

2 Sheets—Sheet 1.

No. 376,822.

Patented Jan. 24, 1888.

*Fig. 1.*

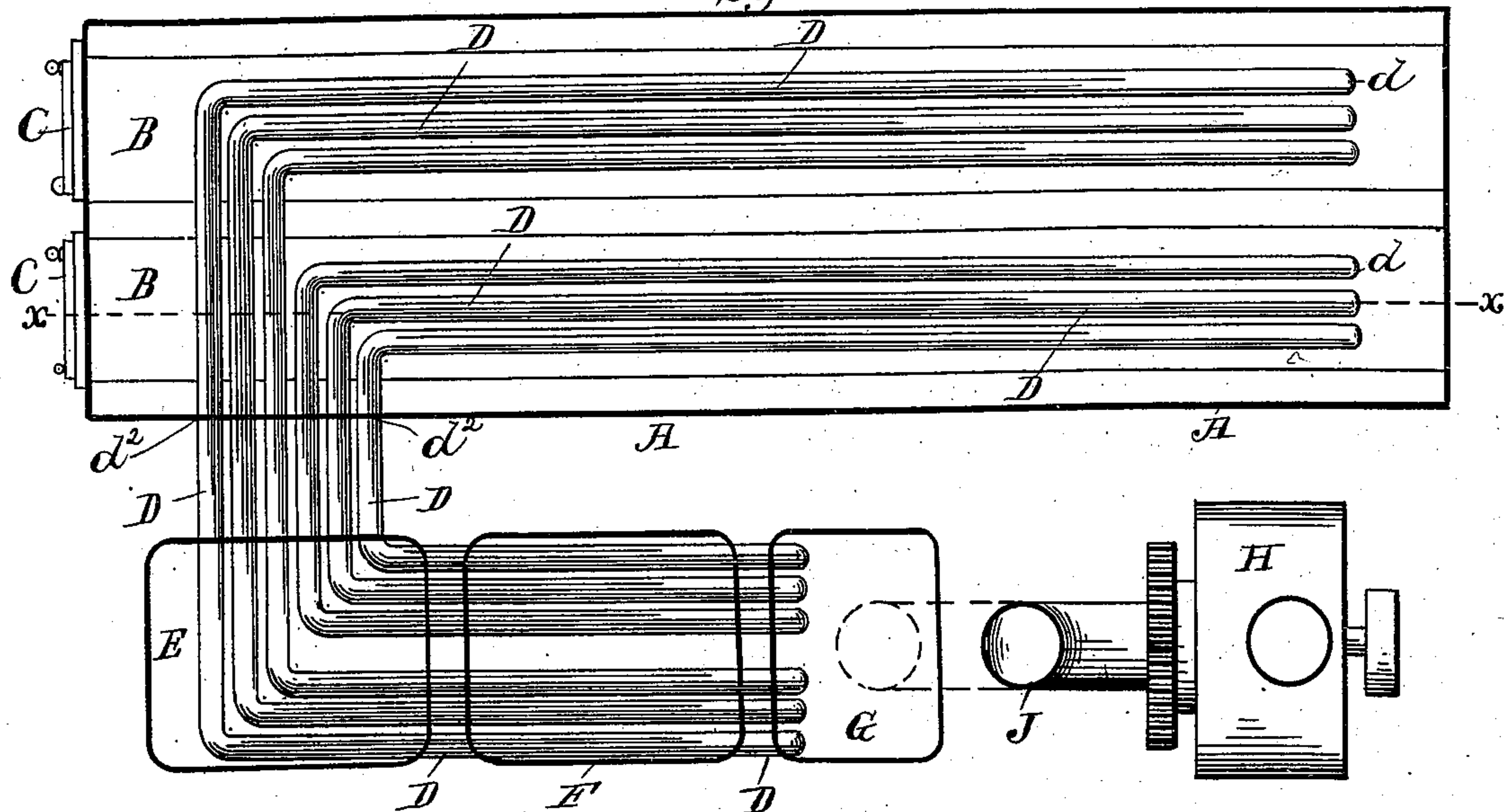


Fig. 2.

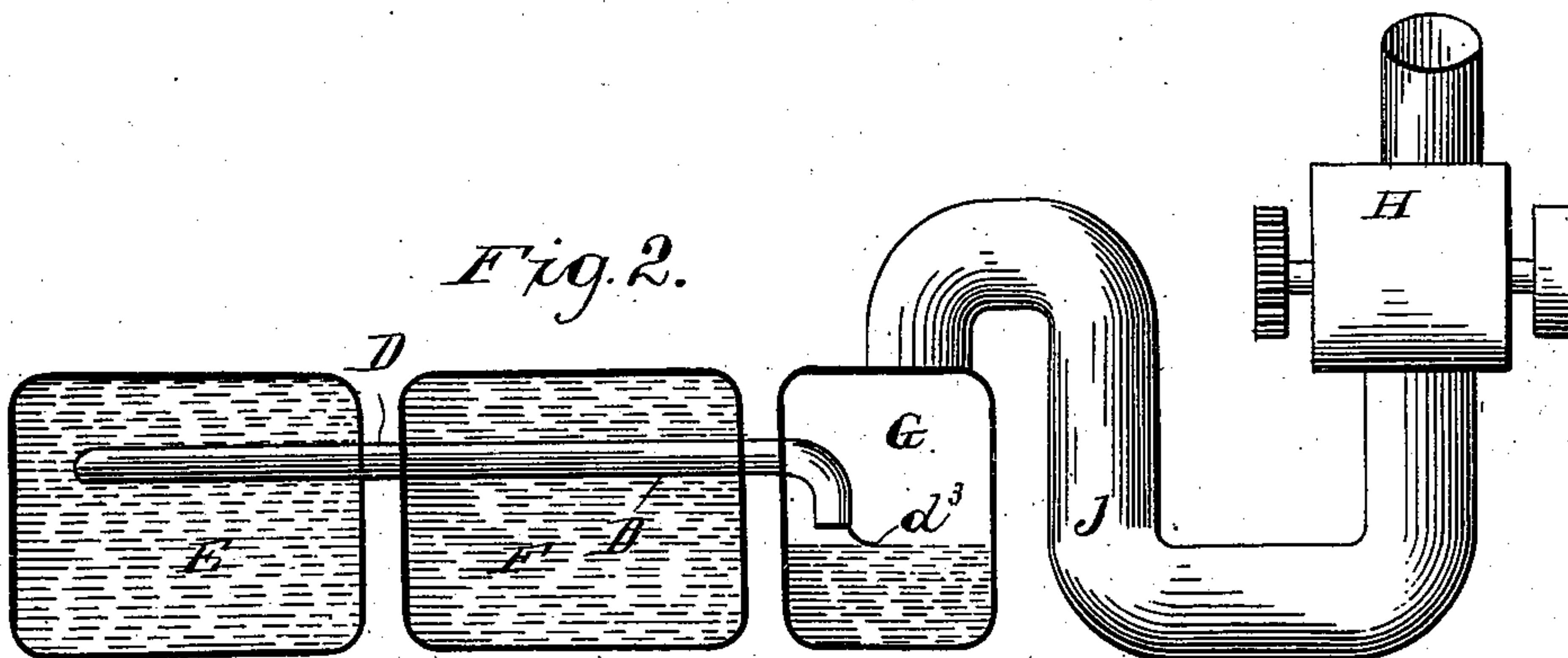
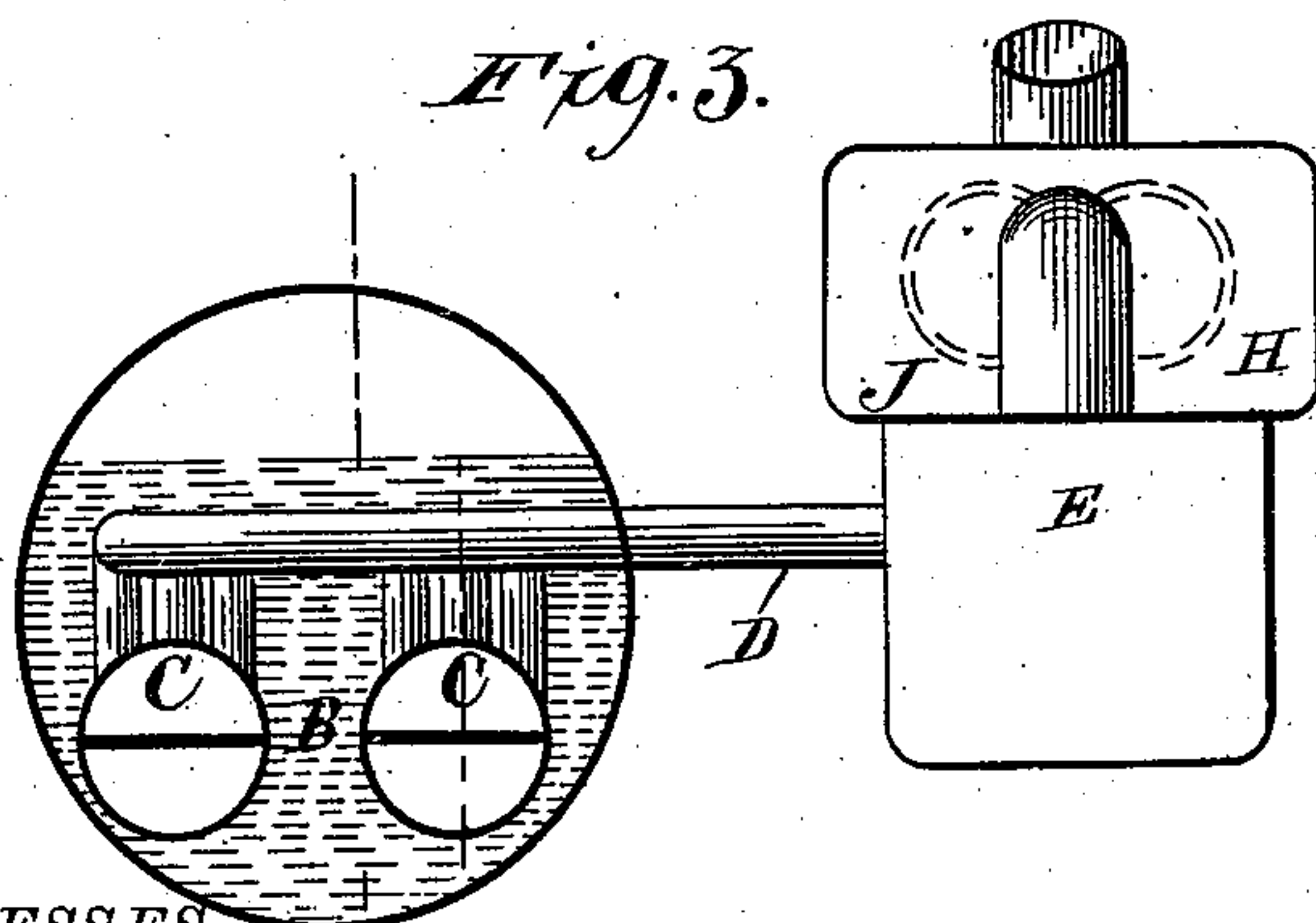


Fig. 3.



*WITNESSES*

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(No Model.)

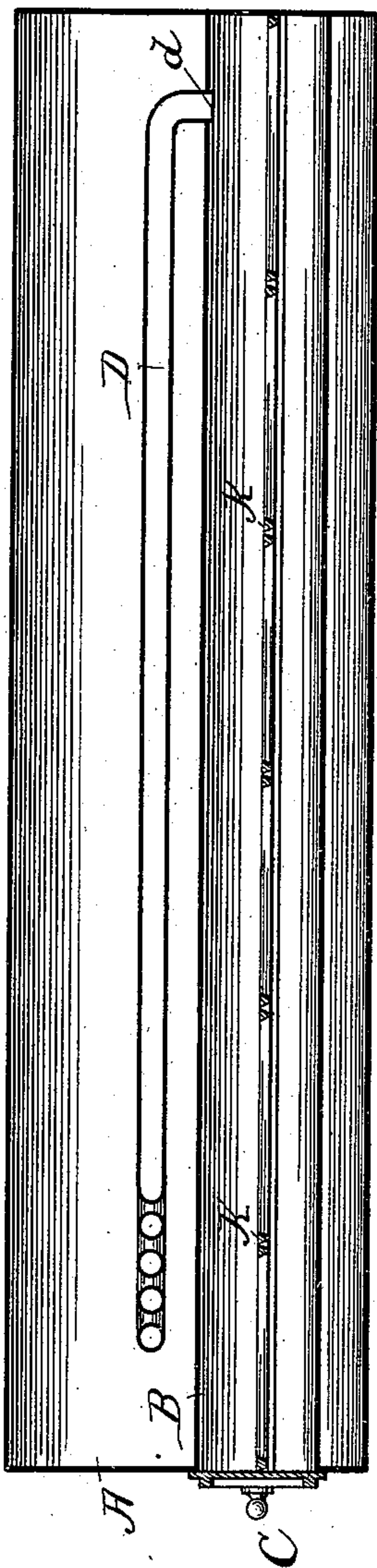
2 Sheets—Sheet 2.

R. W. HEWETT.  
SMOKE CONSUMING FURNACE.

No. 376,822.

Patented Jan. 24, 1888.

*Fig. 4.*



*Attest:*  
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# UNITED STATES PATENT OFFICE

REGINALD WALTER HEWETT, OF BIRMINGHAM, COUNTY OF WARWICK,  
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## SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 376,822, dated January 24, 1888.

Application filed February 28, 1887. Serial No. 229,244. (No model.)

*To all whom it may concern:*

Be it known that I, REGINALD WALTER HEWETT, a subject of the Queen of Great Britain, and a resident of Birmingham, in the county of Warwick, England, have invented certain new and useful Improvements in Smoke-Consuming Furnaces, of which the following specification is a full, clear, and exact description.

My invention relates to certain improvements for increasing or intensifying the combustion of ignited fuel, and is applicable to steam-boiler furnaces and to heating apparatus of various descriptions.

The object of the invention is to intensify the combustion of ignited fuel by instrumentalities auxiliary to the ordinary means of forcing or blowing, or of causing drafts or currents to be produced by means of flues, chimneys, or steam-jets.

In carrying out my invention I utilize an exhaustor—such as a bellows, blower, fan, or the like—operated by any suitable motive power, in order to create the required vacuum to cause air or gases to pass through the fuel and to be withdrawn from the combustion-chamber.

My invention is hereinafter described, in connection with the accompanying drawings, which show a practical application of said invention, and its features of novelty are pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a plan view, partly in section, of an apparatus embodying my invention. Fig. 2 is a side elevation, partly in section, of a portion of the apparatus of Fig. 1. Fig. 3 is a front elevation of an ordinary Lancashire boiler with the front plate removed with my invention applied thereto, and Fig. 4 is a longitudinal sectional view through the line *x x* of Fig. 1.

Referring to the drawings, the letter A indicates the outer shell of a boiler-furnace of any desirable type, and B the flues thereof, which are adapted to be fired at C.

The letter D indicates tubes which are attached to the flues B at *d'*, so as to communicate therewith, and which are arranged to traverse the boiler within the water-space, as

shown. At or near the opposite end of the boiler from where the tubes D enter the flues B said tubes are carried through the side of the boiler, as shown at *d''*, for instance; and said tubes D are thence conducted into and through a tank, E, of suitable dimensions and of suitable material, and thence into and through a second tank, F, not unlike the first, and finally terminate at *d'''* in an air-tight chamber, G, as shown most clearly in Fig. 2. The air-tight chamber G is supplied with water, as shown, the purpose of which is to catch any dust that may be contained in the air drawn into said chamber.

The exhaustor H, which, as before intimated, may be of any suitable pattern, is connected to the chamber G by means of the pipe or tube J. The tanks E and F are kept supplied with water sufficient to submerge the tubes D, which pass therethrough.

In Fig. 4 the grate bars within flues B are shown at K, the tubes D being shown connected to said flues B at the rear end of the furnace and boiler.

The operation of my invention is as follows: The exhaustor H being put in action by means of any suitable motive power, the air is drawn into the flues B at C and through the fire, from thence through the pipes or tubes D into the chamber G, from which it is drawn through the pipe J into the exhaustor H, which delivers it into any suitable conduit or the like adapted to receive it. The air in its passage through the tubes D to the chamber G becomes partially cooled in tank E, the water in which, being greatly increased in temperature by the extracted heat, may be used as feed-water for the boiler. The air is further cooled in its passage through the tubes by reason of their extending through the water-tank F. Any dust that may have been conveyed by the air into tubes D is deposited, as already stated, in the water of chamber G.

The application of my invention to other forms of steam-boiler furnaces than that shown in the annexed drawings, or to furnaces and heating apparatus of various descriptions, would not differ essentially from what is herein shown and described.

Having thus described my invention, what I



claim as new, and desire to secure by Letters Patent, is—

1. In combination with the boiler and its heating-flues, a series of independent tubes  
5 connected to said heating-flues at their rear ends and a suction or exhaust apparatus in communication with said tubes, whereby air is drawn into and through said heating-flues, substantially as and for the purpose set forth.
- 10 2. In combination with the boiler and its heating-flues, a series of independent tubes connected to the rear ends of said heating-flues and extending through the water-space of the boiler and protruding therefrom, and an ex-  
15 haust or suction apparatus in communication with said tubes, substantially as and for the purpose set forth.
3. In combination with a boiler and its heating-flues, the independent tubes D, con-  
20 nected to the rear ends of said heating-flues

and extending through the water space of the boiler, a water-tank exterior of the boiler, through which said tubes pass, and a suction apparatus, substantially as set forth.

4. The boiler and its heating-flues, in com- 25  
bination with a series of independent tubes connected to the rear ends of said heating-flues and extending through the water-space of the boiler, an air-tight water-vessel, G, into which the exhausted air is discharged, and a 30  
suction apparatus in communication with said vessel G, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my name in the presence of two witnesses.

REGINALD WALTER HEWETT.

Witnesses:

GEORGE PRICE,  
LEWIS WM. GOOLDS.