(No Model.)

F. E. IVES.

SATURATOR FOR THE PRODUCTION OF VAPOR BLOW PIPE FLAMES.

No. 385,934. Patented July 10, 1888.

FIG. 1.

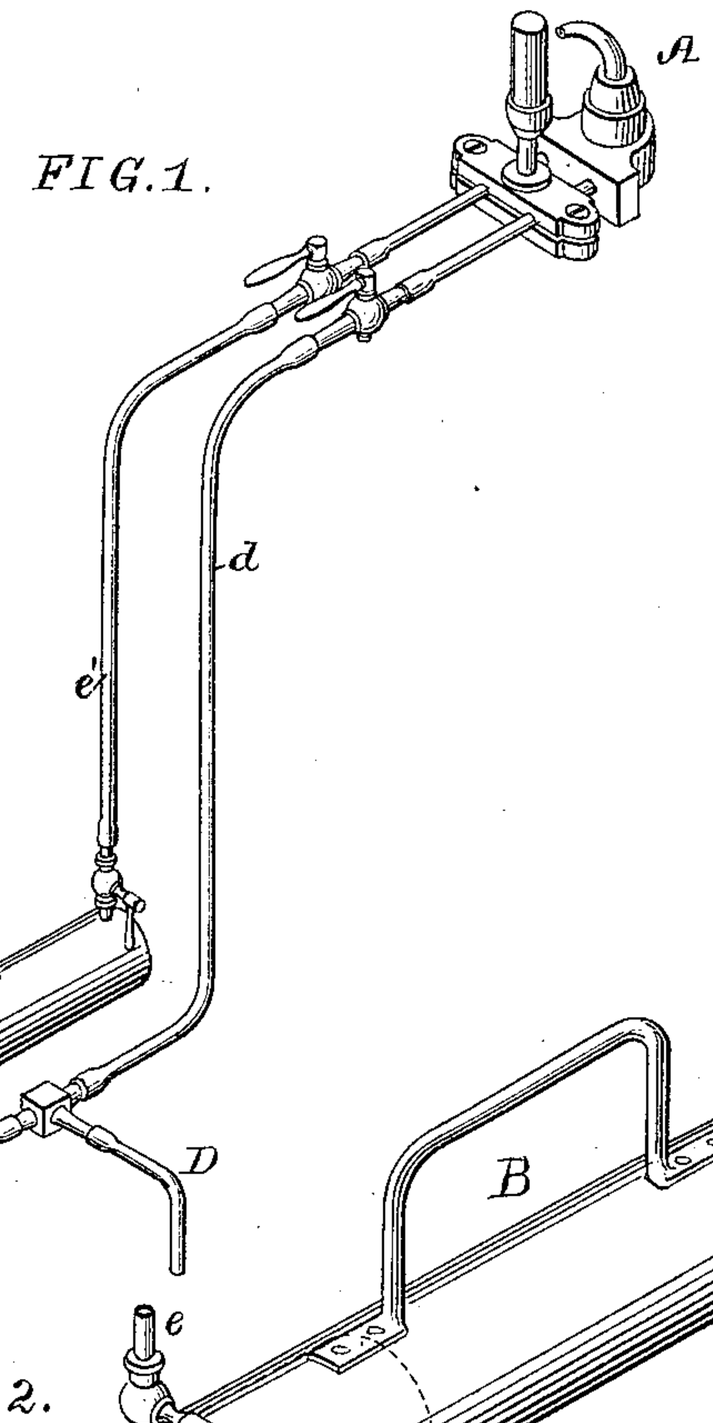


FIG. 4.

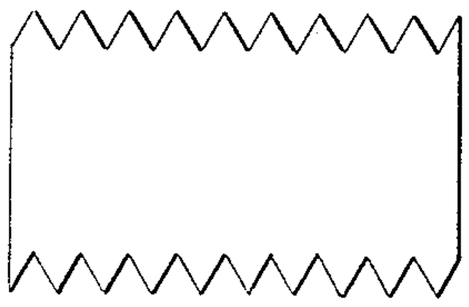


FIG. 2.

FIG. 5.

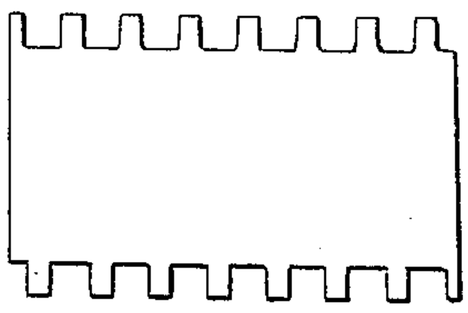
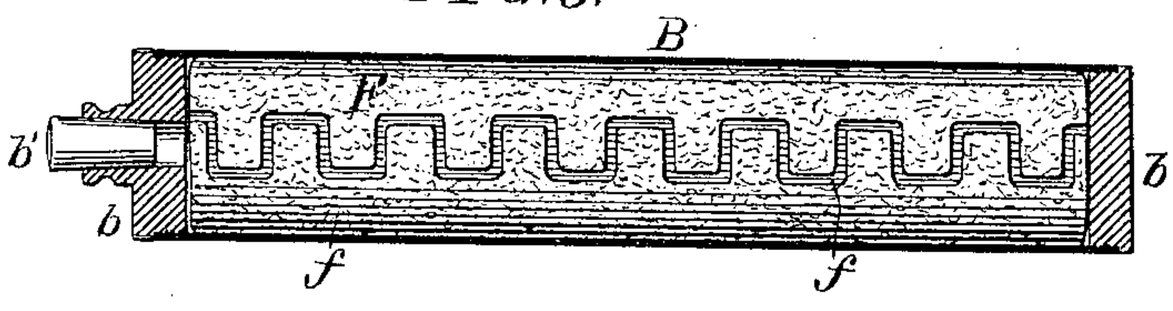


FIG. 3.



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UNITED STATES PATENT OFFICE.

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SATURATOR FOR THE PRODUCTION OF VAPOR BLOW-PIPE FLAMES.

SPECIFICATION forming part of Letters Patent No. 385,934, dated July 10, 1888.

Application filed October 24, 1887. Serial No. 253,158. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC E. IVES, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented an Improved Saturator for the Production of Vapor Blow-Pipe Flames, of which the following is a specification.

My invention relates to the improved means for producing the oxyhydrogen blow-pipe flame set forth in Patent No. 261,852, granted to me August 1, 1882.

My present invention consists of improvements in the construction of the saturator or carburetor employed in carrying out my patented invention.

Heretofore these saturators have been made of metallic cylinders, each about twelve inches long and two inches in diameter, filled with a roll of cotton flannel, and closed with a removable cap or caps, in order that the filling might be occasionally removed to dry out the alcohol and water, which accumulates when commercial ether is used. The roll of cotton flannel had a hole through its center for the passage of the oxygen; but this construction had the disadvantage that it was generally necessary to use two of these cylinders in order to secure the complete saturation of the oxygen for the period of two hours, (more or less,) for which such apparatus is usually used at any one time. Furthermore, it was necessary to put about three times as much ether or gasoline in the cylinder as is required to be used for producing the blow-pipe flame during that time.

The object of my present invention is to so construct the saturator that the same results may be attained with a single cylinder or tube as with two cylinders or tubes of the same length. I attain this object by substituting for the hollow roll of porous material a roll having a zigzag or other circuitous channel or passage along its upper part, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a perspective view of the apparatus for producing the oxyhydrogen blow-pipe flame. Fig. 2 is a perspective view of the saturator, drawn to an enlarged scale and showing the removable cap and its plug withdrawn and the porous filling partly pulled out of its tube. Fig. 3 is a longitudinal sectional plan of the saturator-tube, showing a modified form of porous filling; and Figs. 4 and 5 are diagrams drawn to a smaller scale and illustrating a mode of making the porous core or roll for the saturator.

In Fig. 1, A represents the blow-pipe, which may be of any well-known form, and which in the present instance I have shown as adapted for the production of a lime-light.

B is the saturator, and D the oxygen supply pipe, which has one branch leading to one end of the saturator-tube, while from the opposite end of said tube leads the outlet branch *e'* to the blow-pipe. A branch, *d*, from the oxygen-supply pipe D also leads to the blow-pipe.

The metal cylinder of the saturator B may be provided at one or both ends with removable screw-caps *b b*, in order to permit the porous filling F to be readily removed. A plug, *b'*, may be provided in one of the caps to facilitate the pouring in of the ether or gasoline.

The porous filling F, which constitutes the important feature of my present invention, I provide with a zigzag or other circuitous channel or passage, *f*, along its upper part. In the present invention I have shown it along its outer upper surface, and in the two figures 3 and 4 I have shown two of the various forms which the passage or channel may take. As a convenient way of making this porous filling with the circuitous channel in its upper part pieces of thick soft felt may be cut into such shape as shown in Figs. 4 and 5, and then wrapped around and sewed or otherwise secured to a solid porous roll or core, *f'*, so as to leave channels between the zigzag edges of the pieces of felt. The roll thus constructed practically fills the tube when inclosed therein, and the oxygen coming through the inlet branch *c* is caused to pass through the circuitous channel in the upper part of the filling, and is so made to pass over as many inches of surface of the saturated filling in a single tube as it otherwise would in two, and a larger proportion of the ether or gasoline is used up before the supply becomes insufficient to fully

saturate the oxygen, while the filling can be as readily removed as in the old form of saturator.

I claim as my invention—

A saturator consisting of a tube having inlet and outlet near its opposite ends, and a porous filling with a zigzag or other circuitous channel along the upper portion of said porous filling, all substantially as set forth.

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

FREDERIC E. IVES.

Witnesses:
JOHN T. LEWIS,
HARRY SMITH.