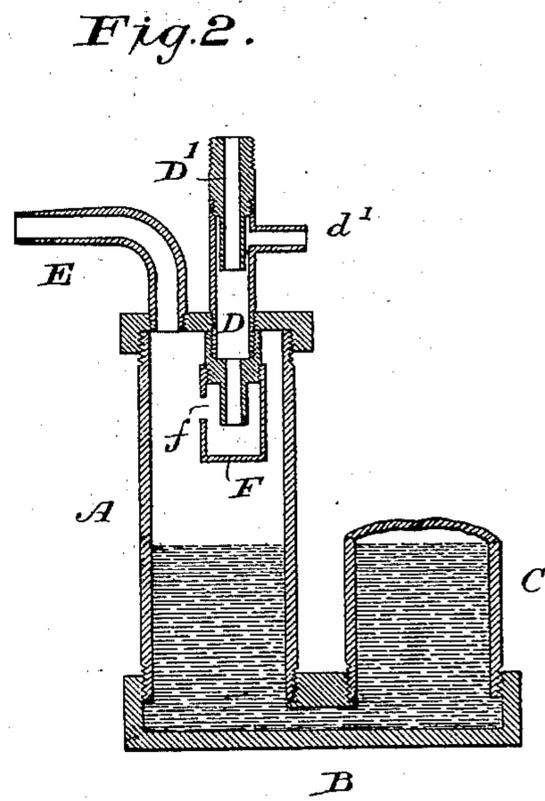
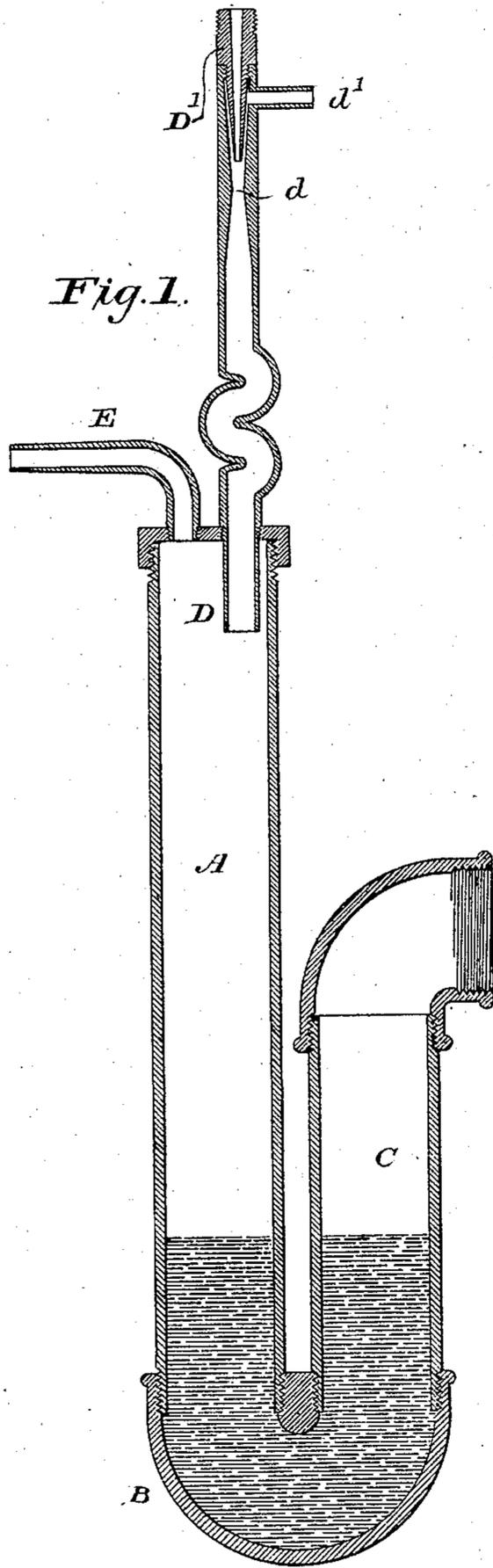


(No Model.)

D. T. PORTER.
CONTINUOUS BLAST APPARATUS.

No. 280,079.

Patented June 26, 1883.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

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CONTINUOUS-BLAST APPARATUS.

SPECIFICATION forming part of Letters Patent No. 280,079, dated June 26, 1883.

Application filed February 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, DAVID T. PORTER, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Continuous-Blast Apparatus, more especially useful with blow-pipes, of which the following is a specification.

My invention relates to a blast apparatus, more especially useful with blow-pipes such as are used by jewelers and dentists in their operations; and its object is to produce an automatic and continuous blast for the purposes now fulfilled in a defective manner by the common blow-pipe.

The subject-matter claimed is first fully described, and then particularly pointed out at the close of the specification.

In the accompanying drawings, Figure 1 is a longitudinal vertical section through one form of my improved apparatus, and Fig. 2 is a similar view through another form thereof.

The blast is produced in my improved apparatus by passing a current of water through a pipe, so as to create a partial vacuum and draw air through an inlet-opening, the air and water being carried to a separating-chamber, from which the water is discharged into a trap below, while the air by the accumulated pressure is forced out of an outlet-opening, either directly against the flame or through a flexible tube carrying a suitable draft-nozzle, whereby the continuous jet or blast of air may be directed to the point desired.

An upright cylinder, A, is united at its lower end to a bowl, B, from which also extends an outlet-pipe, C, through which the water escapes. By means of the bowl B a water-trap is formed which enables the operation to be carried out as above described.

At the upper end of the cylinder A there is an inlet-pipe, D, and an air-outlet pipe or discharge-orifice, E. Extending into the upper end of the inlet-pipe D is a feed-pipe, D', connected with any suitable water-supply. The feed-pipe may be provided with a cock or valve to open or close its orifice to the passage of the water, as desired. This being a common contrivance, it has been deemed unnecessary to show it in the drawings. The tapered end

of the feed-pipe D' projects into the bore of the pipe D, the bore of which is contracted, as at *d*, while above the lower discharge end of the feed-pipe D' an opening, *d'*, is made in the pipe D for the inlet or entrance of the air which is to constitute the blast. The pipe D is provided in Fig. 1 with a zigzag portion, so that the opening through said pipe is not a continuous straight one, but is broken up by the zigzag formation above mentioned. Water flowing through the feed-pipe D' has its velocity increased by the tapered opening in said pipe, and as it is discharged into the pipe D it is also concentrated by the throat or opening *d*, of diminished diameter. The flow of the current of water creates a partial vacuum and sucks or draws in air through the inlet-opening *d'*, before mentioned, and the water and air pass together down the pipe D until they reach the zigzag, where the water strikes or impinges upon the corners or shoulders formed thereby, and allows the water and air to partially separate, which separation is completed by the escape of the column into the cylinder A, the water falling to the bowl B, to continue the formation of a water seal or trap, and escaping through the outlet-pipe C, while the air accumulates in the cylinder A above the column of the water seal or trap. The air is thus driven out through the outlet-pipe E by the pressure in the cylinder, and constitutes a steady continuous blast, especially useful as a substitute for the blow-pipe, as before mentioned. The blast as it escapes from the outlet-pipe E may be directed against the flame; or there may be connected to the said pipe E a rubber or other flexible tube, whereby the apparatus is given a wider range of capability and use, the outer or free end of the tube carrying a suitable draft-nozzle for directing the blast against the flame.

I have deemed it unnecessary to show a flexible-tube arrangement, as it is a common expedient in blast apparatus.

In Fig. 2, which shows a modified form of apparatus, the operation is the same, with the exception that there is no tapered opening in the feed-pipe D', while the preliminary separating-chamber is located at the lower end of

the pipe D, instead of being formed between its ends, as shown by the zigzag in Fig. 1.

The preliminary separating-chamber in Fig. 2 is formed by a box, F, screwed upon the pipe 5 D, and having an opening, *f*, in its side. The column, after passing through the contracted throat or opening *d* in the pipe D, falls into the box and rises to flow out of the opening at its side, thus expanding the column and permit- 10 ting of the preliminary separation of the air and water, which separation, as before described, is fully completed by the discharge into the cylinder A. The principal object of the contracted throat or opening in the pipe 15 D is to form a barrier during the passage of the column or current to the escape of the air up through said pipe. The air, therefore, is continuously and automatically fed in one di- 20 rection into the cylinder A, and from thence is driven through the outlet-pipe in a continuous steady stream to do its work.

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

25 1. In a blast apparatus where the blast is

produced by the flow of a current of water, a preliminary chamber for partially or wholly separating the air and water, substantially as described.

2. In a blast apparatus where the blast is 30 produced by the flow of a current of water, a contraction in the pipe through which the current flows above a preliminary separating-chamber connected with said pipe, substan- 35 tially as described.

3. The combination, substantially as herein- before set forth, with the cylinder, bowl, and discharge-pipe, affording a water seal or trap at the lower end of said cylinder, of a pipe 40 through which a current of water flows to carry air into said cylinder, having an en- larged preliminary chamber for the separation of the water and air, substantially as described.

In testimony whereof I have hereunto sub- 45 scribed my name this 1st day of February, A. D. 1883.

DAVID T. PORTER.

Witnesses:

W. FISK GILE,

GEORGE L. WEIL.