

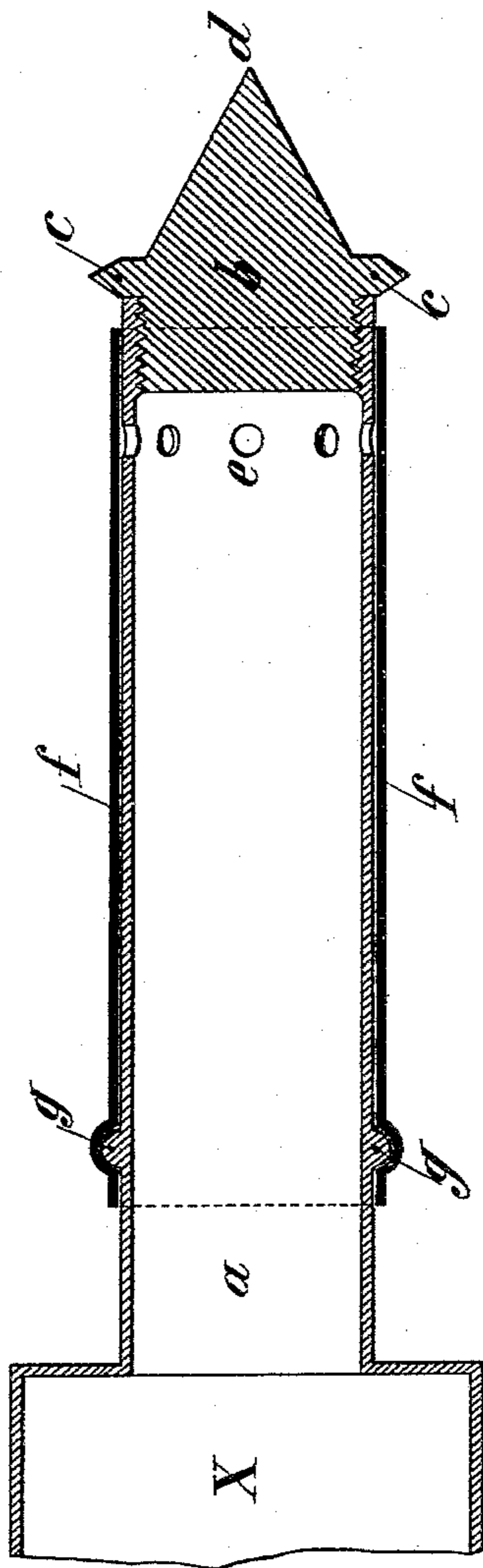
(No Model.)

F. F. BOURDIL.

APPARATUS FOR SPRAYING LIQUIDS.

No. 384,306.

Patented June 12, 1888.



Witnesses:

John M. Speer,  
T. F. Bourne.

Inventor:

Francois Bernard Bourdil.  
by Briesen & Steele  
his Attorneys.

# UNITED STATES PATENT OFFICE.

FRANÇOIS FERNAND BOURDIL, OF PARIS, FRANCE.

## APPARATUS FOR SPRAYING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 384,306, dated June 12, 1888.

Application filed January 26, 1888. Serial No. 261,994. (No model.) Patented in France May 12, 1887, No. 183,536; in England May 27, 1887, No. 7,762; in Belgium May 27, 1887, No. 77,621; in Germany June 4, 1887, No. 41,549; in Italy June 30, 1887, XLIII, 186, and in Spain July 31, 1887, 5/322/11,219.

*To all whom it may concern:*

Be it known that I, FRANÇOIS FERNAND BOURDIL, of the city of Paris, France, have invented a new and Improved Apparatus for Spraying Liquids, (for which I have obtained Letters Patent in France for fifteen years, dated May 12, 1887, No. 183,536; in England for fourteen years, dated May 27, 1887, No. 7,762; in Belgium for twenty years, dated May 27, 1887, No. 77,621; in Germany for fifteen years, dated June 4, 1887, No. 41,549; in Italy for fifteen years, dated June 30, 1887, No. 186, Vol. 43, and in Spain, dated July 31, 1887, 5/322/11,219,) of which the following is a full, clear, and exact description.

My invention relates to an improved atomizer or spray-producer for liquids, fluids, and semi-fluids, in which the atomizing or spraying effect is obtained by forcing the liquid in the form of a film between a rigid tube and an elastic sheath and projecting the said film against a surface, whereby the liquid becomes atomized or sprayed.

This improved atomizer may be made of various dimensions suited to the kind of liquid and purpose for which it is to be used—such as, for example, the spraying of perfumes or of water for moistening the atmosphere in mills, mines, and other places, and also for spraying liquid preparations used for treating diseases of plants, such as vines and others.

The accompanying drawing shows in vertical section an example of the atomizer, consisting of a tube, *a*, for attachment at *X* to a pump-bulb or delivery-pipe, by which the liquid to be atomized is supplied under pressure. The tube *a* is closed by a screw or other plug, *b*, provided with a beveled rim, *c*, and the tube is provided just beneath the plug with a row of holes, *e*, of suitable number and size. The tube *a* is enveloped in an india-rubber or analogous elastic impervious sheath, *f*, which covers the holes *e*, and extends a sufficient distance beyond them in the direction of the rim *c* to give direction to the film of liquid. The liquid under pressure is forced through the holes *e* and between the tube *a* and adjacent surface of elastic sheath *f* in the

form of a thin film, which is forcibly projected against the beveled surface of the rim *c*, which projects from tube *a* in the path of the escaping film, whereby the liquid becomes atomized or sprayed.

To prevent the liquid leaking back between the sheath and tube and to prevent the india-rubber sheath being shifted on the tube, the latter has one or more projecting rims or beads, *g*, over which the sheath is sprung, or with a groove, in which the sheath is secured by a ligature; or the sheath is otherwise suitably held in position on the tube *a*.

The details of the apparatus may be varied without departing from the invention. For example, the form of the rim *c*, against which the film of liquid is projected, may be varied, as likewise that of the stopper. The rim *c* and apertures *e* may be placed at any suitable point in the length of the tube *a*, which may itself be of circular, triangular, polygonal, or other form in cross-section and be either straight or curved, as desired.

I claim—

1. In an atomizer or sprayer, the tube *a*, having holes *e* for the passage of liquid, and a projecting rim, *c*, against which liquid from the holes abuts, combined with the elastic impervious sheath *f*, that covers the holes *e*, whereby the liquid from the tube *a* is directed by the sheath *f* against the rim *c* and thereby atomized or sprayed, substantially as hereinbefore described.

2. In an atomizer or sprayer, the combination of the tube *a*, having external bead, *g*, and holes *e*, plug *b* in the end of the tube *a*, said plug having rim *c*, and of the impervious elastic sheath *f*, whereby the liquid is directed by the sheath *f* against the rim *c* and thereby atomized, substantially as described.

The foregoing specification of my improved apparatus for spraying liquids signed by me this 30th day of December, 1887.

FRANÇOIS FERNAND BOURDIL,

Witnesses:

ROBT. M. HOOPER,  
ALBERT MOREAU.