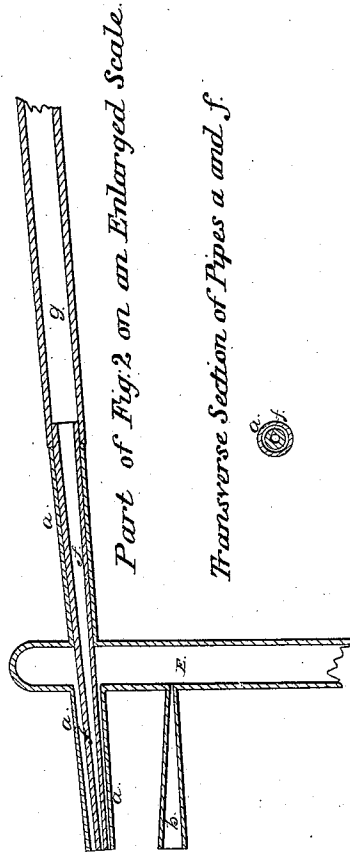
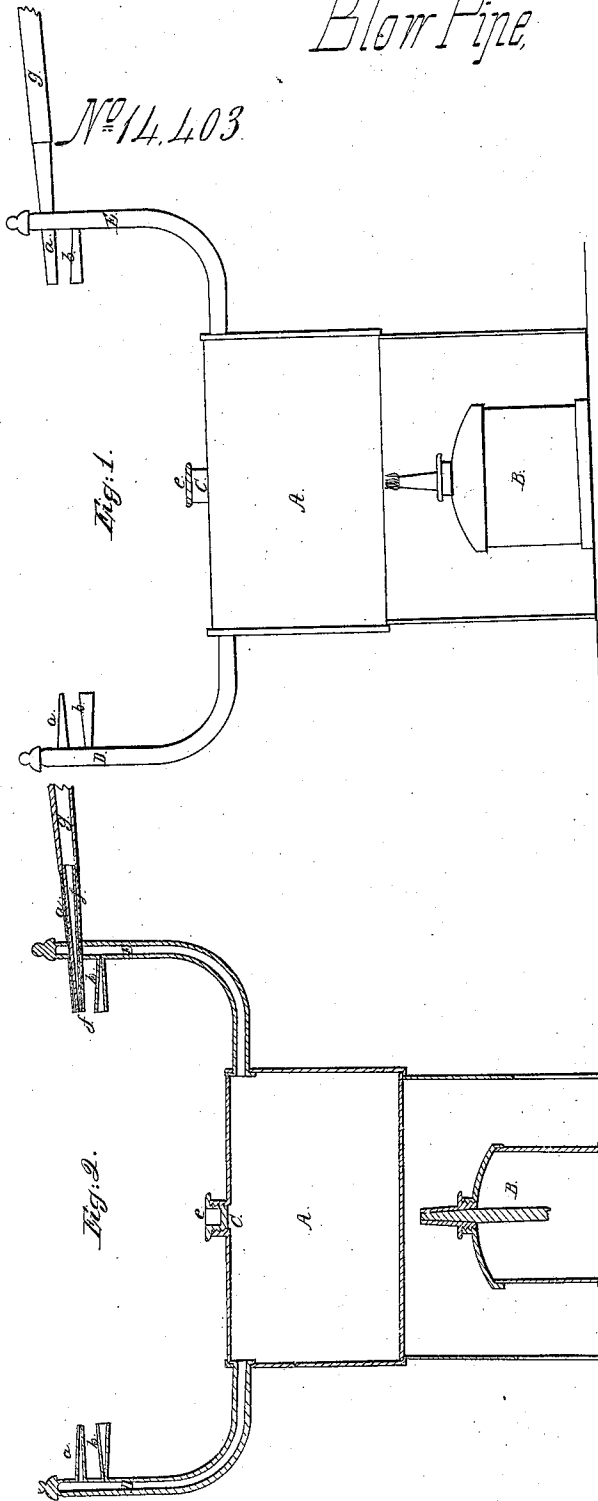


H. N. Macomber

Blow Pipe

Patented Mar. 11, 1856.

No 14,403.



UNITED STATES PATENT OFFICE,

HORATIO N. MACOMBER, OF LYNN, MASSACHUSETTS.

IMPROVED SPIRIT BLOW-PIPE.

Specification forming part of Letters Patent No. 14,403, dated March 11, 1856.

To all whom it may concern:

Be it known that I, HORATIO N. MACOMBER, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improved Alcoholic or Spirit Blow-Pipe; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1 is a front elevation of my improved blow-pipe apparatus. Fig. 2 is a vertical central and longitudinal section of the same.

In the drawings, A exhibits a boiler or vapor-generator, which may have a lamp, B, or other suitable means of heating it, arranged underneath it. The said generator has an orifice, C, through which it may be supplied with alcohol whenever the same may be necessary, the orifice being stopped by a screw-cap, c, at other times. Out of the upper part of each of the two opposite ends of the generator A a pipe or hollow column, D or E, opens and extends upward, as seen in the drawings, the said pipe being closed at its upper end. Each pipe carries a vapor-jet, a, the two jets of the two pipes being arranged so as to point or stand in a direction toward each other.

Immediately below each of the jet-pipes is another jet-pipe, b, which may be termed the "lighting jet." It is provided where it opens out of the main pipe D or E with a very minute orifice, and its outer end, or place where the vapor is burned, is enlarged with respect to its inlet-hole, so that the vapor entering the pipe may be consumed with such little velocity at the discharging-mouth that the flame of said vapor will rise into the current flowing out of the jet a directly over it. The object of the said lighting-jet is to inflame or maintain inflamed the powerful and rapid current of vapor which may be driven out of the jet directly above it, and which, were it not for such lighting-jet, would oftentimes become extinguished.

Axially into one of the main vapor jets a there is inserted an air-jet tube, f, (see Fig. 2,) the same being extended through the upright pipe of said vapor-jet and having a flexible mouth tube or hose, g, applied to its outer end. By means of such jet-tube f and mouth-tube g a person can readily blow air from his lungs into the inflamed vapor of the vapor-jet, so as to reduce the same down to a sharp-pointed flame of great intensity, the oxygen

of the air serving at the same time to promote combustion.

I would remark that the air jet tube is so arranged within the vapor-jet that there is a space entirely around the air-jet, and between it and the inner surface of the vapor-jet, in order that the vapor from the generator may flow into, through, and out of the vapor-jet, which is thus arranged concentrically with the air-jet. A tubular or hollow stream will be discharged from the vapor-jet, and axially into said tubular stream air will flow from the air-jet, such an arrangement of the jets being very advantageous in facilitating combustion of the vapor.

An alcoholic blow-pipe, as commonly constructed with a single jet, is often useful for heating, or what is termed "warming up," a large surface on any article; but owing to the irregular action of the flame or the difficulty of properly attenuating it it has not been found an easy matter to use it to advantage on small surfaces or small spots in a piece of work. With my improved alcoholic blow-pipe not only can opposite sides of a piece of work be heated at one and the same time, thereby dispensing with a charcoal heat, but one of its effluent vapor-jets may be reduced or greatly attenuated and increased in heating power by air blown into it in manner as specified.

I claim—

1. Combining with the vapor-jet of a spirit blow-pipe an air-jet, f, and a mouth-tube, g, so applied to said vapor-jet that air may be blown from the lungs of a person directly into the inflamed current of vapor of said vapor-jet, in order to control, elongate, or reduce said current and increase its heating powers, as specified.

2. Arranging the air-jet concentrically within the vapor-jet, as described, in order that the effluent current of air may pass into a hollow tube or stream of vapor and flame.

3. Combining with each main jet-tube a lighting vapor-jet tube arranged so as to operate therewith, as specified.

In testimony whereof I have hereunto set my signature this 18th day of January, A. D. 1856.

HORATIO N. MACOMBER.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.