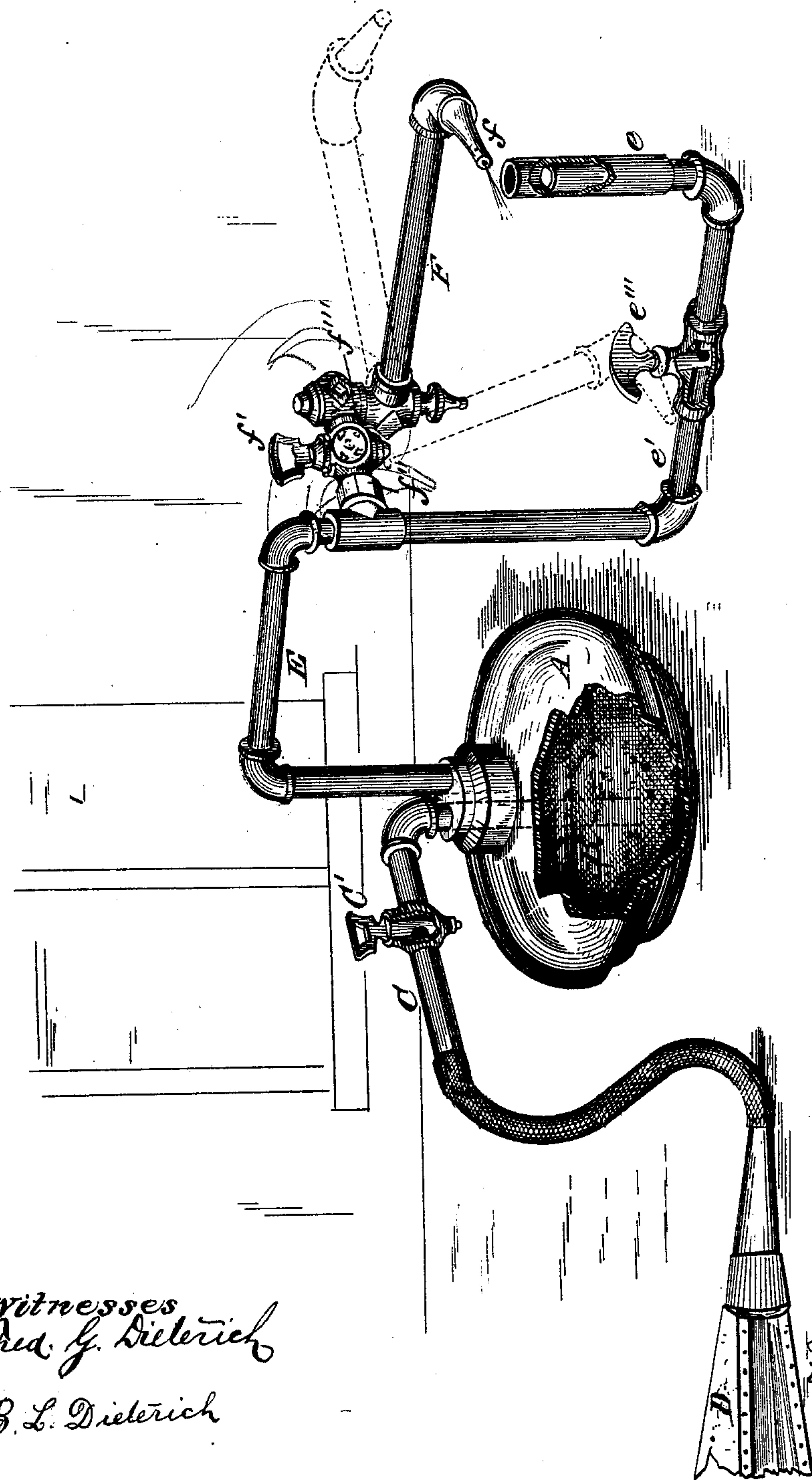


(No Model.)

T. C. STEVENS.
Blow Pipe.

No. 233,951.

Patented Nov. 2, 1880.



Witnesses
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UNITED STATES PATENT OFFICE.

THEODORE C. STEVENS, OF GALESBURG, ILLINOIS.

BLOW-PIPE.

SPECIFICATION forming part of Letters Patent No. 233,951, dated November 2, 1880.

Application filed June 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, THEODORE C. STEVENS, a citizen of the United States, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Blow-Pipes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which form a part of this specification, which is a perspective of the apparatus, partly broken away to show the particular construction of certain parts.

This invention relates to blow-pipes; and it consists, first, in a method or process of intensifying the heat of a blow-pipe flame, consisting in forcing air through light petroleum or hydrocarbon oil, dividing the mixture thereof, and directing one portion of said mixture with force against or through the flame of the other portion thereof; second, in a reservoir for oil, provided with separate pipes, through which air and the volatilized oil may be forced in a state of mixture, and said pipes adapted, the one to produce a flame from the mixed air and vapor of the oil, and the other to act as a blow-pipe supplied by the same mixture.

The invention further consists in constructions and combinations hereinafter described, and set forth in the claims hereto annexed.

Referring to the drawing by letters, letter A represents a reservoir, which may be of any suitable construction, and preferably contains an ordinary sponge, B, or any other material, which may be saturated with a small portion of any light hydrocarbon oil in such subdivided condition that air may be forced through it readily and easily without taking up any great portion of the oil. C is a pipe leading from any suitable bellows, D, air-pump, or other means of forcing air through the saturated sponge B, and may be operated by hand or foot, or by any suitable power. The pipe C should preferably be provided with a stop-cock, C', by means of which the supply of air may be regulated or cut off entirely when desired. By making the pipe C of flexible material the apparatus may be moved as desired without moving the air bellows or pump.

E is a pipe leading from the interior of the reservoir A, preferably at the side of the reservoir opposite that side where the pipe C discharges into it. The pipe E may be bent or curved, as shown, or in any other suitable manner, with its outer end, e, about vertical, and preferably with a portion of its length, e', in same horizontal plane at its lower side as is the bottom of the reservoir A, so that it may rest on the table where the reservoir rests, and aid in sustaining the parts in upright position. The pipe E has a stop-cock, e'', fitted therein a short distance back of its end e.

F is a pipe connected with the pipe E between the reservoir A and stop-cock e'', and is provided with a contracted nozzle, f, at its outer end, and with a stop-cock, f'. The pipe F has a joint, f'', which permits of raising and lowering its outer end, and a joint, f''', which permits of changing the inclination of the nozzle f to the end e of the pipe E, as shown by dotted lines in the drawing. These joints may be variously constructed and located, and the pipe F may be connected directly with the reservoir A, in same or similar manner to the pipe C, and provided with joints of any description which will permit of adjusting the nozzle f properly to the discharge end of the pipe E. The outer end of the pipe F may, if desirable, be made removable, and a flexible tube with nozzle connected therewith, for use with the pipe E, or for use with any flame.

In operation the air is forced through the pipe C, and coming in contact with the light hydrocarbon oil in the reservoir A takes up a small portion thereof in the form of vapor and carries it into and through the pipes E and F. The stop-cock e'' may then be adjusted so as to leave a very small orifice in the pipe E at that point, and thus cause the mixed air and hydrocarbon vapor to issue slowly through the end e, where it may be ignited and will burn with a slow blaze. The flow of the mixed air and hydrocarbon vapor through the pipe F may be regulated by the stop-cock f', and will issue with force from the nozzle f. The nozzle f may then be adjusted so that the jet from its orifice may be projected against the flame from the pipe E as required, and in the manner of any ordinary blow-pipe, when, by regulating the flow through both pipes E and F properly, an intense heat may be produced,

with no smoke, and an almost entire absence of luminosity or flame, and at a very low cost, as the consumption of hydrocarbon is very light.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described method or process of intensifying the heat of a blow-pipe flame, consisting in forcing air through light petro-
10 leum or hydrocarbon oil, dividing the mixture thereof, and directing one portion of said mixture against or through the flame of the other portion, substantially as specified.

2. In combination with the reservoir A, the
15 pipes E and F, through which air and volatile hydrocarbon oil may be passed in a state of mixture and adapted, the pipe E to burn the mixture slowly at its end, and the pipe F to force a jet of the mixture against the flame
20 of the pipe E, substantially as and for the purpose specified.

3. In combination with the reservoir A, the pipe E, having a stop-cock for reducing its bore back of its discharge end, and a pipe, F,
25 provided with a nozzle having a reduced bore at its outer end, substantially as and for the purpose specified.

4. In combination with the reservoir A, the pipe E, having stop-cock *e''*, and pipe F, having stop-cock *f'*, by means of which the flow
30 of mixed air and hydrocarbon vapor through both pipes may be adjusted or entirely cut off, substantially as and for the purpose set forth.

5. In combination with the reservoir A, the pipe C, adapted to supply air thereto, the pipe
35 E, adapted to deliver it mixed with hydrocarbon vapor, so that it may be burned to produce a flame, and the pipe F, adapted to force a jet of the same mixture against the flame of the pipe E, substantially as and for the pur-
40 pose specified.

6. The combination, with a pipe at the end of which a mixture of air and volatile hydrocarbon oil is slowly burned, of another pipe,
45 through which a jet of the same mixture is forced against the side of and through the slowly-burning flame of the other pipe.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE C. STEVENS.

Witnesses:

SAML. N. GROSE,
E. D. AIKEN.