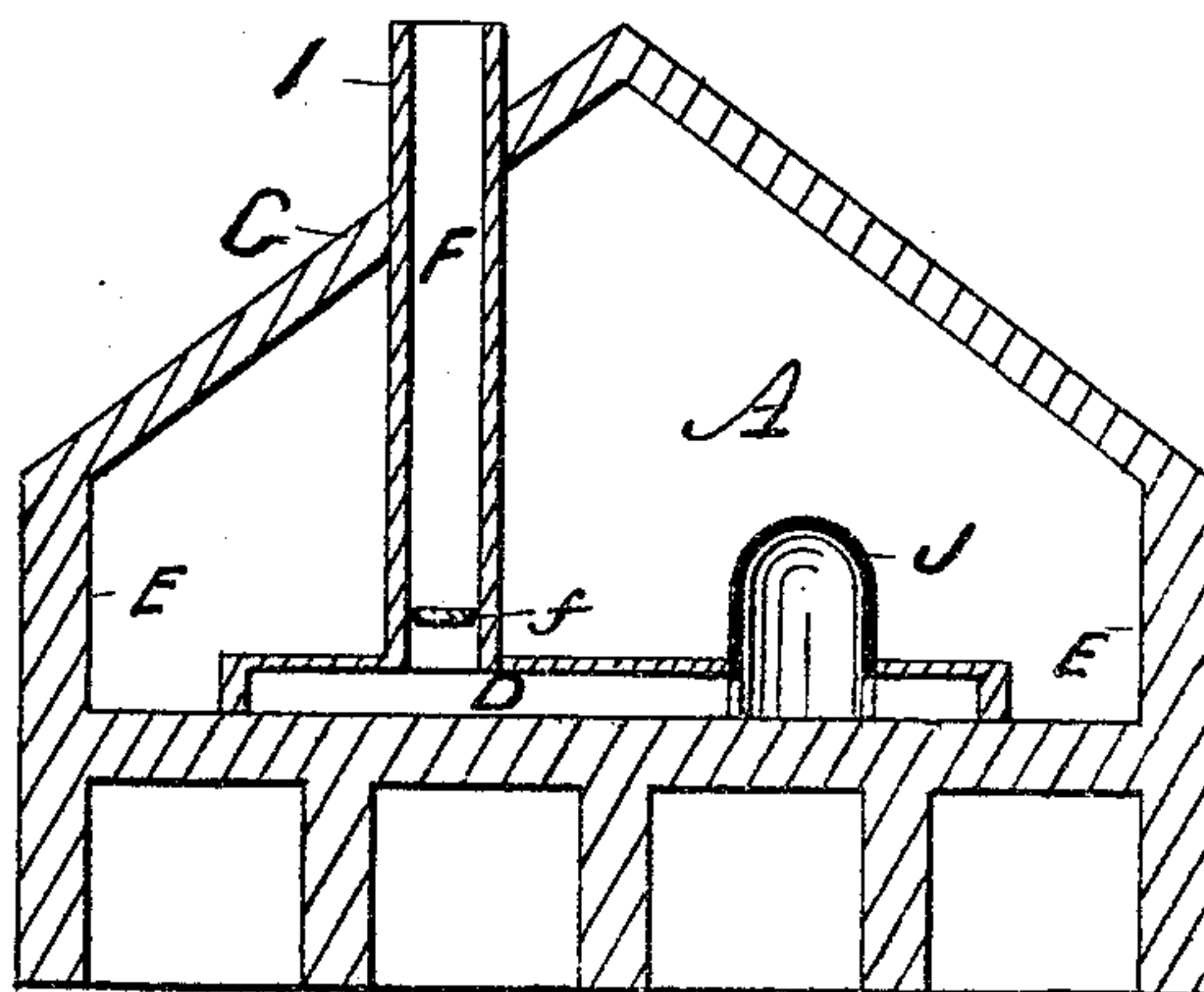
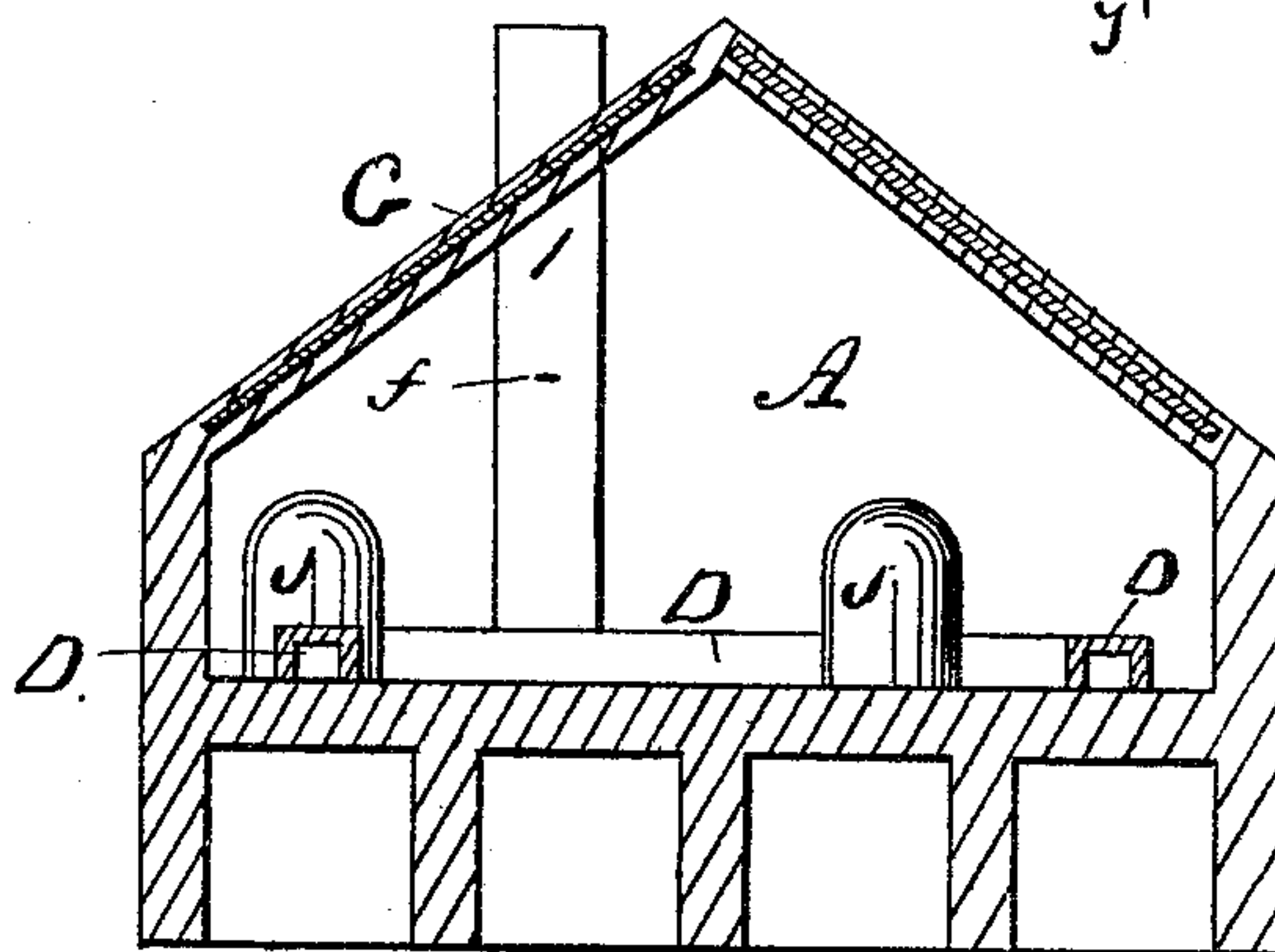
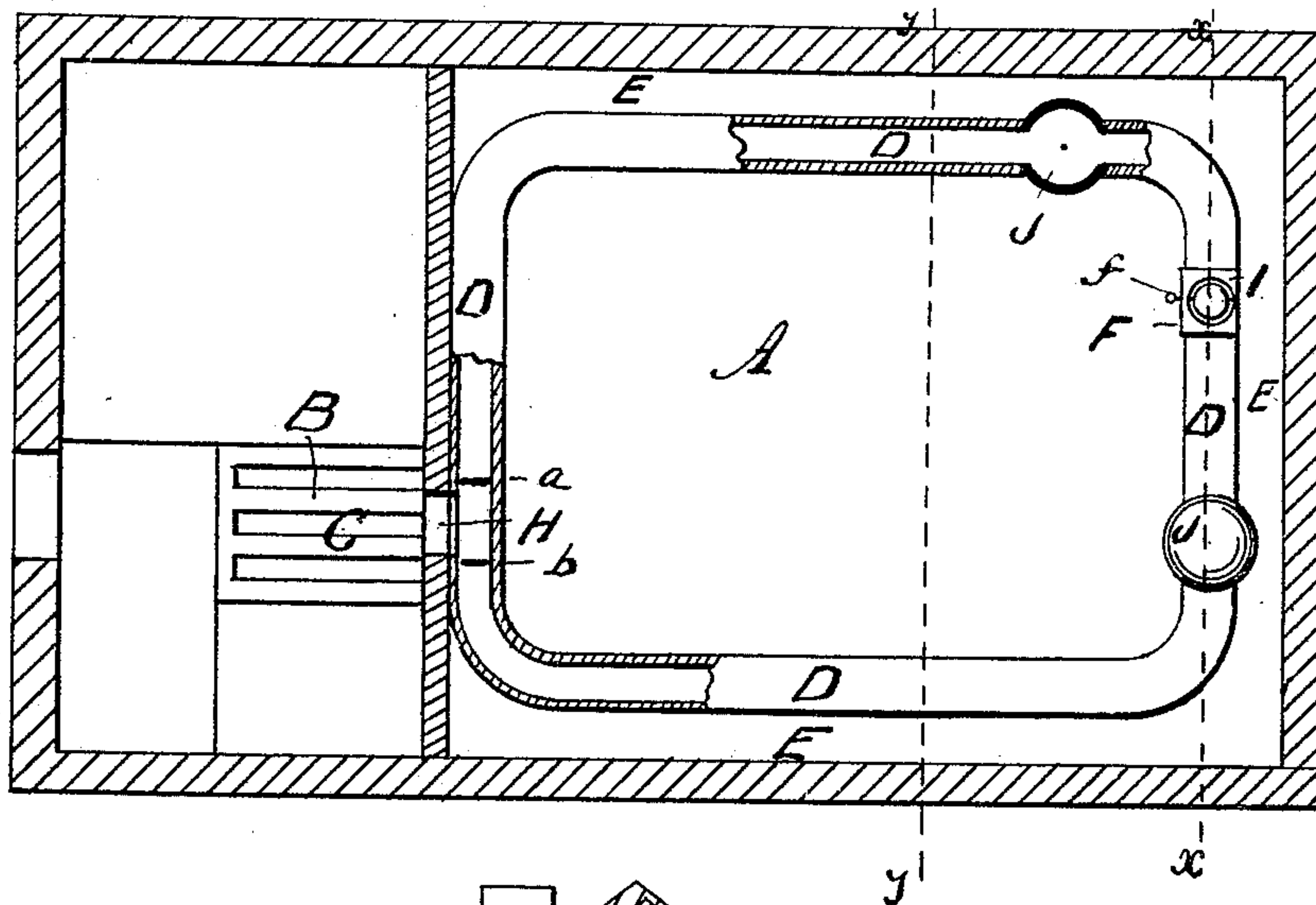


## HEATER FOR HOT-HOUSES.

No. 183,166.

Patented Oct. 10, 1876.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

JOHN F. HIGGINS, OF MANSFIELD, MASSACHUSETTS.

## IMPROVEMENT IN HEATERS FOR HOT-HOUSES.

Specification forming part of Letters Patent No. **183,166**, dated October 10, 1876; application filed August 11, 1876.

*To all whom it may concern:*

Be it known that I, JOHN F. HIGGINS, of Mansfield, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Heating Apparatus for Hot-Houses, of which the following is a specification:

This invention relates to certain improvements in heating apparatus for hot-houses, &c.; and my invention consists of a novel combination and arrangement of parts, which will be fully hereinafter described, and specifically pointed out in the claim, a preliminary description being therefore deemed unnecessary.

In the accompanying plate of drawings, Figure 1 is a horizontal section of a hot-house having my improved arrangement and construction of heating apparatus; Figs. 2 and 3, vertical sections, respectively, on lines *yy* and *xx*, Fig. 1.

In the drawings, A represents a hot-house built in any of the usual ways, shapes, and styles; and B, a heating-furnace, which may be of any suitable construction, C being the fire-chamber; D, a flue or passage which opens into fire-chamber C, and leads from it to and around the inner wall E of the hot-house, and opens into a chimney-flue, F, which passes out through the roof G of the hot-house, midway, or substantially so, of the full length of the flue D within the hot-house; *a* and *b*, two dampers in flue D, one at one side and the other at the other side of the communicating opening H between said flue D and fire-chamber. These dampers are constructed and arranged as usual, and by properly turning

them the flue or passage D at either or both sides of the fire-chamber C can be put into or out of connection with the fire-chamber, as may be desired, and thus the products of combustion be directed to and be made to pass through the flue D at either or both sides of the said fire-chamber opening. This arrangement of the dampers *a* and *b* in flue D enables the heat which is radiated from the products of combustion, as they pass to the chimney F, to be concentrated on either side, or to be directed between the two sides of the hot-house, according as may be desired. *f*, a damper in the chimney I. This damper is arranged as usual, and it may be used from time to time, if desired. J, chambers or drums opening into the upper side of the flue D. These drums increase the radiation of heat from the products of combustion which are passing through the flue to the chimney, and there may be more or less of them, as may be deemed best.

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

The combination of the inclosing-chamber A, the heating-furnace B, the flue D, leading from the latter around the inside of the chamber A, and provided with the drums J, the chimney F, and dampers for changing the direction of the draft through the flues, the whole constructed and arranged to operate substantially as herein described.

JOHN F. HIGGINS.

Witnesses:

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