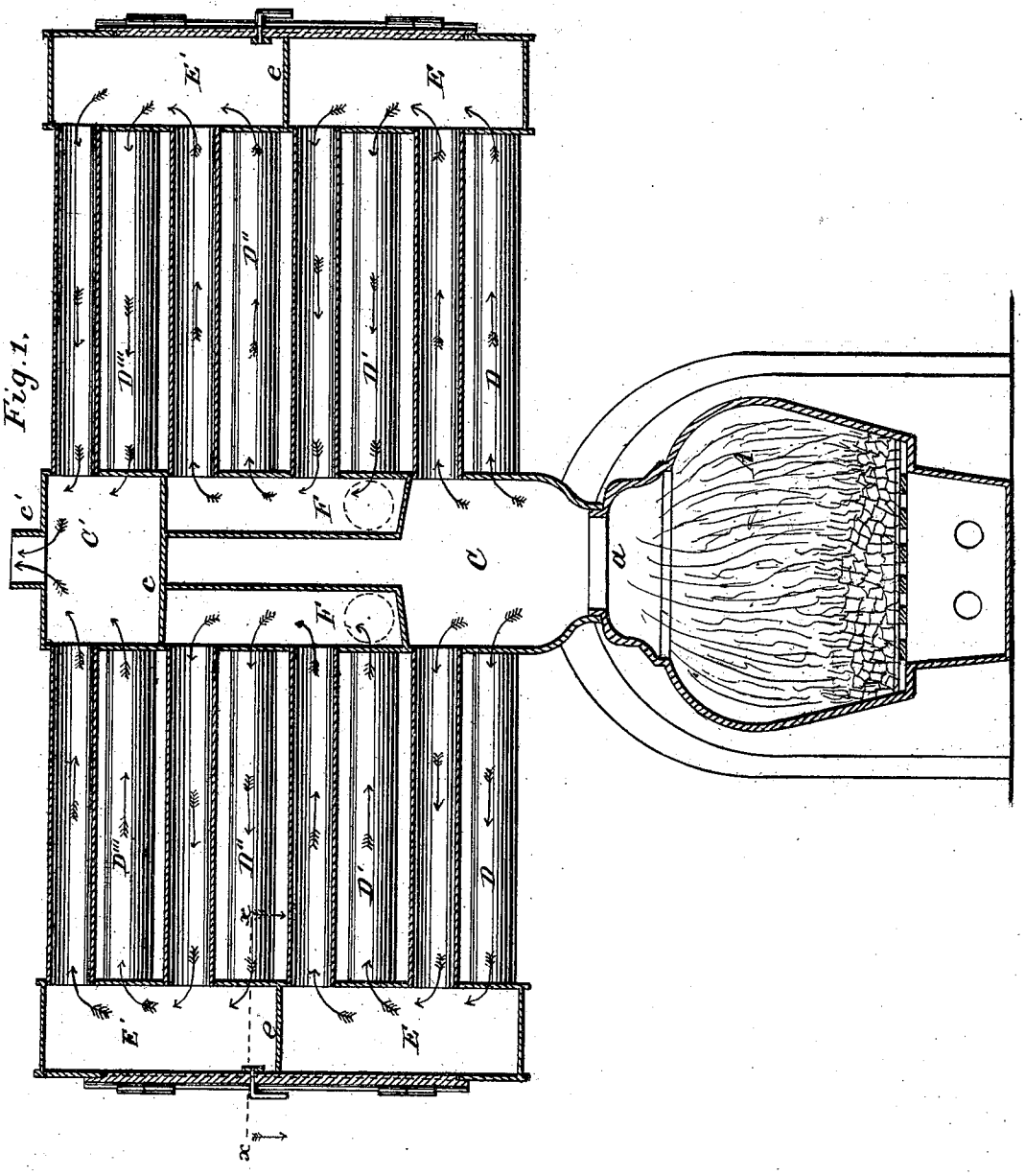
2 Sheets—Sheet 1.

# G. T. FLINT.

## HOT AIR FURNACE.

No. 193,238. Patented July 17, 1877.

Fig. 1.




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2 Sheets—Sheet 2.

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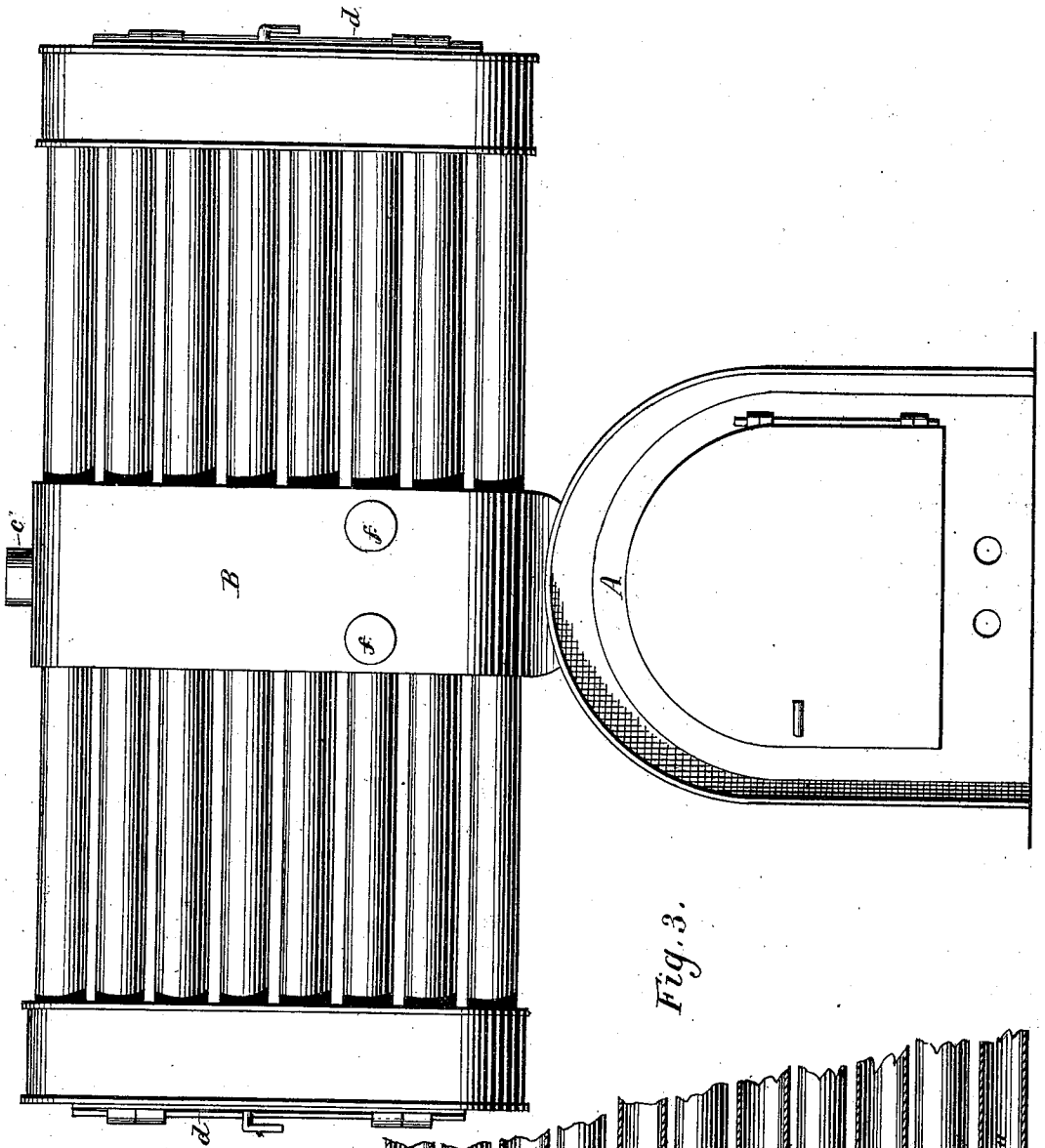



Fig. 2.

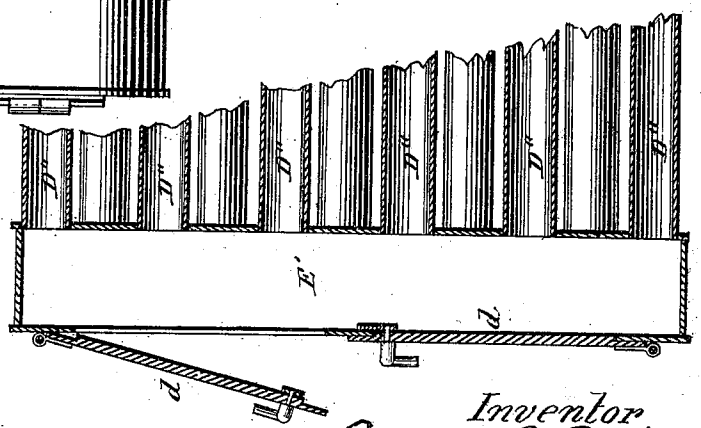



Fig. 3.

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# UNITED STATES PATENT OFFICE.

GEORGE T. FLINT, OF WINONA, MINNESOTA.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **193,238**, dated July 17, 1877; application filed June 21, 1877.

*To all whom it may concern:*

Be it known that I, GEORGE T. FLINT, of Winona, in the county of Winona and State of Minnesota, have invented certain new and useful Improvements in Hot-Air Furnaces and Radiators, of which the following is a specification:

Figure 1 is a vertical central section lengthwise of the radiator and through the fire-box or heater from side to side. Fig. 2 is a front elevation. Fig. 3 is a detail in section, showing one end of the radiator with its doors, &c., on line *x x*.

The present invention is designed to increase the effective radiating capacity in a hot-air furnace; and to this end it consists more particularly in so constructing the radiator that the best provision shall be made for perfect combustion, while at the same opportunity will be afforded for the largest radiation of heat from the products of combustion as they escape from the fire-chamber or heater.

In general character, structure, and operation the present device resembles that embodied in Orange N. Hart's patent of July 20, 1869.

In the accompanying drawings, A denotes the fire-box or heater. This I have now shown as of jug shape in cross-section, for this construction has some important advantages in devices of this sort, in that it affords a most convenient and sure means for attaching the radiator B to and upon its neck *a*. This radiator has a central chamber, C, which rises directly upward from the connection with the fire-box or heater, and from its lower part the horizontal pipes D extend on each side and form connection between said chamber and the lower part of the end vertical chamber E. From this chamber E extend horizontal pipes D′ and connect with the lower part of the vertical chamber F, which are formed centrally in said radiator, and so arranged in and relatively to chamber C that they will be intensely heated by the direct and upward flow of the products of combustion as they escape from the upper part of the fire-box or heater. From this chamber F horizontal pipes D″ lead into the end vertical chamber E′ at its lower part. This chamber being separated from chamber E by fixed partition *e*, and hence again by fixed pipes D‴, the products of combustion are taken to central chamber C′, which is separated from chambers C and F by fixed diaphragm or partition *c*; and from thence the products of combustion will readily escape to the exit-pipe *c*′.

The usual provision is made in the ends and body of the radiator, by doors *d* and *f*, for gaining access to the interior of the radiator for repairs, cleaning, or like purposes.

Under some circumstances it may be of advantage to use but one section of my said radiator, and in such instance I merely leave off one end (or about one-half part) or side of the radiator, the remaining parts carrying all the distinguishing features of my present invention, and being adapted to operate in substantially the same manner as the double radiator before described.

As thus made and adapted for use, we have a radiator and furnace which will give out the largest amount of heat from the smallest amount of fuel. The chambers of the radiator are so arranged that every facility is afforded to heat the interior parts of the radiator, while at the same time no loss of caloric is thereby occasioned. Thus there is attained in this radiator the most complete and thorough draft without any direct expense of heat or fuel for the purpose.

It will be understood that no distinct claim is set up in this case to a radiator composed of three vertical hollow sections, in the middle one of which is a fixed diaphragm, near its center, while said middle section is connected with the section at each end by means of parallel horizontal tubes or pipes, for I am well aware that a radiator simply of such construction is not my invention.

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

1. The radiator B, having chambers C, F, and C′ located centrally therein, and vertical end chambers E and E′, connected with said central chambers, as described, by horizontal pipes D D′ D″ D‴, substantially as and for the purposes set forth.

2. In combination with heater A, having neck *a* at its apex, the radiator B, having

central chamber C, in which are divided off side chamber F and upper central chamber C′, vertical end chambers E and E′, separated from each other by partition *e*, and the horizontal connecting-pipes D D′ D″ D‴, substantially in the manner and for the purposes set forth.

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

GEORGE T. FLINT.

Witnesses:

C. C. CLEMENT,

W. H. TROOST.