

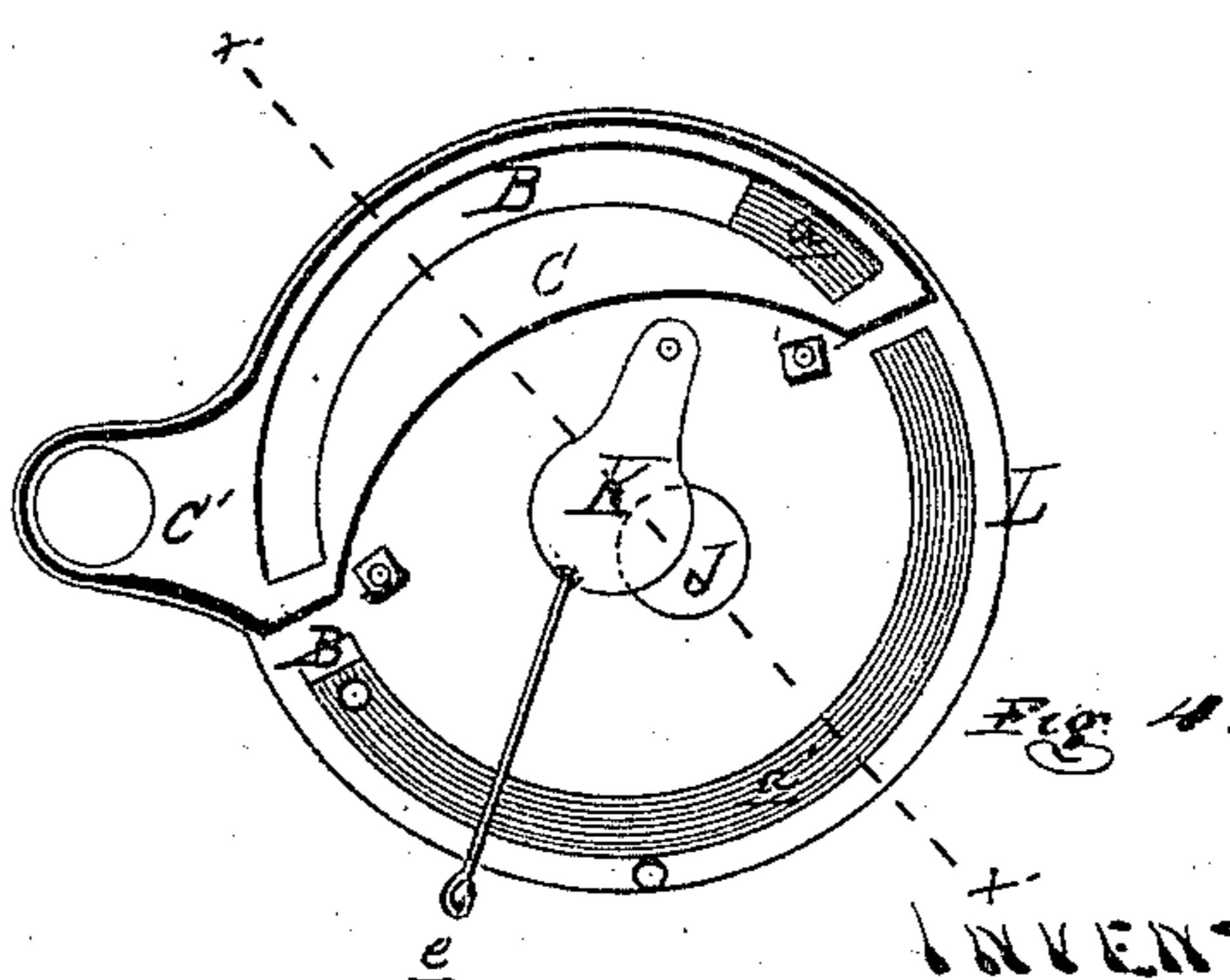
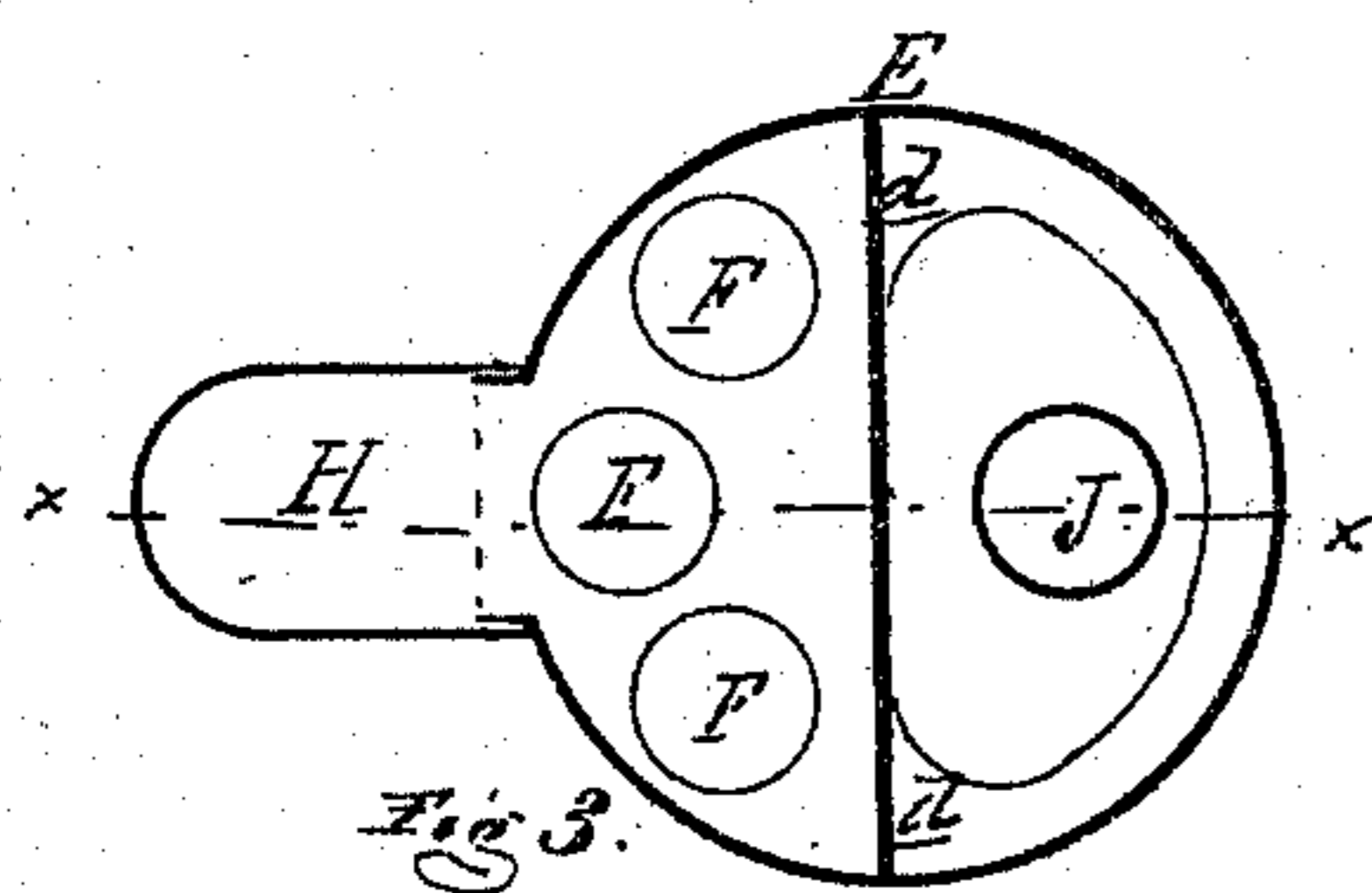
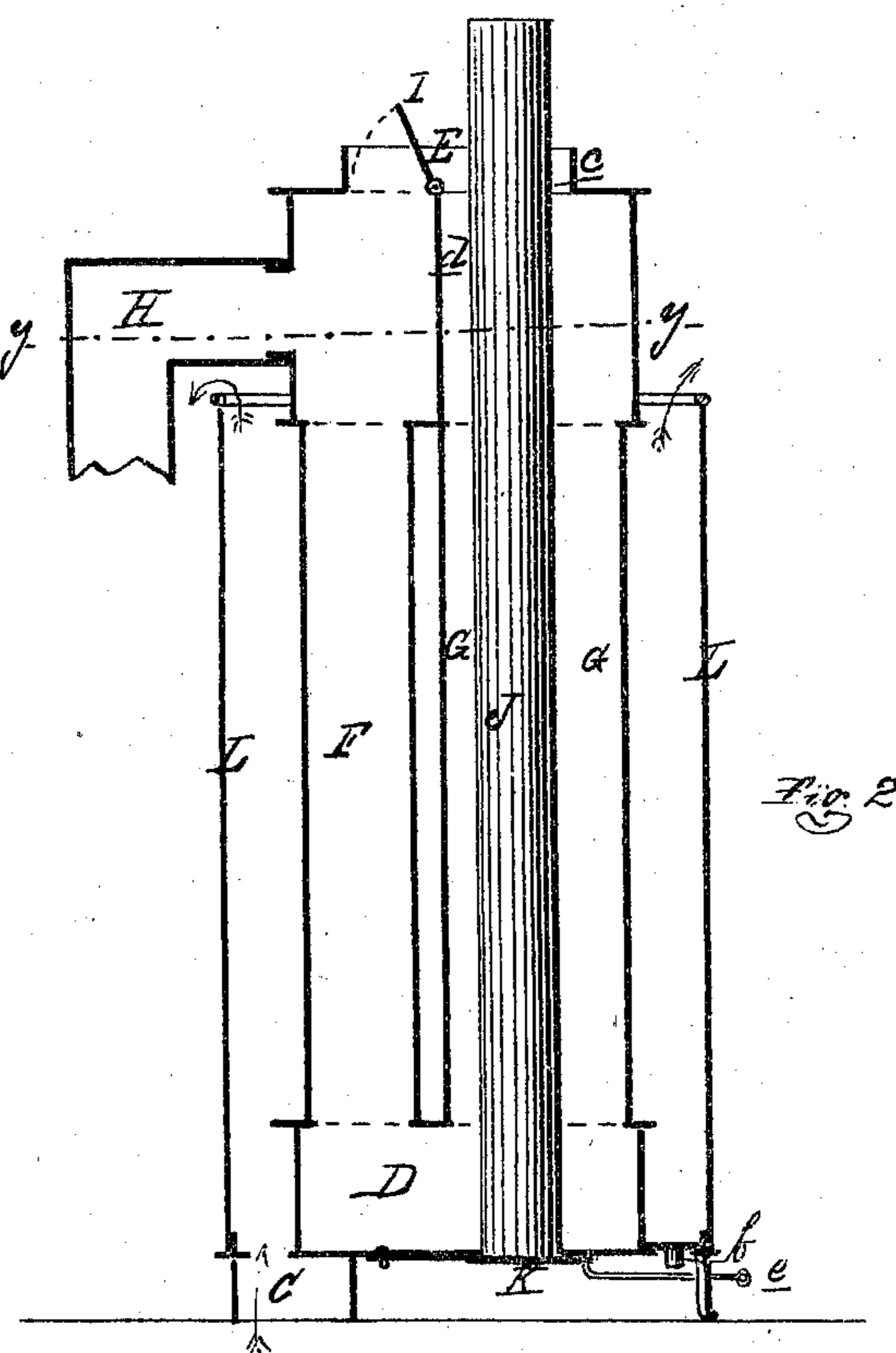
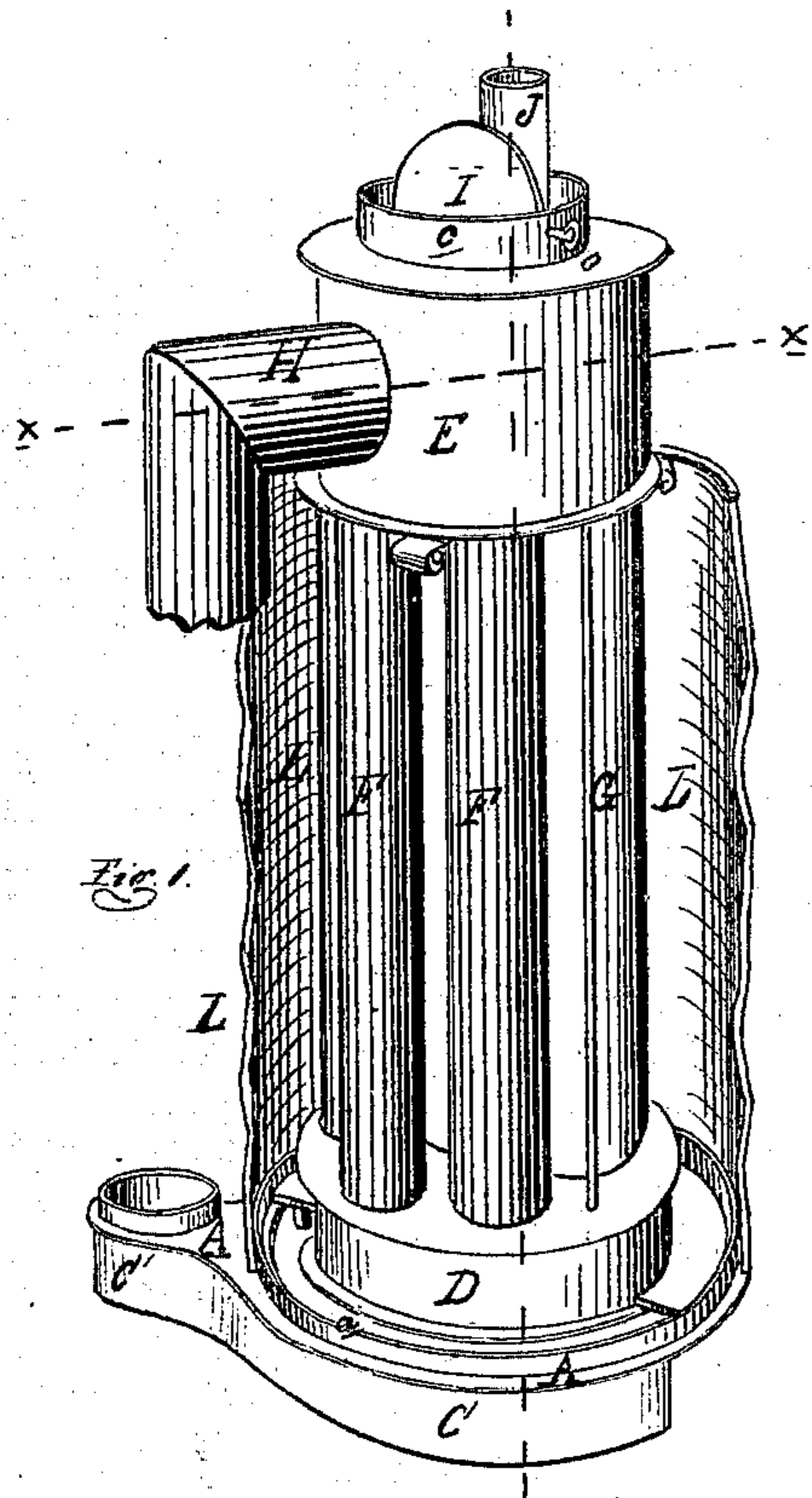
(154.)

JOHN GROSS.

## Radiator.

No. 122,720.

Patented Jan. 16, 1872.



ATT EST:

Mayrow W. Church  
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**INVENTOR:**

John Groff  
per Atty  
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# UNITED STATES PATENT OFFICE

JOHN GROSS, OF RIDGEVILLE, CANADA.

## IMPROVEMENT IN RADIATORS.

Specification forming part of Letters Patent No. 122,720, dated January 16, 1872.

*To whom it may concern:*

Be it known that I, JOHN GROSS, of Ridgeville, in the county of Welland and Province of Ontario, Canada, have invented a new and useful Improvement in Radiators; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is a perspective view of my radiator, with a portion of the external casing broken away. Fig. 2 is a vertical section on the line *x x*, Figs. 1 and 4. Fig. 3 is a horizontal section on the line *y y*; and Fig. 4 is an inverted plan of the under side of the base.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to a radiator to be used in connection with a heating-stove or furnace, for utilizing the heat escaping therefrom which would otherwise be lost; and to the arrangement of the radiator in such a way as to ventilate and carry off the foul air from the apartment in which it is placed, while furnishing a regulated volume of fresh air more or less warmed. The invention consists in the novel and peculiar construction of the radiator and the arrangement of its various parts, as more fully hereinafter set forth.

In the drawing, A represents the base-plate of my radiator, with two peripheral segmental openings, *a a'*, either of which may be closed by the segmental slide B, resting on top and moved by a pendent stud or handle, *b*, Figs. 1 and 2. C is an air-chamber inclosing the opening *a*, extending to the floor of the room and open at the bottom. An opening may be made through the floor into this chamber to supply the fresh air, or the chamber may be extended at one end, as at C', and provided with a collar at the upper side to receive a cold-air pipe leading down from above, where the radiator is to be used in the basement of a building, or in the lower cabin of a ship. D is the base-chamber, above and within the inner circle of the openings *a a'*. E is the top chamber, connected with the base-chamber by a number of diving flues, F, and an ascending flue, G. At the top is a collar, *c*, on which the smoke-pipe attaches to the top chamber, which is also divided by a transverse partition, *d*,

between the ascending and descending or diving-flue. The smoke-pipe H of the stove or furnace discharges the products of combustion in that part of the top chamber which is partitioned off to include the diving-flues. A semicircular damper or valve I in the collar *c*, and hinged to the top of the partition, when opened, as shown in Fig. 2, gives a direct exit into the smoke-flue. J is what I call the foul-air pipe, opening through the base-plate, extending up through the ascending flue and passing into the smoke-pipe of the radiator. K is a valve pivoted underneath the base-plate so as to open or close the lower end of this pipe by means of a handle, *e*, provided for that purpose. L is a sheet-metal air-chamber resting on the base-plate around a flange at its periphery, inclosing the flues and a portion of the top chamber, and is open at the top.

The operation of the radiator is as follows: Close the damper I, and the products of combustion entering at H will be compelled to pass down the diving-flues into the base-chamber, thence up through the ascending flue into the smoke-pipe. If the segmental slide B be so disposed as to close the segmental opening *d* against the entrance of cold fresh air, and the bottom of the foul-air pipe be also closed, a circulation of air contained in the room will at once take place, the cold air at the floor entering at the opening *a'* and passing up between and in contact with the flues and heated top and base chambers, passes out at the top considerably raised in temperature, and thus rapidly heats the apartment. If the apartment be a close one the air will soon become vitiated and unfit to breathe, the stratum of impure air being denser and heavier, by reason of which it settles to the floor, whence it may be carried away up the chimney by opening the valve at the bottom of the foul-air pipe, which necessitates the introduction of a fresh supply to the apartment to replace that which is drawn up the chimney. This is done by opening the segmental opening *d* by moving the slide B around and allowing a volume of external fresh air to enter within the jacket of the radiator and pass up into the apartment, being warmed on its passage in contact with the heated metal, thus insuring a perfect and well-regulated ventilation of the apartment, with economy in the fuel required to warm it.

This description of the radiator as applied to a stove in a single room is not intended to confine me in its use to such an arrangement, as the stove may be in one room and the radiator in another, and connected therewith by a smoke-pipe passing through the partition which separates them; or, if used in connection with a warm-air furnace, it may be set within the air-chamber or hot-room with the furnace. Where the radiator is used below the plane of the cold-air duct which supplies it with fresh air, the extension of the air-chamber as shown at C' is necessary; otherwise it may be dispensed with and the air-supply brought underneath the base-plate, as described.

Although I prefer the multiplicity of flues

shown on account of the great radiating surface they afford, and which is essential if a large volume of air is to be warmed, they may be replaced with a single large flue partitioned from top to within a few inches of the bottom.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the base-plate A, the air-chamber C and L, base-chamber D, top chamber E, smoke-pipe H, flues F and G, and foul-air pipe J, all constructed and arranged substantially as described, for the purposes specified.

Witnesses:

JOHN GROSS.

ALFRED W. STEELE,  
JONAS STEELE.

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