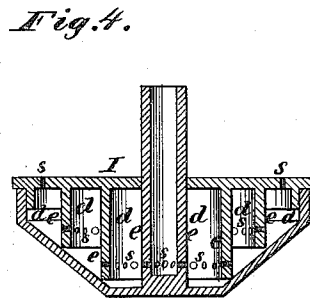
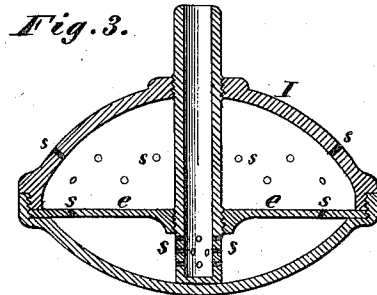
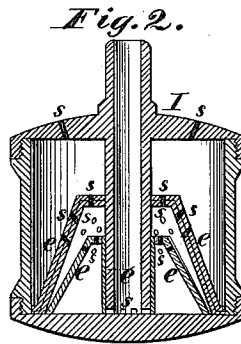
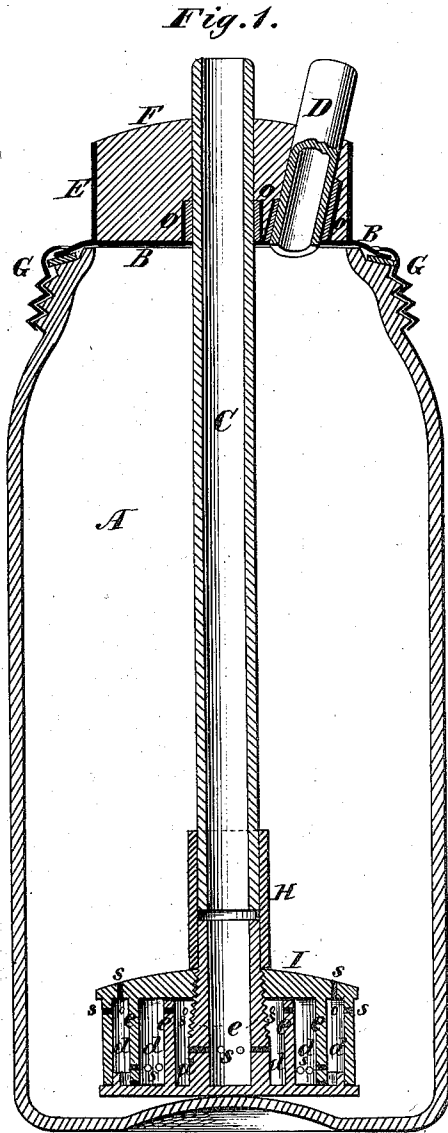


A. E. PURSELL.

Improvement in Apparatus for Washing Nitrous-Oxide
and other Gases.

No. 128,753.

Patented July 9, 1872.



Witnesses.

Fred. W. Harvey.
Thos. Gibbons.

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UNITED STATES PATENT OFFICE.

ABNER E. PURSELL, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN APPARATUS FOR WASHING NITROUS-OXIDE AND OTHER GASES.

Specification forming part of Letters Patent No. 128,753, dated July 9, 1872.

SPECIFICATION.

I, ABNER E. PURSELL, of Indianapolis, in the county of Marion and State of Indiana, have invented certain Improvements in Apparatus for Washing Gas, of which the following is a specification:

Nature and Objects of the Invention.

The first part of my invention relates to washing the nitrous-oxide gas commonly called laughing-gas, and which is now generally employed as an anæsthetic by dentists and surgeons to render their patients insensible to pain; and it consists in the construction of a percolating device, arranged at or near the bottom of a suitable cistern or water-jar, by means of which the gas is separated or subdivided into many minute globules as it passes through, the partitions separating the percolator into chambers, and ascends through the water contained in the jar or cistern to the top, from whence it passes into other connected washers or into the gas-holder; the object being to more thoroughly cleanse and purify the gas than has heretofore been accomplished. The second part of my invention consists in the mode of constructing the cap of the water-tank or vessel, having for its object to both render it gas-tight and to secure the connecting induction and eduction tubes in a more substantial and durable manner than heretofore.

Description of the Accompanying Drawing.

Figure 1 is a vertical section through the center of a gas-washer embodying my invention. Figs. 2, 3, and 4 are sectional views of modifications of my improved percolating and subdividing device, through which the gas passes in being washed.

General Description.

A, Fig. 1, is a transverse vertical section of the cistern or water-tank in which my improved percolating device is placed. In order to cheapen its construction and to render the apparatus as nearly perfect in its operation as practicable, I employ for the cistern or water-tank the "Hero" fruit-jar, the cap of which is packed, to render it air-tight, with an India-rubber gasket, and secured by means of a ring that screws down upon the flange of the cap. To the cap

of said jar I apply my device for cementing and firmly securing the induction-tube C and eduction-tube D. After punching holes in the cap B to receive the tubes C D, I solder short collars O to the cap, surrounding the holes, and somewhat larger than the tubes, to afford space to receive a cement packing of red-lead and litharge, which both prevents the escape of the gas and resists its destructive effects. To the top of the cap B I solder a ring or collar, E, of the same diameter as the top and one or two inches in depth, to be filled with plaster of Paris F, which still further aids to hold the tubes firmly in position. The percolator may be made of hard rubber or other suitable material that will resist the action of the gas, and in any of the forms shown in Figs. 1, 2, 3, 4, the object being to so construct them that the gas will be many times separated into minute globules, and passed through separate bodies of water at each separation or subdivision; the percolator being submerged in the water contained in the jar which finds ingress into it through the small holes provided for the escape of the gas. The action of the gas in passing through the various chambers of the percolator is such as to force a portion of the water out of it, thereby causing the water to be constantly renewed. As the percolators should be cleaned occasionally, they are constructed so as to be screwed together, as shown, so that they may be readily taken apart. The forms and construction to which I give preference, as being cheapest and most effective in subdividing the gas, are shown in Figs. 2 and 4. C is the induction-tube, made of glass, and is connected with the retort in which the gas is generated by means of a common rubber tube attached to the top of tube C, and the percolator is connected with the tube C by means of a short rubber tube, H, as shown in Fig. 1. The gas passes from the retort down tube C into the first chamber of the percolator, from which it passes through small holes *s* into the second chamber *d*; through the water in which it rises and passes out through the small holes *s* in partition *e'* into chamber *d'*; through the water in which it descends and passes through the small holes *s* in partition *e''* into the fourth chamber *d''*; through the water in which it rises and passes out into the vessel A through the small holes *s* in the cap and sides, near the

the top of the percolator. From the jar it escapes through eduction-tube D into the next washer in the series, and from the last washer into the gas-holder. This description, though relating particularly to the percolator shown in Fig. 1, is substantially the same as those shown in Figs. 2 and 4.

It will be seen that the arrangement of the partitions *e* having the small holes *s* therein, and subdividing the percolator into compartments or chambers *d*, is such as to subdivide the gas into small globules as it passes from one chamber to another, thereby exposing it in large surface to the purifying effect of the water as it passes through the percolator. The arrangement of the partitions *e* and small holes *s* therein, in the several modified forms of the percolator shown, is such as to subdivide the gas into small globules in substantially the same manner.

I make no claim to separating or dividing the gas by passing it through small holes in an

enlarged or right-angle termination of the induction-tube C at the bottom of a water-tank or cistern, as this has been done in several different ways.

Claim.

I claim as my invention—

1. The percolator constructed with partitions *e* separating it into compartments *d*, said partitions having small holes *s* so arranged as to make several subdivisions of the gas, and thereby causing it to separate into minute globules, substantially as and for the purpose set forth.
2. The percolator, constructed as described and shown, in combination with the "Hero" fruit-jar in the cap, of which the induction and eduction tubes C D are cemented and secured, substantially as set forth.

ABNER E. PURSELL.

Witnesses:

FRED. N. HARVEY,
THEODORE GIBBONS.