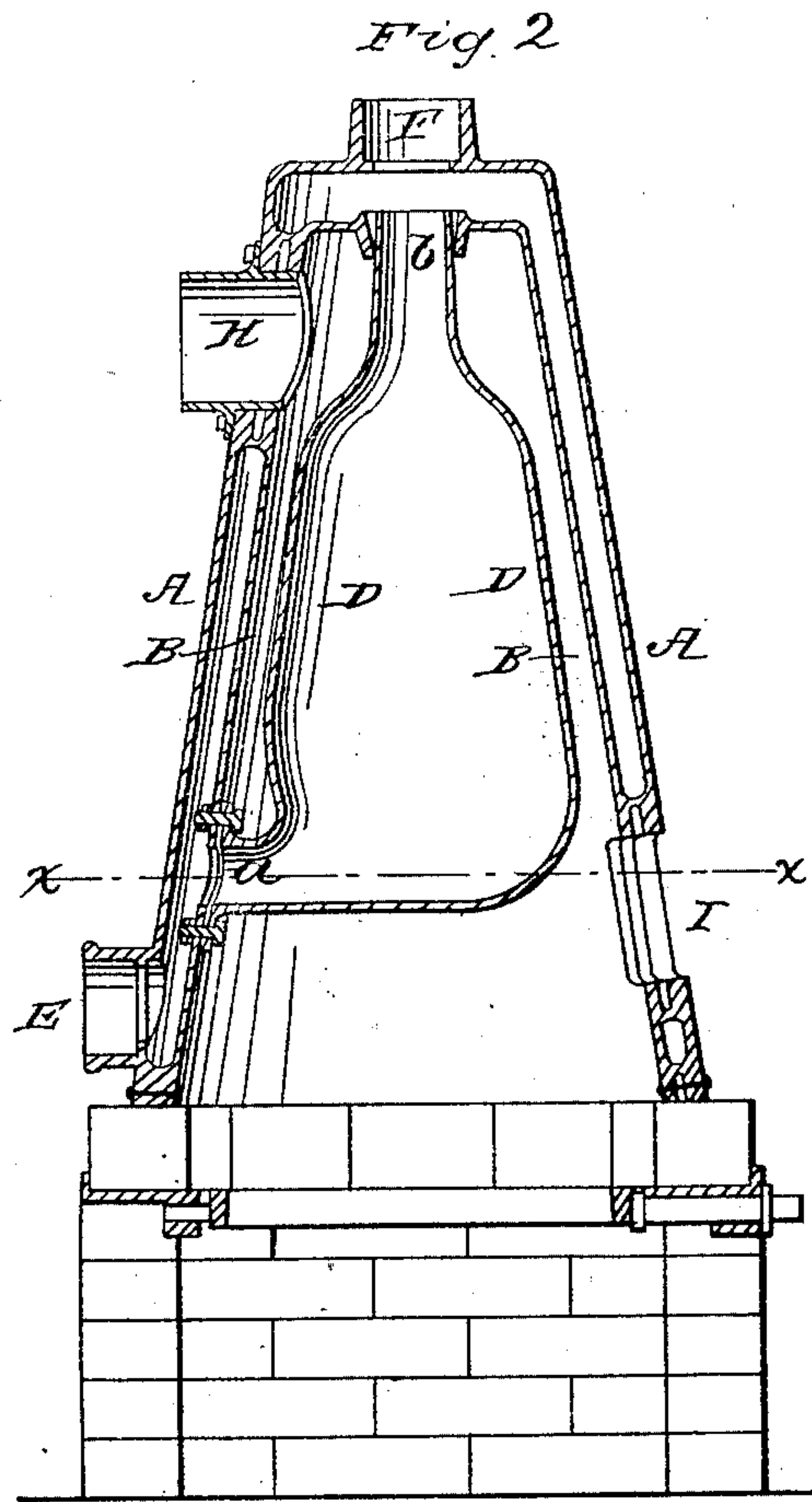
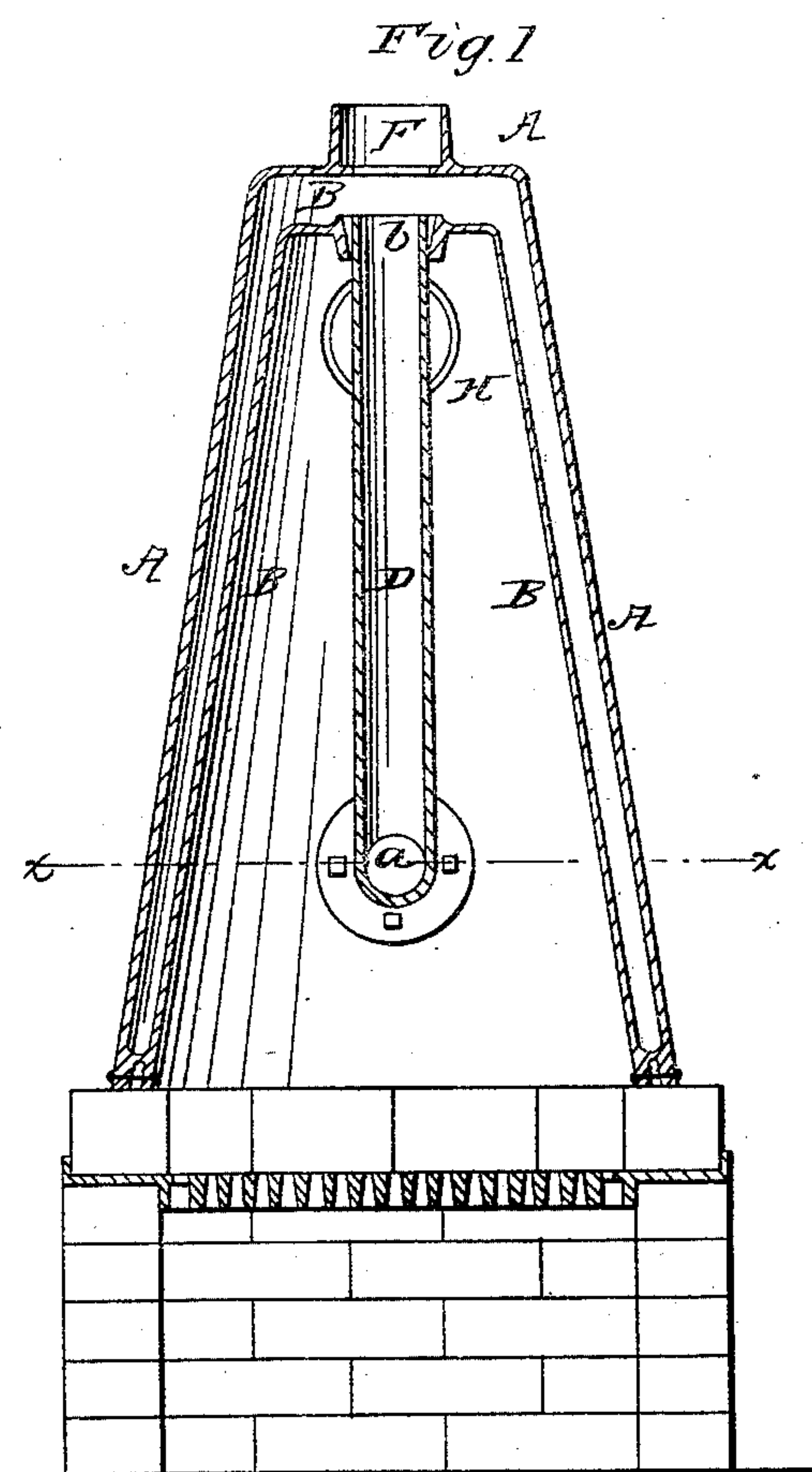


A. E. HITCHINGS.

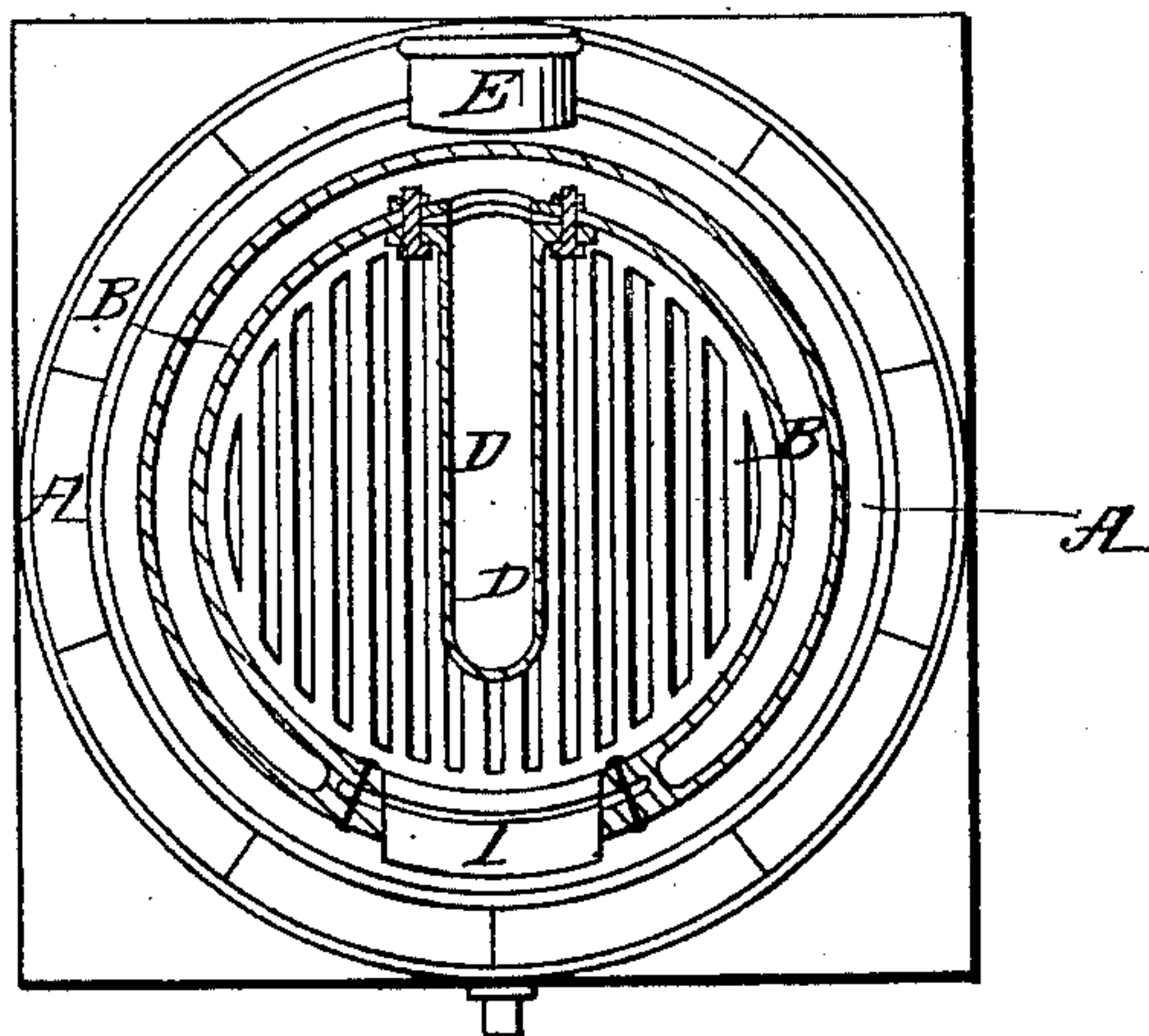
Steam Heater.

No. 18,693.

Patented Nov. 24, 1857.



*Fig. 3*



# UNITED STATES PATENT OFFICE.

ANTHONY ELLIS HITCHINGS, OF NEW YORK, N. Y.

## IMPROVEMENT IN BOILERS FOR HEATING BUILDINGS.

Specification forming part of Letters Patent No. **18,693**, dated November 24, 1857.

*To all whom it may concern:*

Be it known that I, ANTHONY ELLIS HITCHINGS, of the city, county, and State of New York, have invented a new and Improved Boiler for Heating Buildings, Greenhouses, &c., by Hot Water or Steam; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are vertical central sections at right angles to each other of my improved boiler. Fig. 3 is a horizontal section of the same in the line *xx* of Figs. 1 and 2.

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

A is a hollow upright frustum of a cone constituting the outer shell of the boiler.

B is a smaller hollow frustum of a cone with an open bottom arranged concentrically within the shell A and united therewith at the bottom, so as to form a hollow conical water-jacket.

D is an upright flat-sided chamber extending in one direction nearly all across the space within the water-jacket, as shown in Figs. 2 and 3, but being quite narrow in the other direction, as shown in Figs. 1 and 3, said chamber communicating at the bottom by a passage *a* and at the top by an open neck *b* with the interior of the water-jacket A B.

E is the inlet or feed pipe, entering the water-jacket A B near the bottom, and F is the outlet or steam pipe connecting with the top of the water-jacket.

I is the fire-door.

H is the smoke-pipe.

The boiler as above constructed is to be placed concentrically on a fire-brick coping on the top of a circular wall, with the fire-grate below the fire-brick coping, so that the flame and heated products of combustion

from the fire will play all round the inner surface of the water-jacket and the outer surface of the water-chamber. This boiler presents a very large heating-surface surrounded or covered by a small body of water, yet with a sufficient quantity to prevent its being carried out by a rapid generation of steam, and by this arrangement the heating-surface is exposed not only to the contact of the flame and heated products of combustion from the fire, but also to the radiated heat from the bed of fuel, the narrowness of the inner chamber D allowing the rays of heat to strike not only its own broad flat sides, but the inclined inner surface of the water-jacket. It is in this latter peculiarity that the advantage of my invention consists, for if a central chamber were made round of the same capacity as D the effect of the radiated heat would be in a great measure lost, besides which that form of the chamber would present a much less area of heating-surface. By the flat form of the central chamber I also obtain all the advantages of tubes with a cheaper construction, as the whole boiler can be constructed of cast-iron, which is strong enough for the purposes for which the boiler is intended.

I do not claim of itself the conical water-jacket with the fire in the center; but

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

The arrangement within the upright conical water-jacket A B of the upright flat-sided central water-chamber D, extending nearly across the said jacket in one direction, but made narrow in a transverse direction, substantially as and for the purpose set forth.

ANTHONY ELLIS HITCHINGS.

Witnesses:

W. TUSCH,

J. W. COOMBS.