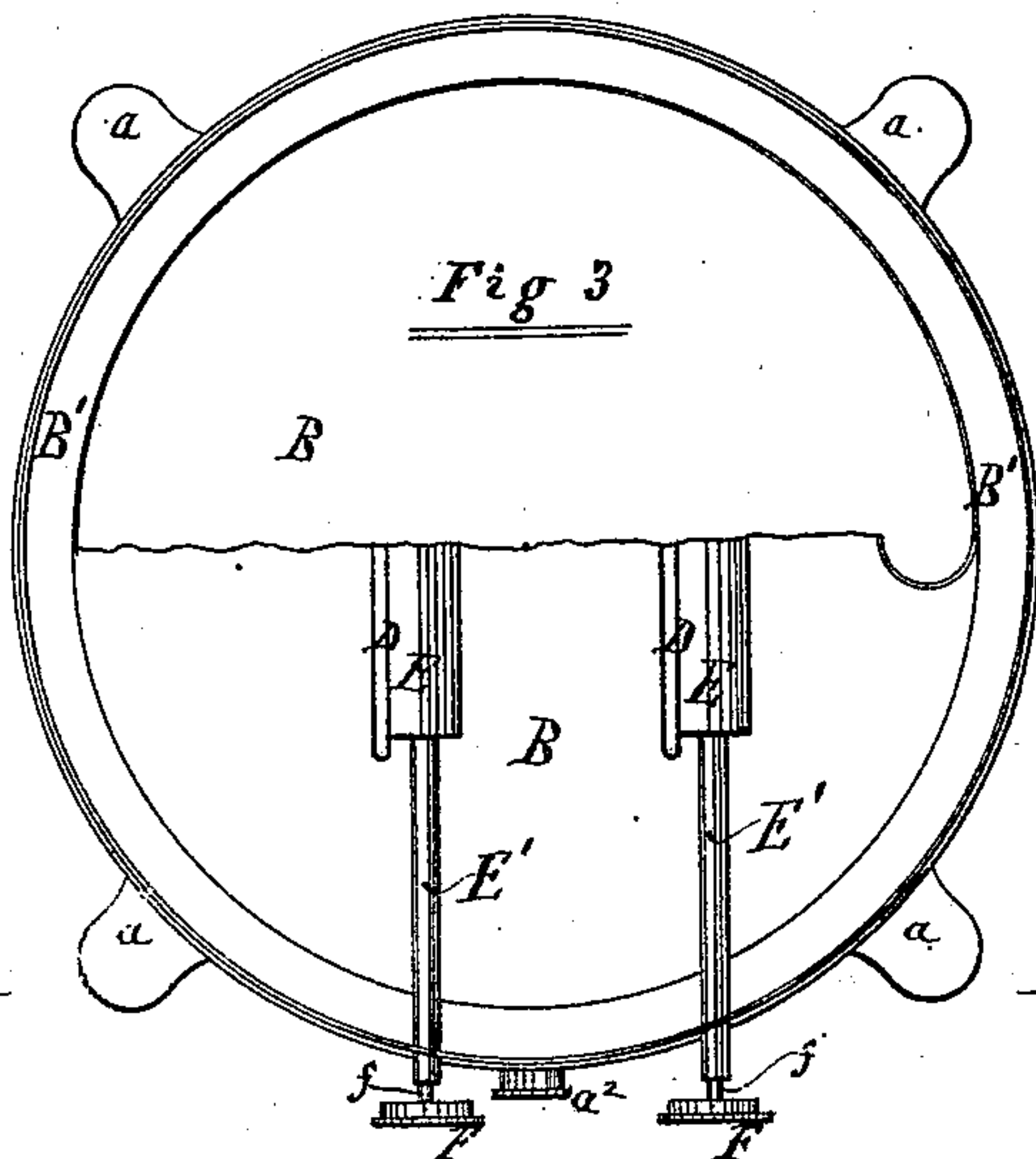
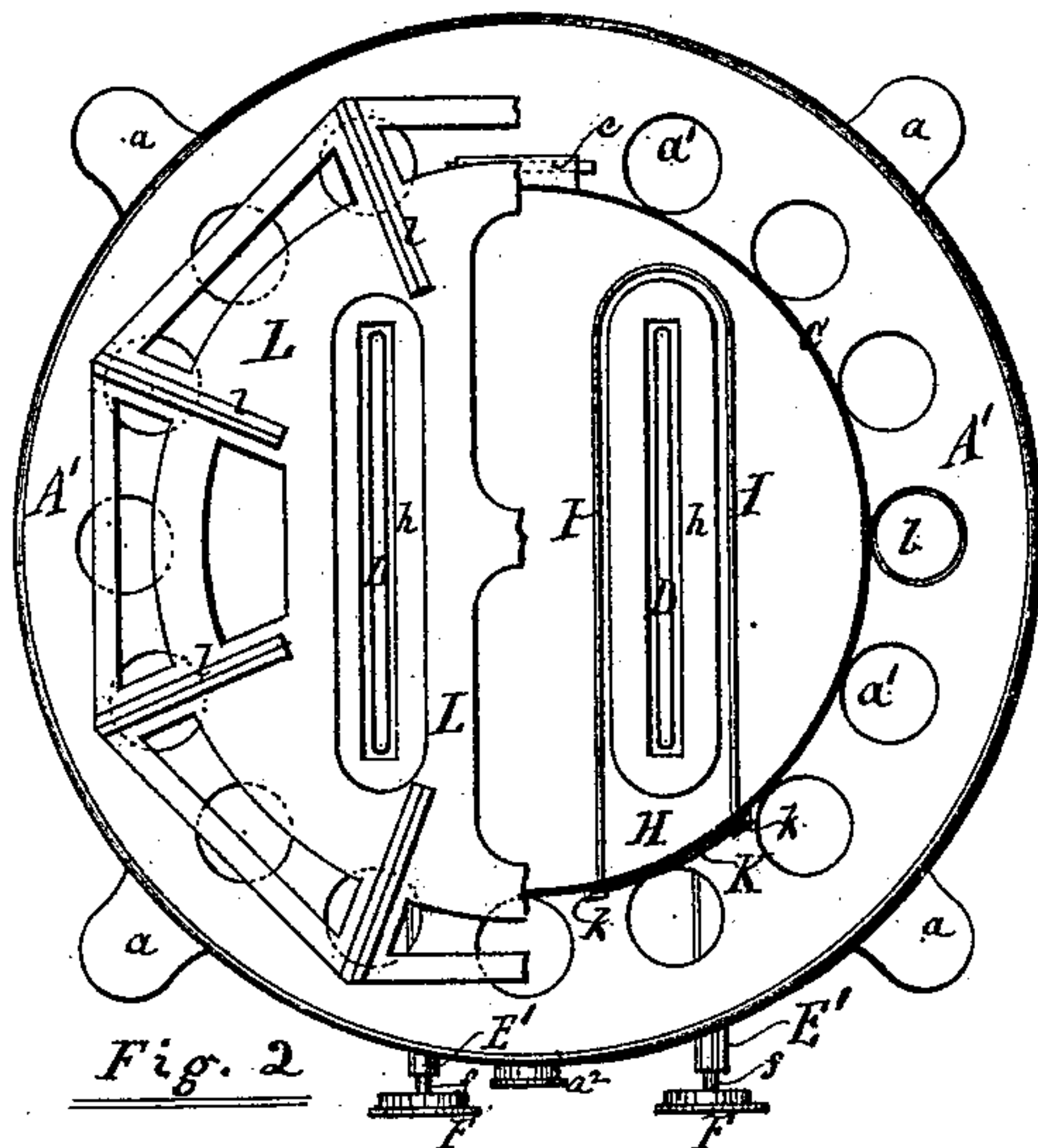
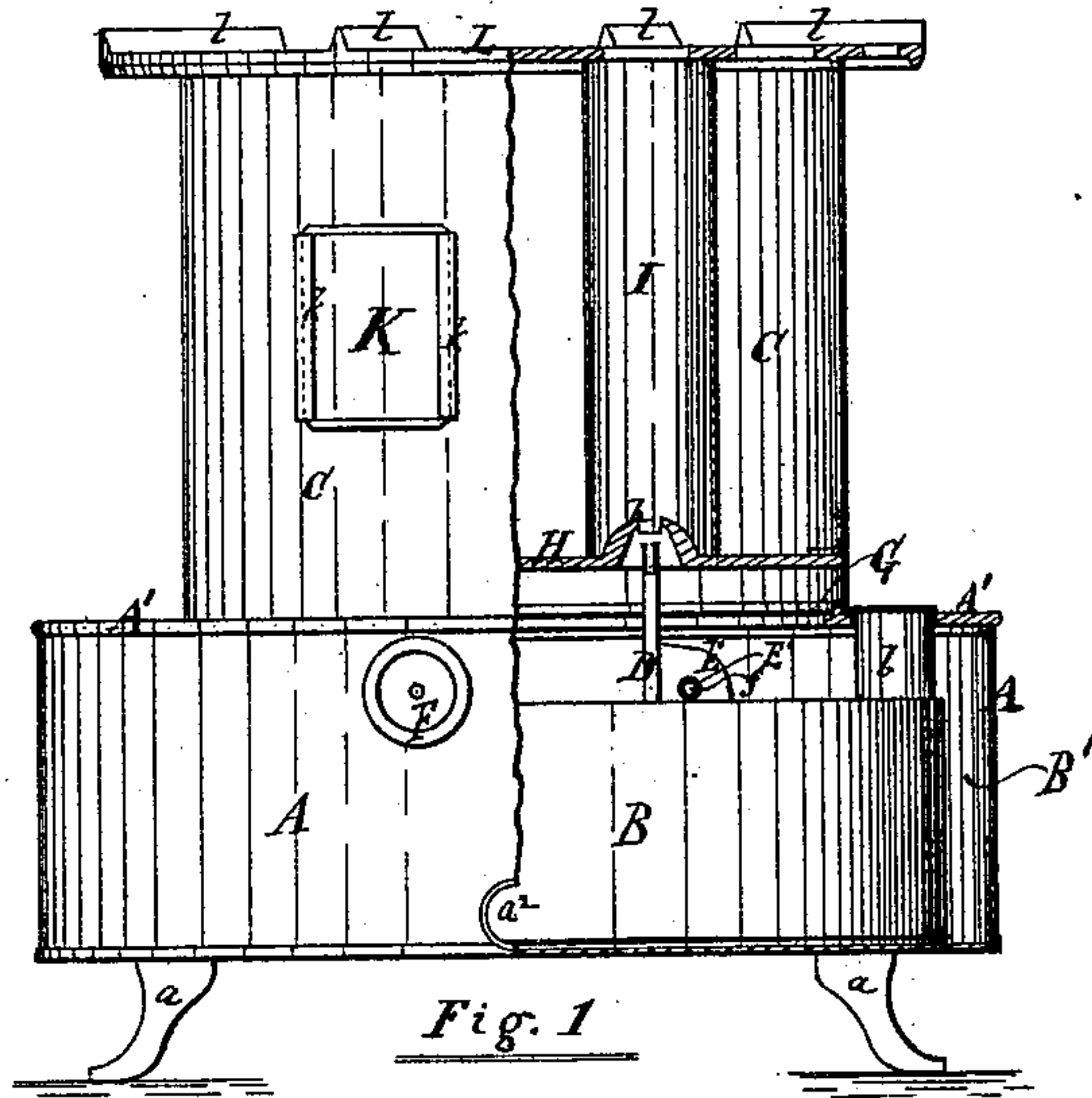


A. B. HUTCHINS.
HYDRO-CARBON STOVE.

No. 177,334.

Patented May 16, 1876.



Witnesses
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IMPROVEMENT IN HYDROCARBON-STOVES.

Specification forming part of Letters Patent No. 177,334, dated May 16, 1876; application filed October 4, 1875.

To all whom it may concern:

Be it known that I, ABNER B. HUTCHINS, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Hydrocarbon-Stoves; and I do hereby declare the following to be the specification of the same.

The object of this invention is to produce a stove which can safely and easily be heated by the combustion of a hydrocarbon or oil in a similar manner to that in common use in illuminating-lamps.

The invention consists of the following devices: The vessel or chamber containing the oil or hydrocarbon is submerged in water, so as to always keep the said oil vessel or chamber cool, and thereby free from explosive or other accident. The water-vessel is covered with a perforated metal plate, which forms the base of the hot-air cylinder, on the top of which the culinary or other vessels to be heated are placed. Vertical tubes or flues are placed in the hot-air cylinder in such positions as to act as chimneys for the burners. Mica windows are placed in the sides of these flues or chimneys in such positions as to enable the operator to observe the flame of the burner and to regulate the same as circumstances may require.

The invention will be readily understood by reference to the accompanying drawings, of which—

Figure 1 is partly an elevation and partly a vertical section of the improved stove. Fig. 2 is partly a plan and partly a section of the same. In this view the half of the top plate only is removed, so as to disclose the construction of the hot-air cylinder and the flues or chimneys. Fig. 3 is a sectional plan of the stove, taken just below the top plate of the water-chamber, and showing a part of the top plate of the oil vessel or reservoir broken out.

The base of the stove consists of a vessel, A, resting, for convenience, on short legs *a*. This vessel is intended to contain water, and has a top plate, A', which is preferably made of cast metal, and strong enough to support all the parts of the stove which are above it. This plate A' is annular in form if the stove is of general cylindrical construction, (which is preferable to other forms,) the central open-

ing in the said plate being nearly equal in area to the sectional area of the hot-air cylinder C, which rests upon it. Concentrically arranged around this central opening is a series of perforations, *a*¹, through which atmospheric air passes down into the top part of the vessel A, and thence up through the hot-air cylinder and its chimneys.

The reservoir or vessel B, in which the oil or hydrocarbon is put for use in this stove, is placed within the vessel A, and the bottom of the vessel A may likewise constitute the support for the bottom of the vessel B, and there will be an intervening chamber, B', between the sides of the vessel B and its inclosing-vessel A, and the sides of the vessel A will extend up one or two inches (more or less) above the top of the vessel B. While in use the annular chamber B' will be filled with water, and water will also cover the top of the vessel B, which said vessel and its contained fluid will thereby be always kept at a low temperature, and accident from the ignition or explosion of the oil or hydrocarbon will thus be rendered impossible by this water covering. A tube, *b*, extends from the vessel B up through one of the perforations or apertures *a*¹, and serves as a means of filling the vessel B. A suitable screw-cap closes the top end of this tube. A pipe or valve, *a*², leads from the chamber B' to the outside of A, for the purpose of drawing off the water when it becomes heated, or when the occasion requires it. Water may easily be poured into the vessel A through the apertures *a*¹.

The wick-tubes D are attached to the top of the vessel B, and the wick used to conduct the oil from B to the flame is operated in the usual manner of illuminating-lamps. The rollers for moving the wicks up and down are inclosed in casings or housings E, and are operated by the thumb-wheels F, the stems *f* of which pass through tubes E', that are attached tightly to the ends of the housings E, and pass through the side of the vessel A. Care must be taken to have all of the parts of D E E' that lie within the water-way of A perfectly water-tight, so as to prevent the leakage of the water either into the vessel B or outside of A.

The hot-air cylinder C is preferably built of sheet metal, and is hinged to its base-plate A'

by the hinge *c* at the back side of the stove, so as to permit the top parts of the stove to be tipped back out of the way of trimming the wicks, or for other purposes. A finely-perforated diaphragm, *G*, covers the central opening of the base-plate *A'* below the hot air cylinder, for the purpose of properly controlling the air-currents that pass up from the chamber of *A* into the hot-air cylinder. A diaphragm, *H*, within the hot-air cylinder *C*, and near its base, is fixed, by riveting or otherwise, to the sides of the said cylinder. Portions of this diaphragm are formed into conical flame-caps *h*, for controlling and confining the flame within its proper limits in a manner similar to that in common use in illuminating-lamps.

Above the diaphragms *H* tubes or chimneys *I* confine the hot gases and products of combustion from the flames of the burners within proper limits for the efficient action of the burners. These tubes or chimneys *I* extend from the diaphragm *H* to the top of the hot-air cylinder, and are preferably made of sheet metal. The shell of the hot-air cylinder *C* forms one side of each of these chimneys, and in this side, which is common to both the cylinder and the chimney, a small mica window, *K*, is placed, so as to enable the operator, from without, to see and regulate the flame of the burners by turning the thumb-wheel *F*, as required. For simplicity of construction I cut apertures in the side of the hot-air cylinder, suitable for the windows *K*, and through these apertures portions of the metal of the chimney-plates are extended, which said portions are bent over in the form of grooves *k*, as in Figs. 1 and 2, for the reception of the mica plates that are to form the windows.

The top of the hot-air cylinder is covered with a cast-metal plate, *L*, that serves as a rest for whatever vessel is to be heated on this stove. The plate *L* is perforated with apertures over the chimneys, and also over the hot-wells of the cylinder *C*, as well as in the portions lying outside of the cylinder, thus permitting all of the heat generated to reach the vessel on top of the plate *L*, and thereby be utilized. The intense heat imparted to the plates of the chimneys *I* and plate *L*, and reflected thence back upon the hot gases passing through and about these parts, will be quite sufficient to consume all of the smoke, and there will, in consequence, be no emission of unpleasant odors from imperfect combustion. The top surface of the plate *L* is provided with ridges *l*, that keep the vessels placed thereon from obstructing the openings in the said plate.

Having described my invention, I claim—

1. The water-vessel *A*, with its perforated top plate *A'* and hot-air cylinder *C*, hinged at *c* to plate *A'*, and top perforated plate *L*, all arranged and connected together substantially as and for the purpose set forth.

2. The chimneys *I*, having one of their sides formed by the hot-air cylinder *C*, to which they are connected by the groove-clips *k*, that also receive the mica windows *K*, as and for the purpose set forth.

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