

No. 680,473.

Patented Aug. 13, 1901.

H. K. BOYD.
GAS BURNER AND HEATER.

(Application filed Feb. 7, 1901.)

(No Model.)

Fig. 1.

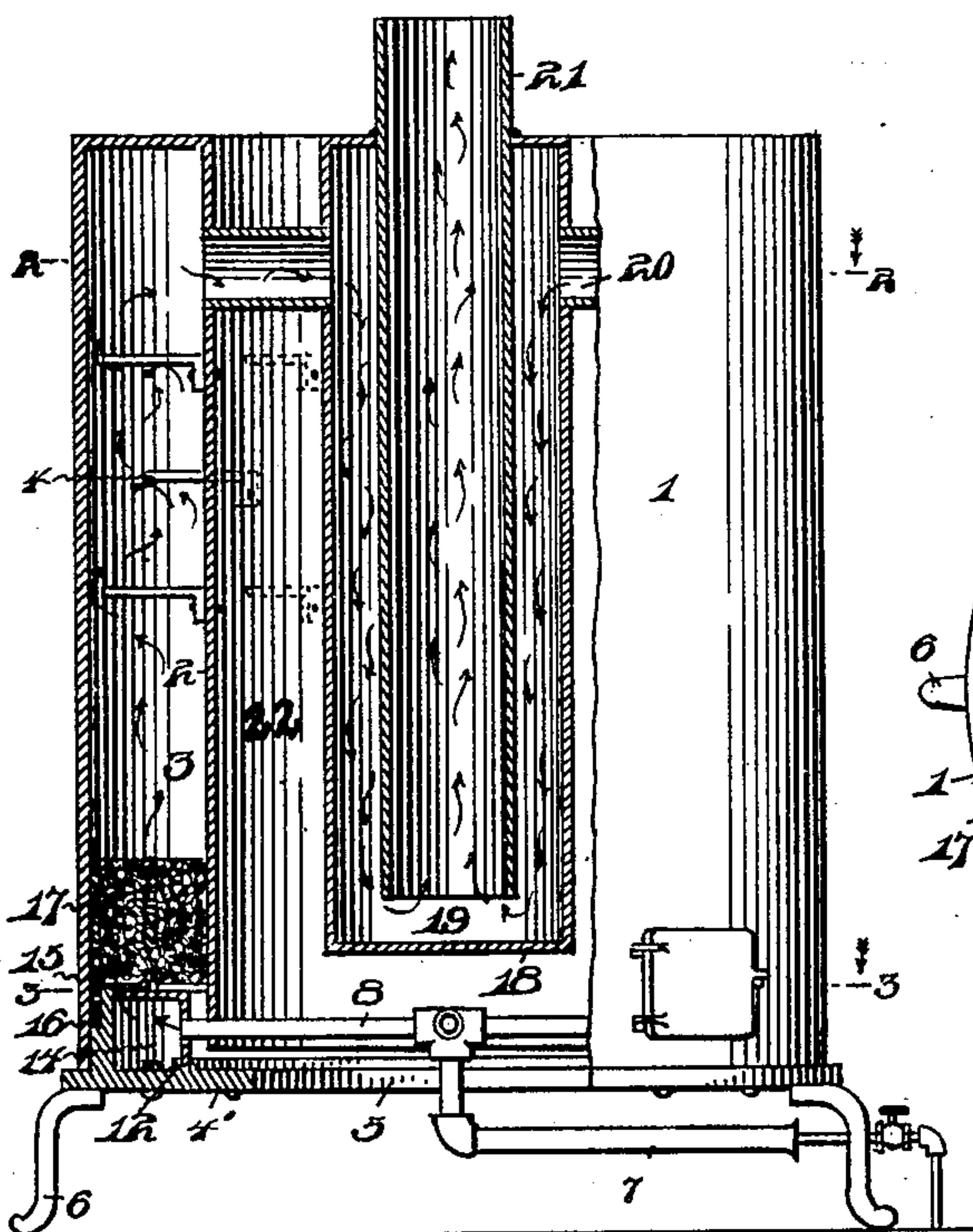


Fig. 3.

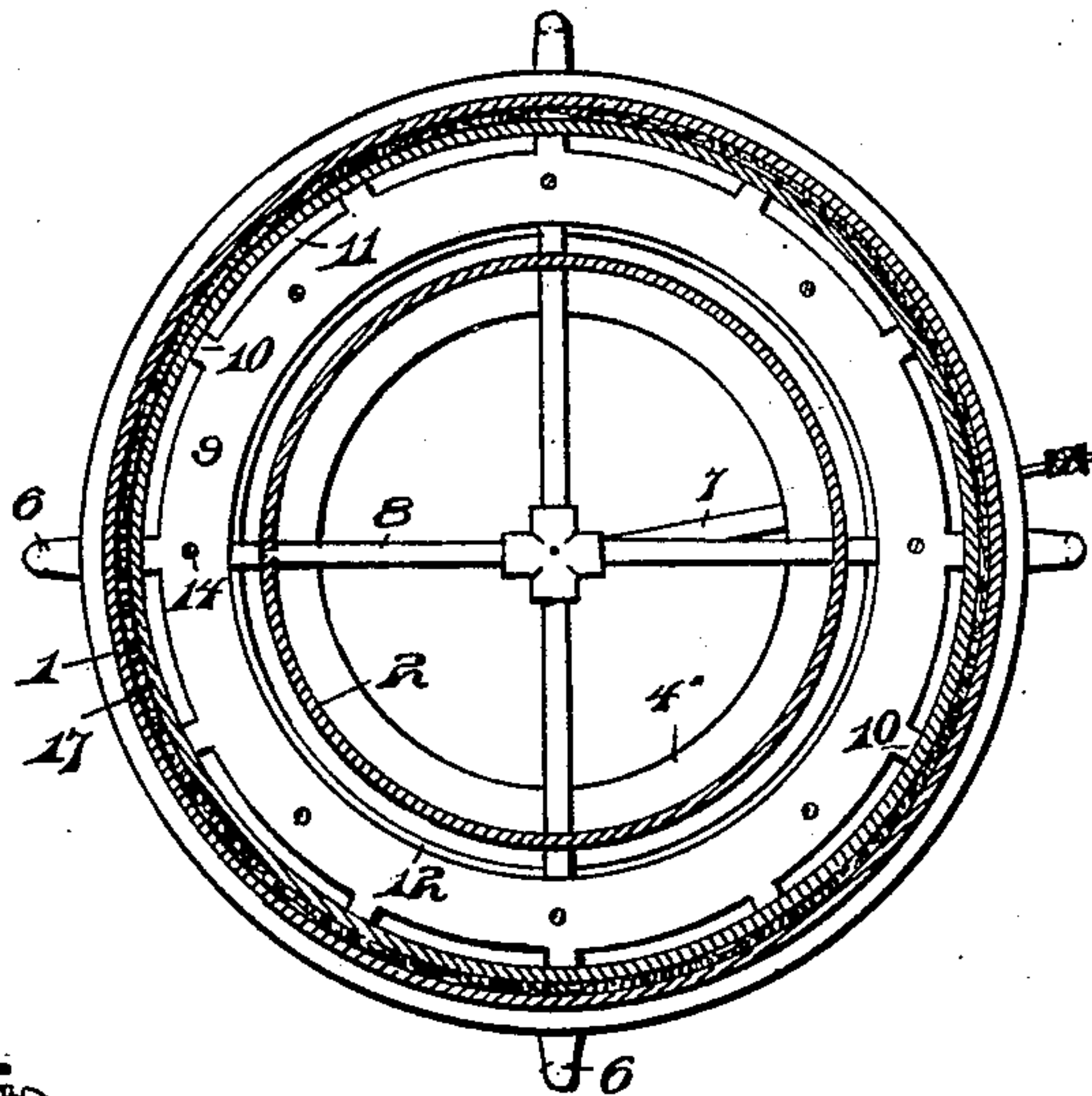


Fig. 2.

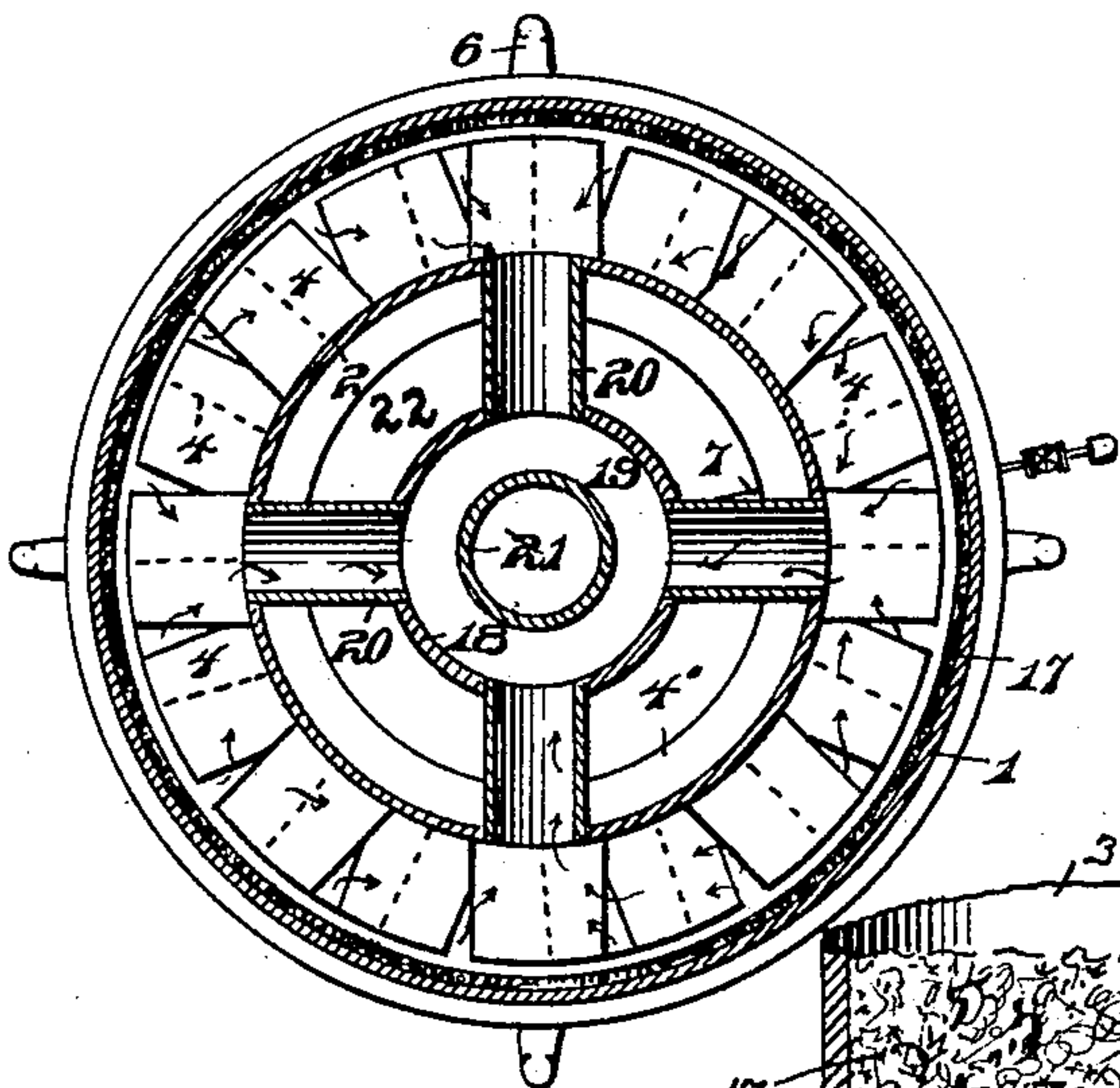


Fig. 4.

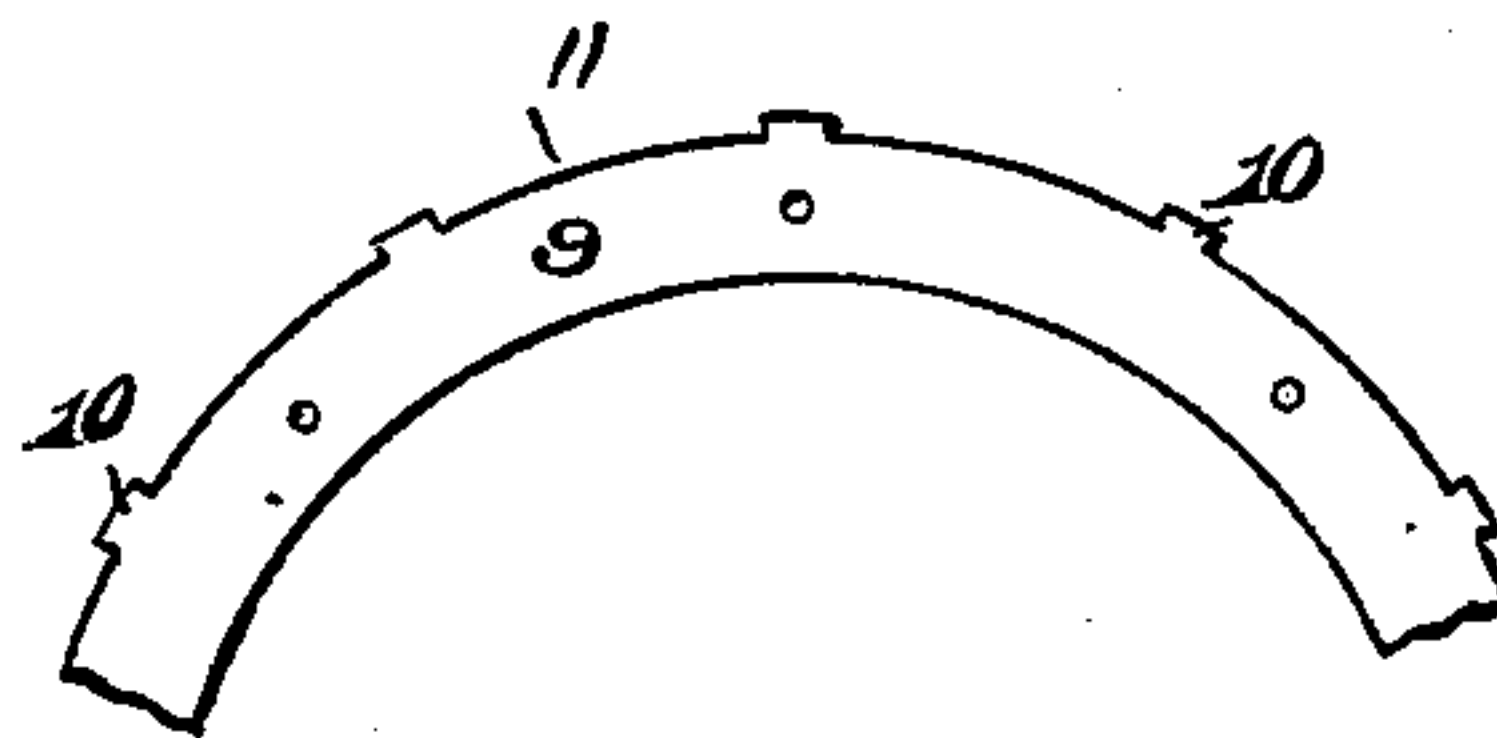
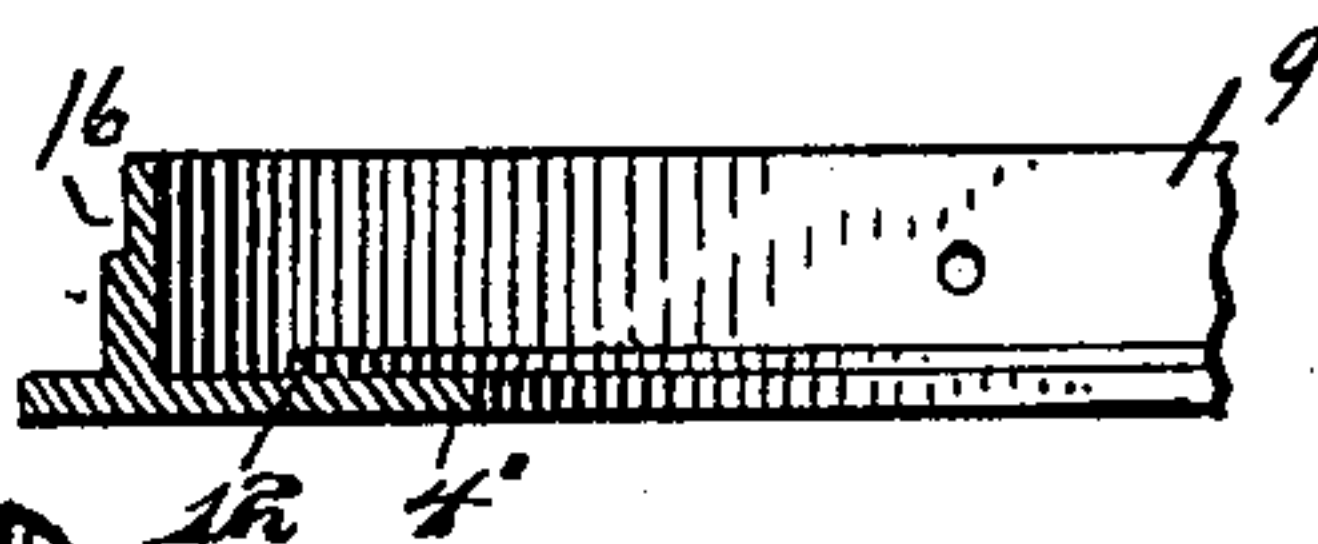


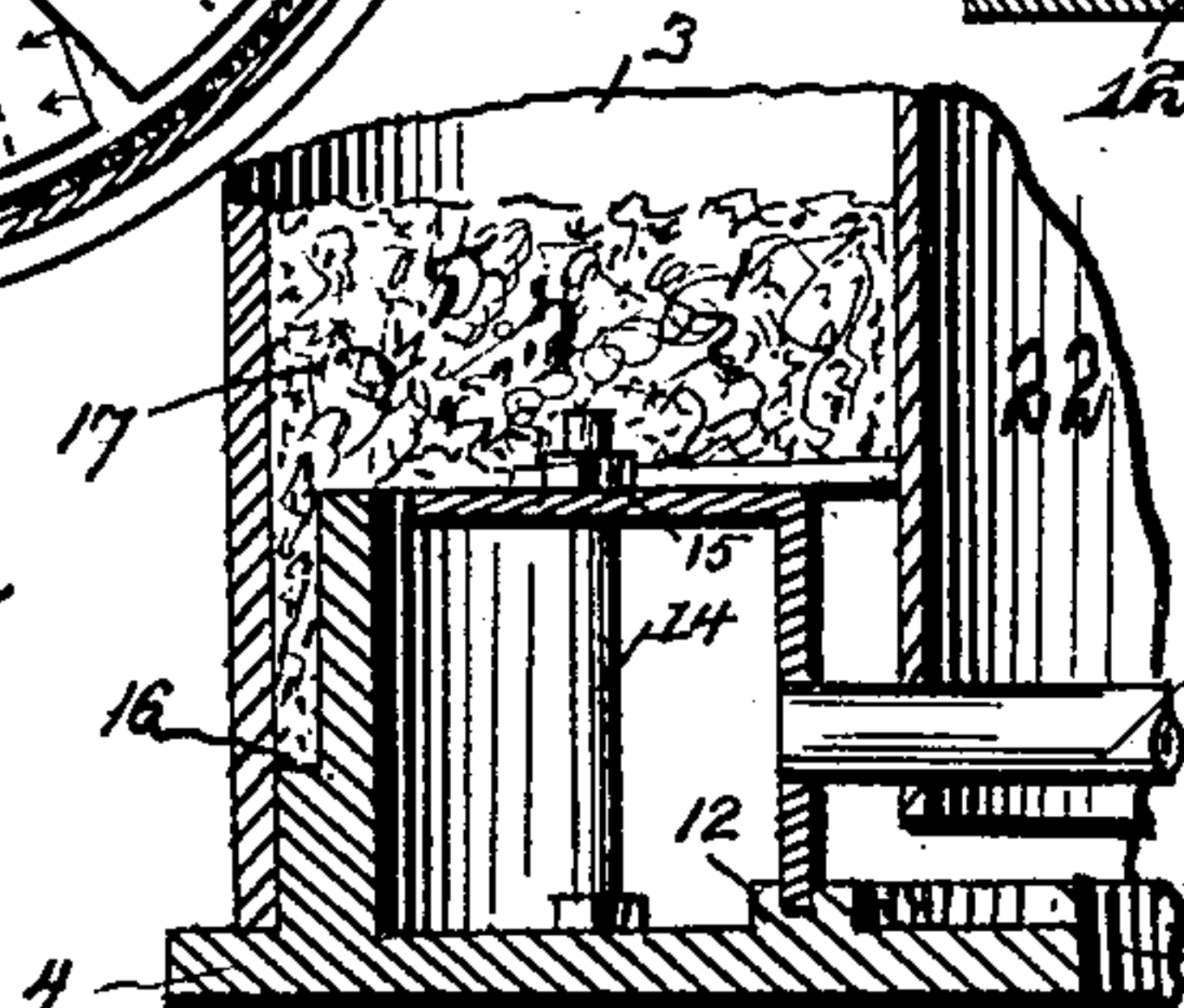
Fig. 5.



Witnesses:

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Fig. 6.



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UNITED STATES PATENT OFFICE.

HAMILTON K. BOYD, OF KITTANNING, PENNSYLVANIA.

GAS BURNER AND HEATER.

SPECIFICATION forming part of Letters Patent No. 680,473, dated August 13, 1901.

Application filed February 7, 1901. Serial No. 46,352. (No model.)

To all whom it may concern:

Be it known that I, HAMILTON K. BOYD, a citizen of the United States of America, residing at Kittanning, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Gas Burners and Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in heaters, and more particularly to that class wherein natural or artificial gas is used.

15 The present invention has for its object the provision of novel means to construct a heater of the above-described class wherein the fuel may be economically used and to obtain a greater heating-surface than in the present form of heaters.

20 The invention further contemplates to construct a heater that will be extremely simple, contain no parts that are liable to become deranged or out of order, and, furthermore, to construct a heater that will be strong, durable, and highly efficient in its use.

25 With the above and other objects in view the invention consists in the novel combination and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

30 In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

35 Figure 1 is a front elevation of my improved heater, showing a portion of the outer casing broken away and a portion of the heater shown in vertical section. Fig. 2 is a horizontal sectional view of the same, taken on the line 2 2 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a similar view, taken on the line 3 3 of Fig. 1, looking in the direction of the arrow, of a portion of the annular burner, showing the construction thereof. Fig. 4 is a top plan view of a portion of the annular burner as shown in Fig. 3 of the drawings. Fig. 5 is a vertical sectional view of a portion of the annular burner. Fig. 6 is an enlarged vertical sectional view of a portion of the heater.

In the drawings the reference-numeral 1 indicates the outer casing, having the inner wall 2, forming an annular products-chamber 3 between the inner and outer walls. These walls being suitably spaced apart and held in that position, deflectors 4 are placed at suitable intervals between the walls of the products-chamber, deflectors for attachment to the inner wall 2 being preferably arranged spirally around said wall 2. This casing 1 is adapted to rest upon and surround the annular base 4', the latter having a central opening 5, the said base being supported by a number of standards 6.

65 The reference-numeral 7 indicates a gas-supply pipe extending through the opening 5 into the heater and connected to the spider 8, this spider 8 communicating with an annular burner 9, located in the said annular base 4', carrying a series of lugs 10, said lugs 10 engaging the interior annular sides of the base portion and forming a space 11 between the lugs, the purpose of which will be hereinafter more fully described. The base portion 4' on its upper face is provided with a pair of annular flanges 12, between which is seated the annular burner 9, this burner being rigidly secured to the base portion by means of bolts 14 and securing-nuts 15. Between the inner walls of the outer casing and the side of the base portion is formed an annular recess 16 to receive an asbestos lining 17, which conforms to the inner wall of the casing 1 and extends upwardly from the burner a short distance.

75 The reference-numeral 18 represents the inner casing, forming an interior products-of-combustion chamber 19, which communicates with the products-of-combustion chamber 3 by means of a series of horizontally-extending flues 20. Centrally in the said interior products-of-combustion chamber 19 is arranged a pipe 21, extending downwardly in said products-of-combustion chamber, within a short distance of the bottom thereof, this pipe 21 leading to the chimney or stack.

80 The reference-numeral 22 indicates the annular product-chamber, which is formed between the inner wall 2 and the inner casing 18.

85 The operation of my improved heater is as

follows: The valve being opened in the supply-pipe the gas will become ignited in the burner, and the flame will extend through the openings 11, formed between the lugs of the burner, where the same will be mixed with the current of air passing up through the opening 5 of the base portion into the product-chamber. In this manner the inner walls of the casing 1 may be directly heated by the products of combustion passing upwardly in the direction of the arrows into the horizontally-extending flues and communicating with the interior products-of-combustion chamber, where the same will be passed downwardly, and thence into the pipe 21, leading to the chimney or stack. Attention is also directed to the fact that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

1. In a heater, the combination of an inner and outer product-chamber, flues connecting said product-chambers, a pipe extending downwardly into said inner product-chamber, a suitable gas-inlet, an annular burner connected to said gas-inlet, an annular base, and means connecting said annular base and the annular burner together, and an asbestos lin-

ing arranged in said outer product-chamber, substantially as described.

2. In a heater, the combination of an inner and outer product-chamber, deflectors arranged in said product-chambers, flues connecting said product-chambers, a pipe extending downwardly to a short distance from the lower end of said inner product-chamber, a suitable gas-inlet, an annular burner connected to said gas-inlet, an annular base, means connecting said annular base and the annular burner together, and an asbestos lining arranged in said outer product-chamber, substantially as described.

3. In a heater, the combination of an inner and outer product-chamber, deflectors spirally arranged in said outer product-chamber, flues connecting said product-chamber, a pipe extending outwardly to a short distance from the lower end of said inner product-chamber, a suitable gas-inlet, an annular burner connected to said gas-inlet, an annular base, means connecting said annular burner and base together, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

HAMILTON K. BOYD.

Witnesses:

JOHN NOLAND,
E. E. POTTER.