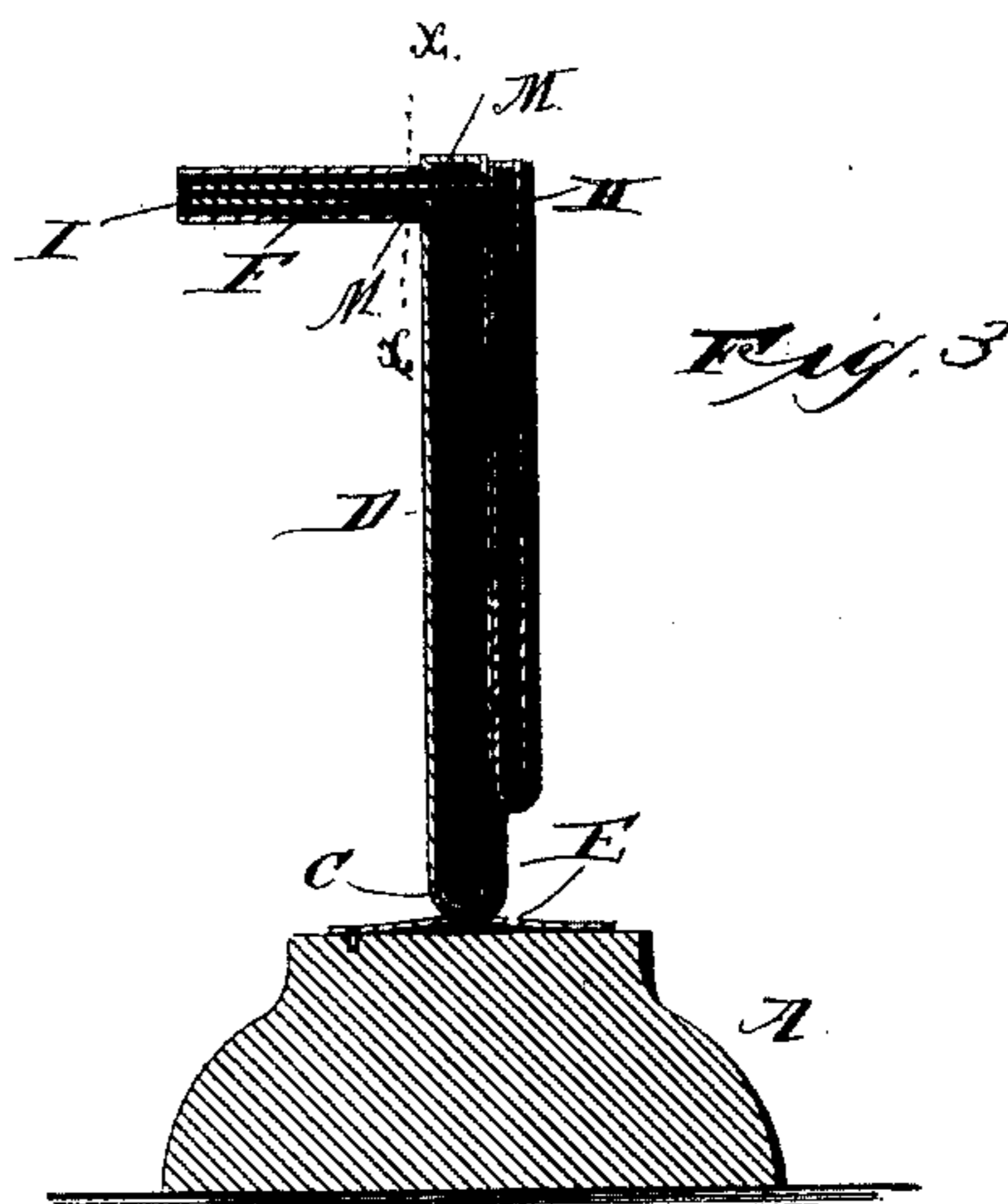
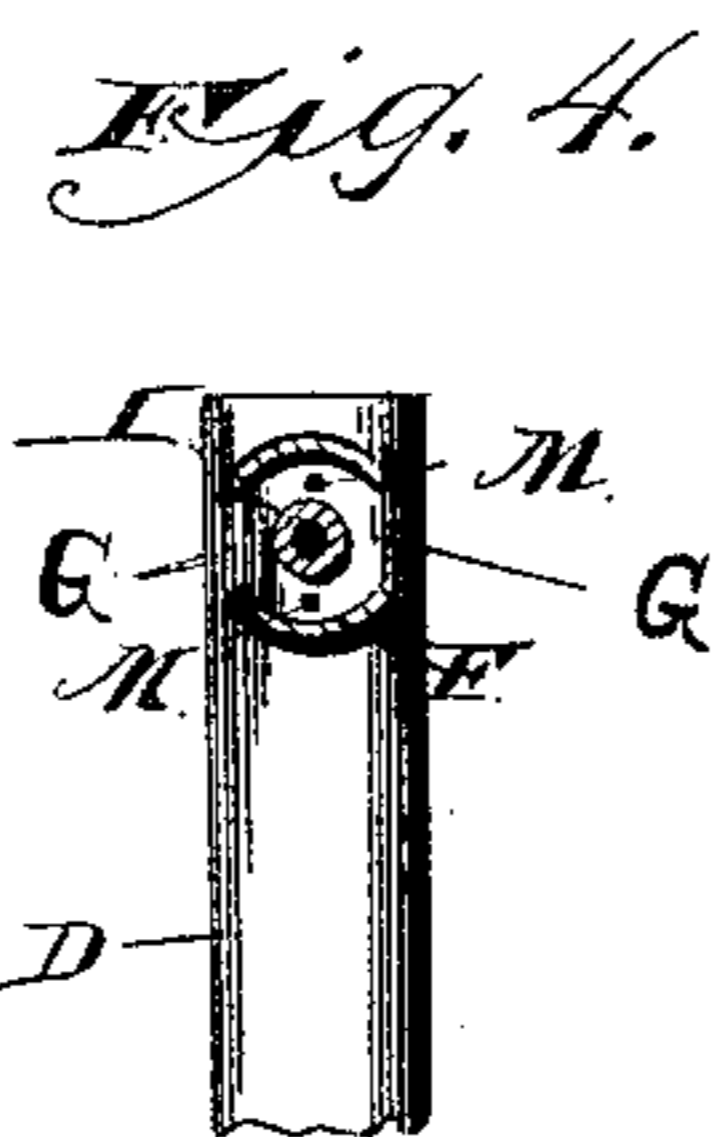
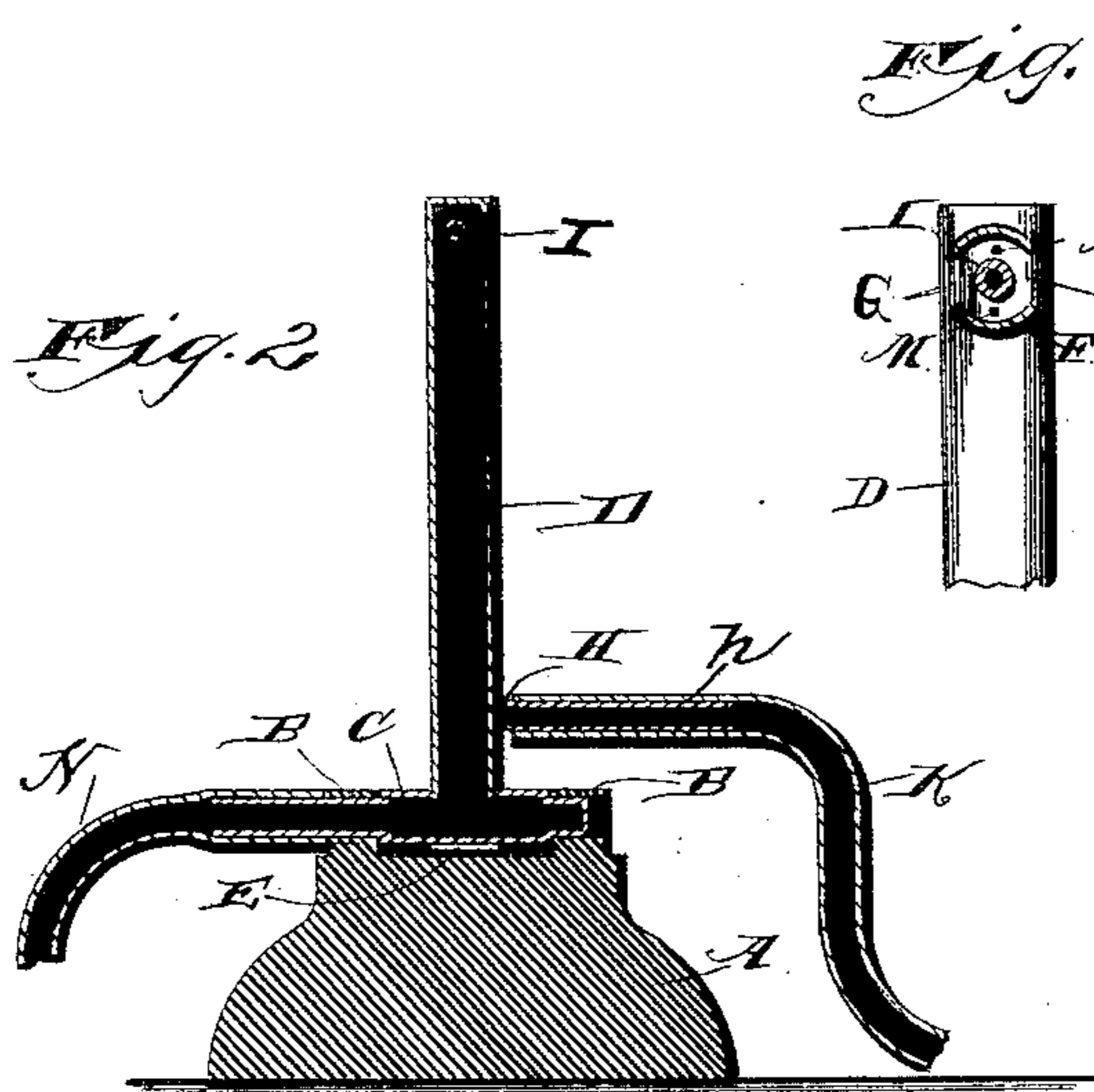
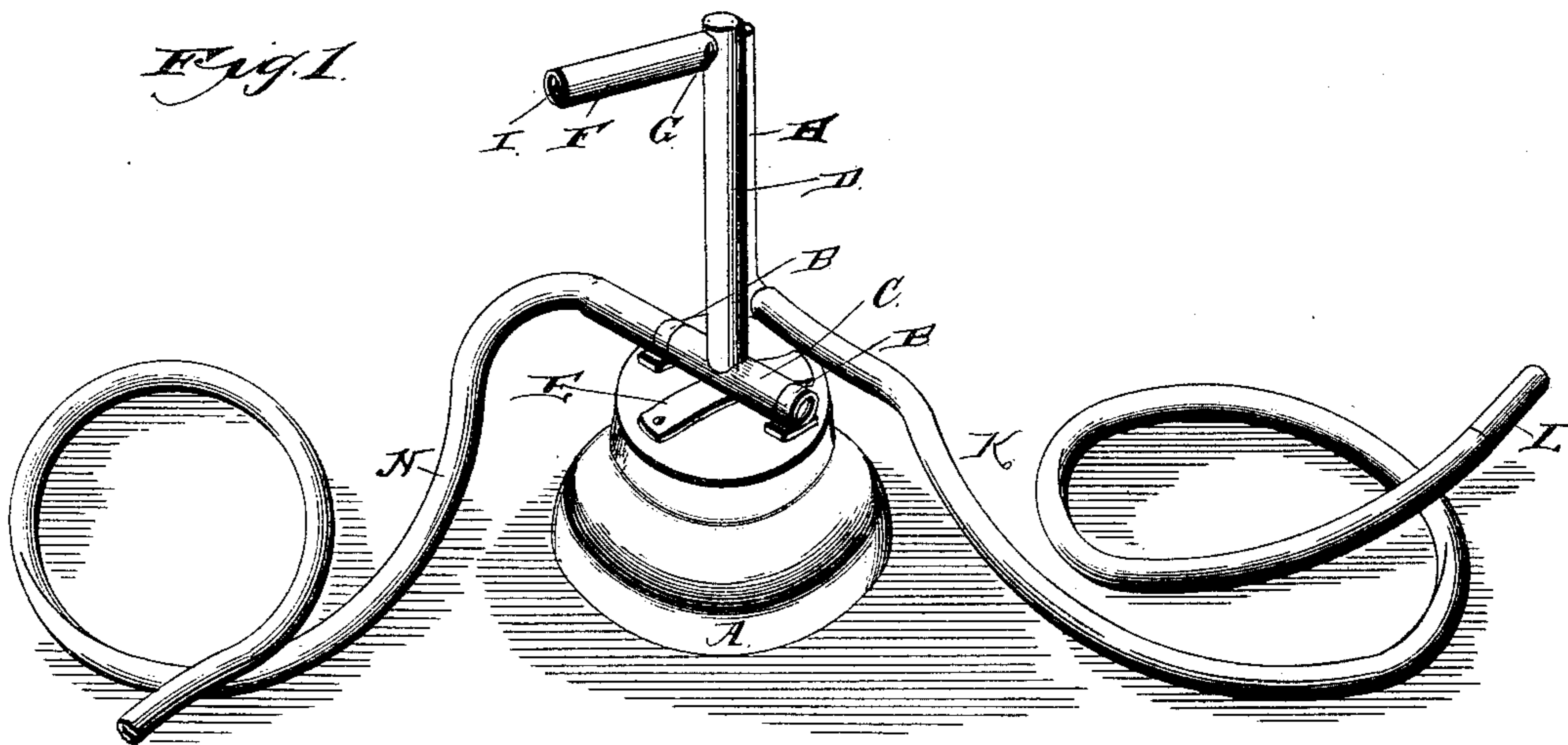


(No Model.)

L. DORN.
BLOW PIPE.

No. 410,503.

Patented Sept. 3, 1889.



Witnesses

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UNITED STATES PATENT OFFICE.

LORENZO DORN, OF GLOVERSVILLE, NEW YORK.

BLOW-PIPE.

SPECIFICATION forming part of Letters Patent No. 410,503, dated September 3, 1889.

Application filed July 11, 1888. Serial No. 279,611. (No model.)

To all whom it may concern:

Be it known that I, LORENZO DORN, a citizen of the United States, residing at Gloversville, in the county of Fulton and State of New York, have invented a new and useful Improvement in Combined Burner and Blow-Pipe for Laboratory Use, of which the following is a specification.

My invention relates to a combined burner and blow-pipe for laboratory use, having for its objects to provide a simple, cheap, and effective blow-pipe, which employs the ordinary illuminating-gas and forms a simple burner, (when not in use as a blow-pipe,) over which test-tubes, &c., may be heated in the ordinary way.

The invention consists in a certain novel construction and combination of devices, fully set forth hereinafter in connection with the drawings, and specifically pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a perspective view of the improved burner. Fig. 3 is a longitudinal central sectional view of the same. Fig. 2 is a central transverse sectional view. Fig. 4 is a detail view on line *x x* of Fig. 3.

Referring by letter to the drawings, A designates the base or support of the improved burner, which is provided on its upper side with the registering bearings B B; and C designates a horizontal inlet-tube, which is mounted in the said bearings, whereby it may rotate freely, and communicates at its center with a perpendicular tube or reservoir D. An upwardly-convexed leaf-spring E is located under the inlet-tube and is affixed at one end to the base, and the said spring bears against the under side of the tube, and thereby holds the same in the desired position, and holds the perpendicular tube or reservoir at the desired angle to the horizontal plane.

A small combustion-tube F is affixed to the side of the tube or reservoir D near its upper closed end, and this combustion-tube is provided at its base adjacent to the reservoir with the side air-openings G G.

The air-pipe H is affixed to the rear side of the reservoir, and is provided at its upper end with a tip I, which passes through the upper end of the reservoir and extends longitudinally through the center of the combus-

tion-tube to within a short distance of its outer or free end, the bore of the said tip being reduced gradually to a very fine opening at its outer end. The lower end of the air-pipe is provided with a laterally-extending curved extension or arm *h*, to which is attached the flexible tube K, provided at its free end with the mouth-piece L.

The reservoir D communicates with the combustion-tube F through small perforations M M, which are located in the side of the reservoir, respectively above and below the tip I, whereby the gas is delivered into the combustion-tube above and below the air-pipe tip.

N represents a flexible feed-tube, which extends from the gas-supply and is fitted on the open end of the inlet-tube C.

The operation of the device is as follows: The gas is conveyed by the feed-tube N to the inlet-tube C and reservoir D, in which it is stored in sufficient quantity to provide a steady flow through the perforations M M, even though the supply is unsteady. The gas is delivered into the combustion-tube through the perforations M, and as it passes through the tube it creates an inward current of air through the air-openings G G, and the gas becomes intimately mingled with the air as it passes through the tube, and therefore burns freely at its outer end. Air is forced through the blow-pipe by the operator, and the fine stream of air which is projected through the burning gas at the outer end of the combustion-tube by the air-pipe tip causes a more perfect combustion of the gas and draws the flame to a fine point, which may be directed upon any desired point by arranging the reservoir at the desired angle.

It will be seen that the perforations M, which admit the gas into the combustion-tube, are located on diametrically-opposite sides of the air-tip, and the air-openings G are also located on diametrically-opposite sides of the said tip in a different plane from the perforations M, and therefore, when the device is used as an ordinary burner, the gas becomes intimately mixed with air, so that it burns freely and with a non-luminous flame at the outer end of the combustion-tube.

The gas being supplied above and below the tip becomes spread around the tip as it

approaches the extremity of the combustion-tube, whereby at the point where combustion takes place a tubular or hollow flame is formed, the intensity of which is the same on all sides. The air being supplied on opposite sides of the combustion-tube out of the plane of the gas-supply perforations, these perforations do not act as escape-openings for the gas, as the latter is projected beyond them by its expansive force. The draft or current of air created by this propulsion of the gas is supplied by the inflow of air through the openings G. This air becomes mixed with the gas in passing through the tube, so that they reach the free end of the latter together, and when the mixture is ignited perfect combustion ensues and a substantially non-luminous flame results.

It will be understood that the gas may be supplied through one perforation; but in this case the flame will be of greater intensity on one side than the other, and this is objectionable.

Having thus described the invention, I claim—

1. In a burner, the combination of the reservoir provided with a suitable inlet-tube and the independent combustion-tube provided with air-supply openings G G, and communicating with the reservoir through small apertures arranged out of the plane of the said air-supply openings, substantially as specified.

2. In a burner, the combination of the reservoir, the independent combustion-tube provided with air-supply openings G G and communicating with the reservoir through the perforations M M, which are arranged out of the plane of the openings G, and the air-pipe tip passing longitudinally through the combustion-tube between the said perforations M M, and extending to the end of said tube, substantially as specified.

3. In a burner, the combination of the reservoir, the combustion-tube communicating with the reservoir through the perforations M M, which are arranged, respectively, above and below the center of the said combustion-tube and provided on opposite sides with air-supply openings G G, the air-pipe affixed to the reservoir and provided with a tip which passes through the upper end of the reservoir, passes between the perforations M M, and extends concentrically through the combustion-tube nearly to its outer end, and the flexible tube connected to the blow-pipe and provided with a suitable mouth-piece, substantially as specified.

4. In a burner, the combination, with a suitable base or support A, provided on its upper side with the registering bearings B B, of the horizontal inlet-tube mounted in the said bearings, the reservoir arranged perpendicular to the inlet-tube, the combustion-tube communicating with the upper end of the reservoir and having an air-pipe tip arranged longitudinally therein, and the spring bearing against the under side of the inlet-tube and adapted to hold the same in the desired position, substantially as specified.

5. The base A, provided with bearings B B, combined with a transverse tube C, mounted in the said bearings, the combustion-tube communicating with the reservoir, and the blow-pipe connected to the combustion-tube, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

LORENZO DORN.

Witnesses:

LEONARD B. YALE,
GEO. R. HUTCHINSON.