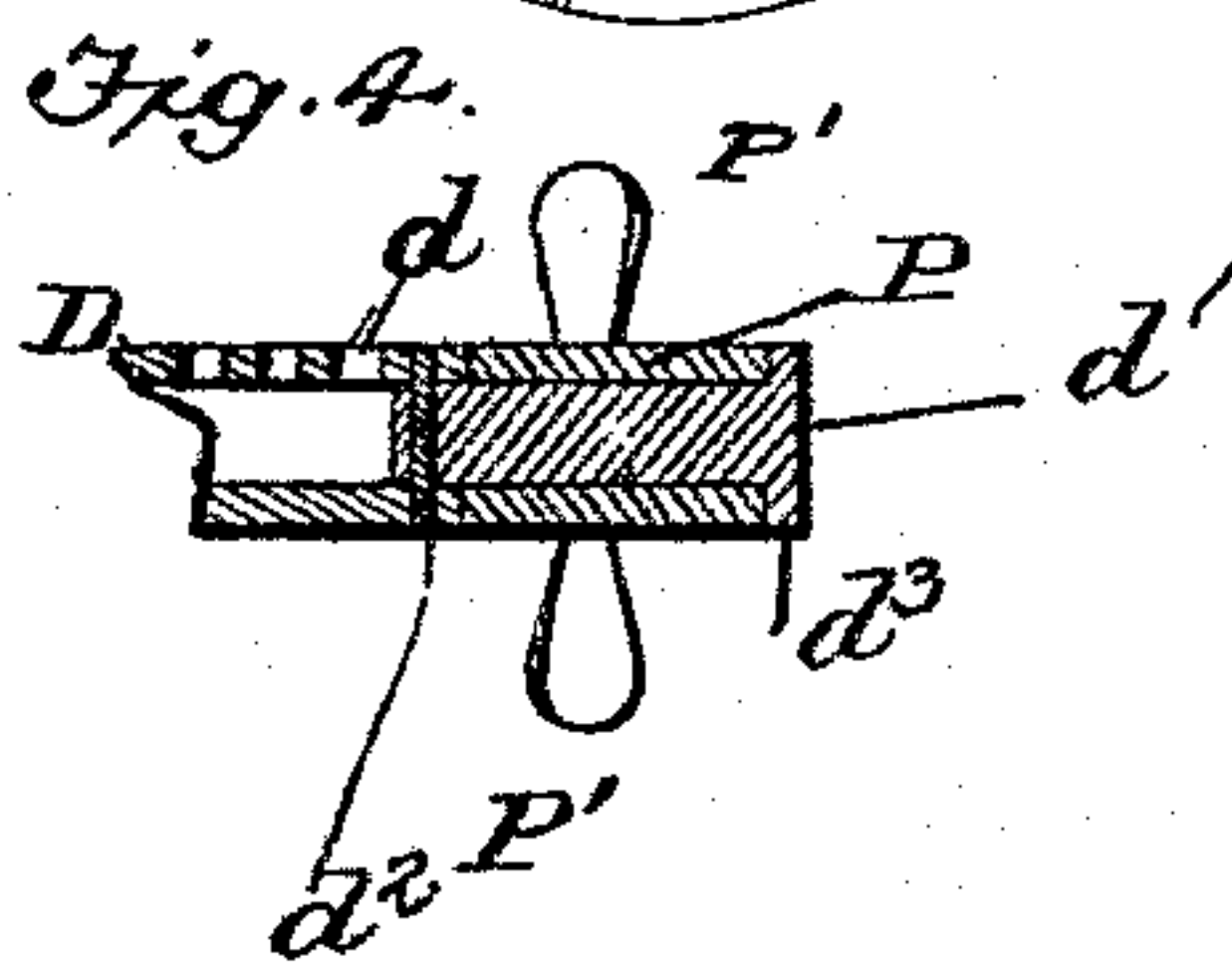
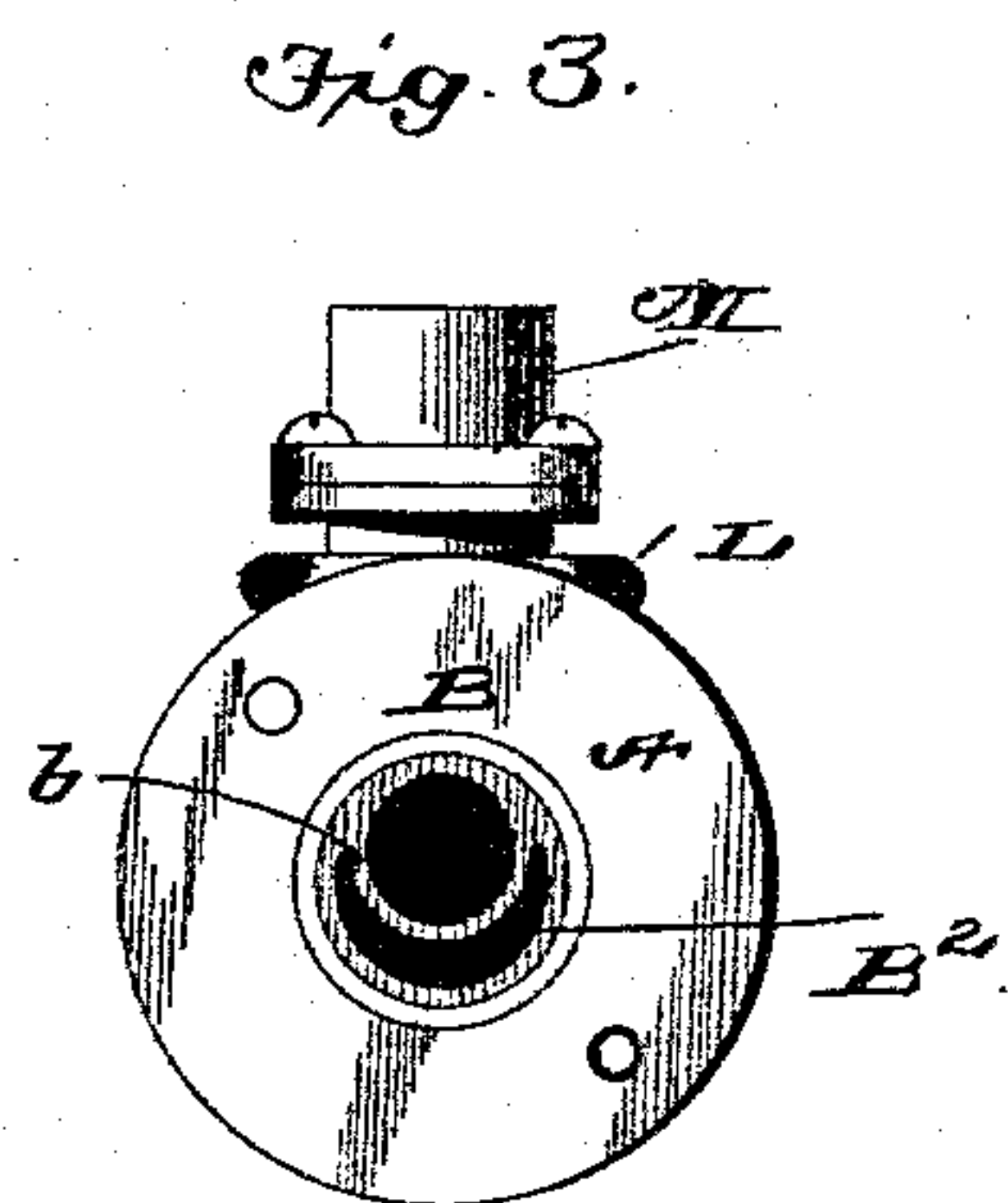
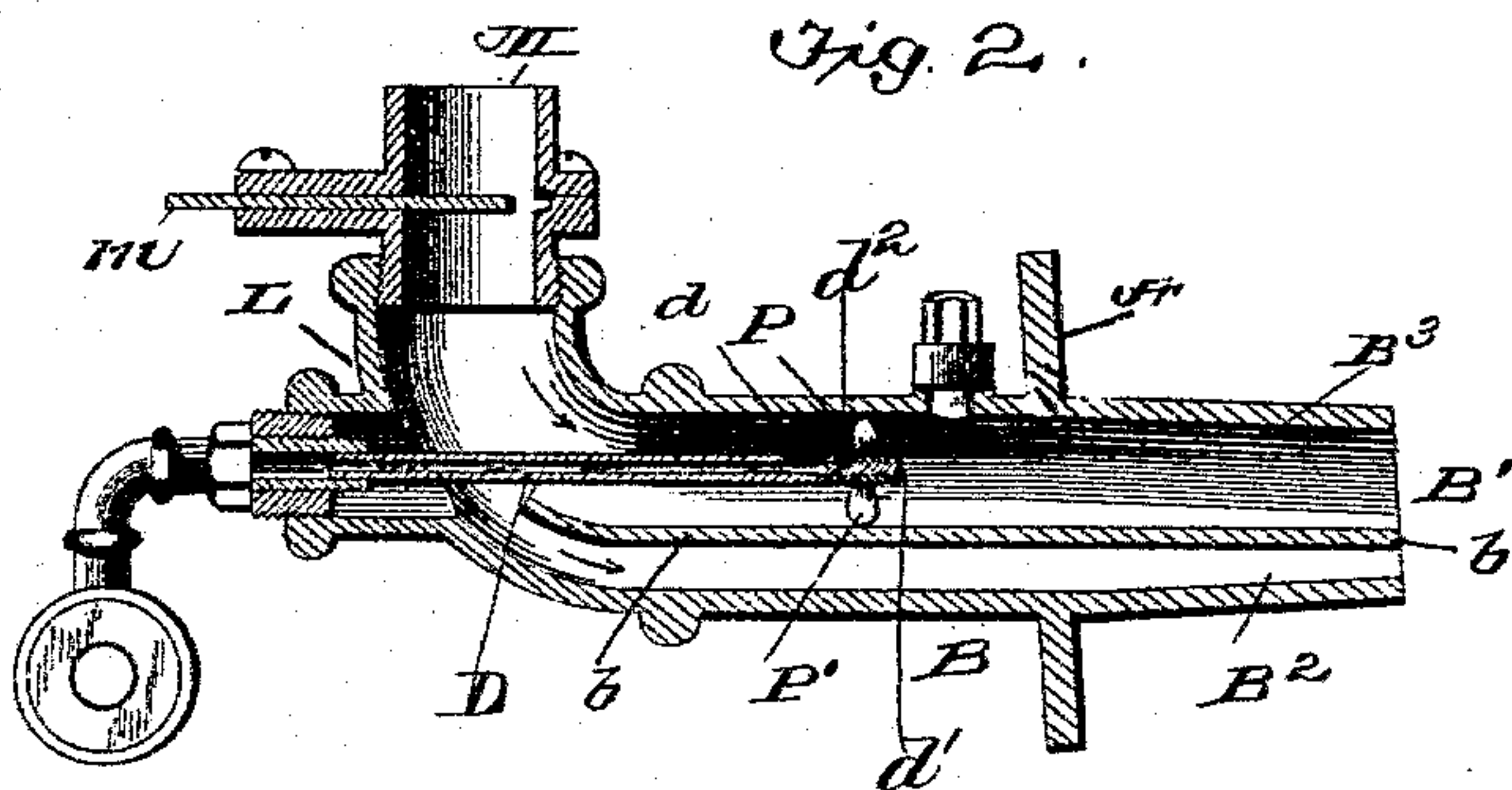
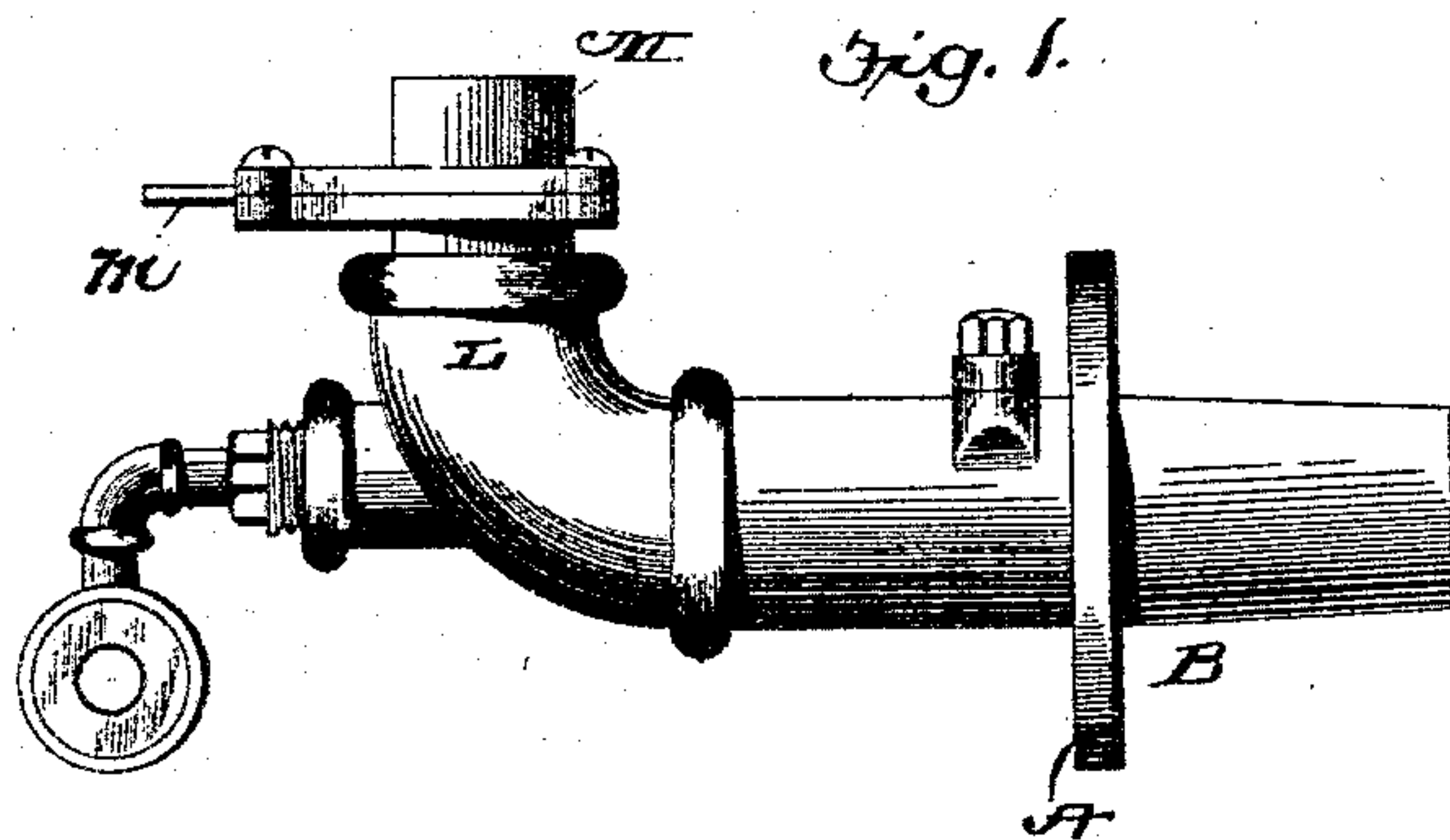


(No Model.)

W. H. AMES.
HYDROCARBON BURNER.

No. 516,069.

Patented Mar. 6, 1894.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM HADWEN AMES, OF NORTH EASTON, MASSACHUSETTS.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 516,069, dated March 6, 1894.

Application filed March 8, 1893. Serial No. 465,157. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HADWEN AMES, a citizen of the United States of America, residing at North Easton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Figure 1, is a side elevation of this burner. Fig. 2, is a longitudinal sectional view of the burner. Fig. 3, is a vertical section looking toward the oil pipe. Fig. 4, is a detail showing the end of the oil pipe and propeller.

This device belongs to the class called hydro carbon burners which are chiefly used in furnaces, and the novelty consists in the structure of their several parts, in their combination with each other, and the device as a whole; all as will be described and pointed out in the claims.

As this device like my two former ones are attached to the furnace, boiler or other apparatus to which an intense heat is to be applied in any well known or usual way—it is not necessary to show anything but the burner itself, and generally designate how it may be applied to the furnace.

In the drawings A, denotes a flange by which the burner is bolted to the furnace. The nozzle B, of the burner is suitably attached to this plate at about its center, and at the rear of it is an atomizing chamber B', which with necessary changes in mere size and shape, is but a continuation of the nozzle B.

In this device I introduce the oil feed pipe D, through elbow L, into the chamber B', in substantially the same manner as described in my application for a patent now pending and serially numbered 433,863, filed May 21, 1892, but without the screens or racks. At the end of the oil feed pipe D, at a suitable distance from the mouth of the burner, or where it opens into the furnace or fire box, one or more orifices d , are made through which the oil comes to the surface of the pipe.

Very near the end of the oil feed pipe D, are made openings d , through which the oil comes

to the surface; and at the end of this pipe is fastened the tip d' , by means of screw or pin d^2 , this tip has a shoulder d^3 , at the end so that the sleeve P, to which the fan and the propeller or distributing fan or blades P', are attached is held in place between this shoulder and the end of the pipe D, but in such a way that it is free to revolve on the tip. But I do not propose to limit myself to any special means for securing the blades to or upon the pipe so that they may be revolved substantially in the manner and for the purpose above stated. Generally there are three small holes d , on the upper side only of the oil tube, for the oil to exude through, which it does by gravity alone, and is then skimmed off by the air or steam blast, and of course partially atomized. It then strikes against the propeller or propellers which are rapidly revolving by the same blast, and is then completely atomized and scattered around in the chamber, so that the blast is more completely saturated, and the nozzle B', discharges its full area of spray or vapor. In the mean time this same vapor in passing through the chamber partially collects on its walls in small drops, which are driven along by the action of the blast, and also have a tendency by gravity to seek the lower side of the chamber, and when they get to the end of the nozzle, fall over its edge, and are again sprayed or atomized by the under, or supplementary blast. As in my Patent No. 465,746, the air or steam or air and steam blast comes through the pipe M, and elbow L, and is divided shortly after this entrance into the nozzle by means of the longitudinal internal diaphragm b , into the upper chamber or passage B³, and the lower chamber or passage B². Therefore a portion of the blast entering at M, continues past the propeller blades through the otherwise unobstructed passage or chamber B³, and another portion through the lower passage or chamber B², but both these portions of the blast escape at the front end of the nozzle. The slide valve m , in the pipe M, regulates, in the usual way, the admission of the blast, but any part admitted is divided as above set forth. I now make it of crescent or semicircular form so as to more effectually catch the drip of the main nozzle B, and pro-

ject the same, atomized, into the combustion chamber or furnace, thereby obtaining the best results from the least quantity of oil.

In this device it is essential that the oil feed pipe and the propellers or spreaders should not be located near the mouth of the burner, as otherwise the intense heat would destroy the workings of the propellers and the uniform saturation of the column of air or steam.

In using two propellers, I find in practice it is best to have them revolve in opposite directions.

This device is a modification of my two former inventions and does away with the screens and the special construction of the chamber which their use necessitated.

I find in practice that in the smaller sizes of burners, the use of the screens is an advantage, but in the large sizes the screens are not needed, the work being thoroughly and uniformly performed by the propellers, provided their location in reference to the furnace or combustion chamber is properly arranged.

Having now described my invention, I claim—

1. A hydro carbon burner, for furnaces or steam boilers, having in the nozzle at the perforated end of the oil supply pipe a revolving and distributing fan in the chamber B', placed

at a suitable distance from open end of said nozzle, and beneath the said chamber a lower air passage B², formed by the integral diaphragm *b*, and opening at one end into the air or steam blast inlet and at the other at the front of the nozzle, substantially as set forth. 35

2. In a hydro carbon burner a nozzle internally provided with an integral curved diaphragm *b*, forming a lower air passage B², and an oil supply pipe in the chamber B³, above having a distributing device at its end, substantially as set forth. 40

3. A hydro carbon burner provided with an oil feed pipe projecting horizontally into an upper chamber and terminating with oil holes and having at its perforated end an oil propelling or distributing device at a distance from the end of the nozzle which enters into the combustion chamber, and a lower supplementary air blast passage of a crescent, or semicircular shape, separated from the chamber holding the oil pipe and distributing device, and ending close to the lower edge of the nozzle, substantially as set forth. 50

In testimony whereof I affix my signature in presence of two witnesses. 55

WILLIAM HADWEN AMES.

Witnesses:

LOUIS C. SOUTHARD,
NELLIE C. SOUTHARD.