

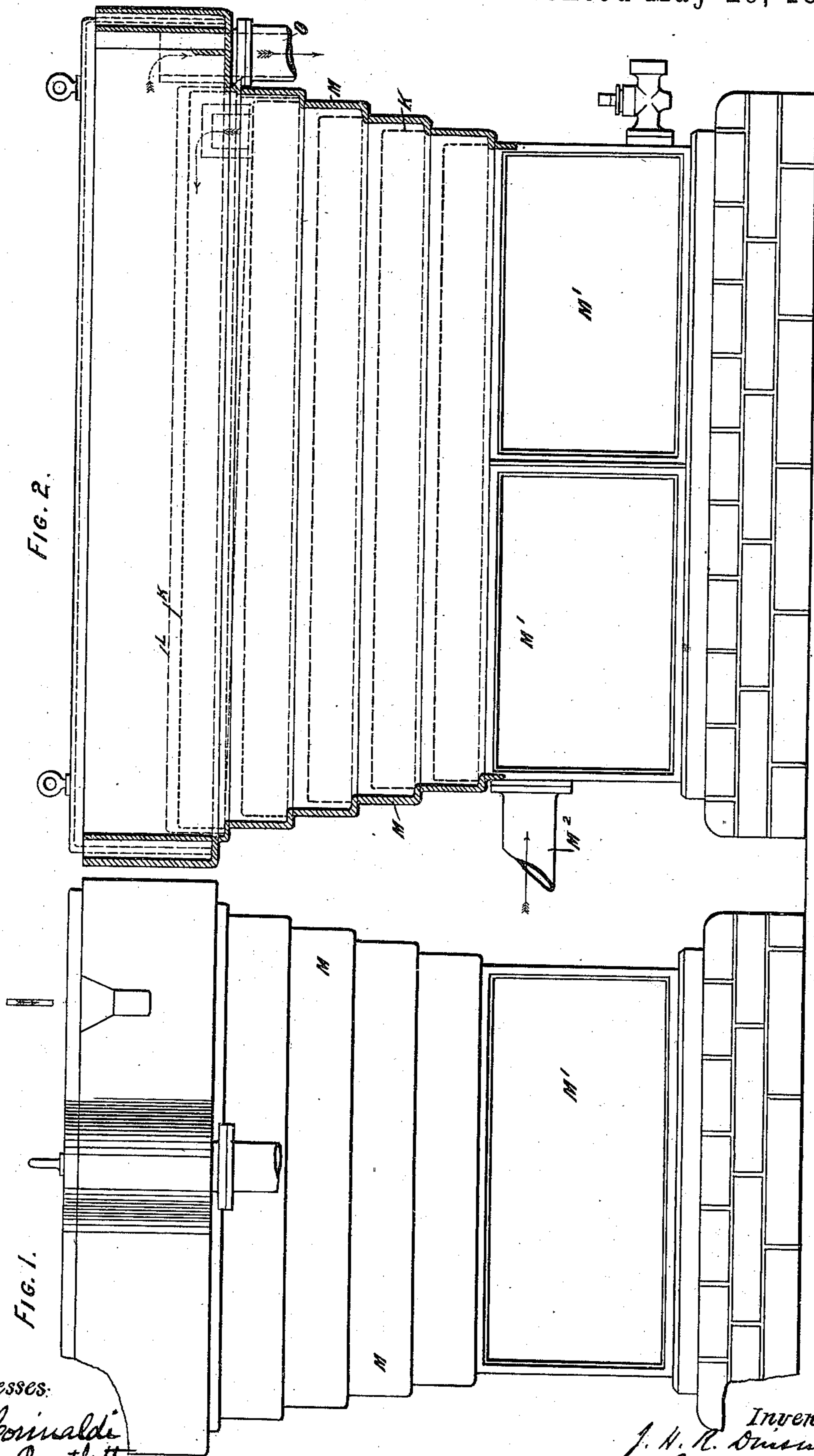
(No Model.)

2 Sheets—Sheet 1.

J. H. R. DINSMORE.

APPARATUS FOR WASHING AND PURIFYING ILLUMINATING GAS.
No. 383,635.

Patented May 29, 1888.



Witnesses:
B. A. Corinardi
Robert Bartlett.

Inventor:
J. H. R. Dinsmore,
by *Proctor & Paul, Attys.*

(No Model.)

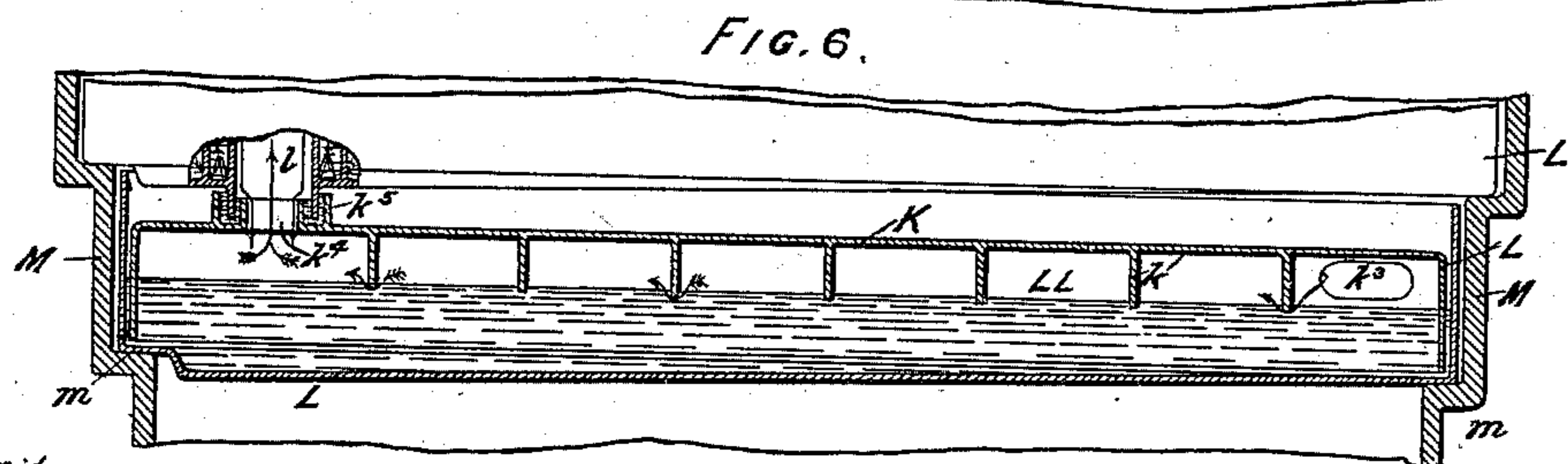
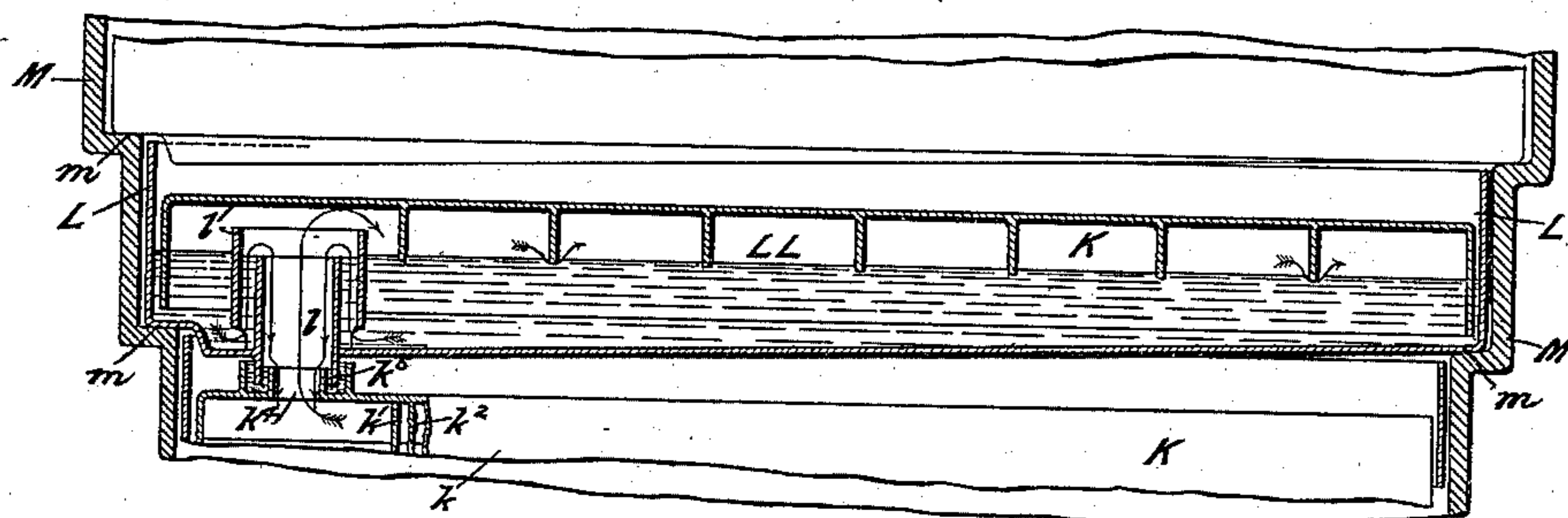
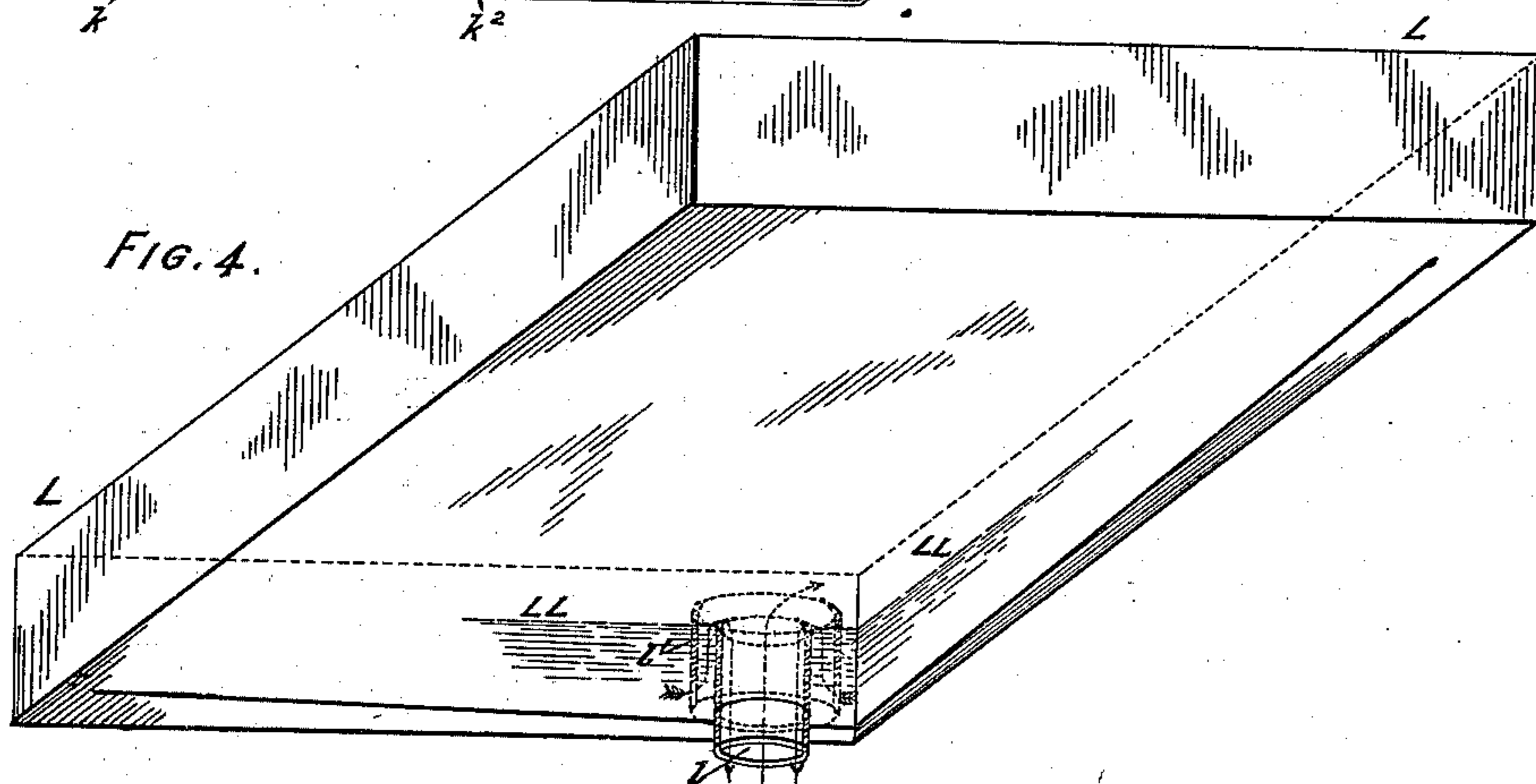
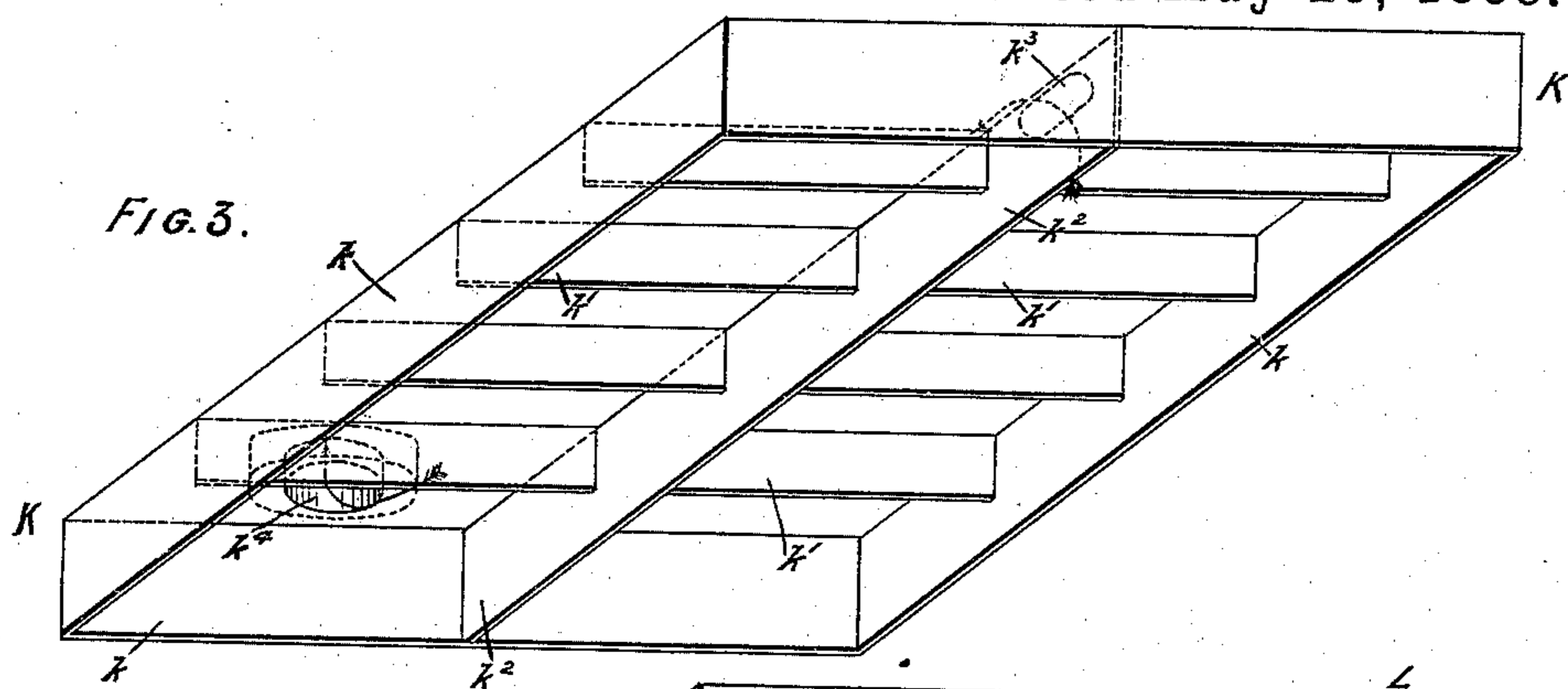
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Witnesses:

R. A. Corinvaldi.
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Inventor:

J. H. R. Dinsmore.
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UNITED STATES PATENT OFFICE.

JOHN H. R. DINSMORE, OF LIVERPOOL, COUNTY OF LANCASTER, ENGLAND.

APPARATUS FOR WASHING AND PURIFYING ILLUMINATING-GAS.

SPECIFICATION forming part of Letters Patent No. 383,635, dated May 29, 1888.

Application filed January 4, 1888. Serial No. 259,804. (No model.) Patented in Belgium September 28, 1887, No. 79,022.

To all whom it may concern:

Be it known that I, JOHN HENRY RICHARDSON DINSMORE, a subject of the Queen of Great Britain, residing at Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Apparatus for Washing and Purifying Illuminating-Gas, (for which a Belgian patent, No. 79,022, dated September 28, 1887, has, with my consent, been obtained,) of which the following is a specification.

This invention has for its object to effect a better washing of gas resulting from the distillation of coal or other hydrocarbonaceous material than heretofore, and relates more particularly to the purifying or washing of illuminating coal-gas.

According to my invention I effect the removal of certain impurities—such as ammonia and tarry matters—from gas by washing in such a manner that the gas is washed or subjected to the action of water or ammoniacal liquor in a finely-divided state, whereby each particle or molecule of gas comes under the action of the washing medium and the impurities removed. This is carried out by washing the gas lightly and spreading it over a large area—that is to say, the gas is caused to pass through only a small depth of the liquid and is distributed over a large area or surface. I obtain the above result—namely, the light washing—by causing the gas to pass below a number of ledges or inverted weirs, the edges of which are immersed only to a small depth in the washing water or liquor. The receptacles for holding the water or liquor are arranged horizontally as trays, and may be conveniently disposed one above the other. A number of ledges or weirs are provided for each tray, so that the gas is subjected to repeated washings in each tray. I have found that the best distribution of the gas and consequent best washing is effected by arranging the weirs in inverted loose trays, whereby the depth of immersion of the weirs or ledges is regulated by the pressure and volume of the gas which is passed through them, thus constituting what may be termed the “floating washer.” By this means an automatic compensation and regulation for differences of volume and pressure are provided.

My invention will be hereinafter fully described and its novel features defined in the claiming clauses concluding this specification.

In the drawings hereto annexed, which serve to illustrate apparatus for washing gas according to my invention, Figure 1 is an outside elevation of the washer in its preferred form. Fig. 2 is an end view of the same. Figs. 3 and 4 are perspective views of floating and stationary trays. Fig. 5 is a section through the inlet side of the trays and Fig. 6 is a section through the outside of same.

With reference to the drawings, K designates the floating trays and L the stationary trays. They are placed one over the other in a case, M. The bottoms of the trays L are inclined toward one corner, to cause the heavier condensed vapors or gases to flow toward the outlet from them. This outlet is designated *l*. The floating trays K are smaller than the trays L, and when in position fit inside the latter, as shown. *k'* are the weirs of the tray K, and *k²* is a diaphragm, having at one end an aperture, *k³*, through which the gas passes from one side of the tray to the other. It leaves this latter side by the passage *k⁴*, which is formed in the roof of the tray, and with the pipe *k⁵* forms a luting to the pipe *l* of the trays L. The weirs *k'* are so arranged that they are only immersed to a small depth in the liquor. The level of the liquor (shown by dotted lines and designated by *LL*) is maintained at a constant level in each tray L by the pipe *l*, besides which it serves as the gas-inlet. The liquor which flows over the lip of the pipe *l* of each tray falls into the tray through the passage *k⁴*, and finally it falls into the receptacle *M'*, from whence it is led. To cause the tar resulting from the condensation of the heavier vapors of the gas to flow toward the overflow-outlet *l*, the bottom of the tray L is inclined toward it, and to cause them to flow over the lip of the pipe *l*, there is provided an outer concentric pipe, *l'*, which stands above the level of the liquor and the lip of the pipe *l*, and has openings at its bottom, as shown, through which the heavier liquids, as they gravitate thence, are carried by lighter liquor, and are forced up between the two pipes *l* and *l'*, and finally over the lip of the latter. They then flow down into the next tray, or into the

receptacle M', as the case may be, and the gas flows up through the center of this pipe. The arrows in the drawings show the direction or course of the gas into and through the washer and the liquor overflow.

The light washing in the manner above described causes the gas to pass under the weirs and through the liquid in a finely-divided state, and also breaks up the liquid at these points into spray, which intermingles with the gas, and so furthers a better and more effective washing of it.

In Figs. 1 and 2 my completed washer in its preferred form is illustrated, the detail of construction of the several trays composing the same being omitted, since they are identical with those illustrated in Figs. 3, 4, 5, and 6. As shown in Figs. 1 and 2, I prefer to set the trays one above the other, gradually increasing in length and breadth as they ascend.

Having now fully described my invention, what I desire to claim, and secure by Letters Patent, is—

1. In an apparatus for washing gas, the combination of a vessel containing a washing-fluid and a tray of less specific gravity than said fluid, and supported on the surface thereof by its own buoyancy, said tray being provided with partitions dividing said tray into a plurality of separate and independent compartments having no communication with each other except through said washing-fluid, substantially as described.

2. In an apparatus for washing gas, the combination of a vessel containing a washing-fluid, a tray divided into a plurality of separate and independent closed compartments supported on the surface of said fluid, a vertical inlet-pipe extending up through the bottom of said vessel and through said fluid and open at its top, substantially as described.

3. In an apparatus for washing gas, the combination of a bath of washing-fluid, a tray divided into a plurality of separate and independent closed compartments supported on the surface of said fluid, a vertical gas-inlet pipe open at its top and extending up through the bottom of said vessel and through said fluid, and a sleeve open at the bottom surrounding said inlet-pipe, substantially as described.

4. In an apparatus for washing gas, the combination of a plurality of baths of washing-fluid, set one above the other, gradually increasing in length and breadth as they ascend, each of said baths being provided with a tray divided into a plurality of separate and independent compartments supported above the surfaces of said fluid, substantially as described.

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