

No. 756,450.

PATENTED APR. 5, 1904.

E. H. YORKE.  
FLUID MIXER.

APPLICATION FILED SEPT. 24, 1902, RENEWED NOV. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

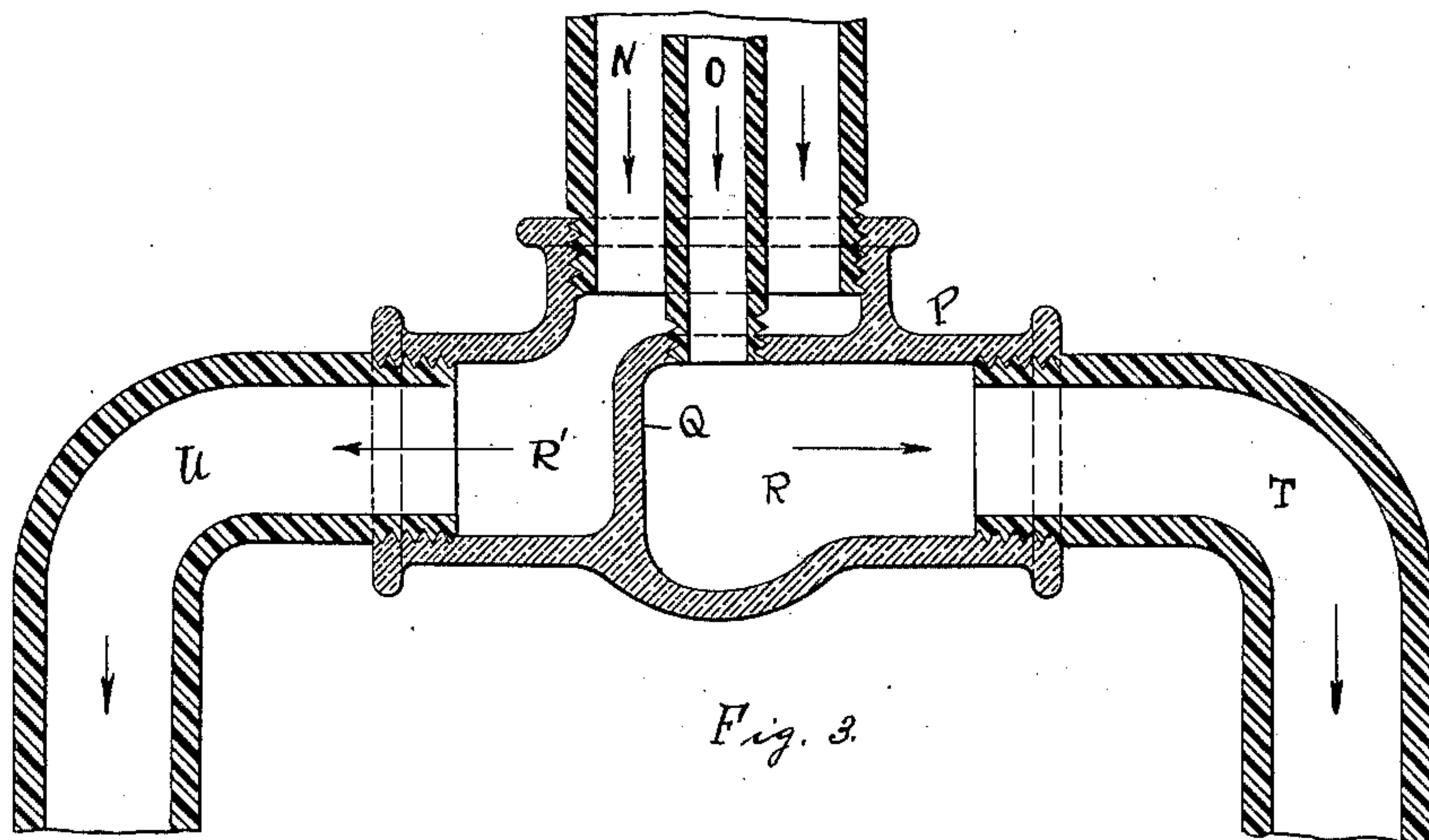


Fig. 3.

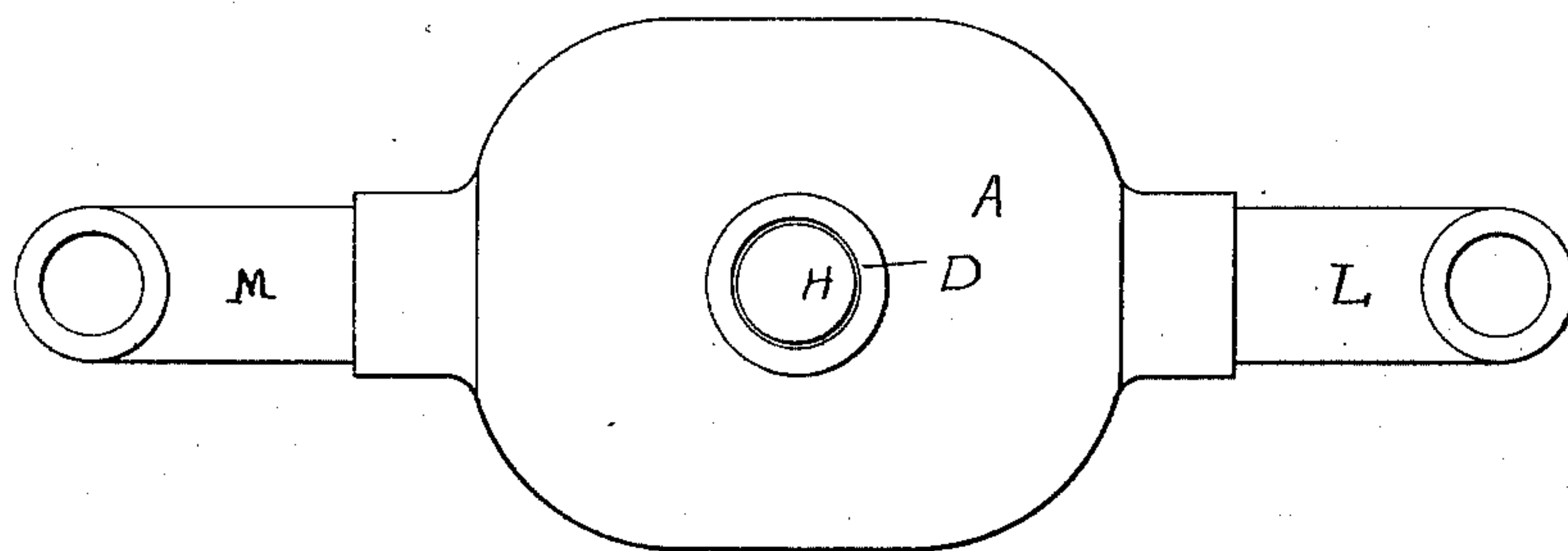
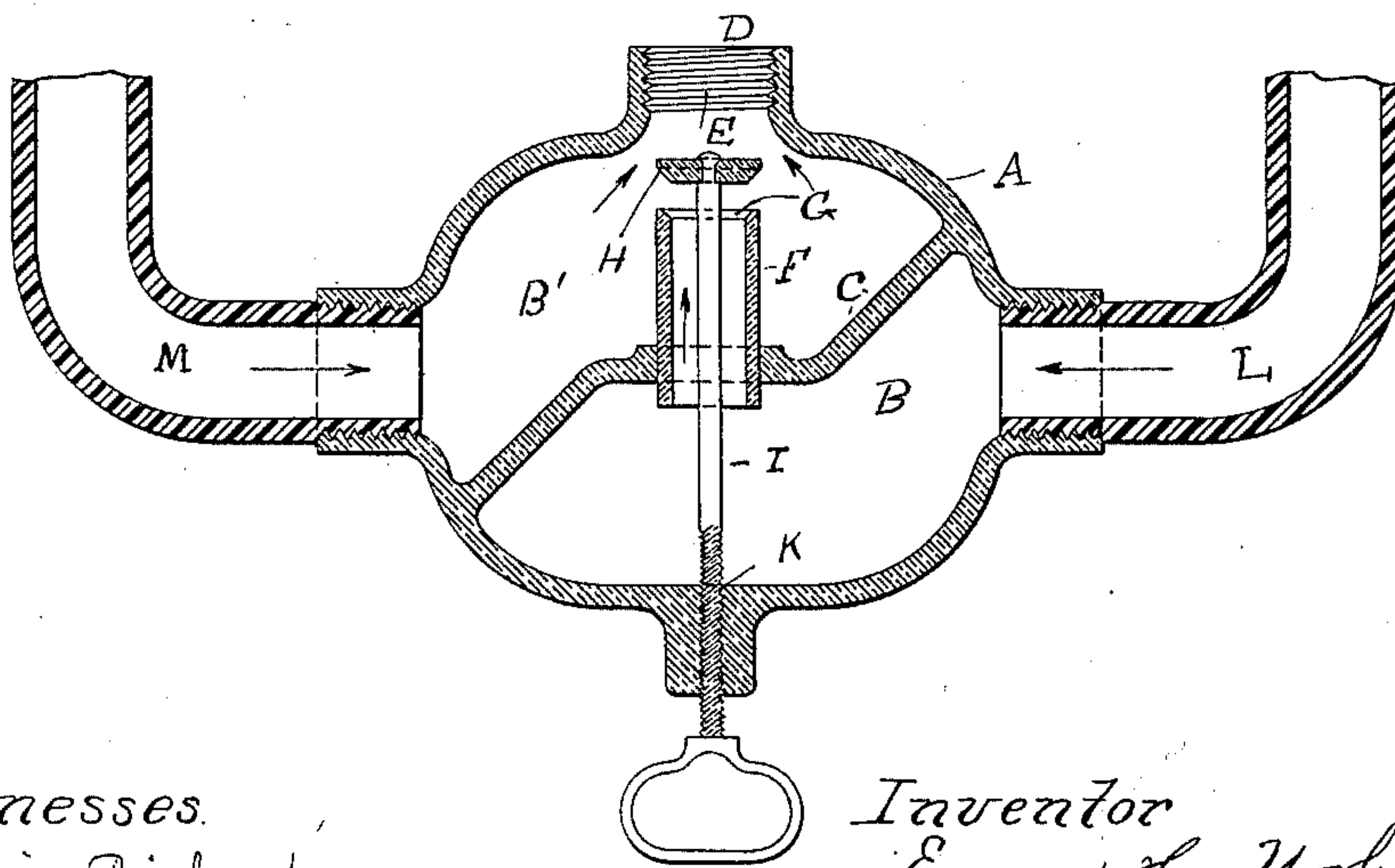


Fig. 1.



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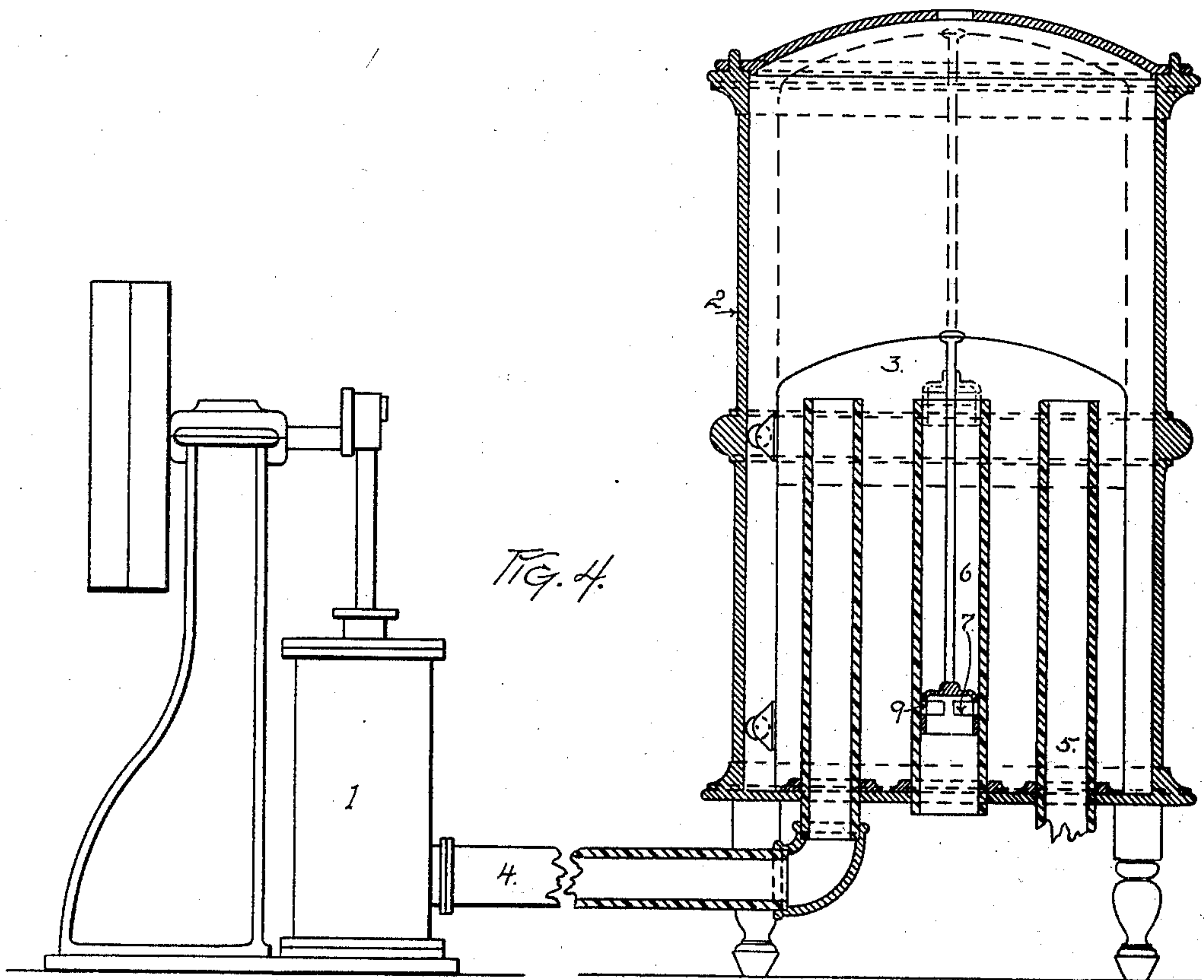
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2 SHEETS—SHEET 2.



Witnesses:  
Ernest Froese,  
Marion Richards.

Inventor:  
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# UNITED STATES PATENT OFFICE.

EUGENE H. YORKE, OF PORTLAND, MAINE.

## FLUID-MIXER.

SPECIFICATION forming part of Letters Patent No. 756,450, dated April 5, 1904.

Application filed September 24, 1902. Renewed November 20, 1903. Serial No. 182,021. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE H. YORKE, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Fluid-Mixers; 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.

My invention relates to improvements in fluid-mixers, and more particularly to such as are designed to mix air and gas for lighting purposes.

In the drawings herewith accompanying and making a part of this application, Figure 1 is a plan view of my improved mixer. Fig. 2 is a central vertical sectional view of the same, showing detached sections of the supply-pipes. Fig. 3 is a central vertical sectional view of a means of supplying air and gas to my improved mixer, consisting of two concentrically-disposed pipes and a coupling therefor, one pipe delivering air and the other gas; and Fig. 4 is a sectional view, partly in elevation, showing means for supplying air under pressure to the burner.

Same letters of reference refer to like parts.

In said drawings, A represents a hollow casing divided into two chambers B and B' by a web or partition C. In the top of the casing is an opening or vent D to receive the burner. For convenience this opening may be threaded, as seen at E. Directly beneath this opening a pipe F extends vertically through the web and has at the top a valve-seat G. A flat valve H, mounted upon a stem I, which passes through the bottom of the casing, is adapted to open and close the end of the pipe F and to deflect radially the gas passing through the pipe. For convenience in adjusting the valve the portion of the stem which passes through the casing is threaded, as seen at K. A gas-pipe L enters the chamber B, and an air-pipe M enters the other chamber B'.

In combination with my improved mixer I employ means for supplying the same with gas and air. I have illustrated in Fig. 3 a special means of doing this, in which N rep-

resents an air-pipe, and O a gas-pipe concentric therewith. The ends of these pipes terminate in a coupling P, divided by a web or partition Q, forming two chambers R and R', the gas-pipe opening into chamber R and the air-pipe opening into chamber R'. Suitable pipes T and U lead from chambers R and R', respectively, to the gas and air chambers B and B', respectively, in the mixer. Any convenient means may be employed for supplying the air under pressure, and I have shown in Fig. 4 an apparatus therefor. In said drawings, 1 is any convenient air-pump from which air is forced under pressure into a storage-reservoir. This reservoir may consist of an outside casing 2, a bell 3 suspended therein and provided at the bottom with a liquid seal. Leading from the air-pump is a feed-pipe 4, and leading from the reservoir to the air-pipe M, which enters the chamber B' in the mixer, is delivery-pipe 5. To prevent an excess of air-pressure in the reservoir, I provide it with a pipe 6, opening to the air at the bottom and at the top opening into the bell. This pipe is closed by a valve 8, having ports 9. As the bell rises under the influence of the air being forced into it from the pump the valve passes upwardly in the pipe until the ports pass beyond the top of the pipe and allow the excess of air in the bell to pass out through the pipe to the open air.

The operation of my improved apparatus is as follows: Gas from any suitable source is delivered to the gas-chamber in the mixer. Thence passing through the valved pipe it strikes against the flat under surface of the valve and is spread out radially in all directions in a thin sheet, including in its extent the entire space between the periphery of the valve and the casing below the burner. At the same time the air is being forced under pressure through the air-pipe into chamber B' and against the sheet or film of gas, thus thoroughly mixing the air and gas before it is delivered to the burner.

The advantages of my improved apparatus are perfect mixing of the gas and air just before entering the burner, thus requiring less gas to produce a given efficiency. It is simple in construction and convenient in opera-



tion, obviating entirely the possibility of explosion. It is also comparatively inexpensive to make and install the apparatus.

The advantages of my improved means of supplying gas and air to the mixer is that in running the pipes only one is exposed to view.

Having thus described my invention and its use, I claim—

1. In a fluid-mixer, a suitable casing divided into two chambers by a partition, an opening in the top to receive a suitable burner, a pipe vertically mounted in the web and positioned directly beneath the burner-opening, a flat valve adapted to seat on the upper end of said pipe and means for supplying gas to one chamber and air under pressure to the other, whereby in their passage to the burner, the gas is spread out in a thin sheet and the air thoroughly mixed therewith.

2. In a fluid-mixer, a suitable casing divided into two chambers by a partition, an opening in the top to receive a suitable burner, a port in said partition positioned directly beneath the burner-opening, a valve adapted to close said port and when open to cause the gas to spread out across the throat of the burner-opening and means for supplying gas to one

chamber and air under pressure to the other, whereby in their passage to the burner the gas is spread out in a thin sheet and the air thoroughly mixed therewith.

3. In a fluid-mixer, a suitable casing divided into two chambers by a partition, an opening in the top to receive a suitable burner, a port in said partition positioned directly beneath the burner-opening, a valve to close said port and when open to cause the gas to spread out across the throat of the burner-opening, in combination with air and gas supply pipes concentrically arranged, a coupling for said air and gas pipes divided into two chambers, the gas-pipe entering one chamber and the air-pipe the other, and pipes leading from said chambers to the gas and air chambers respectively in the mixer and means for supplying gas to one chamber and air under pressure to the other.

In testimony whereof I affix my signature, in presence of two witnesses, this 20th day of September, 1902.

EUGENE H. YORKE.

In presence of—

ELGIN C. VERRILL,  
MARION RICHARDS.