

No. 804,197.

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D. J. ARCHER.
HOT AIR FURNACE.
APPLICATION FILED MAY 16, 1903.

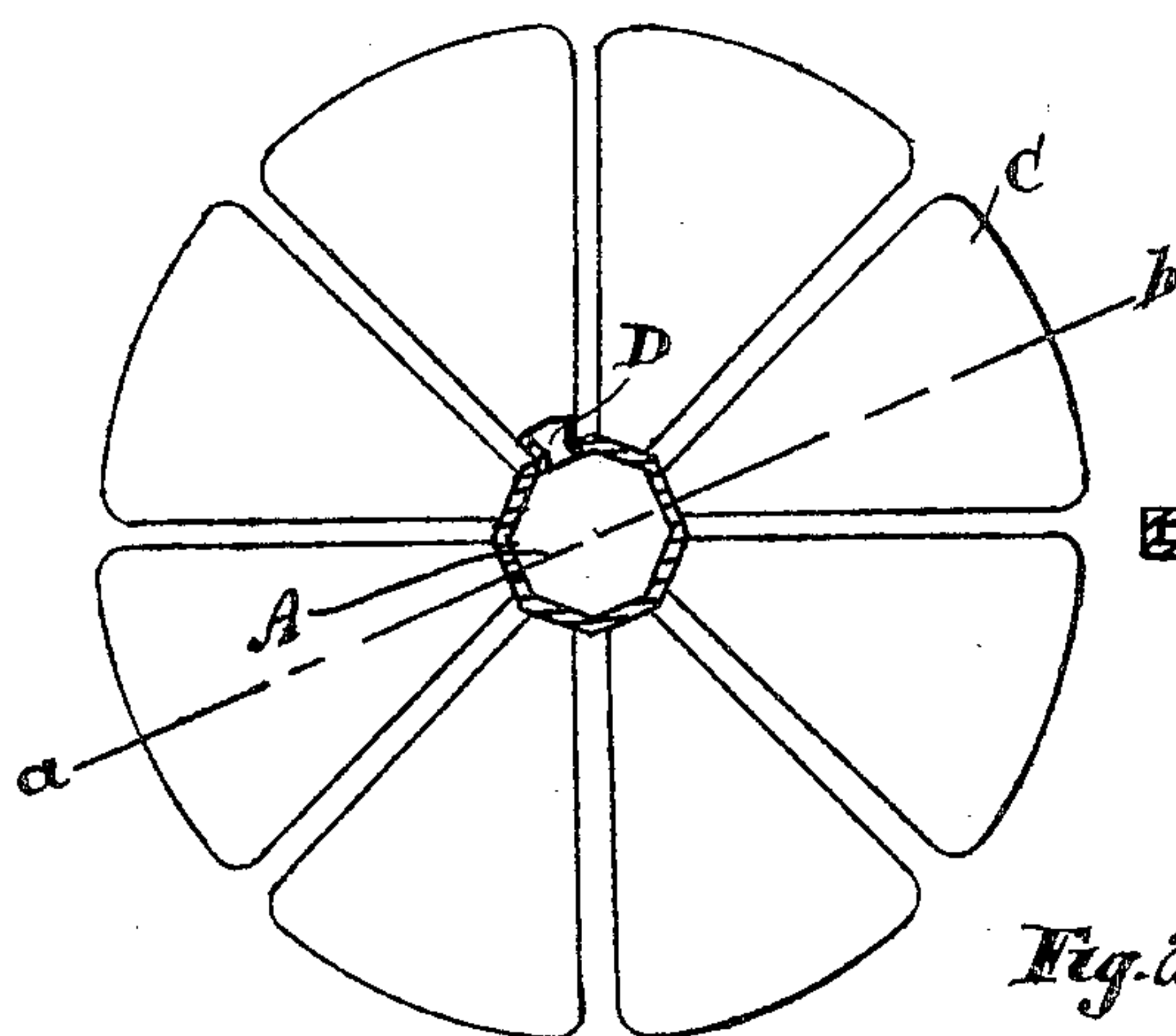


Fig. 2.

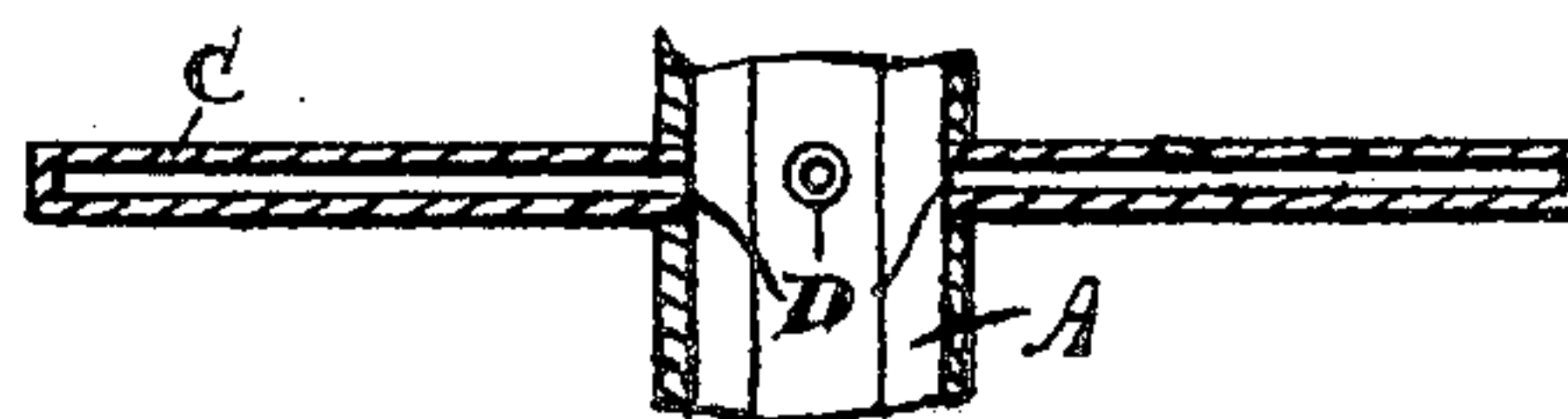


Fig. 3.

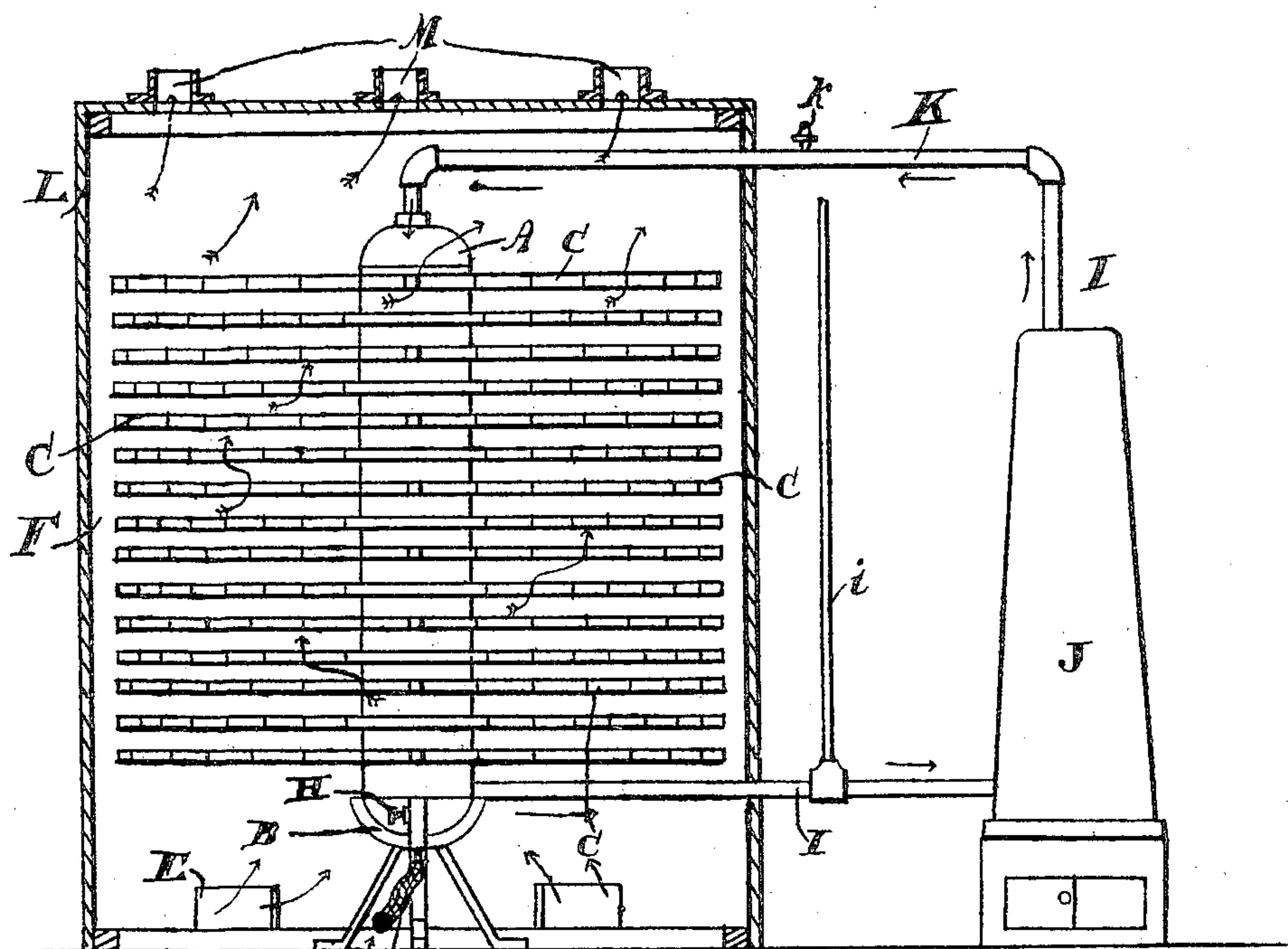


Fig. 1.

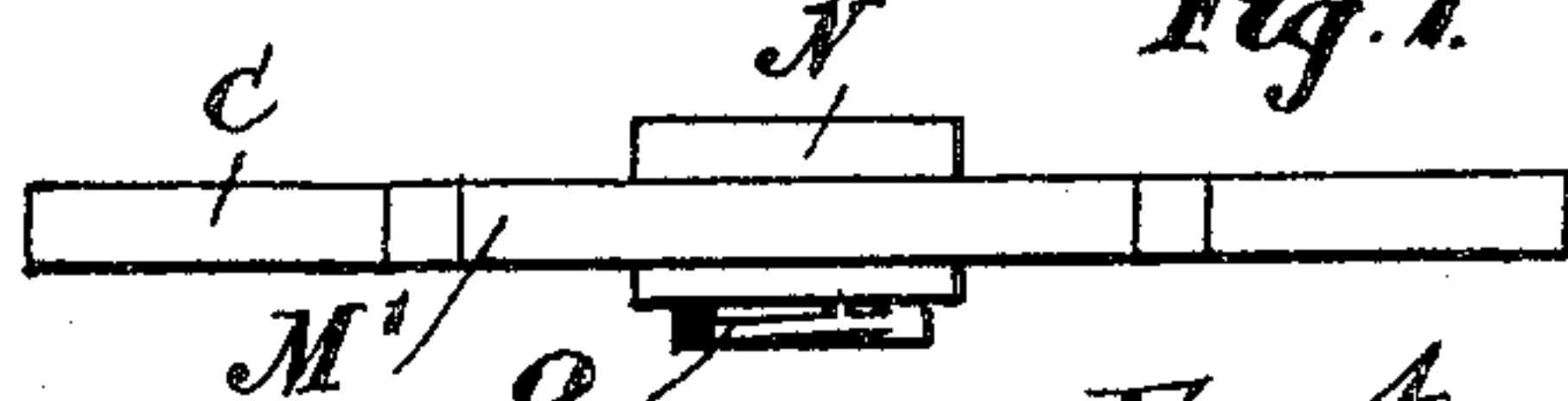


Fig. 4.

Witnesses.

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HOT-AIR FURNACE.

No. 804,197.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID JOHN ARCHER, inventor, a subject of the King of Great Britain, residing in the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

My invention relates to improvements in hot-air furnaces; and the object of my invention is to utilize the heat given off from hot water so as to heat a body of cold air contained in a suitable casing and pass such heated air into the apartment to be heated in order to heat a dwelling as cheaply as possible.

The construction and operation of my hot-air furnace will be fully described and explained in the following specification.

Figure 1 is a vertical section through a suitable casing, showing same inclosing the radiator. This figure also shows a suitable stove for heating the water. Fig. 2 is a plan view of a form of my radiator, and Fig. 3 is a cross-section on the line *a b*, Fig. 2. Fig. 4 is a side view of one of the sections of my radiator.

In the drawings like letters of reference indicate corresponding parts in each figure.

As before mentioned, the radiator is constructed so as to permit the heat to pass rapidly from the water contained therein and consists of a hollow post A, supported on any suitable stand B, resting on the floor. Radiating from the post A are a series of hollow wings C, which communicate with said post by means of the necks D. It will be noticed from the drawings that I have disposed the wings so that the cold air (passing through the openings E in the bottom of any suitable casing F, surrounding the radiator) will be made to pass over the bottom and upper surfaces of said wings.

G is any suitable feed-pipe for the cold water, and H any suitable stop-cock for controlling the entry or passage of water to and from said post.

I is a pipe connecting the post A with any suitable furnace J, in which the water is heated. This pipe passes up through said furnace and joins another pipe K, which admits the hot water into the top of the radiator.

L is any suitable vent-cock, and *i* is any suitable expansion-pipe for the radiator.

I preferably line the casing F with asbestos L, so as to prevent as little waste of heat as possible.

M represents the hot-air pipes leading from the top of said casing.

As the heat radiated by the hot water contained within the wings C and post A will be absorbed by the cold air, the water contained therein will always be of a lower temperature than that contained within the furnace J and connections from same to the upper part of the radiator, thus causing a continuous flow, as will be understood.

I do not confine myself to using a furnace for the purpose of heating the water, as same might be heated by gas.

It will be seen from the drawings that I have shown the post A in Fig. 1 as being round, similar to an ordinary household water-reservoir. On referring to Fig. 2 it will be seen I have shown this post as being octagonal in shape and that the wings are of segmental shape and with their inner ends at right angles to the radius of the circle of which they form segments. It will of course be understood that the said post need not necessarily be constructed as just described; but I find that by so constructing the post I can secure a greater number of wings thereto. When the post is constructed so that the wings may be tapped into a flat surface of same, a better joint is made than when the wings are tapped into a circular surface, as will be understood.

The wings C may of course be disposed in any manner desired. They are constructed thin (so as to permit the heat to readily pass from the hot water) and have as large an area as possible, so as to enable the maximum amount of heat to pass from the hot water therein contained.

By means of my invention I find from actual test that I can heat an ordinary eight-roomed house much better and with a great deal less expense than is possible with the ordinary hot-air furnaces now in extensive use.

If desired, I may construct the radiator of a number of sections M', the wings C of which are cast to the hollow internally-threaded bosses N, one of which is provided with a threaded nipple O. By this construction it will be understood that the sections can be screwed one into the other. I find this form of manufacturing the radiator to be somewhat cheaper than that hereinbefore described.

The wings C are constructed quite thin and are narrow at their base and uniformly widen

out to their outer edges. By means of this construction I am enabled to secure the maximum number of wings to the post A. The said wings are usually disposed round the said post, so that their greatest surfaces will be parallel to the base upon which the casing F rests. As the said wings are preferably placed in a staggered manner, it will be clearly understood that as the air passes up between two wings it will come in contact with the lower surface of the wing above, and as the sets composed of several wings are not very far apart the air will be deflected down upon the upper surface of the wings below. It will be understood from this that I compel the air to pass over the lower and upper surfaces of each wing.

What I claim as my invention is—

1. A hot-air furnace comprising a radiator consisting of a centrally-placed hollow post provided with an aperture at its top and bottom by means of which a hot fluid may be circulated therethrough; means for supplying a hot fluid to said hollow post; a plurality of flat, thin, hollow, wings connected to said hollow post and opening thereinto, and disposed in a staggered position with their greatest surfaces at right angles thereto so that the cold air passing up among same will come in contact with their hot lower and upper surfaces and be heated, the said wings being narrower at their base and uniformly widening out to their outer edges, and a suitable casing sur-

rounding said radiator, the same being provided with lower openings through which the cold air passes thereinto and upper openings through which the hot air passes therefrom.

2. In apparatus for heating air, the combination of a casing, a central hollow post located in the casing, segment-shaped thin, and flat, wings connected to said post, a boiler located outside the casing and connected with said post, said casing having air-inlet openings and hot-air pipes, substantially as described.

3. In an apparatus described, the combination of a casing having air-inlets in its lower end and air-outlets in its top, a radiator consisting of a hollow post and a plurality of flat, thin hollow wings connected to said post, a water-heater located adjacent to said casing and provided with an inlet-pipe connected to the bottom of said post and an outlet-pipe connected to the top of said post, an expansion-pipe in said inlet-pipe, a vent-cock on said outlet-pipe, a water-feed pipe leading into the bottom of said post and a stop-cock on said water-feed pipe, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID JOHN ARCHER.

Witnesses:

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W. H. SMITH.