No. 719,586. PATENTED FEB. 3, 1903.

S. HASBROUCK.

INSUFFLATOR.

APPLICATION FILED JUNE 7, 1902.

NO MODEL.

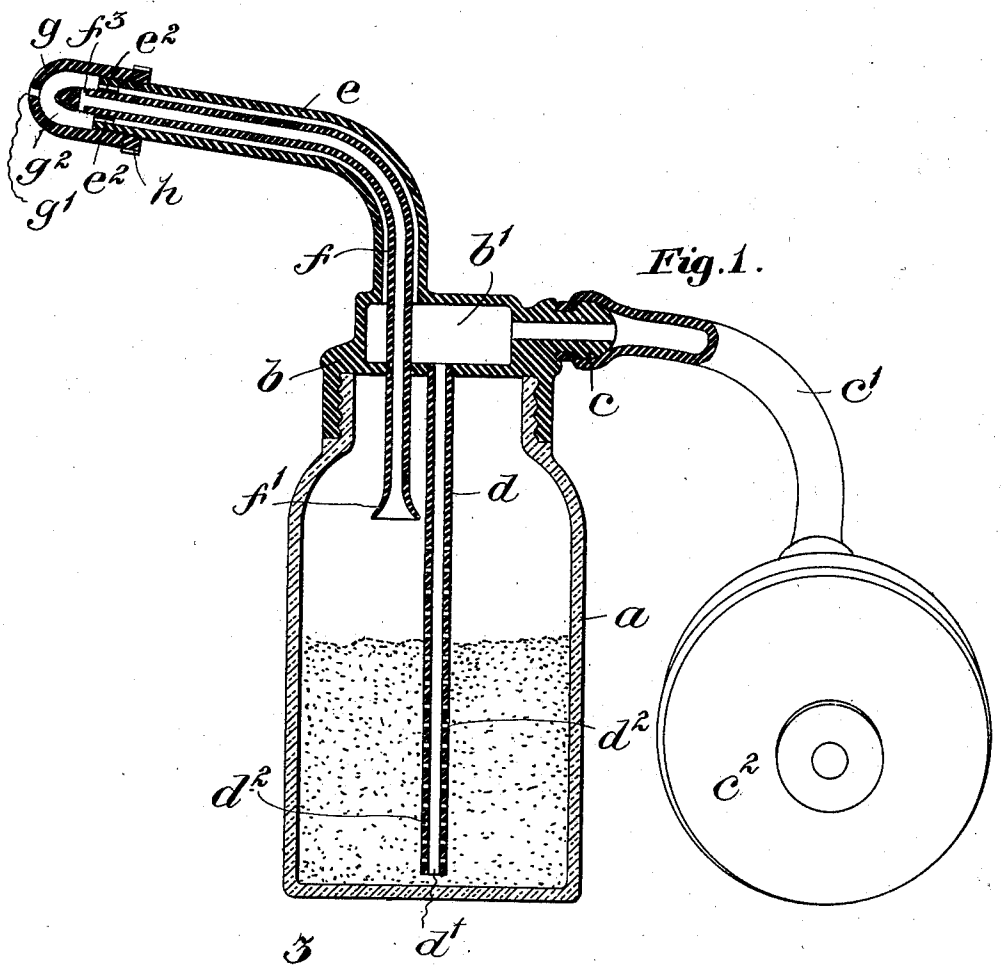


Fig. 1.

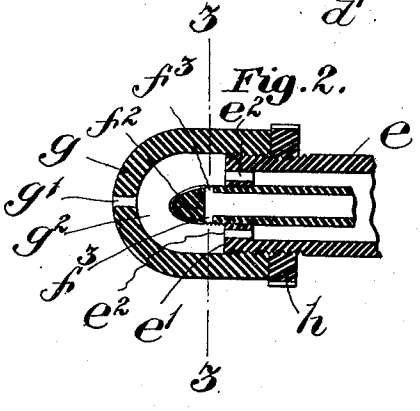


Fig. 2.

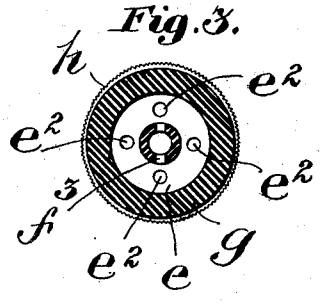


Fig. 3.

Witnesses:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAYER HASBROUCK, OF PROVIDENCE, RHODE ISLAND.

INSUFFLATOR.

SPECIFICATION forming part of Letters Patent No. 719,586, dated February 3, 1903.

Application filed June 7, 1902. Serial No. 110,608. (No model.)

To all whom it may concern:

Be it known that I, SAYER HASBROUCK, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Insufflators, of which the following is a specification.

This invention has relation to insufflators or powder-blowers, having for its object to provide an appliance of the character mentioned by which the powder may be discharged in a cloud of finely-comminuted particles.

On the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 represents my improved insufflator. Fig. 2 represents an enlarged section through the end of the nozzle. Fig. 3 represents a section on the line 3 3 of Fig. 2.

Referring to the said drawings, a indicates a receptacle for the powder. The upper end of the receptacle is closed by a cap b, which is formed with the air-chamber b'. Leading laterally from the air-chamber there is a nipple c, on which may be slipped the end of a conduit c', leading from an air-compressor, such as a valve-bulb c^2. Extending from the chamber b' downwardly in the receptacle there is an air-tube d, the lower end d' of which is open. This tube is provided with lateral openings d^2, leading from the bore thereof, so as to discharge the air laterally into the mass of powder lying therearound.

From the top of the chamber b' there extends an outer tube e, the end of which is closed, as at e', except for a plurality of eccentrically-disposed discharge-ports e^2. Extending through this outer tube and through the chamber b' down into the receptacle a there is an inner tube f, having a relatively large bore and having its lower end flaring, as at f'. The upper end of the inner tube projects through the end of the outer tube and is rounded, as shown at f^2. This tube is provided with one or more lateral discharge-ducts f^3, communicating with its bore, so that when powder passes up through the tube it is discharged laterally therefrom. The ports f^3 are so located with reference to the ports e^2 that the stream of powder issuing from the first-mentioned ports is intersected by the stream of air issuing from the ports e^2.

The end of the outer tube is externally threaded to receive a tip g, which has a discharge-port g' in line with the end of the inner tube. This tip forms a chamber g^2, the wall of which is semispherical and is adapted to be locked against movement by a lock or check nut h.

The operation of the device is as follows: Air being delivered under pressure to the chamber b' passes downward through the tube d and outward through the tube e. The air which passes through the tube d is discharged into the mass of powder, lifting it lightly and forcing more or less of it outward through the inner tube f. The streams of air issuing from the ports e^2 meet the streams of powder and air issuing from the ports f^3 and deflect the powder against the sides of the tip in such manner as to break up whatever lumps there may be and so divide or comminute the powder as to deliver it in a cloud through the aperture g' in the tip. It will be seen that some of the ports d^2 are located above the surface or level of the powder, while the others are below. The effect of this is that the mass of powder is lifted and loosened, while that at the top is easily carried by the current of air into the mouth of the tube f. The air issuing up through the powder lifts that at the top in the form of a cloud, and the streams of air issuing from the tube d, near the upper end thereof, become more effective in carrying the lifted cloud into the mouth f'.

I have found by the use of this apparatus that it may be employed for a variety of purposes and will operate on powder, which has hitherto been incapable of use with an insufflator.

I do not herein claim, *per se*, the air-tube extending into the receptacle and adapted to be more or less submerged by the material in the receptacle, said air-tube being provided with a series of lateral ports arranged longitudinally of the tube, as it forms the subject-matter of a copending application, Serial No. 134,293, filed December 8, 1902.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. An insufflator comprising a powder-receptacle, an air-chamber, an inner tube passing through said chamber and having an open lower end extending into said receptacle, an outer tube encircling said inner tube and communicating with said air-chamber, ports leading from the ends of the outer and inner tubes for the delivery of intersecting jets or streams of air and powder respectively, an apertured tip on the end of the outer tube, and an air-tube leading from the air-chamber into the receptacle and having apertures for delivering air into the mass of powder therein.

2. An insufflator comprising a powder-receptacle, an air-tube leading into said receptacle, a powder-tube leading from the said receptacle and having lateral discharge-apertures, and a third tube having a tip inclosing the end of the powder-tube, with apertures for streams of air to intersect the streams of powder issuing from said lateral apertures in the powder-tube.

In testimony whereof I have affixed my signature in presence of two witnesses.

SAYER HASBROUCK.

Witnesses:

CHARLES R. DAY,

CHAS. L. GREEN.