2 Sheets--Sheet 1.

I. W. FOX & D. H. IRLAND.

Improvement in Gas-Generators.

No. 125,888. Patented April 23, 1872.

Fig 1

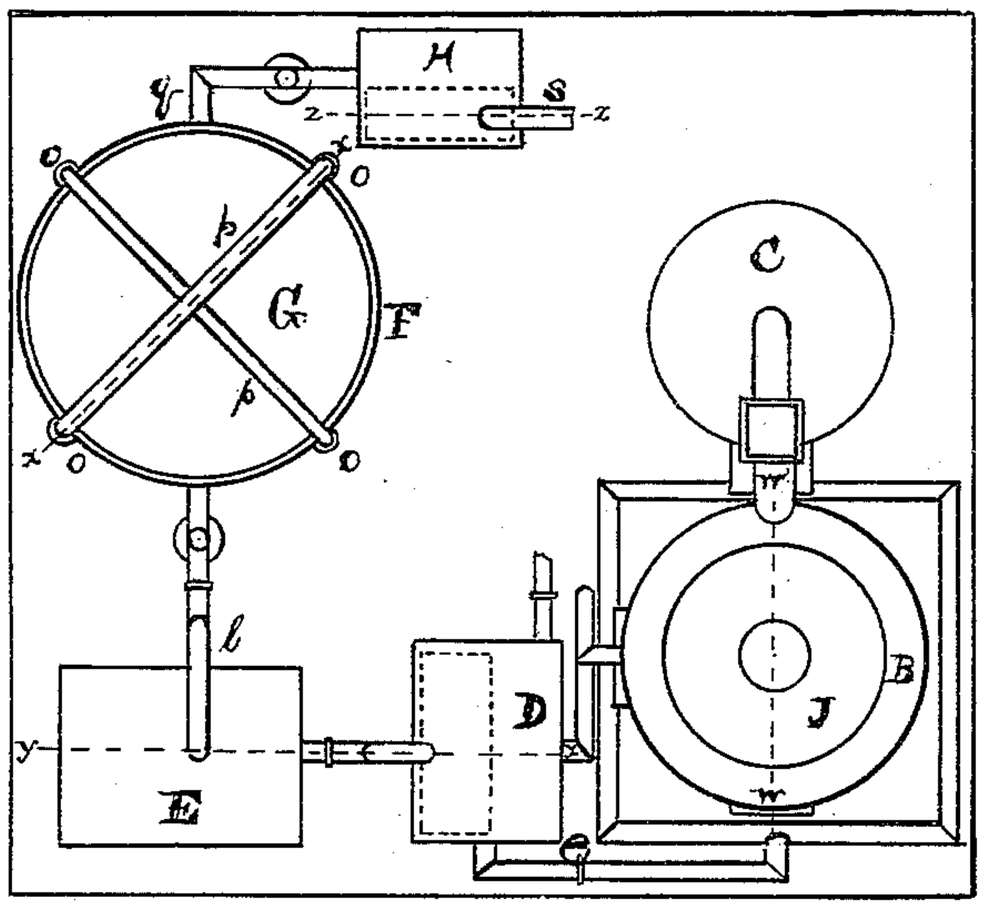
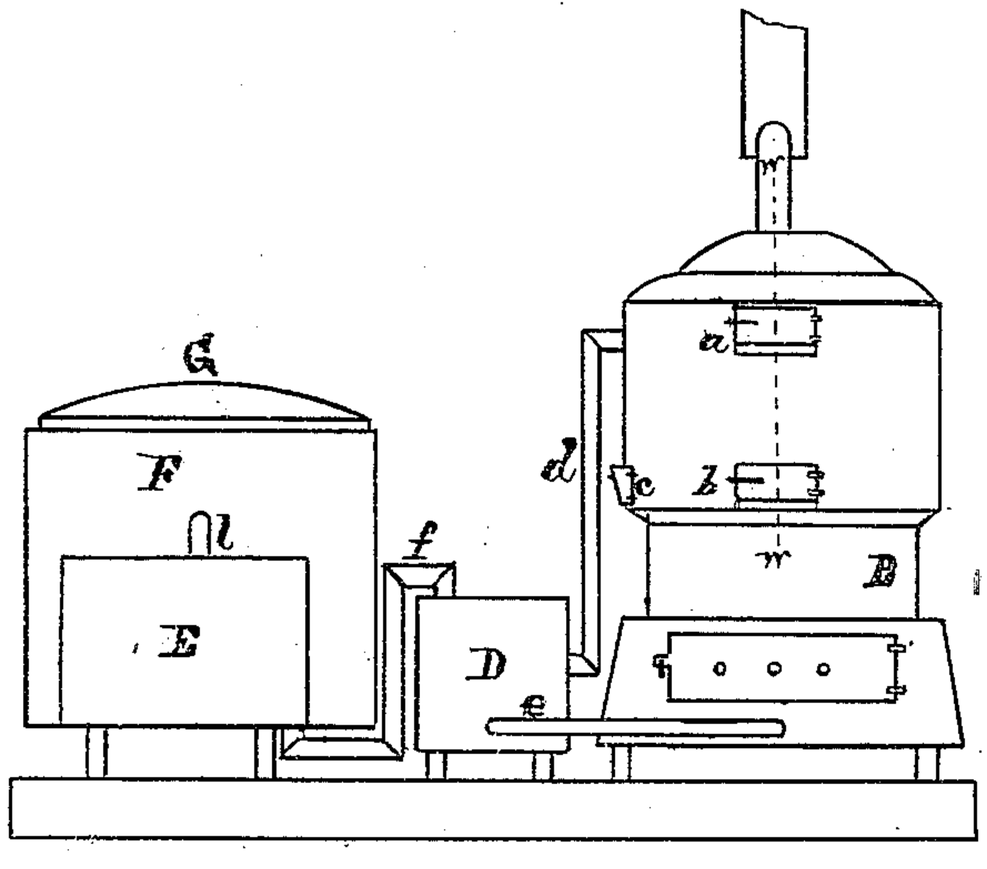


Fig 2



WITNESSES

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C. W. Bond

I. Millard Fox

David H. Irland

INVENTORS

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.).

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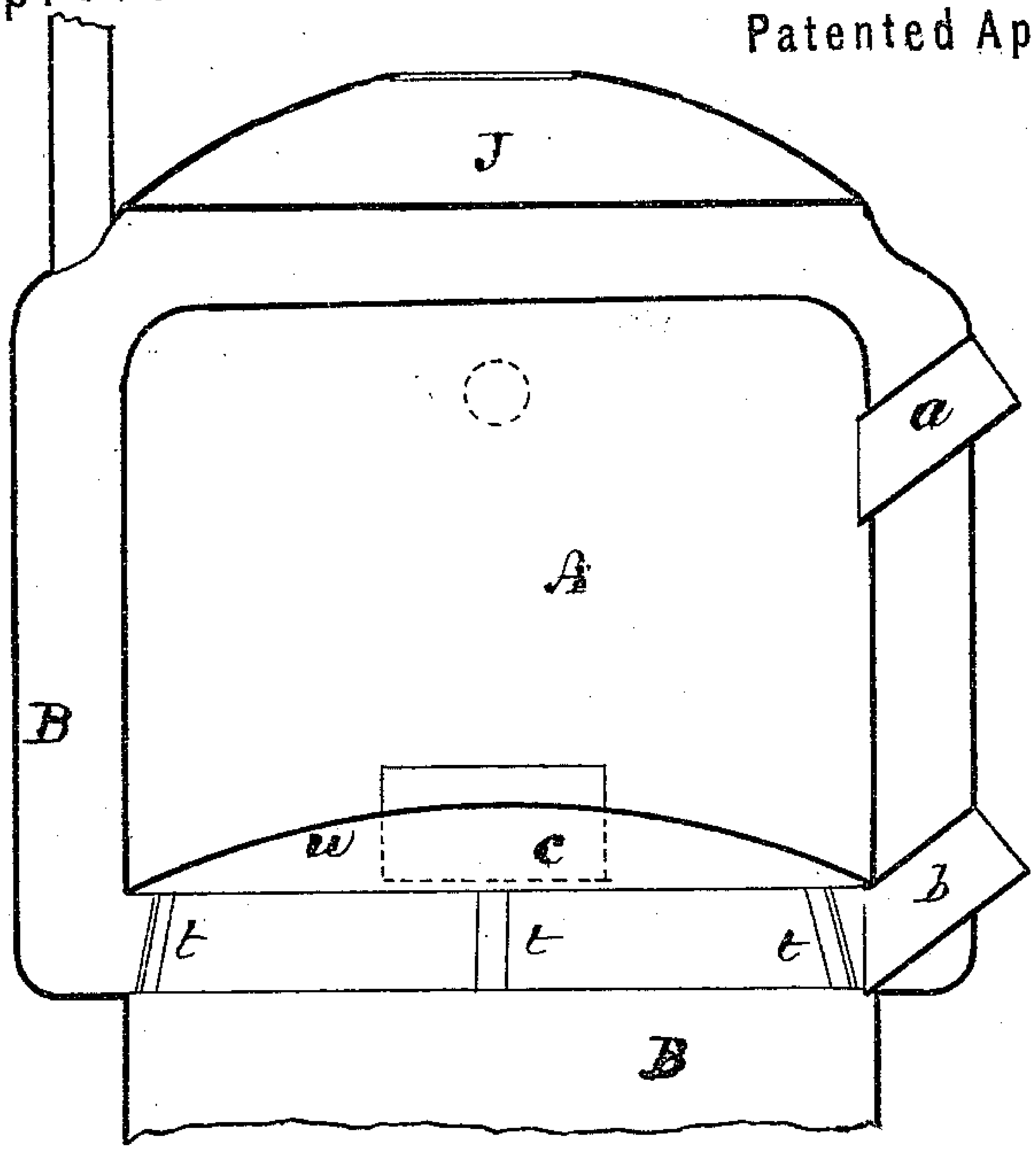

Fig 3
Section on line w.w

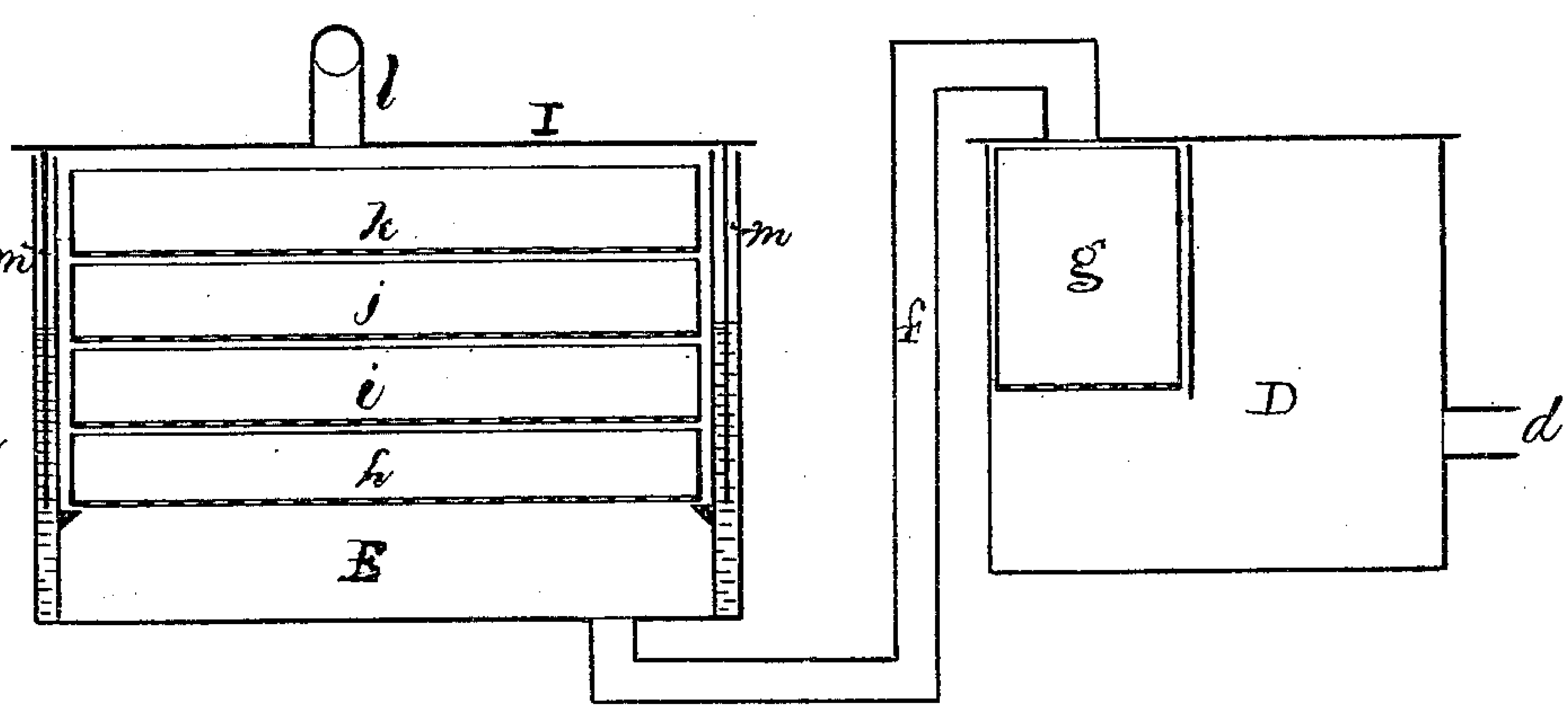

Fig 4
Section on line y.y

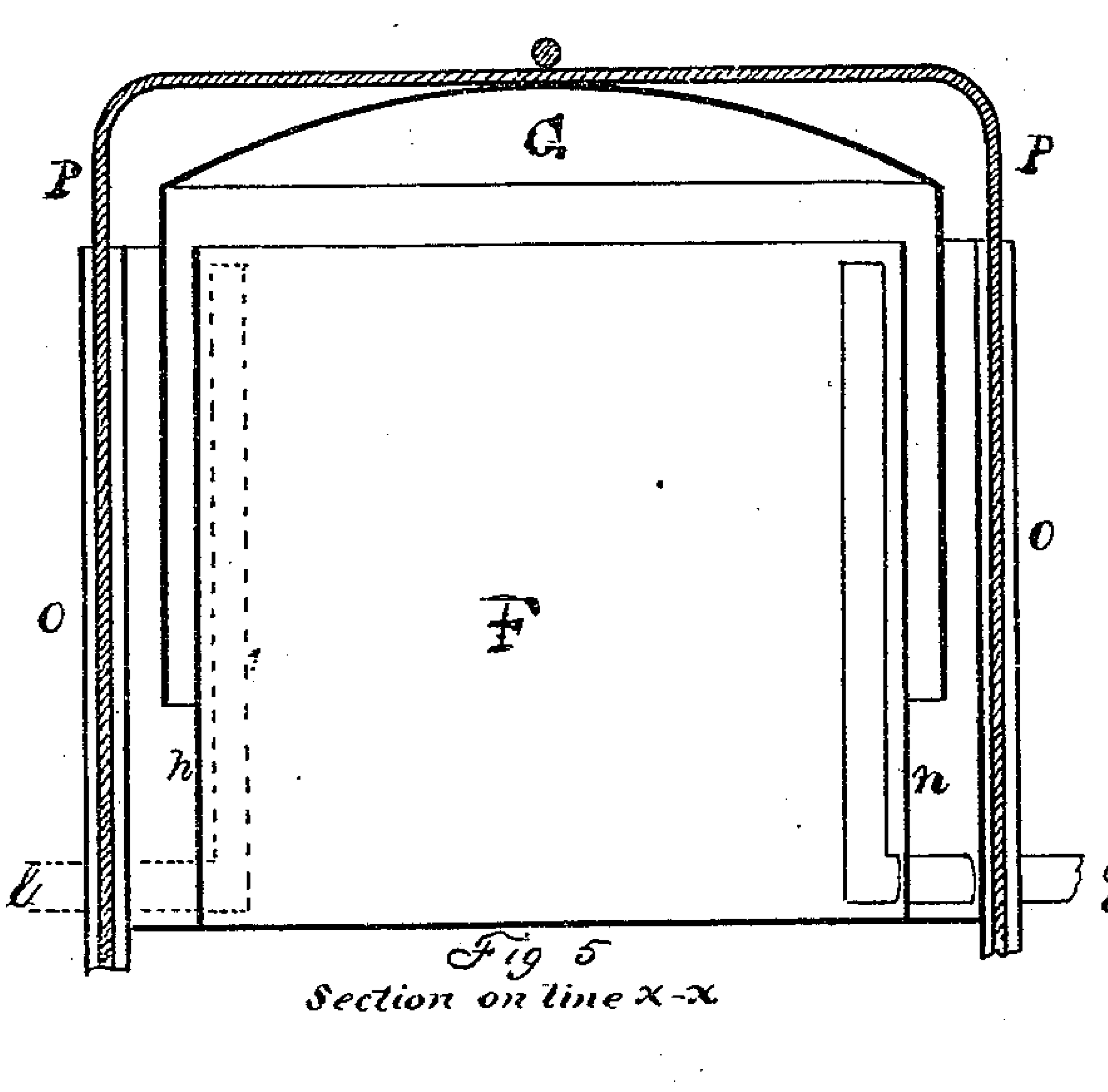

Fig 5
Section on line x-x

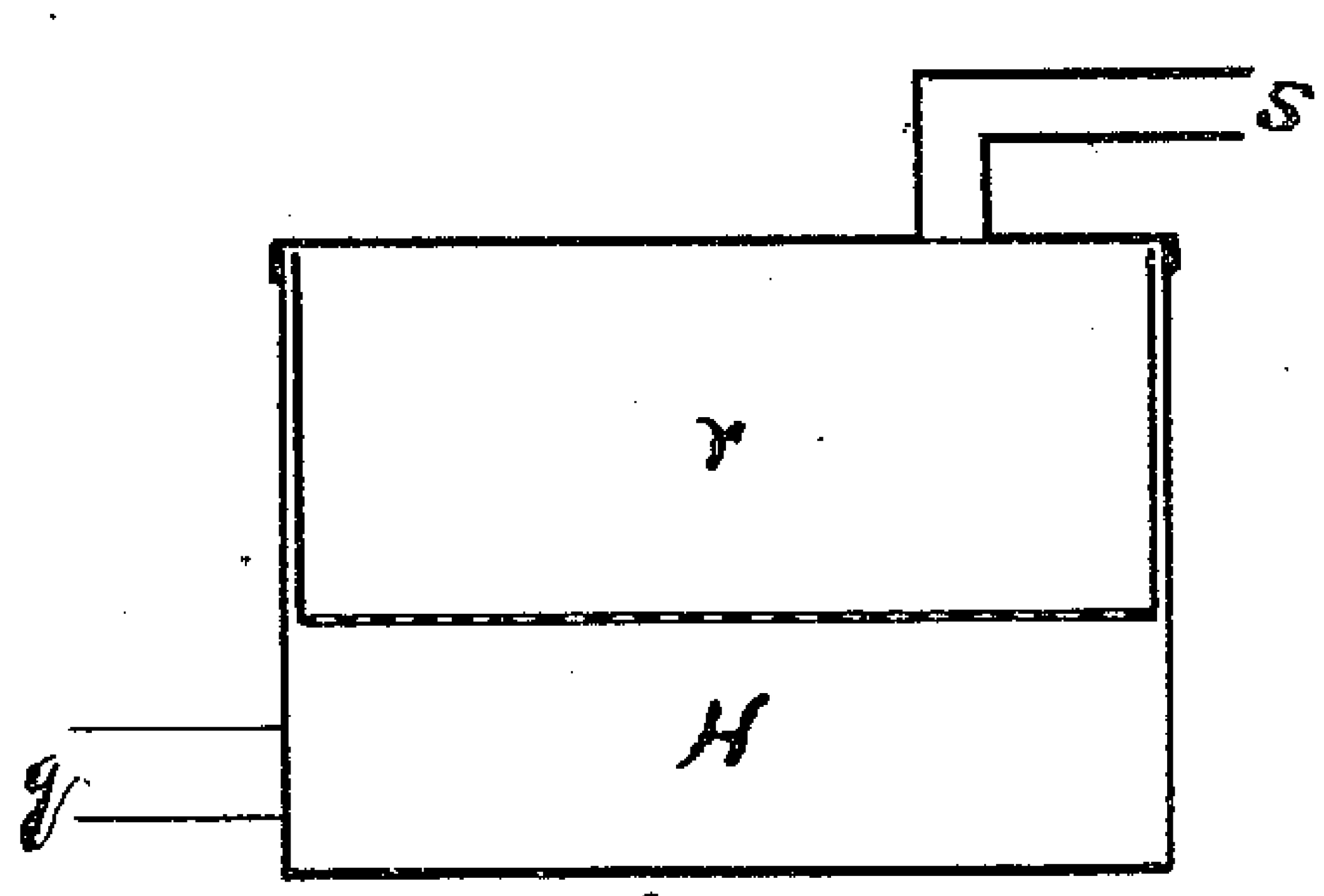

Fig 6
Section on line z-z

Witnesses

I Willard Fox
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UNITED STATES PATENT OFFICE.

ISAAC W. FOX AND DAVID H. IRLAND, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GAS-GENERATORS.

Specification forming part of Letters Patent No. 125,888, dated April 23, 1872.

SPECIFICATION.

We, ISAAC WILLARD FOX and DAVID H. IRLAND, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas-Generators, of which the following is a full description, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view; Fig. 2, a front elevation; Fig. 3, a vertical section on line *w w* of Figs. 1 and 2; Fig. 4, a vertical section on line *y y;* Fig. 5, a vertical section on line *x x;* Fig. 6, a vertical section on line *z z*.

My improvements are primarily designed to be used in gas-generators which are sometimes called portable.

In the drawing, B represents a furnace or stove, in which is placed a retort, A, having a concave bottom, *u*, which form facilitates the heating of the contents. As shown, the retort rests on the supports *t;* but it may be supported in any other suitable manner; and it is so constructed and arranged that the heat from the furnace passes all around it. J is a space above the retort. *a* is an opening, through which coal, to be converted into gas, is fed into the retort. *b* is an opening, through which coal is fed into the furnace; *c*, an opening, through which the coke can be removed from the retort. C is a heater, which may be used in connection with the furnace. D is a condenser, into which the crude gas passes from the retort through the pipe *d*. In this condenser is a receptacle, *g*, having a perforated bottom, to be filled with charcoal or other suitable material through which the gas passes, the tar and some other heavy impurities being condensed in D, from which they can be drawn off as occasion requires. From D the gas passes into the purifier E at the bottom through *f*. In this purifier are four receptacles, *h*, *i*, *j*, *k*, placed one above the other. *h* is to be filled with charcoal; *i*, with lime; *j*, with iron filings; and *k*, with salt. These receptacles all have perforated bottoms, and the gas passing through the substances mentioned becomes purified and passes from the top of E to the gasometer F G through the pipe *l*. The four walls of the purifier E are double, leaving a space, *m*, between them to be filled with water, forming a water-packing for the sides of the cover, which pass down into the space *m*, preventing the escape of gas except through the pipe *l*. The walls of the gasometer F are also double, leaving a space, *n*, between them to be partly filled with water, into which the sides of that part of the gasometer marked G enter. To the outside of F are placed a suitable number of tubes or sockets, *o*, (four are shown,) into which the guide-rods *p* pass. From the gasometer the gas passes into the second condenser H, in which is a perforated receptacle, *r*, filled with sponge or excelsior shavings, or other similar suitable material, through which the gas passes, and in this second condenser any moisture remaining in the gas will be condensed instead of being carried into the pipes in the building. From H the gas passes to the burners, *s* being the outlet from H, connected with the pipes running through the building. Between D and E and between E and the gasometer, and between the gasometer and H are suitable stop-cocks to regulate the flow of gas or cut it off wholly, as occasion may require. Leading from the condenser D to the furnace B is a tube, *e*, through which the gas may be carried to the furnace and consumed there for heating purposes, if desired. In this pipe *e* is a stop-cock, by which the flow of gas through *e* can be checked or entirely cut off.

The construction of the gasometer enables us to use a non-freezing fluid in winter instead of water without involving much expense, the quantity of fluid required being small, at the same time the capacity of a gasometer of any given size is greatly increased, which is an advantage, saving cost and economizing room.

The condensation of moisture in the gas-pipes has been hitherto a serious objection to all portable gas-machines. The second condenser H effectually obviates this difficulty. Suitable means are to be provided for drawing the water of condensation from H at proper intervals.

The covers of D and H may be secured in place by screw-bolts; but the cover of E should be so secured that it can be easily removed for the purpose of changing the materials in the receptacles.

The gas passes to the condenser H through

the pipe *q*, and by the stop-cock in this pipe the pressure of the gas in the burners can be regulated.

What we claim as new is as follows:

1. A gas-generator, consisting of the furnace B, retort A, condenser D, purifier E, gasometer F G, second condenser H, with their connecting-pipes, constructed and arranged to operate as herein shown and described.

2. The use of charcoal, iron filings, and salt in the purifier E, substantially as and for the purpose set forth.

I. WILLARD FOX.
DAVID H. IRLAND.

Witnesses:
E. A. WEST,
O. W. BOND.