

137-250

No. 733,464.

PATENTED JULY 14, 1903.

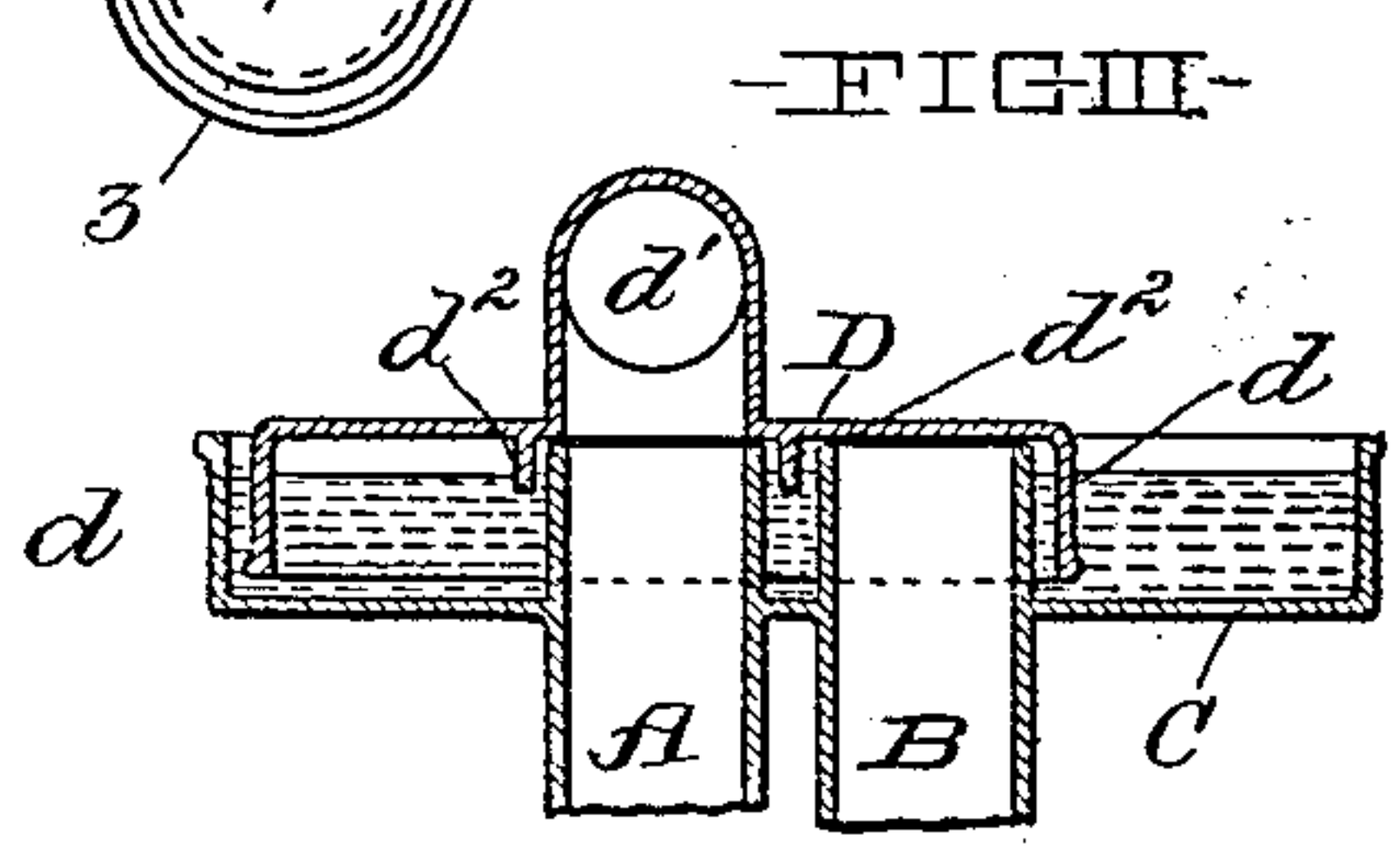
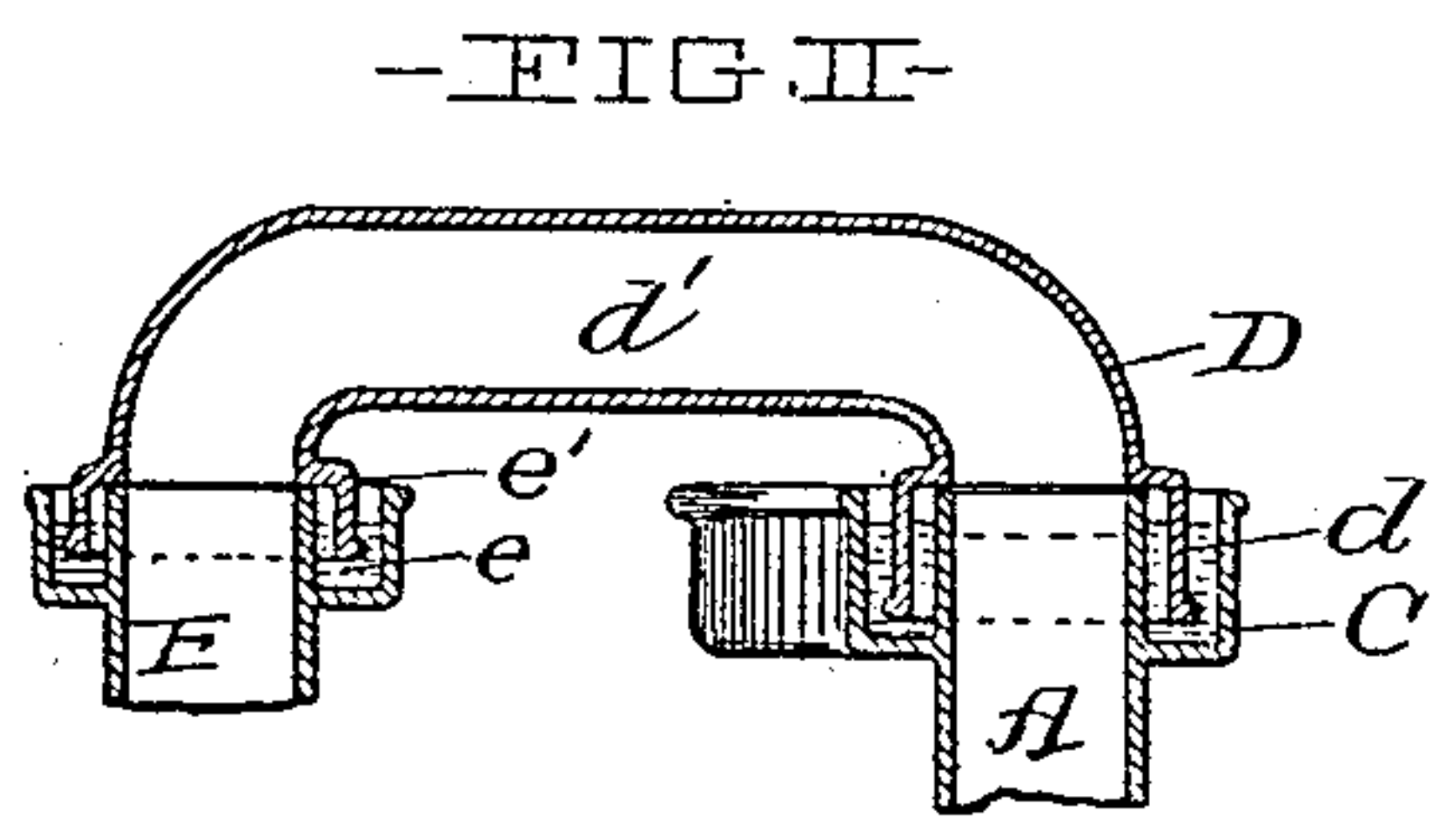
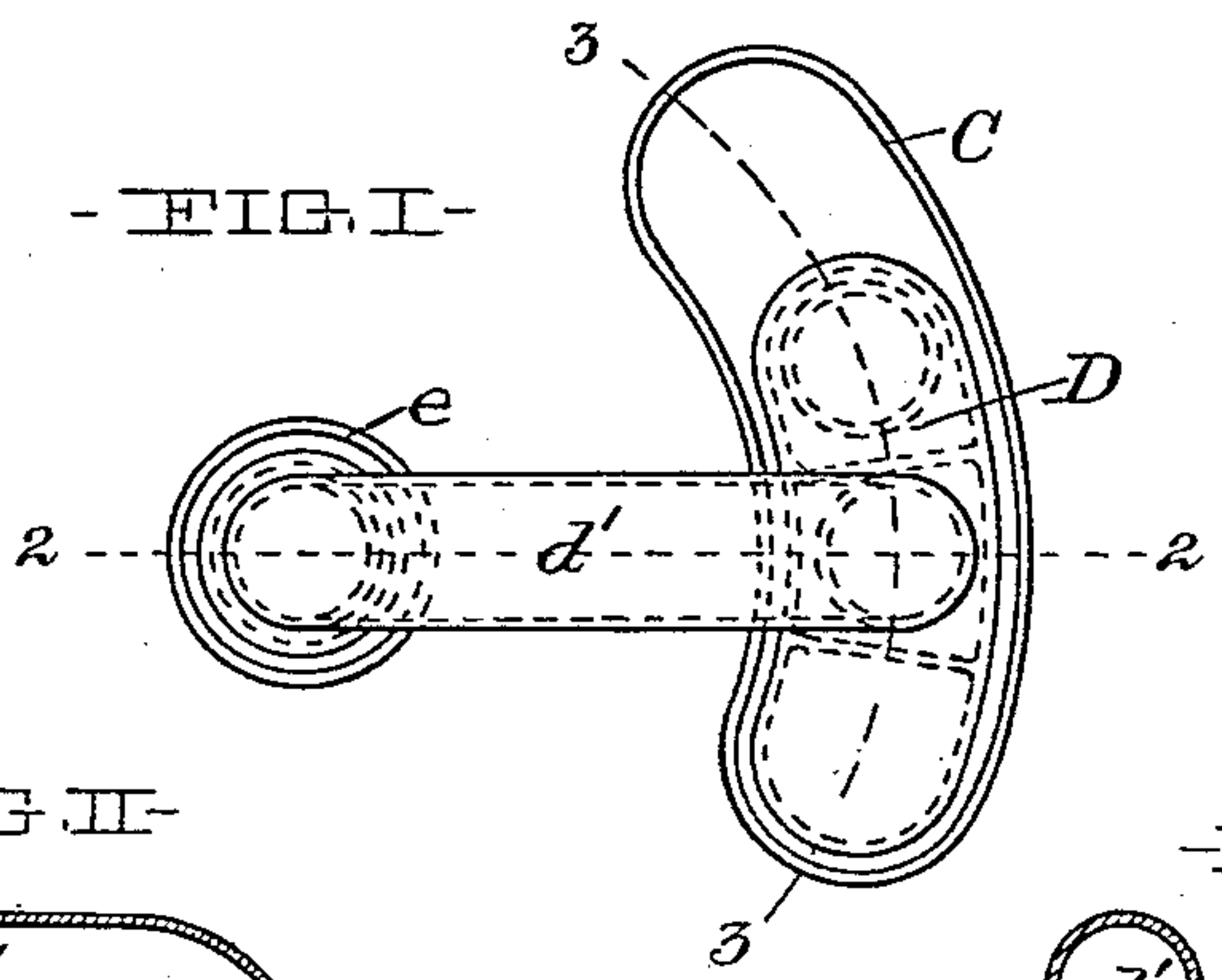
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MEANS FOR CONTROLLING THE FLOW OF GASES.

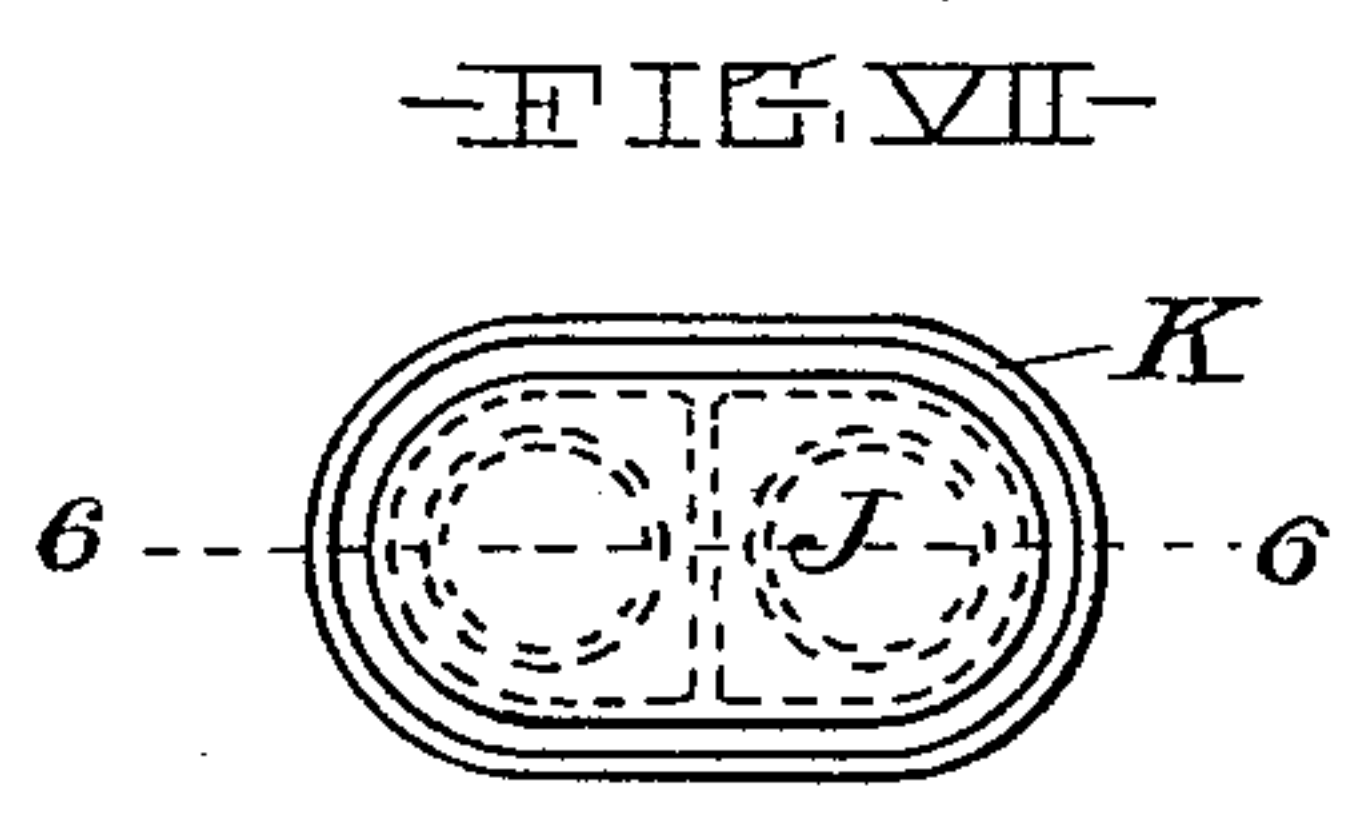
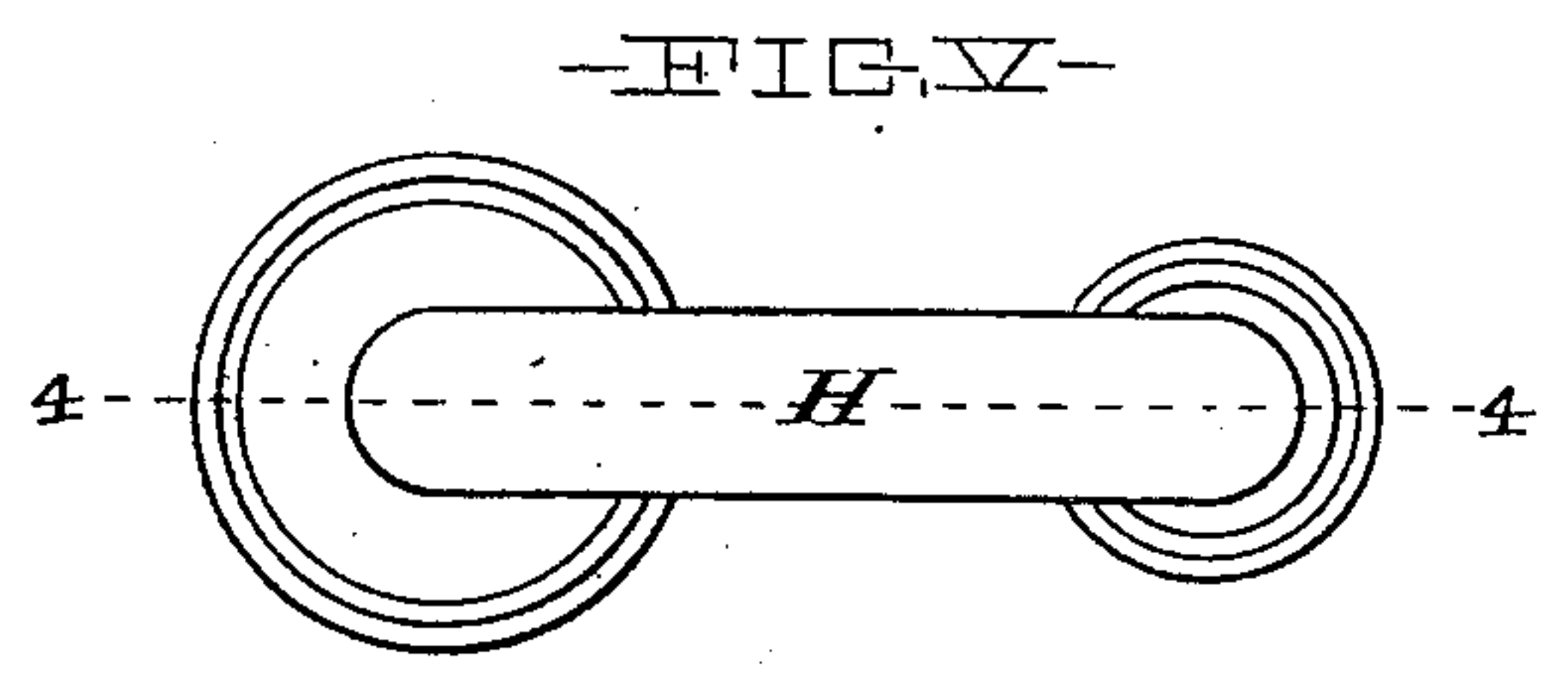
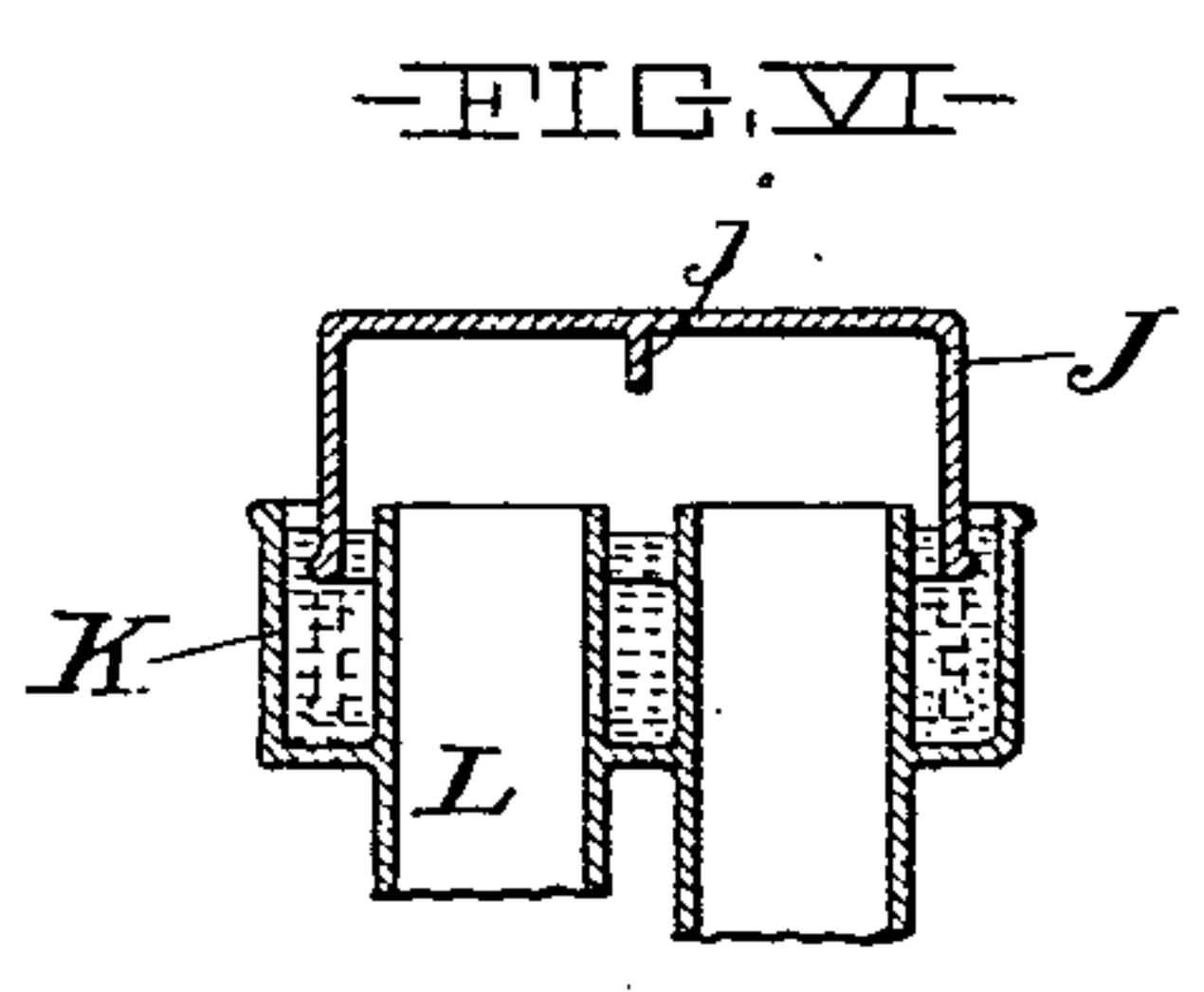
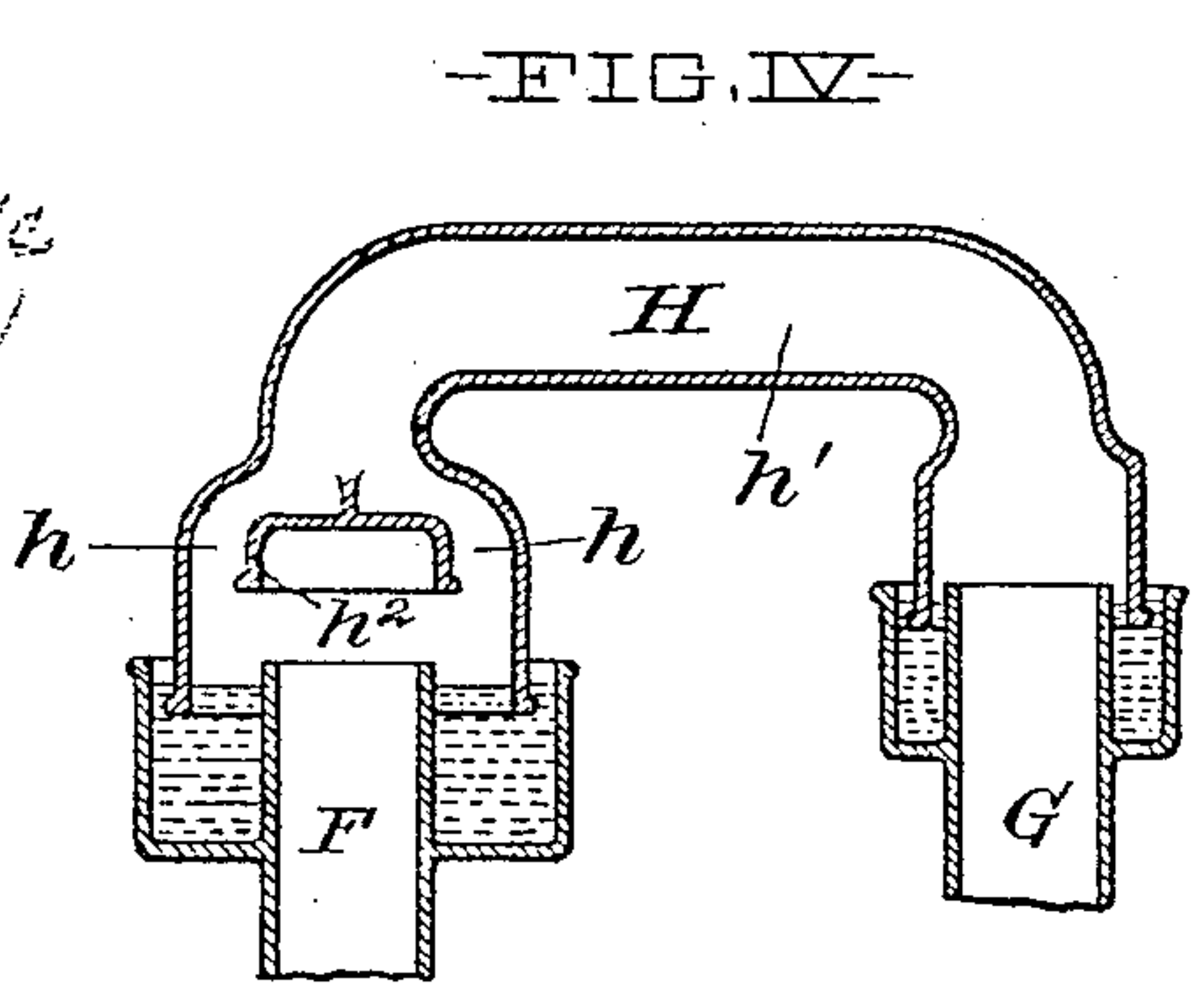
APPLICATION FILED FEB. 13, 1902.

NO MODEL.

2280
x2355
7



825.3



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288

UNITED STATES PATENT OFFICE.

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MEANS FOR CONTROLLING THE FLOW OF GASES.

SPECIFICATION forming part of Letters Patent No. 733,464, dated July 14, 1903.

Application filed February 13, 1902. Serial No. 93,819. (No model.)

To all whom it may concern:

Be it known that I, HERBERT H. DOW, a citizen of the United States, and a resident of Midland, county of Midland, and State of Michigan, have invented a new and useful Improvement in Means for Controlling the Flow of Gases, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to means for controlling the flow of gases through ducts, its object being to provide means for shutting off or diverting such flow without permitting the escape of gas into the atmosphere or the influx of air into the ducts.

The invention is particularly adapted for application to ducts or mains for conducting gases, such as chlorine, which have a deleterious action upon most substances, and hence usually preclude the use of valves of ordinary construction.

Said invention consists of means hereinafter fully described, and specifically set forth in the claims.

The annexed drawings and the following description set forth in detail certain means embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a plan view of one form of device embodying my invention. Figs. II and III represent cross-sectional views of same, taken upon planes indicated, respectively, by lines 2 2 and 3 3 in Fig. I. Fig. IV represents a longitudinal cross-section, and Fig. V a plan view, of a second form of device embodying the principle of my invention, such section being taken upon the plane indicated by line 4 4 in Fig. V. Fig. VI represents a longitudinal cross-section, and Fig. VII a plan view, of a third form of device embodying the principle of my invention, such section being taken upon the plane indicated by line 6 6 in Fig. VII.

In the form illustrated in Figs. I, II, and III, A and B represent, respectively, the upwardly-extending extremities of two gas-

ducts, these extremities being completely surrounded by a water receptacle or lute C, which is usually cast integral with the pipe, but which may be connected in any suitable manner so as to form a water-tight receptacle. The longitudinal sides of the lute are formed upon the arcs of concentric circles in this particular form of my invention, the purpose of which will hereinafter appear. Water is placed in the lute and completely surrounds the duct extremities, as shown. Located in such lute and of a form such as will permit it to be moved longitudinally therein is a cap D, having a wall d extending downwardly below the plane of the openings of the ducts and of a depth sufficient to permit the cap to be raised some distance without being withdrawn from the water in the receptacle. From the middle of the cap rises a U-duct d' , the extremity of which rests upon the top of a third pipe E, which is also provided with a water-lute e , such extremity being provided with cup e' , surrounding the extremity of pipe E and extending downwardly into the lute, as shown in Fig. II. On either side of the opening in the cap into duct d' is a transversely-located wall or diaphragm d^2 , extending across the entire distance between the sides of the cup d . These diaphragms are equal in and of a depth such that a plane passing through their lower extremities will intersect the outer wall of the cap. The water in the lute is of quantity sufficient to permit the diaphragms d^2 to extend below its surface.

When it is desired to effect communication between ducts A and E, the cap is placed so as to cause the end of duct A to be included between diaphragms d^2 , as shown in the drawing Fig. III. To disconnect these two ducts and connect B and E, the cap is lifted upwardly a distance sufficient to permit it to be moved over and then dropped so as to include the end of B between diaphragms d^2 , the end of A being thereby capped and further communication therewith cut off. Such change of position may, it is then seen, be effected without permitting the escape of gas from the ducts into the atmosphere or the entrance of air into the ducts from without, since the difference in depth between cup d and diaphragms d^2 permits the latter to be

withdrawn from the water's surface without withdrawing the cup d therefrom when the difference between atmospheric pressure and the pressure of the gas is not sufficiently great to force the water out of the lute or into the duct. Communication with the capped duct is effectually cut off by the interposition of one of the diaphragms intermediately of such duct and the cap-duct d , such diaphragm extending below the water's surface.

Figs. IV and V illustrate a second form of device embodying the principle of my invention. This form is designed to connect and disconnect two ducts or mains, such as F and G, by means of a U-duct H, the form of the cap being somewhat varied. The intermediate diaphragm h^2 is made bell-shaped, passages h being formed around same and effecting communication with the cap-duct h' . In the construction the U-duct is raised or lowered to connect or disconnect the mains, the bell-diaphragm extending below the water's surface when in its closing position.

A simple form of device embodying my invention is illustrated in Figs. VI and VII. In this construction the cap consists of an inverted bell J, having a single diaphragm j extending across its interior. A single lute K surrounds both extremities L and M of the gas-ducts, the bell being adapted to include both such extremities. As in the case of the device just previously described connection or disconnection is established by merely raising or lowering the bell; the diaphragm j' being interposed or withdrawn from between the duct extremities.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards

the means herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In means for controlling the flow of gases, the combination with two fixed ducts, the extremity of each of which is surrounded by a water-receptacle, of a movable U-shaped duct having its two extremities extending into said receptacles respectively; one extremity of such movable duct being provided with an interior diaphragm terminating in a plane intersecting the adjacent wall of the movable duct, and forming an inclosure upon the interior of such extremity adapted to surround its respective duct end.

2. In means for controlling the flow of gases, the combination of three fixed ducts, the extremities of two of which are surrounded by a water-lute, and the extremity of the third of which is surrounded by a second and separate water-lute, and a movable U-shaped duct having its two extremities extending into the water-lutes respectively, one extremity of such movable duct being provided with two interior diaphragms terminating in a plane intersecting the adjacent wall of the movable duct and forming a central inclosure adapted to surround either of two duct extremities, whereby either one of such duct extremities may be alternately connected with or cut off from the third.

Signed by me this 24th day of January, 1902.
HERBERT H. DOW.

Attest:

D. T. DAVIES,
A. E. MERKEL.