

J. PREUSS.
HOT AIR FURNACE.
APPLICATION FILED JAN. 31, 1910.

983,566.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

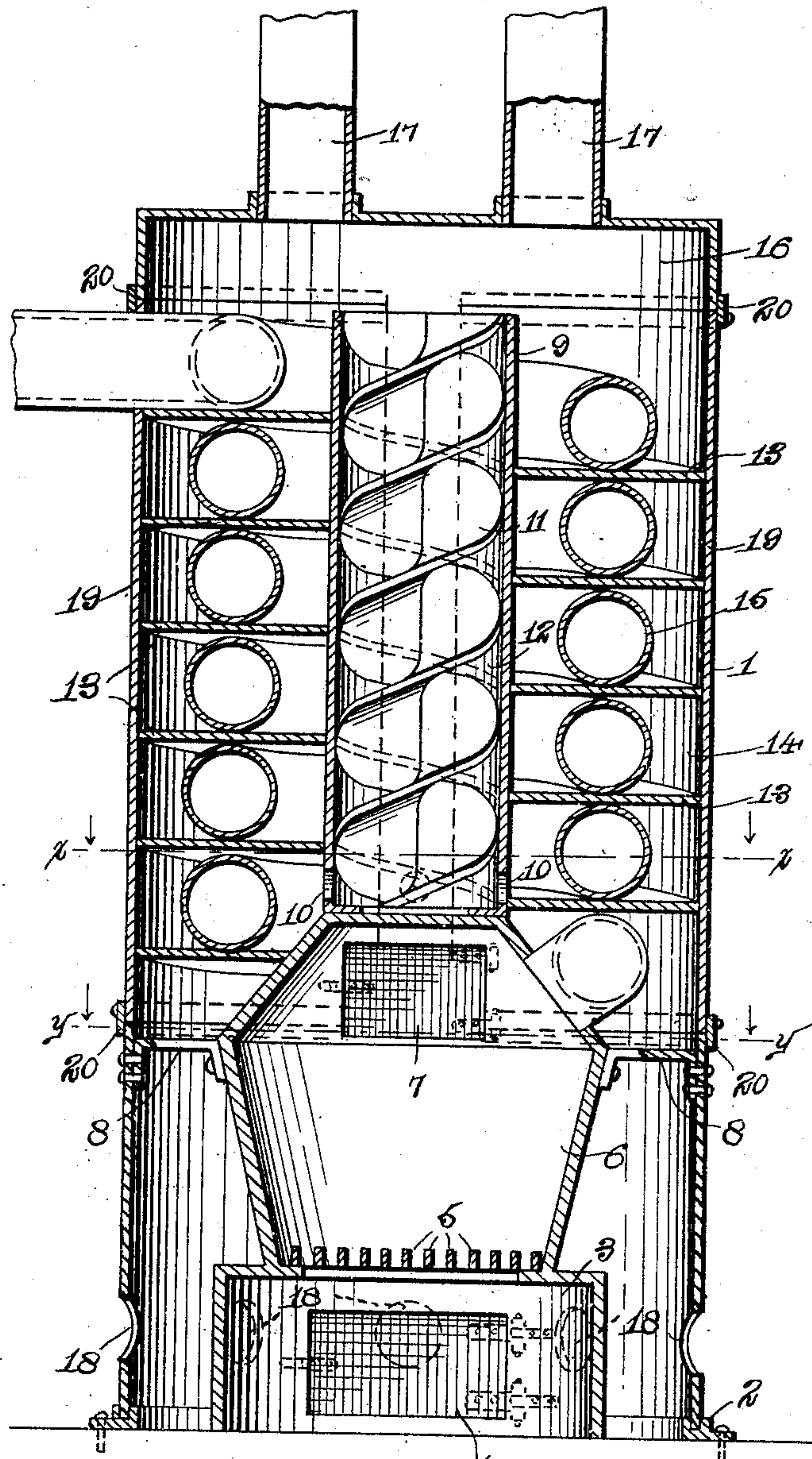


Fig. 1.

Witnesses:

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B. G. Richards

Inventor:

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by Joshua R. Wood
his Attorney.

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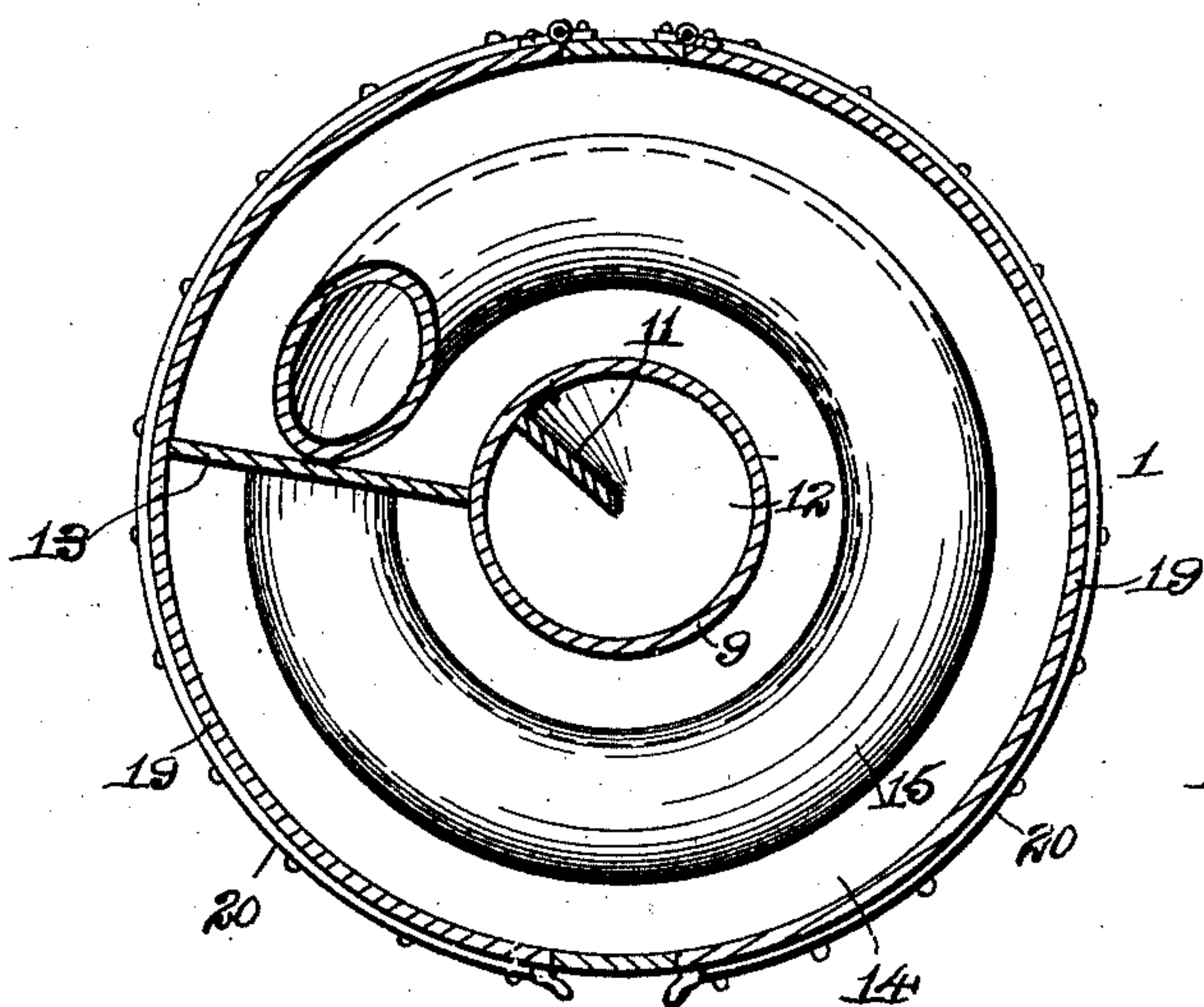


Fig. 2.

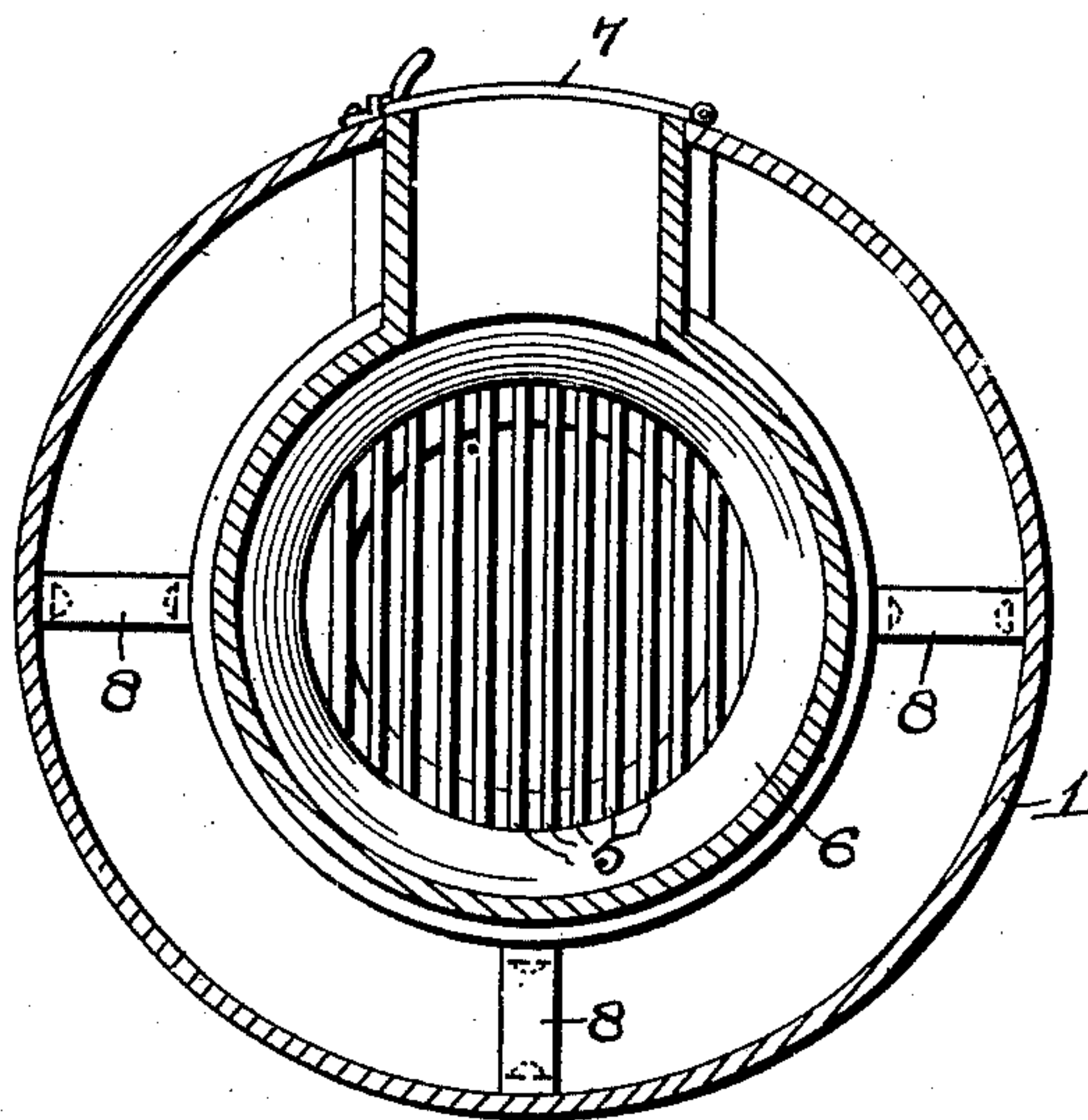


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN PREUSS, OF CHICAGO, ILLINOIS.

HOT-AIR FURNACE.

983,566.

Specification of Letters Patent.

Patented Feb. 7, 1911.

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To all whom it may concern:

Be it known that I, JOHN PREUSS, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

My invention relates to hot-air furnaces and has for its object the production of a device of this character which will be of strong, durable and economical construction and efficient in operation.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a furnace characterized as above mentioned and wherein the furnace heat-radiating surface will be increased to a maximum and further wherein the heated gases arising from the furnace fire-box will be thoroughly utilized before being exhausted to heat said radiating surface.

My invention further consists in the provision in the hot-air chamber of the furnace of means whereby the cold air or gases introduced therein will be caused to pass through an elongated heating passage before reaching the distributing portion of said chamber, and whereby a thorough heating of said gases before delivery to the registers employed in connection with the furnace will be effected.

My invention further consists in certain details of construction and arrangement of parts which will be hereinafter fully described and more particularly pointed out in the appended claim.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a central vertical section of a hot-air furnace embodying the preferred form of my invention, and Figs. 2 and 3 are horizontal sections thereof taken on line $x-x$ and $y-y$ respectively of Fig. 1.

Referring now to the drawings 1 indicates a cylindrical shell or housing mounted upon a suitable annular base 2. Centrally arranged within the shell 1 is an ash-box 3 provided with a hinged door 4. 5 indicates grate bars.

6 is the fire-box provided with a hinged door 7, said fire-box and ash-box being accessible from without, as clearly illustrated in Fig. 3. Spacing bars 8 are preferably provided to effect a rigid connection and

opposite relative positioning of said fire-box and shell. Co-axially arranged within the shell 1 the lower end thereof being supported upon the fire-box 6, as shown, is a tubular core member 9 open at its upper end. Provided adjacent the lower extremity of the lateral wall of said core is a plurality of openings 10. Arranged within said core is a snugly fitting worm 11 co-extensive in length therewith and whereby a helically extending passage 12 is formed therethrough. Arranged in the annular space intervening the adjacent surfaces of the shell 1 and core 9 is a helically extending partition 13 whereby a helically extending passage 14 is formed therein. Arranged in said passage is a helical smoke pipe 15 communicating at its lower extremity with the fire-box, as shown, and having its upper extremity projecting exteriorly and communicating with the outside atmosphere. The passages 12 and 14 communicate at their upper extremities with a hot-air distributing chamber 16 provided at the upper extremity of the shell 1.

17 are the usual conduits by means of which the heated gases are conveyed to the registers employed in connection with the furnace. Provided in the shell 1 adjacent the lower extremity thereof is a plurality of air inlets 18.

With the provision of a furnace of a construction as set forth cold air will be admitted to the interior of the shell 1 through the openings 18. This air will rise in said shell first contacting the heated exterior surfaces of the ash-box and fire-box and thence entering the passage 14 and passing upwardly therethrough to the chamber 16. Some of the air admitted to said passage 14 will pass through the openings 10 to the interior of the core 9 wherein they will be conveyed through the passage 12 and thence to the chamber 16. Upon entering the shell 1 the air, because of its contact with the heated surfaces of the ash-box and fire-box, will evidently be heated to a considerable extent. In its passage through the passages 12 and 14 it will again be subjected to the heated surfaces of the smoke pipe 15 and the surfaces positioned adjacent thereto which, because of such proximity to said pipes, are also in a heated condition, and whereby the heated condition thereof is greatly increased. Thus the gas entering the chamber 16 and which is conveyed through the pipe 17 will be in a highly heated condition, such maxi-

mum heating thereof being effected because of the superheating to which the same is subjected in its passage through the passages 12 and 14.

- 5 The upper end portion of the shell 1 is preferably formed with hinged doors 19 whereby ready access to the interior of the furnace for repairs or cleaning may be effected. The flanges 20 are preferably provided adjacent the peripheries of the doors 10 19 in order to form a tight connection.

While I have shown what I deem to be the preferable form of my furnace I do not wish to be limited thereto as there might be 15 various changes made in the details of construction and arrangement of parts described without departing from the spirit of the invention comprehended within the scope of the appended claim.

- 20 Having described my invention what I claim as new and desire to secure by Letters Patent is:

A hot-air furnace comprising an outer cylindrical shell, a fire-box arranged centrally 25 within said shell at the lower end thereof, a tubular cylindrical core coaxially arranged within said shell above said fire-box terminating below the top of said shell and forming an annular chamber in the same, said core

being open at its upper and lower ends and 30 communicating at both ends with said annular chamber, a helically extending partition in said annular chamber forming a similarly extending passage therethrough, a smoke 35 pipe arranged in said passage having its lower end communicating with said fire-box, said smoke pipe extending substantially from one adjacent convolution of the helical partition to the other adjacent convolution 40 forming passage ways each side of the smoke pipe, a snugly fitting worm arranged within said core, a hot-air distributing chamber at the upper end of said shell communicating with said air passage and the upper end of 45 said core, said shell being provided with air openings adjacent its lower extremity, hot-air conduits communicating with said distributing chamber and the portion of said shell surrounding said helical partition being 50 formed of hinged members, substantially as described.

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

JOHN PREUSS.

Witnesses:

JANET E. HOGAN,
JOSHUA R. H. POTTS.