

(No Model.)

2 Sheets—Sheet 1.

J. N. CHAMBERLAIN.

EXHIBITION CABINET FOR GAS BURNERS.

No. 273,952.

Patented Mar. 13, 1883.

Fig. I,

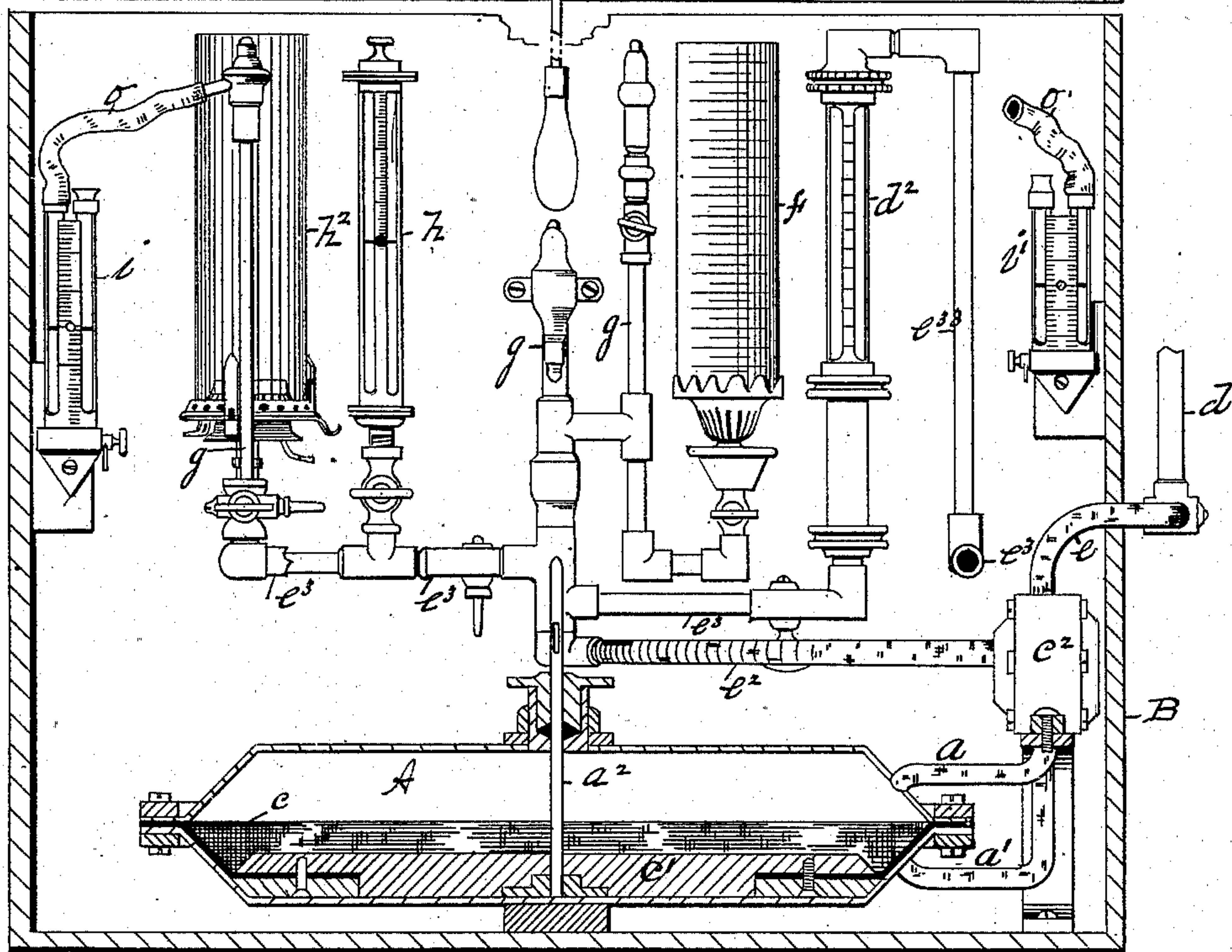
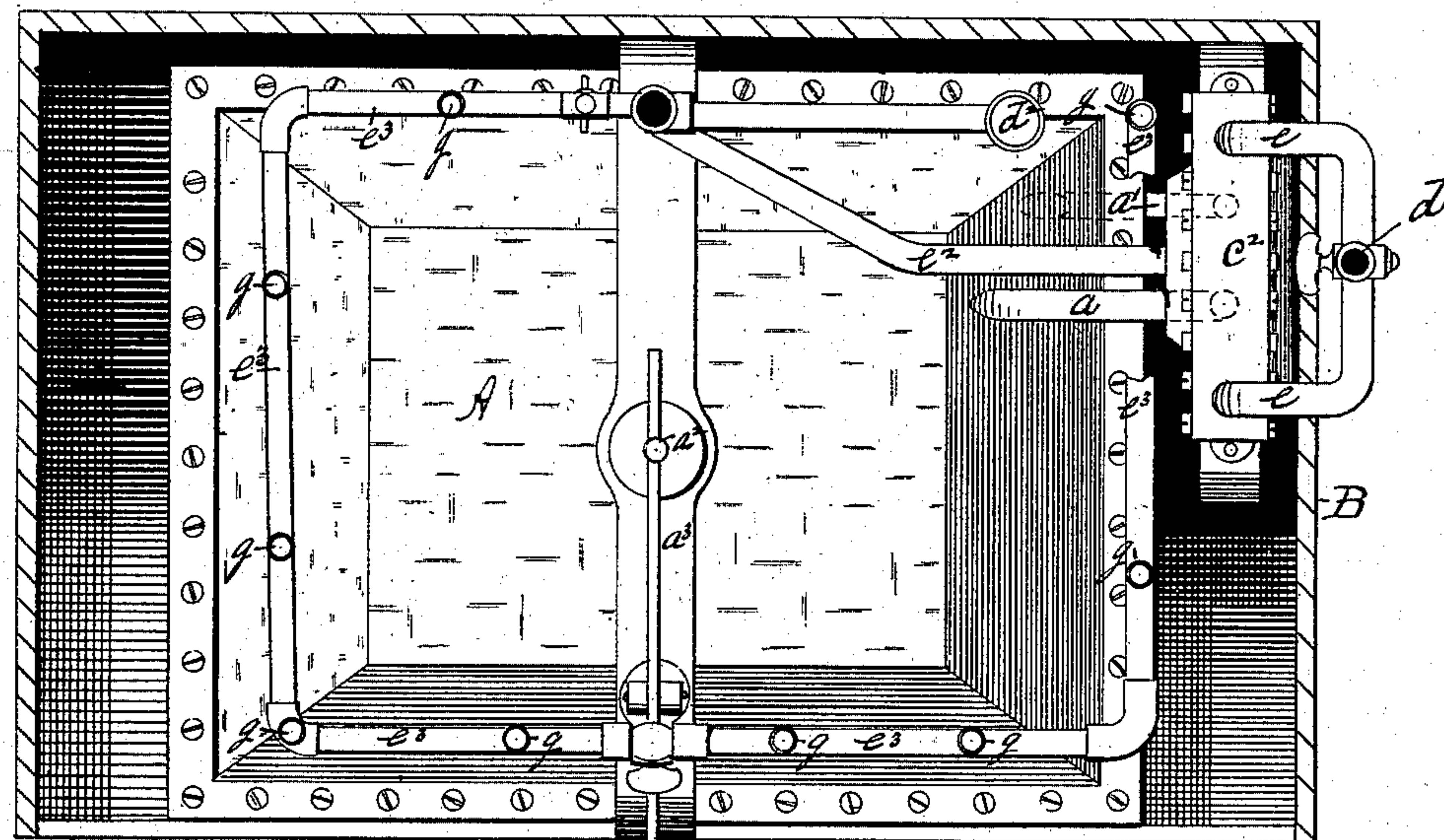


Fig. II,

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(No Model.)

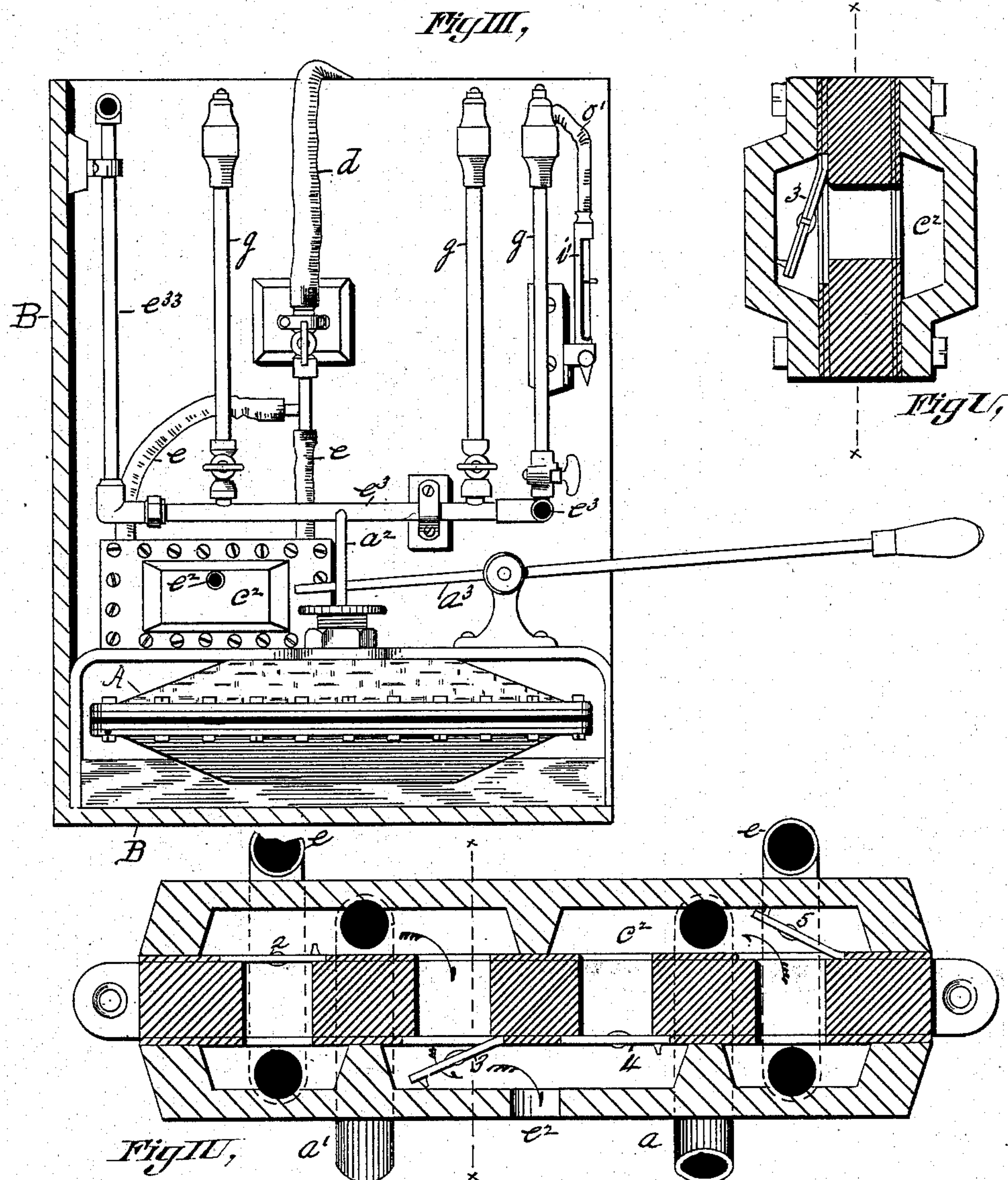
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

JOHN N. CHAMBERLAIN, OF SPRINGFIELD, MASSACHUSETTS.

EXHIBITION-CABINET FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 273,952, dated March 13, 1883.

Application filed June 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. CHAMBERLAIN, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Exhibition-Cabinets for Gas-Burners, of which the following is a specification.

This invention relates to the details of the construction of an exhibition and testing cabinet for gas-burners, the object being to combine in a portable and convenient form a suitable gas-receptacle capable of receiving and delivering gas under varying pressures, with a distributing-pipe leading therefrom and adapted to support thereon and supply gas to a series of burners, and to afford connections and a support for apparatus for determining the quality and quantity of gas consumed and the varying pressures under which it is delivered to burners and by them consumed.

In the drawings forming part of this specification, Figure 1 is a plan view, partly in section, and Fig. 2 is a front elevation, also partly in section, of a gas-burner exhibition-case constructed according to my invention. Fig. 3 is an elevation of the right-hand side of the case shown in Fig. 2. Fig. 4 is a longitudinal section of the valve-box interposed between the supply-pipe and the apparatus, and Fig. 5 is a vertical section through the line $x x$, Fig. 4.

In the drawings, B indicates a properly-constructed case, of box form, for holding the apparatus.

A is a double-chambered gas-reservoir, formed by securing a flexible diaphragm, c , between the two halves of its body in a well-known manner. A rigid block or plate, c' , is secured to or within said diaphragm, extending from the center thereof toward the surrounding edges of said reservoir, said diaphragm and plate c' being so adapted to each other and to the surrounding walls of said reservoir as to permit the plate and diaphragm to be moved reciprocally up and down therein, whereby two chambers adapted to alternately receive and discharge gas are formed. A piston-rod, a^2 , is secured to plate c' , and passes up through the top of said reservoir, and is provided with a slot, as shown, to permit of engaging the end of a hand-lever, a^3 , there-

with, said hand-lever having a suitable fulcrum-support on a floor above said reservoir, as in Fig. 3. By operating said lever a^3 the diaphragm in said reservoir is moved up and down therein.

A valve-box, c^2 , is located near to one side of reservoir A, provided with interior gas-passages, as shown in Figs. 4 and 5, and with hinged clapper-valves 2 3 4 5. The pipe d , Figs. 1, 2, 3, is the main gas-supply pipe, and two pipes, $e e$, are led therefrom to said valve-box c^2 , and two pipes, $a a'$, lead from the latter to said reservoir, one connecting with each of said chambers therein, and a pipe, e^2 , leads from the side of said valve-box, connecting the chamber within the latter with a main distributing-pipe, e^3 , which runs around the interior of the case.

The action of the clapper-valves in the box c^2 while gas is flowing to pipe e^3 through pipe e^2 is as follows, viz: Gas flowing through the left-hand pipe e would open valve 2, and flowing to the right in the direction of the arrow would flow against valve 3, opening that, and pass out at e^2 , and if flowing through the left-hand pipe e it will open valve 5, flow across and open valve 4, and out at e^2 . The action of said valves is, however, different when the diaphragm c of the reservoir A is operated to inhale gas into either the upper or lower chamber thereof for the purpose of expelling it therefrom under pressure into the main burner-supply pipe e^3 , without permitting any back-flow in the pipes $e e$ and d . Therefore, supposing the handle end of lever a^3 be moved downward, causing the diaphragm c to be drawn upward from the position it occupies in Fig. 2, the gas therein would be forced through pipe a into valve-box c^2 , shutting valve 5 and the passage leading to pipe e , (at the right,) opening valve 4 and shutting valve 3, and thus forcing the flow of gas through pipe e^2 under such pressure as the operator may desire. The upward movement of said diaphragm, as just described, causes valve 3 to close and opens valve 2, and creates a forced flow of gas from pipe e (at the left) through pipe a' into the lower chamber of the reservoir, and a downward movement of said diaphragm, whereby gas is drawn through pipe e (at the right) into the upper chamber of said reservoir, shuts valve

4 and opens valve 5. Thus the office of said valve-box is to allow a free flow of gas from pipes e , through it and pipe e^2 , to pipe e^3 , and to permit gas to be forced from either the upper or lower chamber of the reservoir into pipe e^3 without escaping through pipe e , and to permit gas to flow into one of said chambers while being forced out of the other one.

The pipe e^3 is adapted to be run around four or less sides of the exhibition-case B, as shown in Fig. 1, upon which are supported, on suitable stand-pipes, g , various burners, on others one or more Argand burners, h^2 , a siphon pressure-gage, h , an instrument, f , for measuring the strength of the gas-flame, an instrument, d^2 , for measuring the quantity of gas consumed by any burner connected to pipe e^3 , suitable stop-cocks, as shown, being placed in said pipe, whereby the gas entering it from pipe e^2 may be made to flow to the left or to the right, or both ways, in supplying that part of pipe e^3 (which is broken off in Fig. 2) which runs along in front. That part of said pipe and its connections located on the right-hand side of case B, and which is connected with the top of instrument d^2 by pipe e^3 , (shown in both Figs. 2 and 3,) is shown in Fig. 3, in which i' is a siphon pressure-gage connected by pipe o' to a burner, just below its tip, for the purpose of determining the pressure therein while burning.

In Fig. 2, i is a second siphon-gage connected by a pipe, o , to a burner at a different

point from the last-named one. Said gages i and i' are operative only when the burners with which they are connected have gas flowing through them from pipe e^3 . The siphon-gage h indicates the pressure in pipe e^3 .

When gas flows freely through pipes e , valve-box c^2 , and pipe e^2 to pipe e^3 , gas is burned in the several burners connected therewith at about the pressure existing in the gas-mains from which it is drawn, and without means above described for varying the gas-pressure all experiments must be made under the gas-main pressure, which would be greatly inadequate to the requirements of a complete exhibition of burners of differing capacities, while with the appliances herein described every requisite necessary to a complete exhibition-cabinet is provided in a compact and convenient form.

What I claim as my invention is—

A portable cabinet for the exhibition and testing of gas-burners, having a flexible gas-receptacle adapted to hold and to deliver gas under varying pressures into a distributing-pipe leading therefrom, and having connected thereto a series of burner-stands and burners and gas testing apparatus, as described, substantially as set forth.

JOHN N. CHAMBERLAIN.

Witnesses:

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WM. H. CHAPIN.