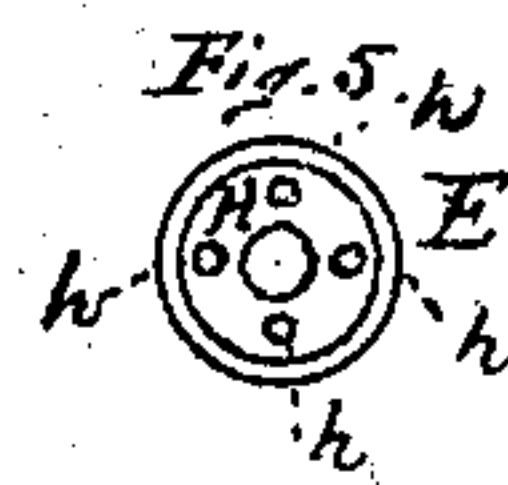
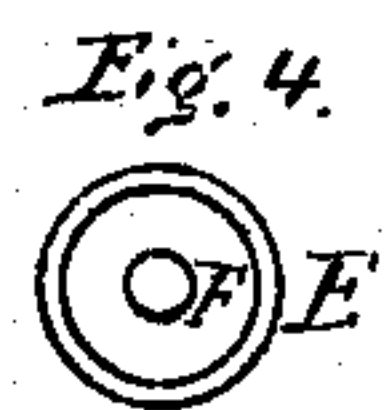
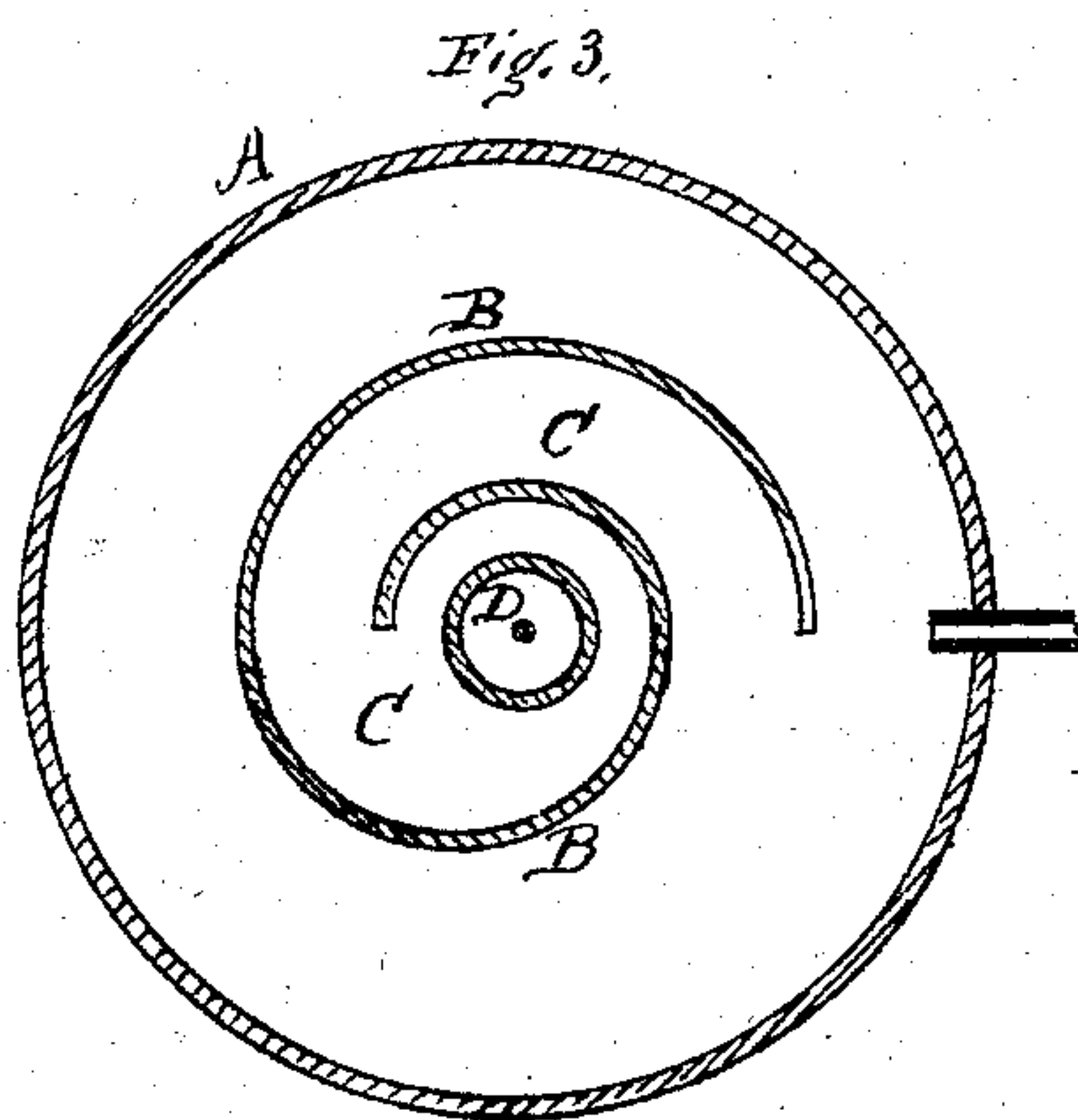
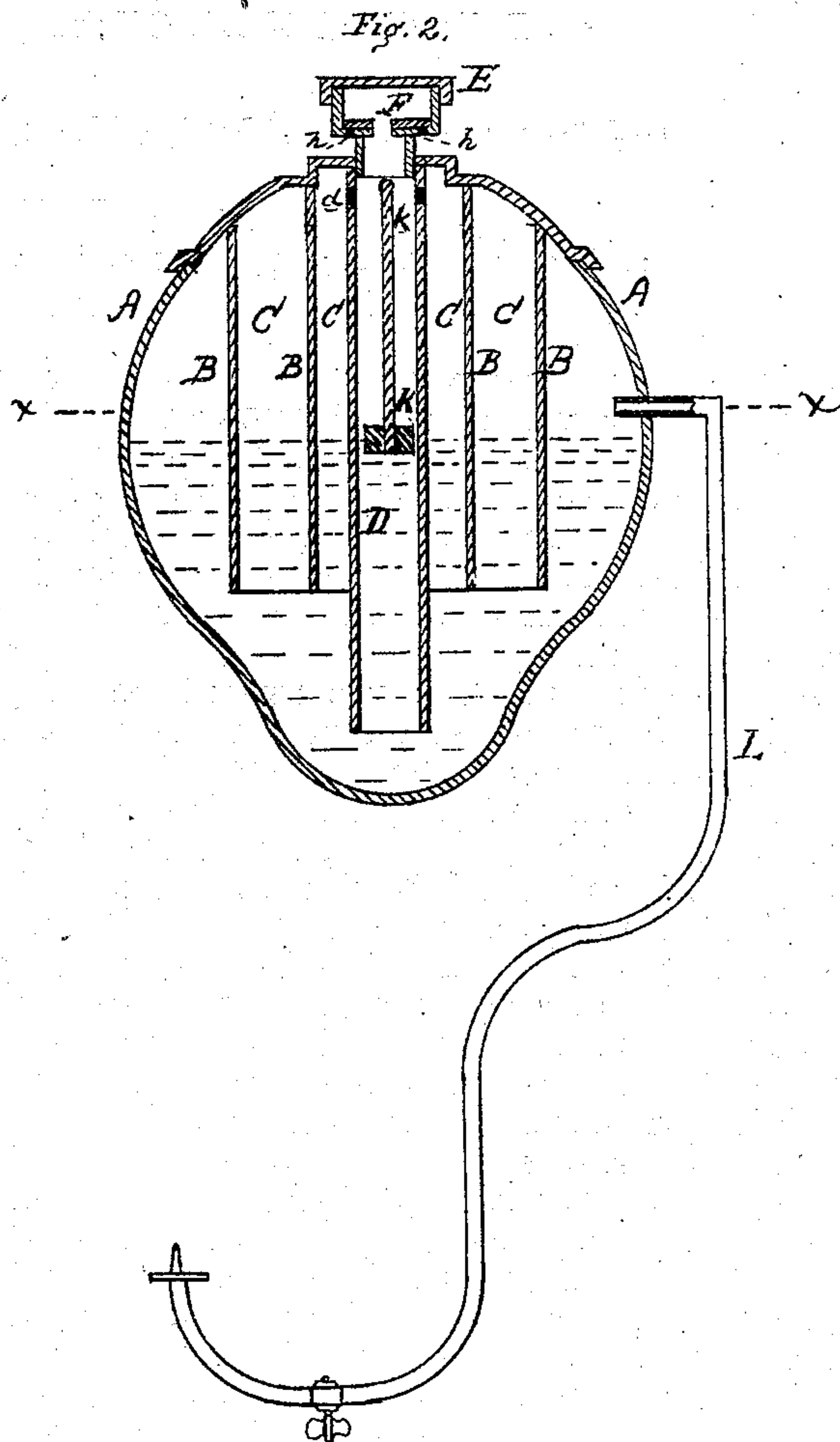
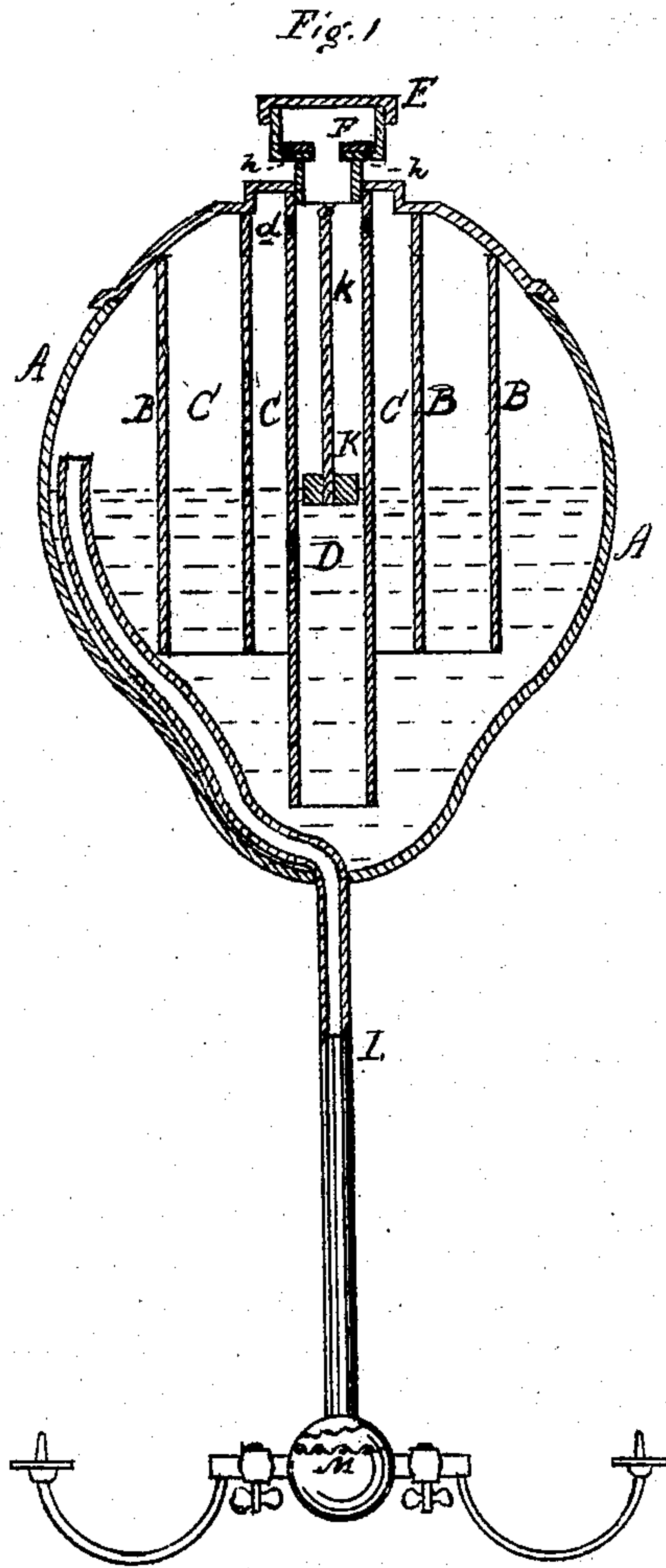


BYRON SLOPER.

Improvement in Apparatus for Carbureting Air.

No. 115,988.

Patented June 13, 1871.



Witnesses
J. L. Coombs
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UNITED STATES PATENT OFFICE.

BYRON SLOPER OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. 115,988, dated June 13, 1871.

To all whom it may concern:

Be it known that I, BYRON SLOPER, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Air-Gas Lamps, or Apparatus for Carbureting Air; and I do hereby declare that the following is a full, clear, and exact description thereof.

The nature of my invention consists in an air-gas lamp or apparatus for carbureting air, so arranged that the atmospheric air will be automatically admitted through a valve or valves to the carbureter when the apparatus is in operation, and shut off when the apparatus is not in use, by said valve.

The gas apparatus heretofore in use has proved defective and dangerous, for the reason that when the apparatus is not in use the vapor will escape through the air-inlet aperture, forming an explosive mixture in the room in which said apparatus is placed. Or, in cold weather, when a low gravity of hydrocarbon is used, the atmospheric air, entering the apparatus and becoming very lightly carbureted to the extent of eight parts of air to one of hydrocarbon vapor, would cause the flame to flush back through the pipes into the carbureter. To insure my apparatus from any danger attending its use from this cause, I employ, between the carbureter and burner, a packing of wire gauze or other suitable material, which operates upon the principle of the safety-lamp, and thus prevents any communication or back-flow of the flame from the burner to the carbureter. In my invention the liability of the vapor to escape, or to become improperly mixed with air while the apparatus is not in use, is entirely obviated, since the operation of my valve is entirely automatic, and opens and closes invariably at the proper times; and hence no accident can possibly arise from its use, however careless the person may be to whom it is intrusted.

In the drawing, Figures 1 and 2 represent vertical sections of my apparatus; Fig. 3, a sectional view on line *x x* of Fig. 2; Fig. 4, a view of the valve-box with the top removed, showing the valve; and Fig. 5, a view of the valve-box showing the valve-seat.

A represents a vessel or carbureter of any suitable shape or material, in the upper part

of which is secured a convolute partition, B, forming a winding passage, C, which is filled with curled hair, excelsior, or other suitable material. Said partition is secured to the top of the carbureter, and its lower edge extends to near the bottom, so as to be covered by and immersed in the hydrocarbon liquid when the carbureter is charged. Extending from the top of the vessel B down through its center is a tube, D, which terminates near the bottom of said vessel, and to the upper end of which is attached, by means of a screw-thread or otherwise, a valve-cap, E, in which the automatic valve F works. Said automatic valve consists of an annular disk, the aperture through which comes directly over the opening or tube communicating with the carbureter. Said valve rests on an annular valve-seat, H, formed by the bottom of the valve-box or cap E, through which is made a series of apertures, *h h*, establishing a communication with the interior of the valve-box and the atmospheric air when the valve rises from its seat. Over these apertures the annular valve rests, and prevents communication with the atmosphere when the apparatus is not in use. Near the top of the tube D is an aperture, *d*, opening into the center of the winding passage C, and providing an inlet for air, which passes from the center of said passage to its outer edge, becoming carbureted in its course, and escaping into the service-pipe L, which extends from said carbureter at a point above the level of the hydrocarbon liquid, and terminates in proper burners below. Between said burners and carbureter in the service-pipe is placed a packing of wire, wire-gauze, or other suitable material, M, which acts upon the principle of the safety-lamp, and prevents any back-flow of flame to the carbureter. In the tube H is placed a float, K, attached to a rod, *k*, extending up into said tube, which indicates when the proper quantity of hydrocarbon liquid has been poured into the apparatus in filling.

To put the apparatus in operation the valve-cap or box is removed, and hydrocarbon liquid poured into the tube until the valve-rod rises to the top of the tube D. The valve-cap is then replaced, and the cock at the burner turned so as to open communication with the carbureter. The vapor in the carbureter falls

by its own gravity through the service-pipe, and issues at the burner, where it may be lighted, at the same time causing a partial vacuum in the carbureter, which causes the air to raise the automatic valve and enter the carbureter through the valve-box and tube. When the light is turned off the valve falls upon its seat, and is held firmly closed by the pressure of the vapor or carbureted air within, stopping all communication between the carbureter and the atmospheric air until the cock is again opened at the burner.

I am aware that carbureting apparatus have

been used provided with an inlet for air and an outlet for gas above the point of combustion, and this I do not claim.

What I claim is—

An air-gas apparatus or lamp, so constructed that the air will be automatically admitted to and shut off from the carbureter, substantially as and for the purposes herein described.

B. SLOPER.

Witnesses:

CHAS. L. COOMBS,

JOS. L. COOMBS.