

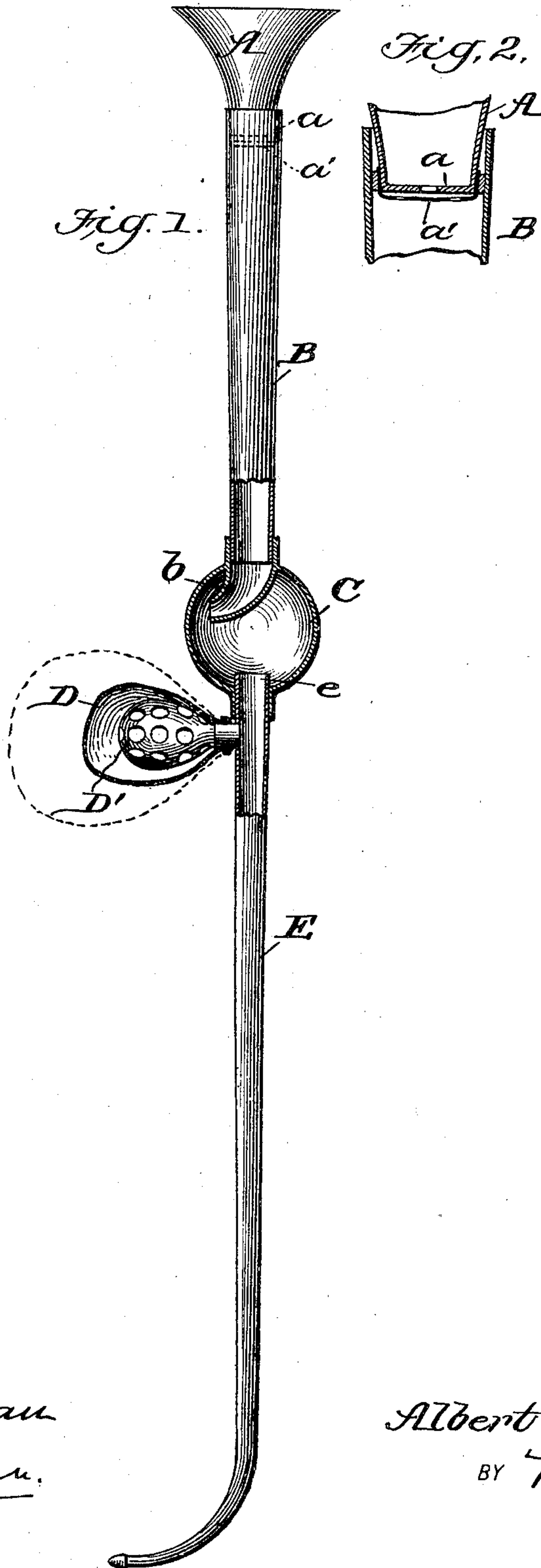
No. 682,529.

Patented Sept. 10, 1901.

A. C. CALKINS.
AUTOMATIC BLOWPIPE.

(Application filed Dec. 22, 1900.)

(No Model.)



WITNESSES:
Jos. A. Ryan
Edw. W. Byrne

INVENTOR
Albert C. Calkins.
BY *Munn & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBERT C. CALKINS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO
FREDERICK W. BRAUN, OF SAME PLACE.

AUTOMATIC BLOWPIPE.

SPECIFICATION forming part of Letters Patent No. 682,529, dated September 10, 1901.

Application filed December 22, 1900. Serial No. 40,758. (No model.)

To all whom it may concern:

Be it known that I, ALBERT C. CALKINS, of Los Angeles, in the county of Los Angeles and State of California, have invented a new and
5 useful Improvement in Automatic Blowpipes, of which the following is a specification.

My invention is in the nature of an improved blowpipe for the use of chemists, assayers, &c., which shall be in a measure automatic or continuous—that is to say, one in
10 which the interval of drawing in the breath shall be bridged over by the mechanical action of the blowpipe, so as to make a continuous blast at the nozzle or twyer end of the blow-
15 pipe.

It consists in the peculiar construction and arrangement of the parts of the device, as will be hereinafter fully described with reference to the drawings, in which—

20 Figure 1 is a side elevation, partly in section. Fig. 2 is a sectional detail of the check-valve.

In the drawings, A represents the mouthpiece; B, the body of the blowpipe; C, the
25 moisture-bulb; D, the expansible bellows-chamber, and E the lower section of the blowpipe, having the curved end turned to one side to form the twyer or blast-nozzle. At the point where the mouthpiece A enters the
30 body-section B there is a check-valve that allows the air-blast from the mouth to enter the section B, but will not allow it to pass back. For this purpose a perforated plate *a*, arranged crosswise on the end of the mouth-
35 piece, may have a thin film or disk of soft flexible substance *a'*, such as soft rubber, with holes through it out of registration with the holes of the plate *a*, so that air-pressure in the mouthpiece will pass through both sets of
40 holes; but a pressure in the opposite direction closes the thin film *a'* on the plate *a*, so that all holes are closed. To secure this film to the mouthpiece and the mouthpiece to the
45 body of the tube, the tapered end of the mouthpiece (see Fig. 2) has a ring on its small end that compresses and retains the edges of the film between said ring and the small end of the mouthpiece, and the enlargement formed by this ring is just sufficient that when
50 the mouthpiece is entered into the tube B it gives an extended stiff and closely-fitting

double bearing—one between the tube B and mouthpiece A a little above its lower end and the other between the tube B and the retaining-ring at the lower end of the mouthpiece. 55

The moisture-bulb C is preferably spherical, and where the section B of the pipe enters it there is a bent inlet *b*, which terminates in a laterally-directed nozzle, and the section E enters the bulb and rises somewhat above its
60 bottom, as at *e*, so as to trap any condensed moisture or saliva in the bulb and prevent it from passing out the discharge end of the blowpipe. The object in bending the inlet-pipe *b* to one side is to cause the blast to
65 strike the relatively cold wall of the bulb and its vapor to be condensed, instead of driving straight through the bulb and out at the discharge-opening on the other side before it has had time to be condensed. 70

On one side of the section E of the blowpipe there is a laterally-projecting nipple terminating in a perforated bulb D', and this is inclosed by an expansible and collapsible sheath D, made of soft rubber and tightly
75 fitting over the neck of the nipple. This perforated bulb D' is an important feature in preventing the entire collapse of the rubber sheath, for when rubber becomes wet, as it does from the moisture of the breath, the
80 walls of said sheath if allowed to come in contact with each other and so remain would stick and tear at the next expansion. This is prevented by this perforated bulb, which prevents the sheath from ever becoming col- 85
lapsed.

When the blowpipe is in use, the air from the mouth entering the mouthpiece A and passing through the valve *a a'* faster than it can escape from the nozzle of the lower section E causes the expansible sheath D to be-
90 come inflated like a balloon to a degree determined by the pressure of the air and the capacity of the lungs. This takes place as long as air is forced into the mouthpiece, and
95 when the capacity of the lungs is exhausted and the operator desires to inhale he does so in the natural way, and during this interval the contraction of the sheath D continues to force air out of the nozzle end of the pipe E, 100
since the check-valve at *a a'* closes automatically. This contraction of sheath D con-

tinues during a short period of inhalation, and after this the operator is ready to renew the process of expiration and blow into the mouthpiece A again.

5 My blowpipe gives a continuous blast without tiring the operator, avoids blowing saliva onto the work, and is of great practical value to chemists, assayers, jewelers, and all artificers who have occasion to use the blowpipe.

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

1. In a blowpipe, the combination with the body-tube; of a tapering and detachable
15 mouthpiece having a flexible valve-diaphragm stretched across its lower end, and a retaining-ring embracing the edges of the diaphragm, the said mouthpiece and its ring and diaphragm being fitted in the end of the

body-tube with an extended bearing substantially as described. 20

2. A blowpipe having in its length a moisture-bulb, the inlet-pipe of which is extended within the same and bent to one side and terminates in a laterally-directed nozzle, to
25 cause the incoming moist-air currents to strike the side wall of the bulb and condense the aqueous vapors substantially as described.

3. A blowpipe having in its length a laterally-projecting nipple terminating in a perforated bulb and having tightly fitted around
30 the nipple an elastic sheath substantially as and for the purpose described.

ALBERT C. CALKINS.

Witnesses:

SIDNEY J. PARSONS,
AMY C. LESTER.