Silber and White

Improved apparatus for lighting and heating

No. 118,979. Patented Sep. 12, 1871.

Fig: 1

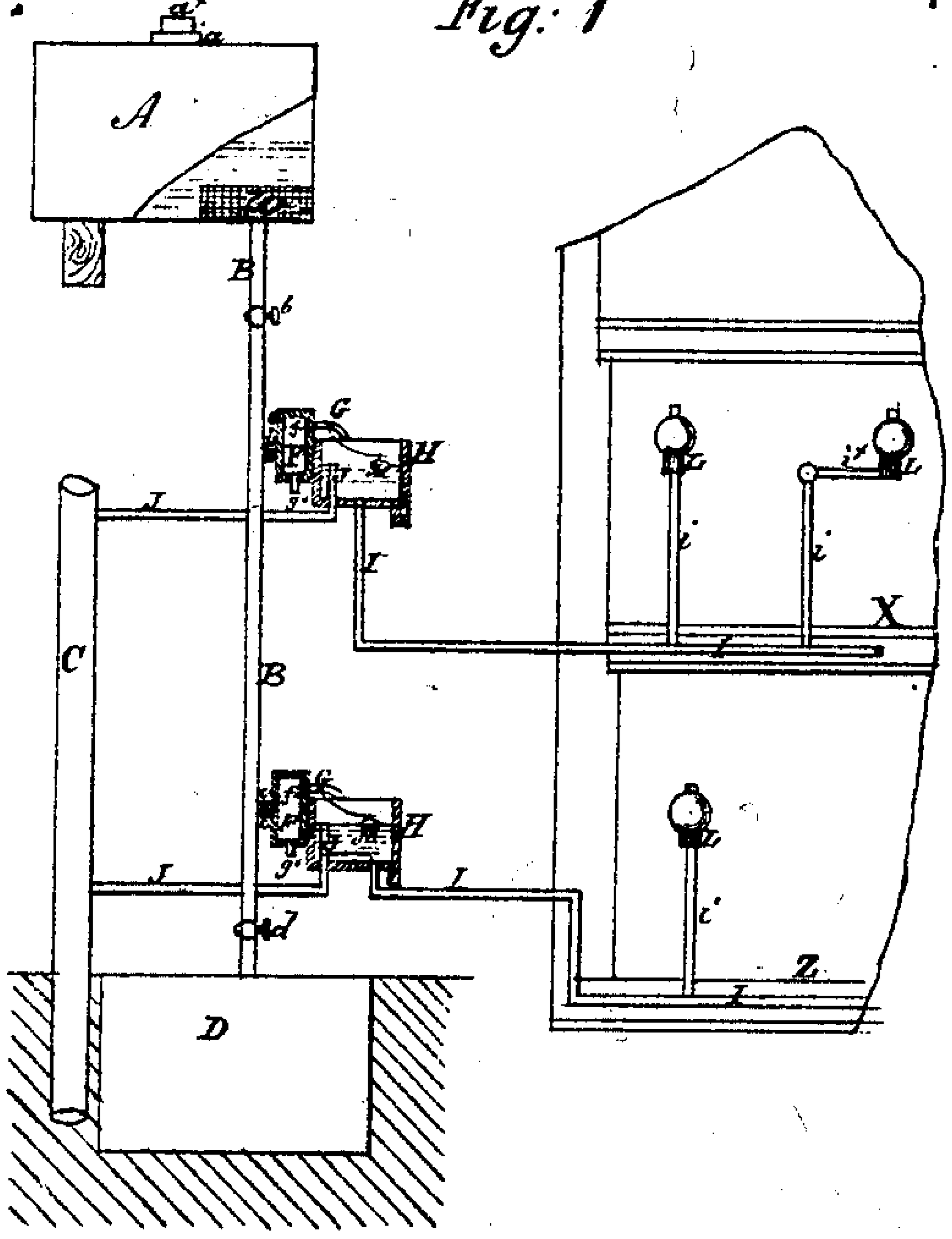


Fig: 2

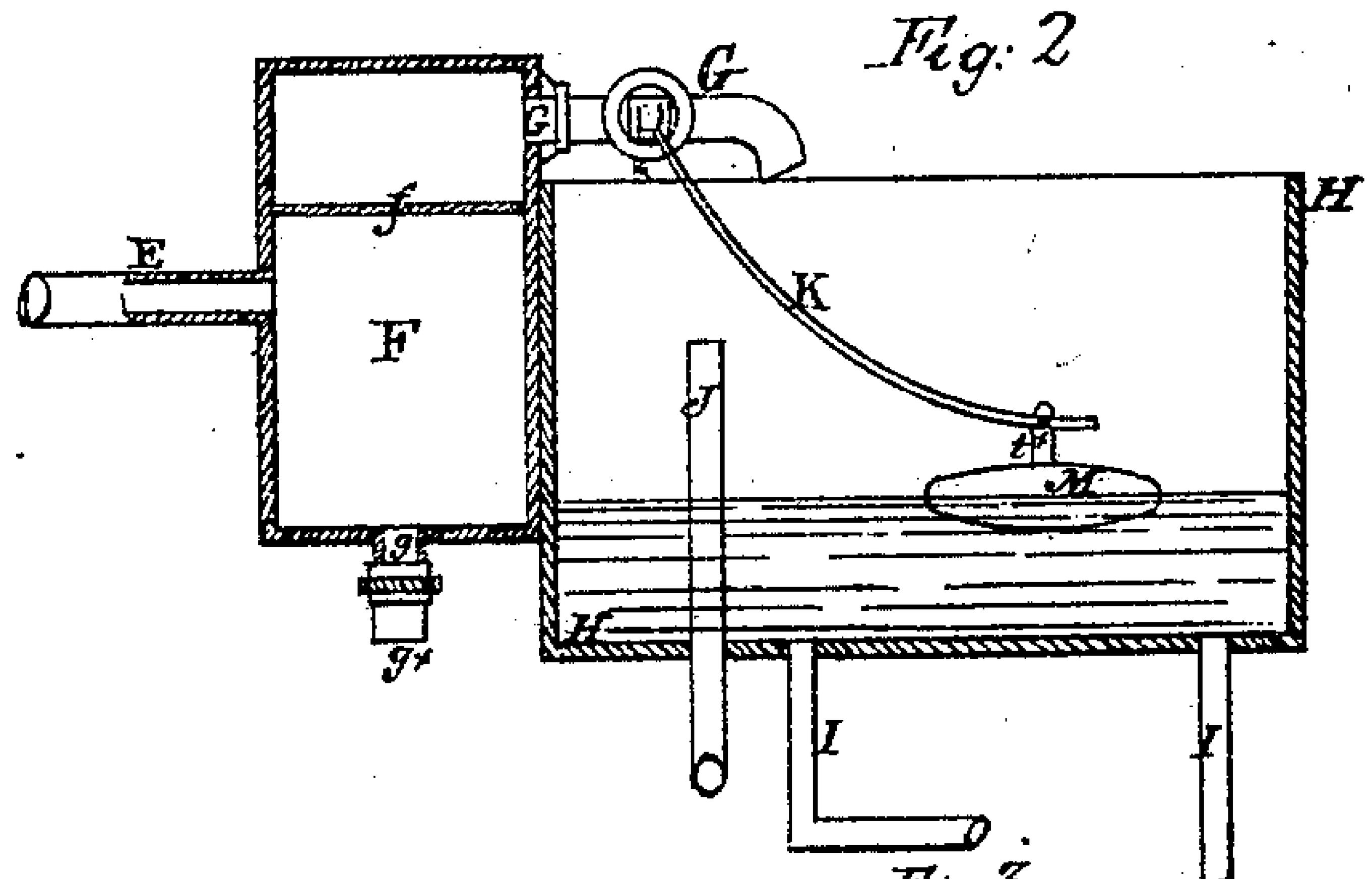
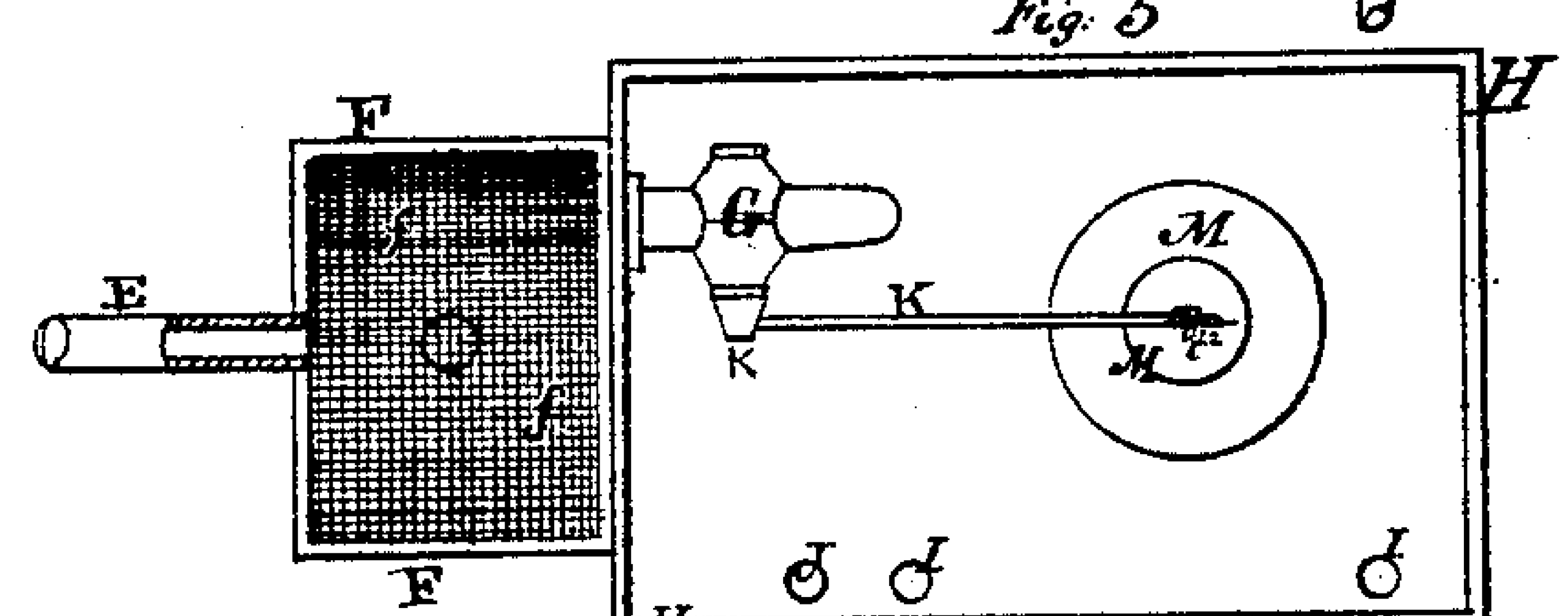


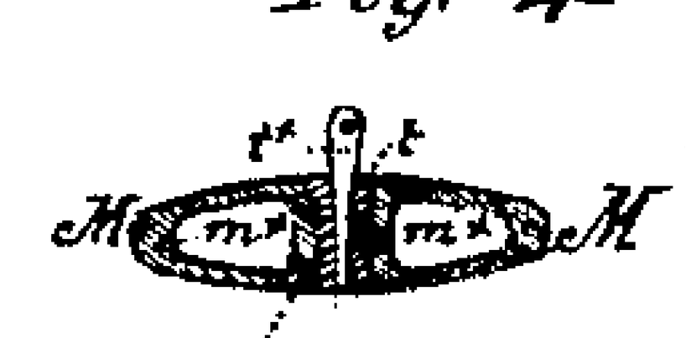
Fig: 3



Witnesses

Inventors

Fig: 4



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UNITED STATES PATENT OFFICE.

ALBERT MARCIUS SILBER AND FREDERICK WHITE, OF LONDON, ENGLAND.

IMPROVEMENT IN APPARATUS FOR LIGHTING AND HEATING PURPOSES.

Specification forming part of Letters Patent No. 118,979, dated September 12, 1871.

To all whom it may concern:

Be it known that we, ALBERT MARCIUS SILBER and FREDERICK WHITE, both of London, England, have invented certain Improved Apparatus for Lighting and Heating Purposes, of which the following is a specification:

This invention relates to improved apparatus employed and hereinafter described for lighting and heating purposes, by means of the combustion of mineral or vegetable oils and other combustible liquids of an analogous character in place of gas. Our improved apparatus is intended to be used for lighting houses, churches, theaters, roads, or street-railway trains, ships, or other public or private buildings, structures, or places, and for heating fire-places, furnaces, and steam-boilers, and for other heating purposes.

In the application of our invention the burning oils or liquids are supplied to a reservoir or tank, whence they flow through pipes or conduits to one or more receiving or distributing-vessels or chambers constructed and used as hereinafter described, one of which will serve for any number of lamps or burners, as afterward explained. The receiving or distributing-chamber is made of any convenient form, and is provided with a self-acting float-valve or other suitable valve, which, when the oil or liquid received into the chamber rises above a certain level, closes a cock or tap and thus shuts off the supply to the chamber. A pipe or passage leading from the chamber communicates with and supplies the oil or other combustible liquid to conduits which communicate with the burners. So long as the burner is giving forth the burning oil or liquid, or its products—that is to say, so long as the oil or liquid is burning, or in a state of combustion—so long will oil or liquid be supplied to the burner and be continued to be drawn from the distributing-chamber. When, however, the light is extinguished the oil or liquid will cease to be so drawn, and if the supply or service-pipe be still in communication with the tank, and if the oil or other liquid continues to pass into the receiving or distributing-chamber, then, when the oil or liquid reaches a certain elevation therein, the float will rise and the valve act so as to close the supply-passage, and thereby prevent the further admission of oil or other liquid to the chamber. For heating purposes, apparatus of a similar construction to that used as above described for lighting purposes, are employed, according to our invention, for supplying the oil or other combustible liquid through pipes and distributing-vessels to a number of burners. The burners may be arranged in rows upon a frame made to move on rails, so as to travel to and from the boiler or other furnace or place to be heated. By the employment of the improved apparatus above described we are enabled to regulate and control the supply of combustible oil or liquid, which is conducted from the tank in which the oil or liquid is stored, to the burners, where it is efficiently and economically applied to lighting and heating purposes.

The accompanying drawing shows the mode in which the invention may be carried into practical effect. Figure 1 is a vertical sectional elevation of our apparatus applied to a house, two floors of which, marked, respectively, X and Z, are indicated. Fig. 2 is a vertical sectional elevation, and Fig. 3 a plan of the receiving or distributing-chamber H, with its filtering-box F, (the top of the latter being removed.) Fig. 4 is an elevation in section of the float. These last three figures are on a larger scale than Fig. 1.

A is a tank or reservoir for holding the oil or liquid to be used for lighting the house. This tank is, by preference, fixed or placed outside the house, at the top thereof. *a* is a neck, through which is an opening for filling the tank. This neck is closed by a screw-cap, $a^{\times}$. When the tank is supplied by feed-pipes communicating with a general reservoir, by which all the tanks of a town or city are fed, then the feed-pipe and opening *a* should be at one of the sides of the tank instead of at the top. B is a pipe which may be called the main service-pipe, and which leads from the bottom of the tank A. It is preferred to place the pipe B parallel with and near to the ordinary waste-water pipe C. This pipe B is opened and closed near its upper end by a tap or cock, *b*, and at bottom it opens into a reserve-tank, D, sunk in the ground so as to be protected from explosion or fire. Communication between the pipe B and the reserve-tank D is opened and closed by a cock, *d*, which is usually kept closed; but in case of danger of fire it is opened, and the tank A and pipe B are allowed to discharge their contents into the sunken tank D. The oil or liquid can be pumped up again into the reservoir A by any ordinary well-known

means; or the pipe B may communicate at bottom, and in like manner with the drain of the house, instead of with a tank, D. *w* is a filter, placed in the tank A over the mouth of the main service-pipe B, to filter the oil or liquid as it passes from the tank A to the pipe B. It is a rectangular hollow case, of wire-gauze or finely-perforated metal. The oil or liquid is conducted from the pipe B through branch pipes E E to filtering-boxes or compartments F, each of which communicates, by a tap, G, with a chamber, box, or vessel, H, which we call a receiving or distributing-chamber, and which is supported by conveniently-fixed brackets. Each pipe E is provided with a tap, *e*. Each filtering-box F is connected with one of the branch pipes E, and also attached to the back end of one of the chambers H, and it contains a partition or diaphragm, *f*, of wire-gauze, or perforated metal. *g* is an opening at the bottom of the box F, closed by a joint-nut or screw-cap $g^{\times}$, for removal of subsidence or deposit from time to time. The pipe E opens into the box F below the partition *f*, and the cock or tap G opens out of that box at a point above the partition *f*, so that the oil or liquid, in passing from E through F to G, is filtered by its passage through the partition *f*. H is the receiving or distributing-chamber, which contains a float-valve, M, for opening and closing the tap G. I is a pipe which leads from the chamber H, and carried into and around the room X, (or Y,) and leads to branch pipes *i*, which are placed at suitable intervals and are carried up the walls to the required height. Hollow arms or branch pipes $i^{\times}$ lead therefrom and communicate with burners L attached to them. One chamber, H, may supply any number of burners, L, placed at proper level. J is an overflow-pipe leading from the interior of the chamber H into the waste-pipe C. The oil or liquid in the tank A will, by the law of equilibrium of fluids, flow through the pipe B and branch pipes E into the filtering-box F, and, passing through the diaphragm *f*, it will rise into and flow through the tap G, into the chamber H, the tap G being open, because the float hereinafter described will be depressed while the chamber H is empty, and it will rise when the chamber H is filled with oil or liquid to a certain level or height. From this chamber H the oil or liquid will flow through the pipes I, and through the conduits *i*, arms, brackets, or pendants $i^{\times}$, to the burners L, where such oil or liquid is burned or used for illuminating purposes. So long as the burner gives off the oil or liquid by combustion—that is to say, so long as the wick or burner is alight and consumes the oil or liquid—the flow of oil or liquid thereto will be continuous, though its passage from the tank to the burner is not a continuous uninterrupted passage, but it is intercepted or broken in the chamber H, as shown; but if the burner should be extinguished and cease to draw oil or liquid from the chamber H, the level of the oil or liquid (so long as it is supplied through E F G) will rise in that chamber until it reaches a certain elevation, then the float M, rising with it, will act through its stem K on the plug or throttle-valve, or the tap G, and will close the passage or fluid-way through that tap, and thereby stop the supply of oil or liquid to the burner. The supply of oil or liquid to the burner being regulated by the float as, described, there will be no overflow at the burner, but only just so much will be supplied as required. We recommend that the pipes used for conveying the oil or liquid to the chamber and burners should be made of best tin. The chamber H may be of tin or brass. The brackets, arms, joints, and other parts should be carefully finished, to avoid leakage.

The float-valve may be thus described: K is a stem, connected at *k* with the axis of a throttle-valve or plug which is within the spout G, so as to form a tap or cock, and which, when actuated by the float M at the other end of the stem K, opens and closes the fluid-way through the spout or tap G. The end of the stem K is jointed to a hollow float, M, made of well-fired China or porcelain. A vertical section of this float is shown at Fig. 4. When the float is molded a hole is left in it on the thickness *m*, between the two internal hollows, $m^{\times}$; into this hole a cotter or wedge of hard wood, *t*, is driven, and into this wedge *t* a tapering flat-sided brass pin or point, $t^{\times}$, is forced, the upper end of which is connected by a short pin, t^2, with the stem K. By these means the float is delicately hung or articulated to the stem, (which curves upward beyond the point of suspension of the float,) and thus great nicety of adjustment and regularity of work are obtained. When the tank A is supplied with oil or liquid and the main tap *b* opened, and all the taps *e* in the branch pipes E are opened, (the tap *d* being, of course, carefully closed,) the oil or liquid will be continuously supplied to the burners while these are kindled or ignited, and owing to the operation of the valve, as above mentioned, it will cease to be supplied to the burners when the lights are extinguished. Several pipes, I, may lead from one chamber, H, through pipes *i i*, to burners at the same level.

The apparatus may be applied in similar manner to burners used for heating purposes, such as heating furnaces, boilers, ovens, and other arrangements for obtaining and applying heat.

Having described the nature of the said invention, and the manner in which it may be performed, we declare that we claim—

1. The receiving or distributing-chamber or vessel H, containing float M for opening and closing a valve in the supply-tap G, and communicating with one or any number of burners, the said valve opening the tap when the chamber is empty and closing it when the burner is extinguished, and regulating or controlling the flow of oil to the burners, substantially as described.

2. The combination of the chamber H with the filtering-box F, as described.

3. The float M, molded of China or porcelain, to contain an internal annular hollow space or chamber, and perforated centrally through its solid core with an aperture to receive a wooden

wedge-pin, all substantially as and for the purpose herein set forth.

4. The combination of a number of burners or lights with one single receiving or distributing-chamber or vessel, H, furnished with its supply-tap or cock G and float M for opening and closing the same, when actuated as described, so that one such chamber may serve any number of burners or lights.

5. The arrangement and combination of the within-described parts, whereby the continuity of the passage of oil or liquid from the tank to the burner is intercepted by the chamber H, substantially as described.

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