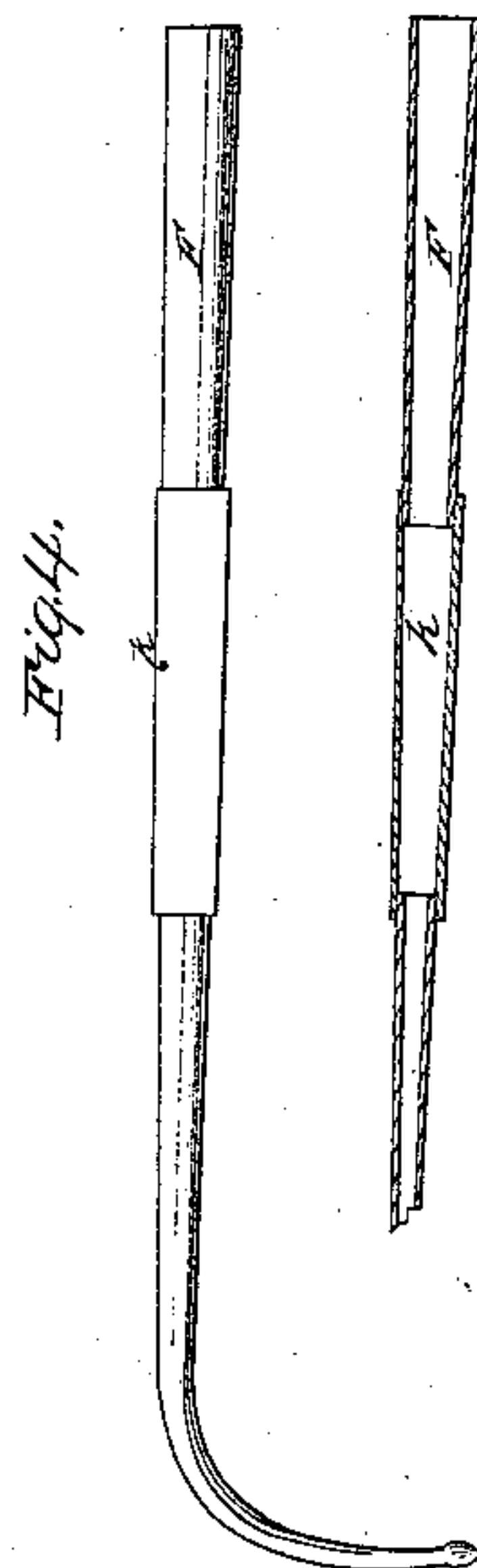
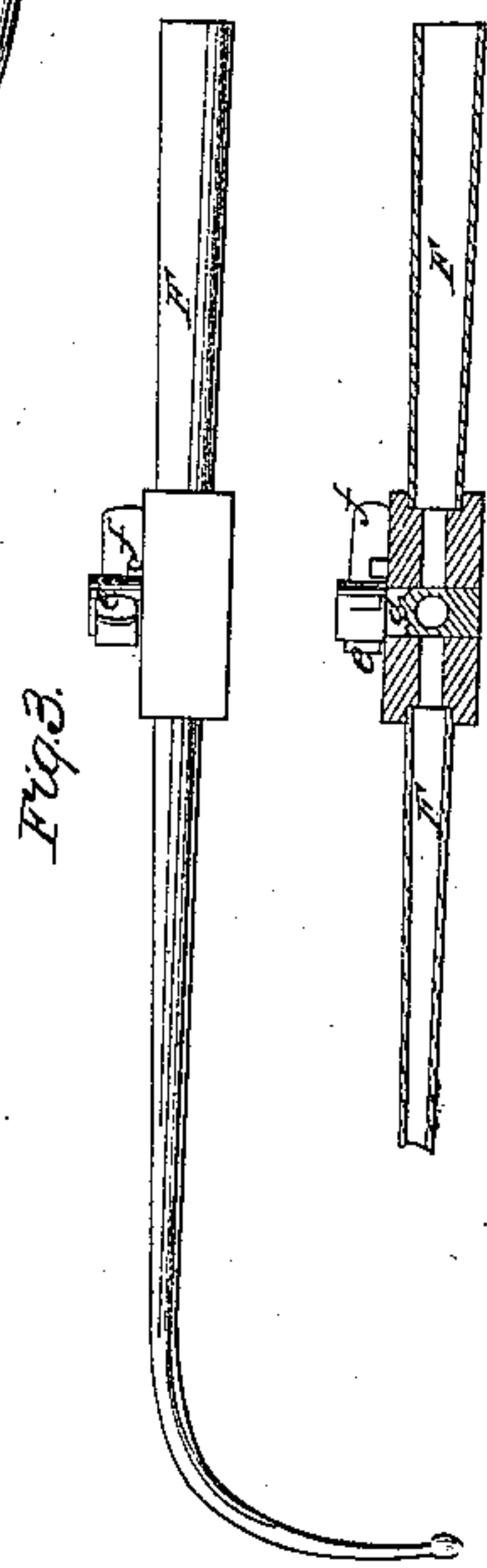
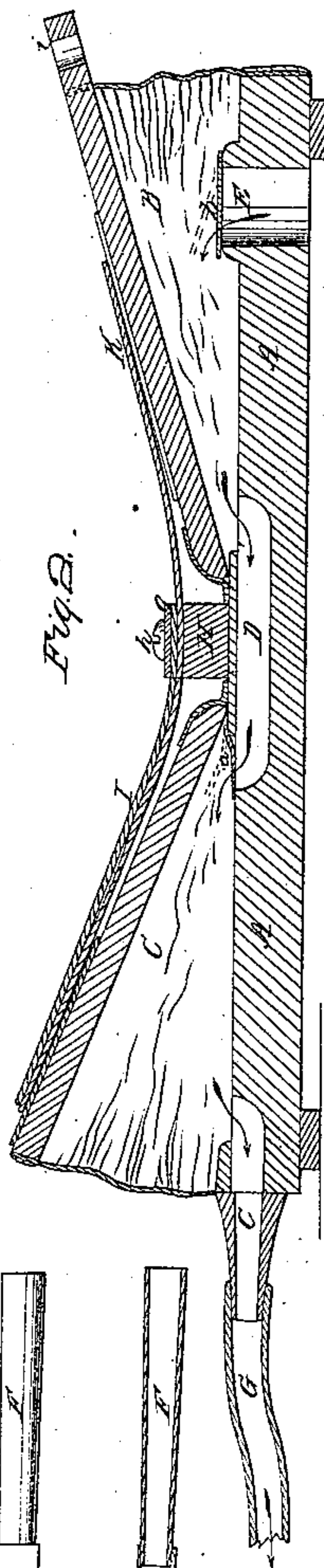
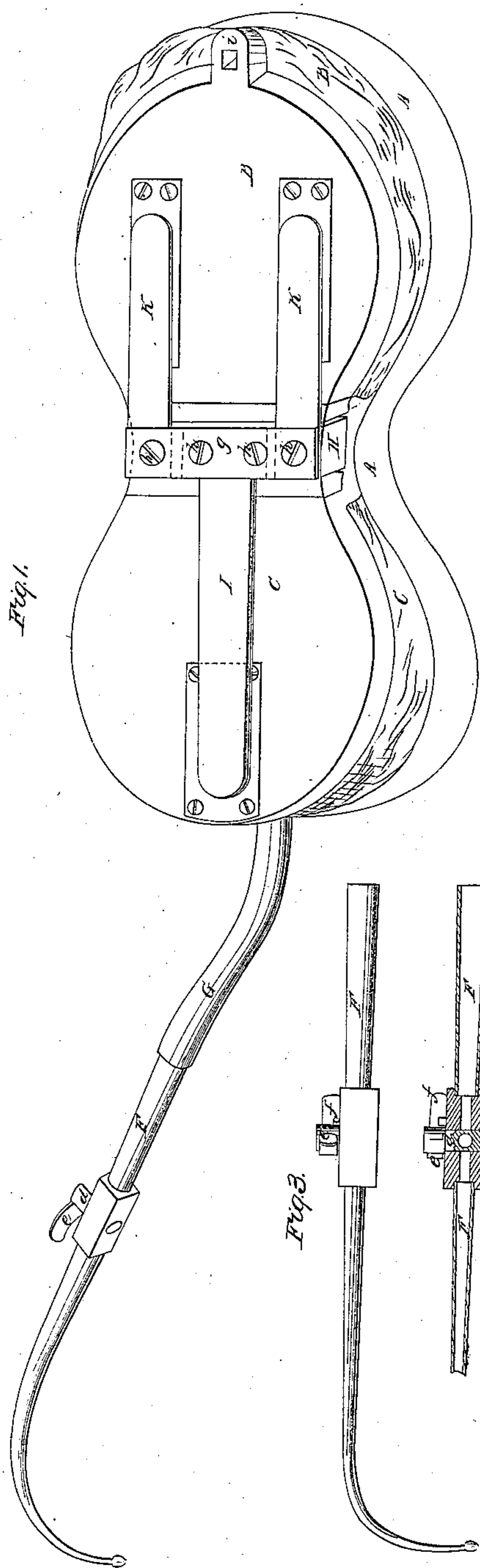


D. Cumming,

Bellows.

N^o 20,045.

Patented Apr. 27, 1858.



UNITED STATES PATENT OFFICE.

DAVID CUMMING, OF SORREL HORSE, PENNSYLVANIA.

BLOWING APPARATUS.

Specification of Letters Patent No. 20,045, dated April 27, 1858.

To all whom it may concern:

Be it known that I, DAVID CUMMING, of Sorrel Horse, in the county of Montgomery, in the State of Pennsylvania, have invented
5 certain Improvements in Apparatuses for Blowing a Stream of Air Uniformly Through a Flame; and I do hereby declare that the following is a full and exact description thereof, reference being had to the
10 accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in certain improvements in apparatus for blowing a uniform and efficient stream of air,
15 for the purpose of concentrating a flame, from a lamp or gas burner as hereinafter to be more fully described.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation, reference being had to the accompanying drawings and the letters marked thereon, where—

Figure 1, is a perspective view. Fig. 2, a longitudinal vertical section. Figs. 3, and
25 4 detail views of the pipe and its attachments, similar letters denoting the same part.

A, represents a platform or base, upon which are formed the bellows, B, and C, the former being the prime or inhaling, the latter the auxiliary or exhaling, bellows.
30

In the upper surface of the platform, A, is formed a channel, D, (best seen at Fig. 2,) in one end of which is a valve, *a*, and through said platform or base is made an orifice, E,
35 in which is a valve, *b*, to the prime bellows, B.

At one end of the base, A, is attached an exit pipe or nozzle, *c*, to which is secured at pleasure, as hereinafter described, the conduit pipe, through which the blast is conveyed to the blow pipe proper.
40

F, represents the blow pipe, which may be made of any peculiar form or capacity desired; near the middle of said pipe, or at
45 such point therein as shall be deemed most suitable is formed a valve, *d*, operated by a finger lever, and spring, *e*, and, *f*, for the purpose of controlling the blast which is emitted, while the action of the bellows is
50 invariable.

G, is an elastic tube or conduit pipe which is attached at pleasure to the nozzle, *c*, by simply expanding its end and forcing the same over the tapered end of said nozzle,
55 where, by virtue of its elasticity, it is held firmly, and perfectly air tight.

Across the central portion of the base, A, is constructed a bridge or projection, H, upon the top surface of which are firmly secured the springs, I, and, K, which compress
60 the bellows, B, and C. The said springs are held down by a plate, *g*, through which pass screws, *h*, *h*, &c., into the bridge H, and by which the strength of or pressure of the springs I, and K, upon the bellows may be
65 regulated. It will be observed that the spring I, is more than double the capacity or strength of the springs K, since the bellows or receiver, C, has the air which it contains forced through an aperture much smaller
70 than that through which the air passes from, the bellows, B. This difference of pressure is of course always made in certain relative proportion with the difference between the
75 exits of the bellows B, and C. I would here remark that I do not contemplate confining myself to the use of the springs as described since weights can be used and made to operate substantially as the springs and to possess all the advantages in operation, as set
80 forth for the springs. The hinges of the bellows are formed in the sides of the bridge H. *i*, is a tab or projecting hook to which is attached a cord or rod driven by any motor
85 for the purpose of operating the prime bellows, B.

As a substitute for the valve as shown at *d*, Figs. 3 and 4, a simple piece of elastic tubing may be used, by making the pipe F, in two parts, and inserting said elastic tube,
90 as seen at *k*, (same figures); the tube, G, might be operated upon by the thumb and finger as contemplated in the use of the tube, *k*, were it always convenient to reach said tube, which is not the case.
95

The flexible portions of the bellows may be made of any material most suitable to the purpose.

The operation of my improvement will readily be understood from the following
100 viz:—

The bellows, B, is alternately expanded and contracted, by the motive power, applied at the cord or rod attached to the tab, *i*, and the action of the springs K,—whereby
105 an intermittent stream of air is forced into the auxiliary bellows or receiver, C, which becomes inflated, and from which the air is forced by the action of the spring I, in a uniform stream, through the nozzle, C, thence
110 through the conduit pipe, G, and out of the blow pipe F;—the strength of said uniform

stream flowing from the blow pipe being regulated by the valve, *d*, (or, *k*,) in said pipe. By means of the elastic conduit pipe, *G*, which may be of any desirable length, the
5 blow pipe, *F*, can be readily applied to flames at different distances from bellows or apparatus when the blast is created.

Having fully described the construction and operation of my improved apparatus, 10 what I claim therein as new and desire to secure by Letters Patent, is:—

1. The bellows, *B*, in combination with exhaling bellows, or receiver, *C*, when the former and latter are compressed by springs

or weights of different capacities, in proportion to the exits of the said bellows, for the purpose of producing a uniform blast, as described. 15

2. The arrangement of the bellows *B*, and *C*, on the base *A*, with the channel, *D*, valve, 20 *A*, orifice *E*, and valve *b*, and exit, *c*, essentially as described for the purpose set forth.

In testimony whereof I have hereunto set my hand this eleventh day of February 1858.

DAVID CUMMING.

Witnesses:

JOHN SMITH,

CALEB H. SMITH.