J. E. CHAPMAN.

Hot-Air Furnace.

No. 93,675. Patented Aug. 17, 1869.

Fig. 2.

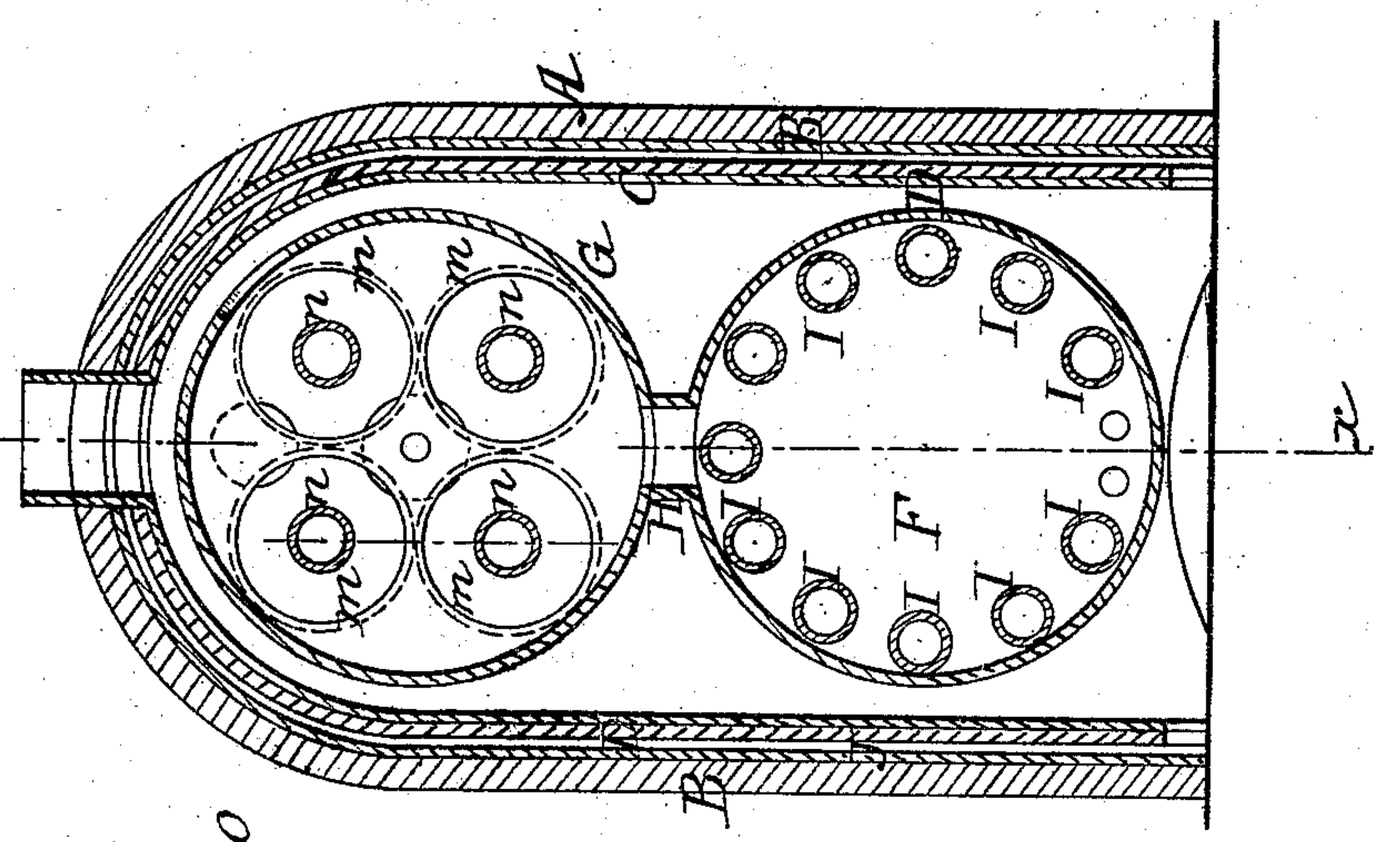
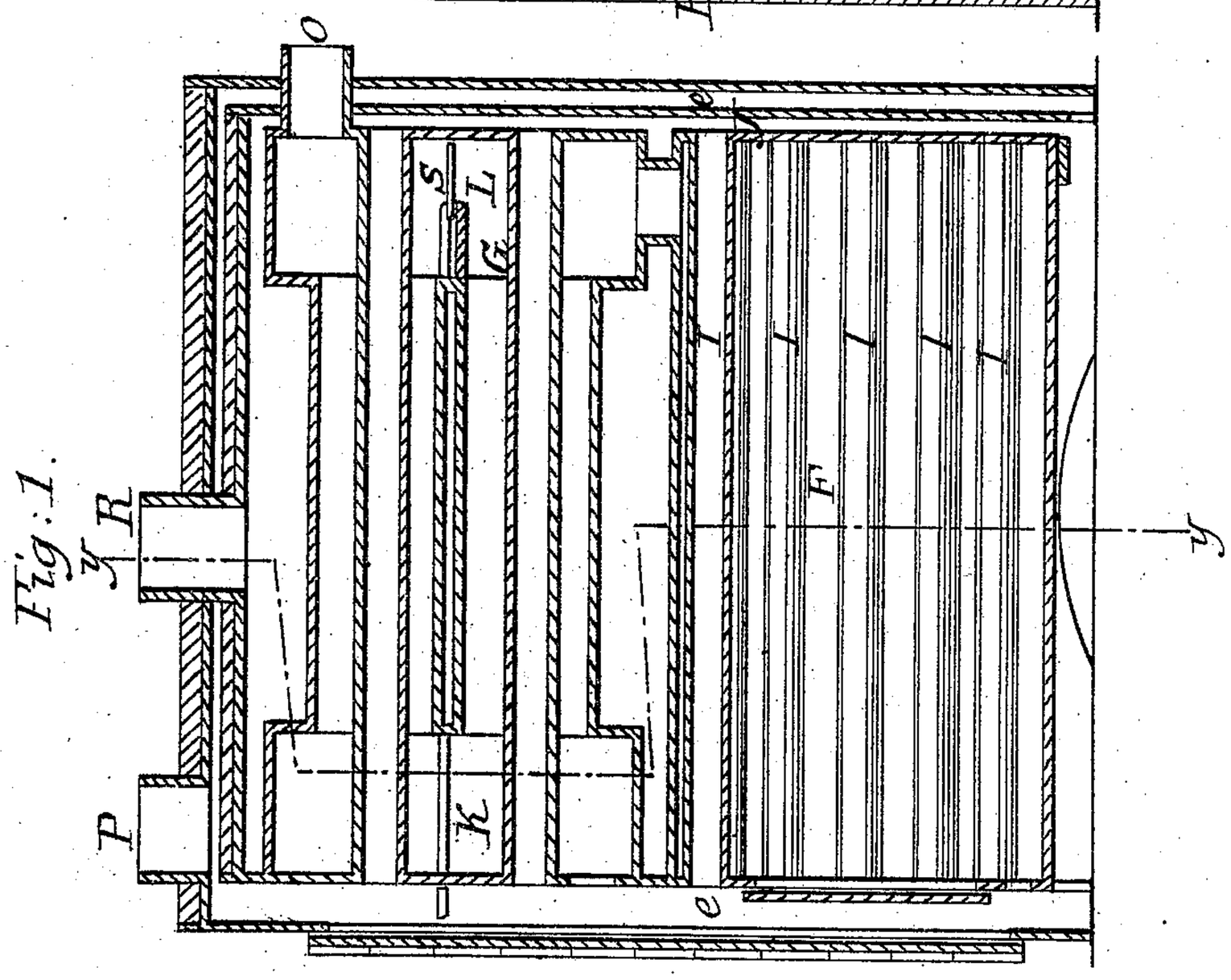


Fig. 1.



Witnesses

Chas. Nida

Geo. W. Mabee.

Inventor

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per Munn & Co Attys.

United States Patent Office.

JOSEPH E. CHAPMAN, OF CANNON FALLS, MINNESOTA.

Letters Patent No. 93,675, *dated August* 17, 1869.

IMPROVEMENT IN HOT-AIR FURNACES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH E. CHAPMAN, of Cannon Falls, in the county of Goodhue, and State of Minnesota, have invented a new and useful Improvement in Hot-Air Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a furnace for heating air for warming buildings, or for other purposes, and consists in the arrangement of air-flues in the furnace or fire-box, and also in the hot-air drum or radiator, and also in the method of preventing the radiation of heat from the furnace-walls, and from the casing thereof, as will be hereinafter more fully described.

In the accompanying sheet of drawings—

Figure 1 represents a sectional side elevation, showing the position of the air-tubes in the fire-box, and the form of the radiator with the tubes therein, the section being through the line *x x* of fig. 2.

Figure 2 is a cross-section of fig. 1, through the line *y y*.

Similar letters of reference indicate corresponding parts.

A is the jacket or casing by which the furnace is surrounded.

This is covered on the outside with a coating of plaster of Paris, B, to prevent the radiation of heat therefrom.

C represents the walls of the furnace, the outer sides of which are also protected by a coating of plaster of Paris, D.

Between the casing and the furnace-walls, there is an air-space, *e*, as seen in the drawing.

F is the fire-box.

G is the radiator connected with the fire-box by the tube H.

I represents air-tubes, which pass through the furnace fire-box, and connect the open space *e* at the front end of the furnace with the space J at the back end.

It will be seen that these air-tubes are exposed to the direct action of the fire, but as there is a current of air from the outside constantly passing through them, the heat will not be so intense as to injure them, but should the sides most exposed become injured, they may be turned over or renewed, and be replaced with others without difficulty.

The radiator G is formed of two chambers, K and L, connected together by four (more or less) large tubes, *m*, through which air-tubes *n* pass, also connecting the front air-space *e* with the space J, as before stated.

The smoke and gaseous products of combustion pass up through the connection H, into the chamber L and around the tubes *n*, and are discharged through the flue O.

The air which enters from the top at P, and also that which passes through the tubes I and *n*, is discharged from the central aperture R, and distributed therefrom, as may be desired.

S represents a damper, by closing which the heated products of combustion are thrown through all the tubes *m*.

The furnace may be made of either sheet or cast-iron, and the parts may be secured together in any suitable and substantial manner.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. Protecting the walls C of a hot-air furnace and the casing A by a coating of plaster of Paris, or its equivalent, substantially as and for the purposes described.

2. The combination, in a hot-air furnace, of the fire-box F, with its tubes I and the radiator G, with its tubes *m* and *n* arranged substantially as described.

JOSEPH E. CHAPMAN.

Witnesses:

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