

(No Model.)

T. E. SPENCER.
WATER HEATER.

No. 446,301.

Patented Feb. 10, 1891.

Fig. 1.

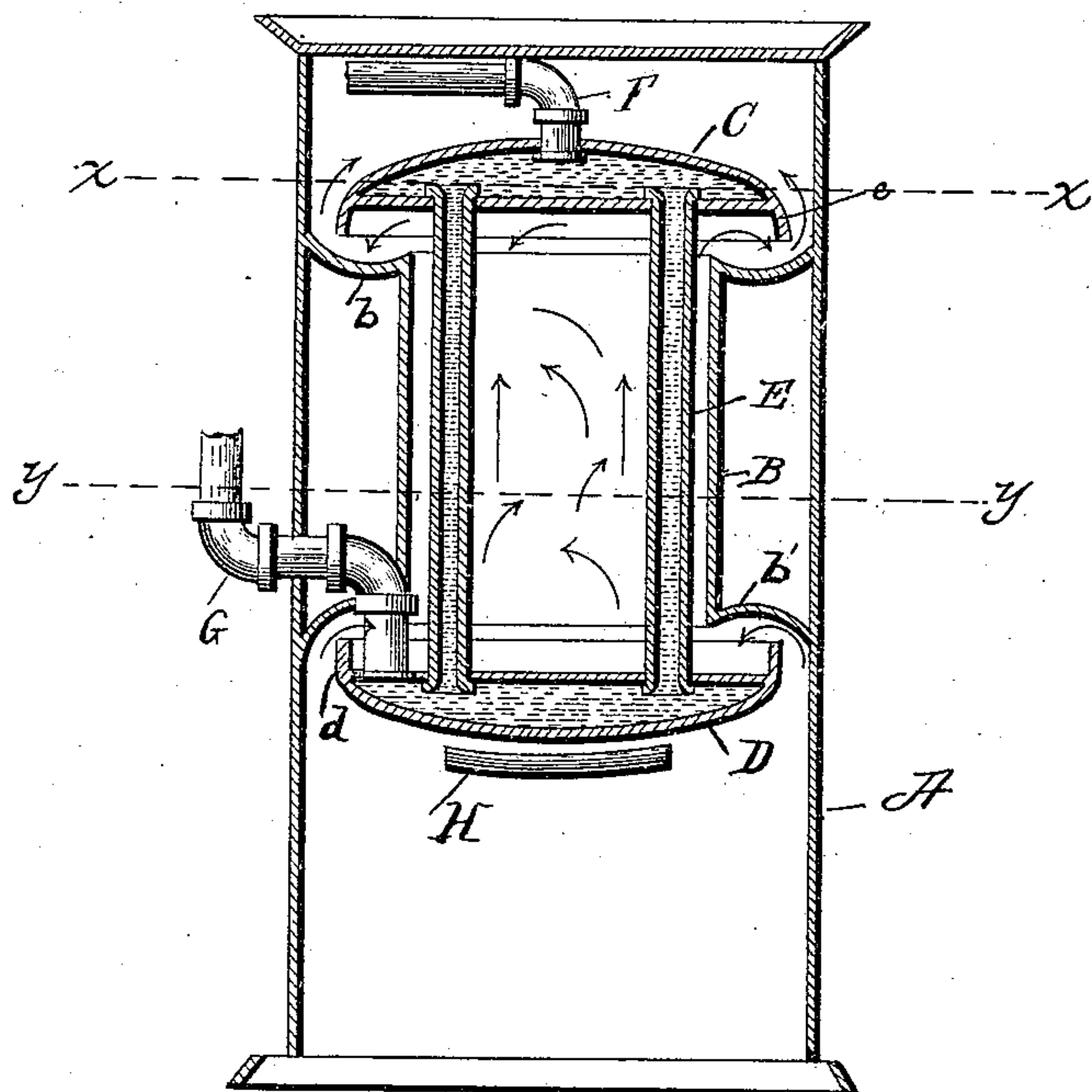


Fig. 2.

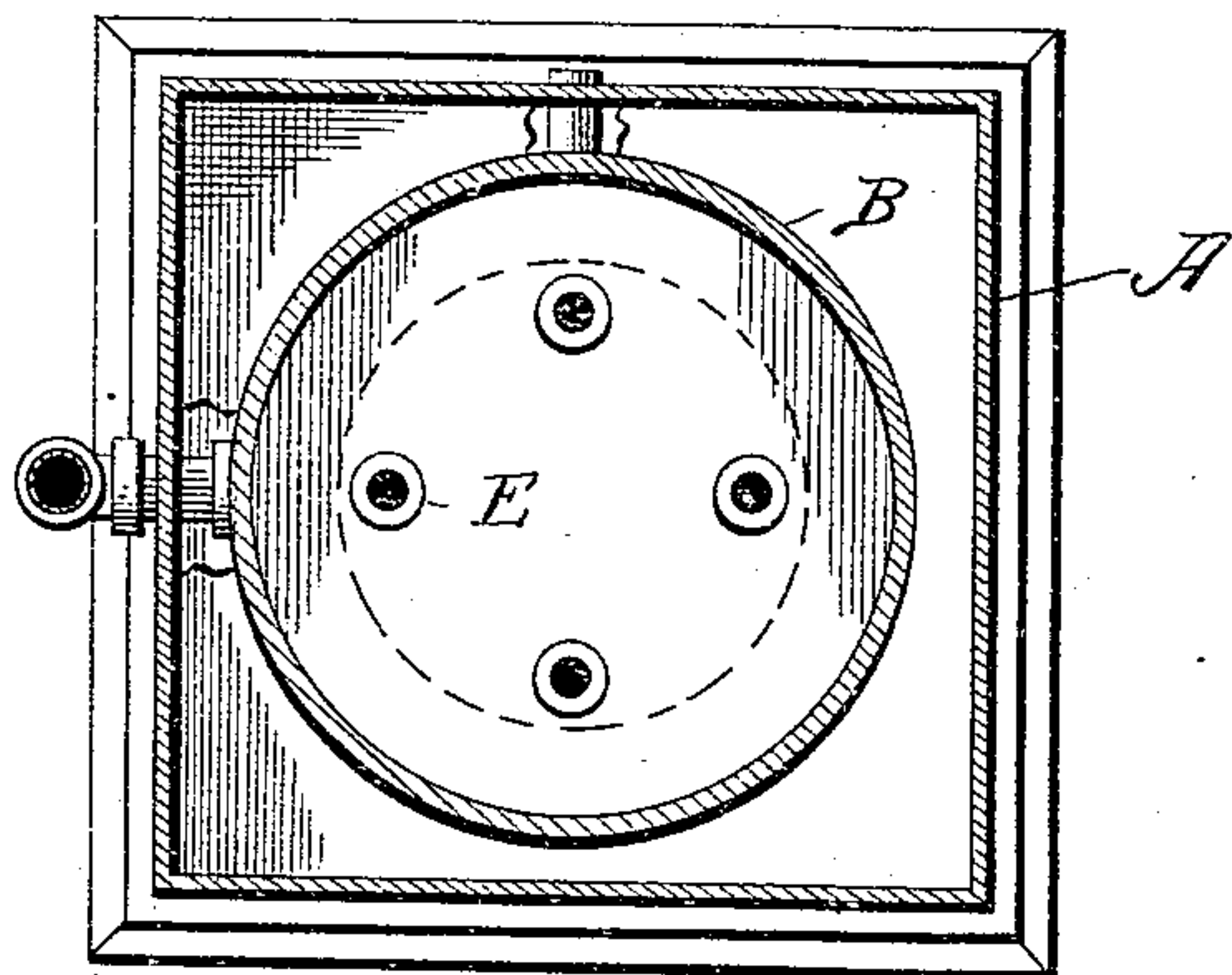
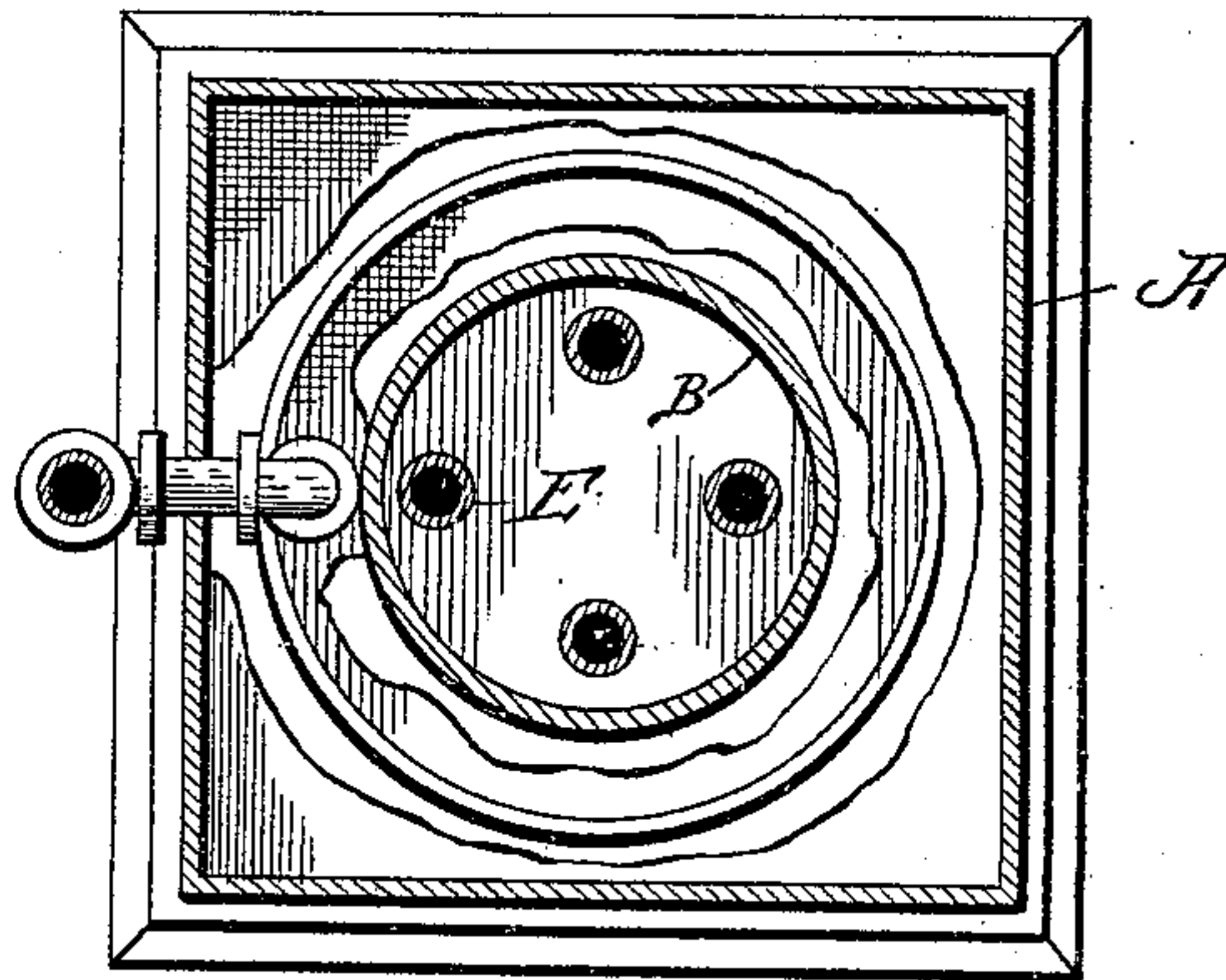


Fig. 3.



WITNESSES
Marcus L. Byng
W. Schneider.

INVENTOR
Thomas E. Spencer,
By
Arthur L. Morsell,
att. Attorney

UNITED STATES PATENT OFFICE.

THOMAS E. SPENCER, OF TORONTO, CANADA, ASSIGNOR TO CATHERINE E. SPENCER, OF SAME PLACE.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 446,301, dated February 10, 1891.

Application filed June 27, 1890. Serial No. 356,981. (No model.)

To all whom it may concern:

Be it known that I, THOMAS EDWARD SPENCER, manufacturer, a subject of the Queen of Great Britain, residing at the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Water-Heaters; and I hereby declare the following to be a full, clear, and exact description of the same.

The object of my invention is the provision of a simple and effective device of this character whereby all the heat generated is consumed and utilized.

With this object in view the invention consists in the improved construction and combination of parts, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a sectional view of my improved heater. Fig. 2 is a horizontal section on the line $x x$, Fig. 1; and Fig. 3 is a horizontal section on the line $y y$, same figure.

Like letters of reference refer to like parts throughout the several views.

Referring to the drawings, the letter A indicates the outer casing, and B an inner deflecting-casing having an open top and bottom, connected at its upper end to the outer casing by means of an annular concave flange b and at its lower end by an annular convex flange b' .

The letter C indicates an upper water-chamber, the top of which is dome-shaped and has a depending annular flange c , which terminates sufficiently high above the upper flange b of the deflecting-casing as to form a passage for the flame, gas, and heated air.

The letter D indicates a lower water-chamber, having its bottom dome-shaped and extending upwardly to form an annular flange d , which terminates at a point sufficiently below the lower flange b' of the deflecting-casing as to leave a passage therebetween for the heated air.

The upper and lower water-chambers are connected by means of tubular pipes E, said chambers also provided, respectively, with a flow-pipe F and a supply-pipe G.

Within the outer casing, and beneath the lower water-chamber, is a burner H. The flame, gas, and heated air generated by this burner below the base-chamber pass across

the dome-shaped bottom, and, coming in contact with the base-flange b' of the deflecting-casing, are directed inward and upward about the pipes E, where they are permitted to ascend to and across the under side of the upper water-chamber C and through the passage formed between the overhanging flange c and the flange b of the deflecting-casing, and finally into the smoke-chamber I, whence they are carried off in the usual way. By this arrangement of parts I am enabled to consume all the heat generated by the burner, as the heated gas and air, in coursing between the pipes E and water-chamber, are entirely absorbed by the iron chambers filled with water.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a heater for gas-stoves, the combination of an outer casing, upper and lower water-chambers, pipes for connecting the same, and a cylindrical deflector surrounding the connecting-pipes, said deflector connected at its top and bottom within the outer casing, forming a closed annular chamber, substantially as set forth.

2. In a heater for gas-stoves, the combination of an outer casing, upper and lower water-chambers, pipes for connecting the same, and a cylindrical deflector surrounding the connecting-pipes, said deflector provided at its upper and lower ends, respectively, with concave and convex flanges connecting the same with the outer casing, substantially as set forth.

3. In a water-heater for gas-stoves, the combination of an outer casing, an inner deflecting-casing provided at its upper and lower ends with concave and convex flanges respectively connecting the same with the outer casing, upper and lower water-chambers provided with projecting vertical flanges, tubular pipes connecting the same, a flow-pipe fitted to the upper chamber, a supply-pipe entering the lower water-chamber, and a burner, substantially as set forth.

Toronto, June 17, 1890.

T. E. SPENCER.

In presence of—

GUSTAVE A. PRIEST,
JNO. COUSINS, Jr.