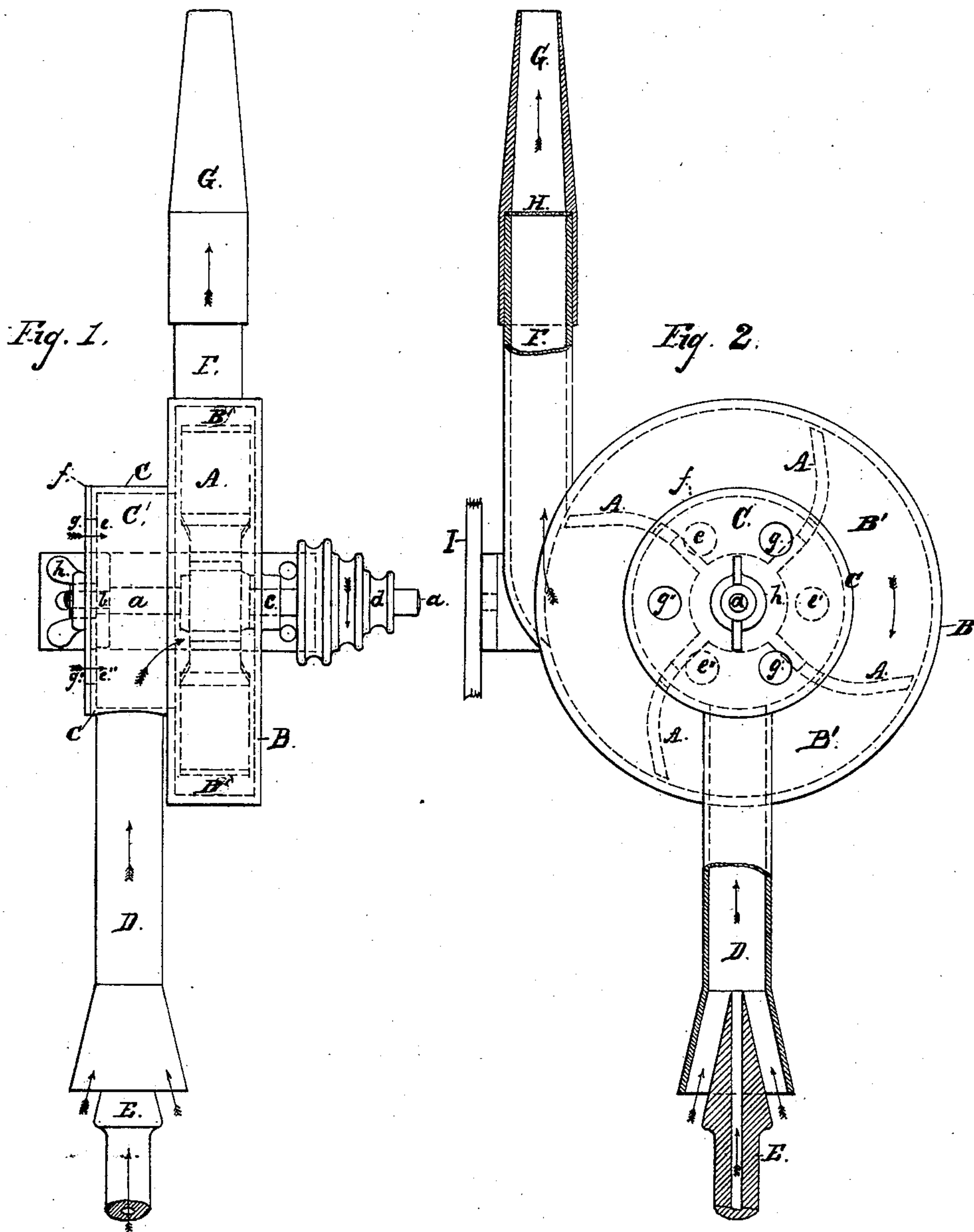


(No Model.)

T. T. MORRELL.  
Blow Pipe.

No. 243,597.

Patented June 28, 1881.



Witnesses;  
*Cyrus Eldred*  
*H. S. Mason*

Inventor;  
*Thomas T. Morrell*

# UNITED STATES PATENT OFFICE.

THOMAS T. MORRELL, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND CAMBRIA IRON COMPANY, OF PENNSYLVANIA.

## BLOW-PIPE.

SPECIFICATION forming part of Letters Patent No. 243,597, dated June 28, 1881.

Application filed November 29, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS T. MORRELL, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain Improvements in Blow-Pipes, of which the following is a specification.

The principal object of my invention is to obtain a more perfect mixture of gas and atmospheric air before reaching the point of combustion than is accomplished by the blow-pipes in common use, so that the heat of the flame will have greater intensity and will be uniform throughout, and not more intense in one part than another, as is generally the case. This I accomplish by providing suitable means for directing atmospheric air and gas into the fan-chamber, so that the fan will constitute a mixer for the air and gas, as hereinafter described. I also effect a material lessening of power.

In the accompanying drawings, Figure 1 is a front view of a blow-pipe embodying my invention. Fig. 2 is a side view of the same.

A is an ordinary centrifugal fan rigidly attached to and revolving with shaft *a*, which shaft *a* has a bearing in the center of metallic casing B C at *b* and *c*. On the end of this shaft where it projects through the casing is mounted the pulley *d*, by which motion is communicated to the fan. The metallic cylindrical portion B of the casing inclosing the fan A forms a chamber, B'. The portion B may be made solid or it may be closed on the pulley side by a cap screwing on and off, and it has on the other side an opening into a smaller projecting metallic cylindrical portion, C. This portion forms a valve-chamber, C', and is perforated at the side with holes *e e' e''*, and covered with a cap or register, *f*, provided with corresponding holes, *g g' g''*, which register may be turned to regulate the admission of air.

*h* is a thumb-screw used for holding the register *f* in place. It may be held equally well by screws and turn in slots.

D is a metallic tube entering the valve-chamber C', and preferably constructed wider at the lower end, where the gas enters through a glass or metal tube, E, made conical in shape,

so that by elevating or lowering it the opening of the tube D may be more or less closed by it, thus regulating the admission of air.

F is a metallic tube opening at one end into the fan-chamber B, and having on the other end a nozzle, G, put on with a ground joint.

H is a gauze screen dropped into the end of tube F, where it rests on a shoulder and serves to prevent a return of the flame from the combustion point at the end of nozzle G. Gas and air entering together at the mouth of tube D become thoroughly mixed in their passage, as indicated by the arrows, to the point of combustion, and an additional supply of air may be obtained, as desired, through the register *f*. The direction of the motion of the shaft is indicated by an arrow on the pulley.

The blow-pipe thus constructed may be fastened to a bench, I, or other support, and a number of them may be compactly arranged and driven by the same power. I drive a series of these blow-pipes with a small water-motor, the power required being exceedingly small.

I am aware that it has been proposed to introduce gaseous products of combustion together with air into the case of a blast-fan for the purpose of utilizing the waste heat, as described in Letters Patent granted to Jacob Reese the 6th of December, 1864. This fan is in no sense a blow-pipe, being used for the ordinary purposes of a blast for supporting the combustion of fuel.

My invention relates to a class of appliances quite distinct from the above—to wit, lamps or blow-pipes for supplying a combined jet of inflammable gas and atmospheric air for producing a flame of intense heat for metallurgic and other operations in the laboratory.

A nozzle for producing a jet of air is an indispensable feature in my invention; but I do not, of course, limit myself to making the said nozzle separate from the eduction-pipe F, as it is manifest that it may be formed in one piece therewith.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A blow-pipe consisting of a centrifugal



fan driven by its shaft in customary manner, a fan-casing provided with means for admitting both inflammable gas and atmospheric air, causing them to be mixed in the casing by the action of the fan and a suitable blow-pipe nozzle, at which the jet of gas mingled with air is burned, substantially as set forth.

2. A blow-pipe consisting of the centrifugal fan A, driven by its shaft in customary manner, the casing B, gas-pipe E, connected with the fan-case, the blow-pipe nozzle G, and suitable opening or openings to admit air to the fan-case, so that it will mingle with the gas therein, substantially as herein set forth.

3. A blow-pipe consisting of an ordinary centrifugal fan, A, casing B, induction-pipe D, gas-pipe E, eduction-pipe F, and nozzle G, said induction and gas pipes D and E conducting

gas and air to the said casing, substantially as and for the purposes set forth.

4. The combination of the casing B, the centrifugal fan A, driven by its shaft in customary manner, the chamber B', eduction-pipe F, and nozzle G, as set forth.

5. The screen H, in combination with the combined air and gas pipe F, nozzle G, and fan A, as set forth.

6. The valve-chamber C', having air-inlets *g* and register *f*, in combination with the fan A, casing B, induction-pipe E, eduction-pipe F, and nozzle G, as set forth.

THOMAS T. MORRELL.

Witnesses:

CYRUS ELDER,  
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