly terminates at a short distance from the nozzle end. A cotton wick I is placed in the wick-tube, fibrous material C′—such as asbestus—is loosely packed in and around the tube, so as to fill the casing, and a small quantity of porous or fibrous material P—such as asbestus—is packed within the deflecting-cone H and around the nozzle F.

The liquid fuel we prefer to employ is the light petroleum-oil known as "benzoline."

To fill the apparatus the inlet-nozzle cap L is removed and the apparatus is held vertically with the jet end downward. The fuel is then poured into the casing until it appears within the nozzle or until it is considered that a sufficient quantity has been supplied. The apparatus is then inverted, so that any fuel not absorbed by the fibrous packing will run out through the inlet-nozzle, which is then closed. By this arrangement it will be evident that the liquid cannot under any ordinary conditions enter the wick-tube, and that it cannot by any other means reach the jet-nozzle.

The valve or cock is constructed with three ways, passages, or channels, by one of which air is admitted to the valve or cock, by another air is admitted to the jet-tube, and by the third air is admitted to the air-tube.

A convenient method of construction of a cock is represented in the drawings, in which *a* is a channel cut in and surrounding the plug, *b* is a short channel coincident with and controlling the inlet to the jet-tube K, and *c* is a channel similar in all respects to *b*, but commencing at a point in or about a vertical line with the termination of *b* and coincident with and controlling the inlet to the air-tube J. There is a channel or means of communication in the plug or in the body of the cock between *a*, *b*, and *c*.

The action of the cock or valve is as follows: Let the inlets to the air-tube and to the jet-tube both be closed by the solid part of the plug of the cock, and let a light be ap-

plied to the nozzle, so as to ignite the vapor of the liquid fuel issuing therefrom; let also a suitable supply of air-pressure be connected to the air-inlet E. If, now, the valve or cock is turned, as shown in Fig. 1, air will first enter the jet-tube and create a small blow-pipe flame at the jet which will be projected beyond the protector G. The valve being further turned, the channel *c* opens to the air-tube, through which air is consequently admitted to the apparatus, and in passing through the saturated fibrous material and the wick-tube, which it enters at the end nearest the valve, becomes highly charged with the hydrocarbon vapor from the liquid fuel before issuing through the nozzle, from which a flame of large dimensions is projected, the character and dimensions of the flame being controlled by the amount of rotation of the valve and by the air-pressure. The channels in the valve are preferably diminished from the middle to the extremities, so as to secure gradual admission and cut-off and to enable the amount of air passing to be controlled with greater delicacy.

Although we have described an arrangement by which the supply of air to the jet-tube is not cut off until the air-tube is fully opened, we do not bind ourselves to this arrangement, as in some cases it may be desirable that the supply of air to the jet-tube should be cut off before or at the time the air-tube is opened. When the air-supply to both the tubes is cut off, the vapor of the liquid fuel continues to issue from and burn at the nozzle, acting as a pilot-light between the periods of use. The protective perforated tube or cone G prevents the pilot-light being extinguished by the wind, and therefore renders the apparatus adaptable for use in exposed positions. Any liquid fuel which may from any cause condense at or issue from the nozzle is immediately absorbed by the fibrous materials under the deflecting-cone H, where it is gradually vaporized and burned by the flame.

We prefer to construct the nozzle of a series of small short tubes F, arranged around the jet, as in Fig. 1, and as shown in plan in Fig. 4. The spaces between these tubes and between the tubes and the jet and wick tube may be tightly packed with asbestus, or may be filled or otherwise closed with metal.

The jet-tube may, instead of being constructed and arranged as represented in the drawings, be included within the wick-tube for the whole of its length.

The apparatus may be constructed so that the end in or upon which the valve or cock is formed or secured may be removed from the casing when it is required to renew the fibrous packing or the wick. For this purpose the end may be socketed and internally screw-threaded, so as to engage with an external screw formed upon the casing. The air-tube and the jet-tube may in this case terminate in a removable plate or in a fixed skeleton framing or bar N.

A cap or extinguisher G′ (shown in dotted lines) may be placed over the jet to prevent evaporation of the fuel when the apparatus is not in use.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a blow-pipe apparatus, the combination, with a casing containing an absorbent filling, of a wick-tube arranged therein having a nozzle at one end and extending from the nozzle to a point near the opposite end of the casing, a wick contained in said wick-tube, an air-tube arranged between the wick-tube and the casing having one end adapted for connection with an air-supply and its other end lying near the nozzle, and a jet-tube also adapted to receive a supply of air and having its delivery end lying within the nozzle end of the wick-tube, substantially as described.

2. The combination, with a casing adapted to contain a supply of hydrocarbon fluid, of a wick-tube containing a wick arranged in said casing and projecting therefrom at one end, an air-tube lying between the casing and the wick-tube and terminating near the projecting end of the wick-tube, a jet-tube also within the casing and having its jet-delivery arranged within the projecting end of the wick-tube, a three-way cock controlling both the air-tube and the jet-tube, and means for conveying a supply of air to said tubes, substantially as described.

3. The combination, with a casing adapted to contain a supply of hydrocarbon fluid, of a wick-tube containing a wick arranged in said casing and having at one end a nozzle projecting from said casing, a frusto-conical deflector surrounding the nozzle, an absorbent packing between the nozzle and the deflector, and means for delivering air into the casing near the nozzle end of the wick-tube, substantially as described.

4. The combination, with a casing containing an absorbent filling, of a wick-tube arranged therein containing a wick and having at one end a nozzle projecting from said casing, an air-tube delivering air into the casing near the nozzle end of the wick-tube, a jet-tube delivering air to the nozzle, a three-way cock controlling the supply of air to the air-tube and the jet-tube, a frusto-conical deflector surrounding the nozzle, and a perforated open-ended shield surrounding the deflector, substantially as described.

5. The combination, with the casing C, having the curved filling-nozzle L near its middle, of a wick-tube I, arranged within the casing, provided with a wick I′, and a projecting nozzle, a filling or packing of fibrous mate-

rial surrounding the wick-tube and wick, and means for introducing air into the casing, substantially as described.

6. The combination, with a casing adapted to contain hydrocarbon fluid, of a wick-tube projecting from said casing, a series of short tubes F, suitably held in the projecting end of said tube and surrounded with asbestus, a frusto-conical deflector surrounding the end of the wick-tube, and means for supplying air to the casing, substantially as described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 9th day of May, 1888.

W. R. RAWLINGS.
J. J. RAWLINGS.

Witnesses:
J. R. COLLETT,
WILLIAM FRANCIS.