

(No Model.)

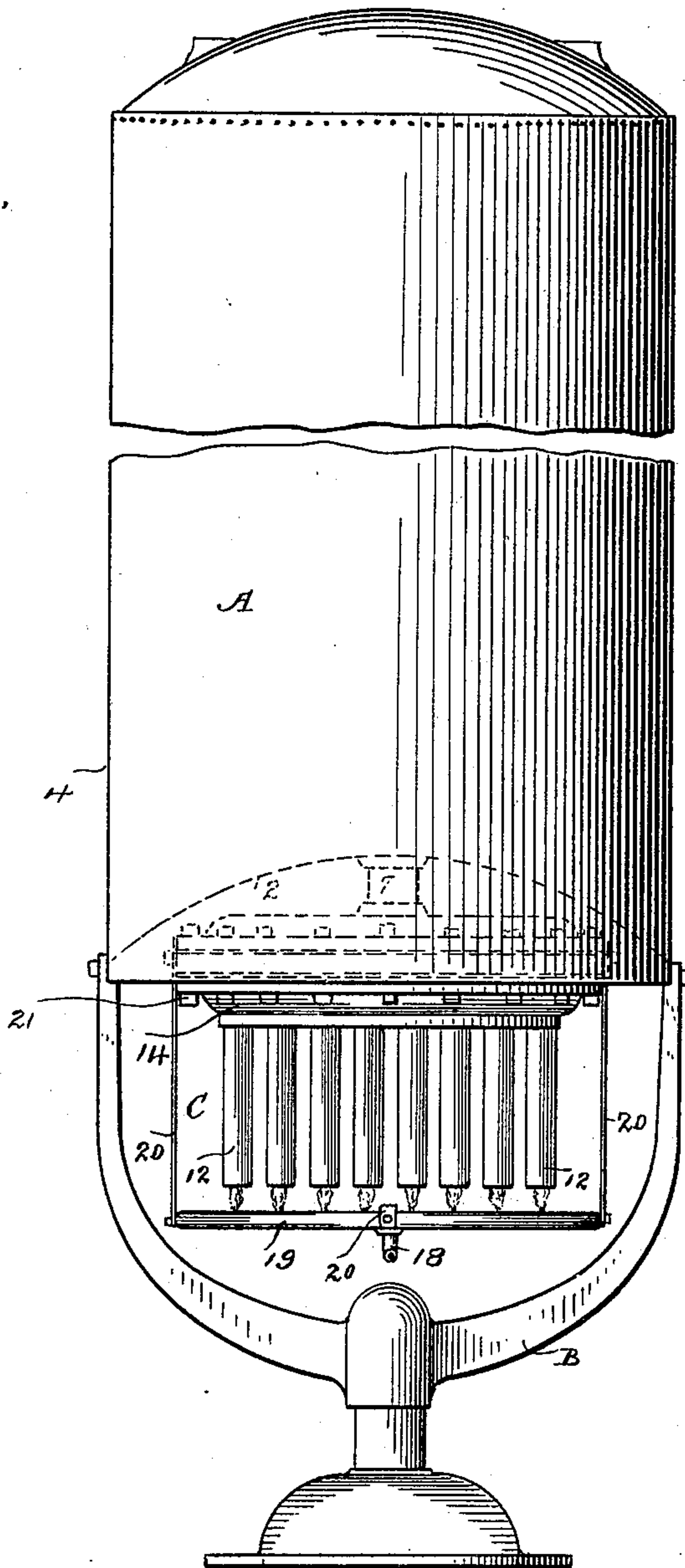
2 Sheets—Sheet 1.

M. G. CUNNINGHAM.
GAS WATER HEATER.

No. 606,126.

Patented June 21, 1898.

Fig. 1.



WITNESSES

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INVENTOR

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Atty.

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2 Sheets—Sheet 2.

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Fig. 2.

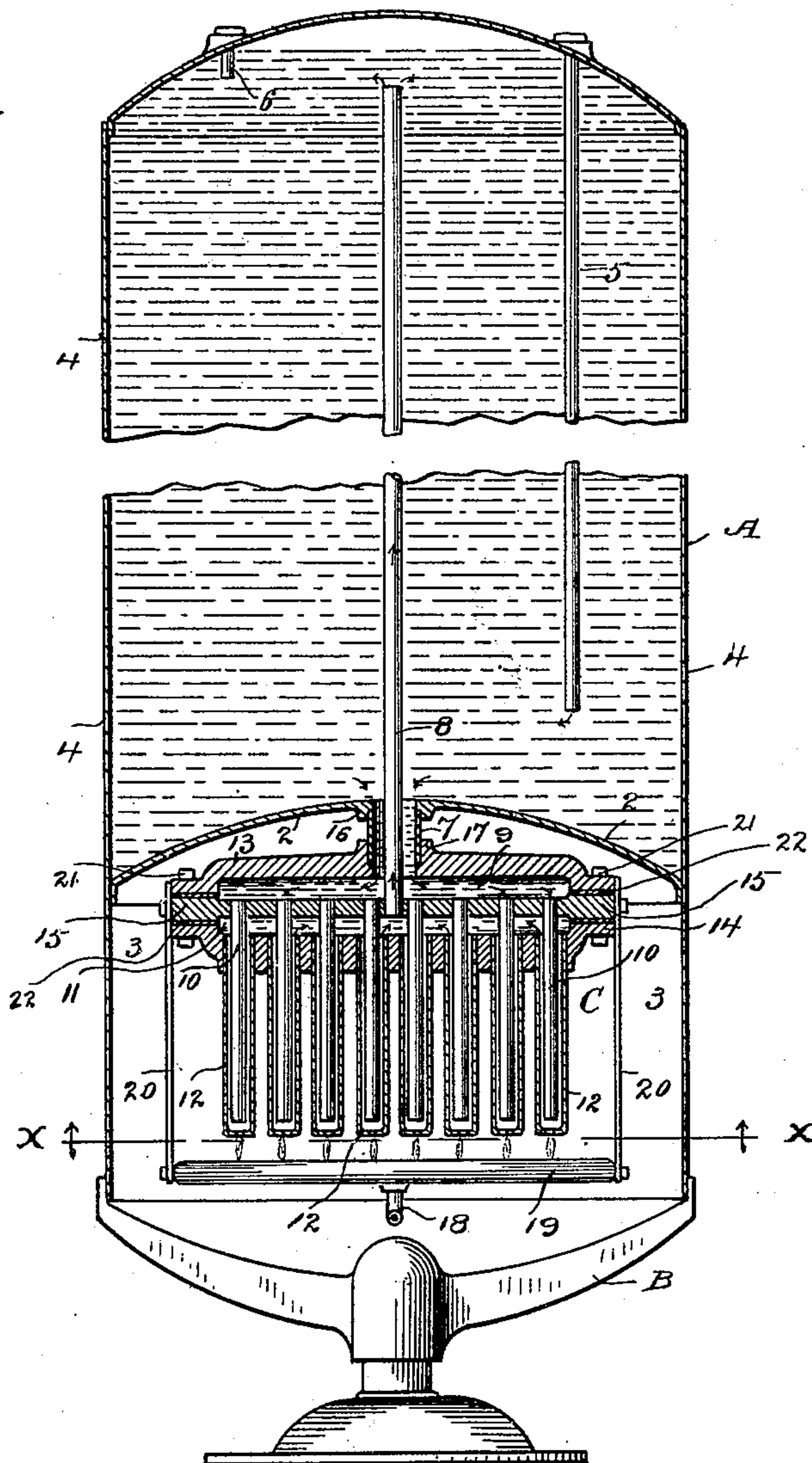
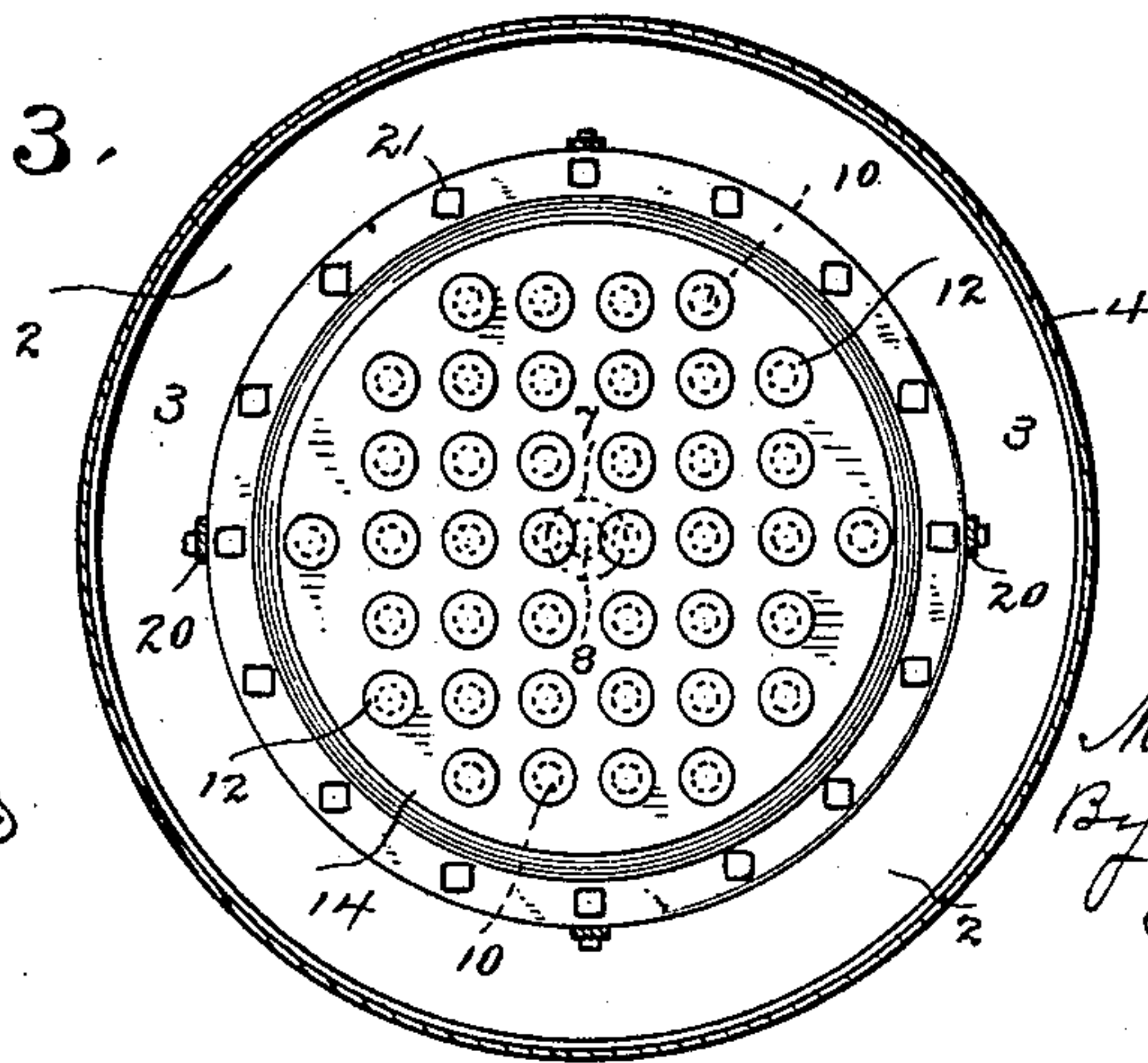


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

MICHAEL G. CUNNINGHAM, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF
ONE-HALF TO CHARLES D. WOODRUFF, OF SAME PLACE.

GAS WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 606,126, dated June 21, 1898.

Application filed March 7, 1898. Serial No. 672,828. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL G. CUNNINGHAM, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Gas Water-Heater, of which the following is a specification.

My invention has for its object to provide a water-heater which may be produced at comparatively little expense, which may be used to heat water for domestic or for heating purposes, which may be applied to boilers already in use or may be used in connection with specially-constructed boilers, so that the heater will be wholly out of sight, and which shall be equally adapted for use with either ordinary illuminating-gas or fuel-gas.

With these ends in view I have devised the novel gas-burning water-heater which I will now describe, referring by numbers to the accompanying drawings, forming part of this specification, in which I have illustrated my novel water-heater as applied to an ordinary kitchen-boiler, this single illustration of the application of my invention being deemed sufficient for the purposes of this specification.

Figure 1 is an elevation illustrating my invention as applied to an ordinary kitchen-boiler which may have been already in use; Fig. 2, a sectional view illustrating the application of my invention to a specially-constructed boiler which wholly conceals the heater from view, and Fig. 3 is a section on the line *xx* in Fig. 2.

A denotes a hot-water reservoir, or "boiler," so called, and B a stand by which it is supported. The reservoir may be of any ordinary or preferred style or design that will best suit the special purpose for which it is intended, and the stand likewise may be made of any appropriate design that will best suit the requirements of use or the taste of the manufacturer. In Fig. 2 I have shown the concave bottom 2 of an ordinary "kitchen-boiler," so called, as placed at a distance above the lower edge thereof, so as to form a recess 3 within the shell 4 of the reservoir or boiler.

5 denotes the ordinary receiving-pipe of the reservoir; 6, the discharge-pipe of the reservoir; 7, a cold-water pipe leading from

the reservoir to the heater, and 8 a hot-water pipe leading from the heater, and discharging within the reservoir, this pipe preferably lying within pipe 7, as clearly shown in Fig. 2.

C denotes the heater as a whole. This heater consists, essentially, of an upper water-chamber 9, which receives water from pipe 7 and from which the water passes into open-ended depending tubes 10. Tubes 10 pass through a lower water-chamber 11 and nearly to the bottom of larger depending tubes 12, which are closed at their lower ends and whose upper ends open into water-chamber 11. Pipe 8 passes downward through water-chamber 9 and opens into water-chamber 11.

The special mode in which the reservoirs are constructed and the general mode of assembling the parts of the structure are not of the essence of my invention. I have found, however, in practice that the water-chambers may be formed in a very simple and inexpensive manner by means of upper, lower, and intermediate plates, which are castings easily made, and which I have designated, respectively, by 13, 14, and 15. These plates are so shaped as to form chamber 9 between plates 13 and 15 and chamber 11 between plates 14 and 15. Pipe 7 is shown as connected to a hub 16 upon the bottom 2 of the reservoir and a hub 17 upon plate 13. Pipe 8, as already stated, passes through pipe 7 and through chamber 9 and is connected directly to plate 15. Depending tubes 10 also are connected directly to plate 15, their upper ends opening into chamber 9 and their lower ends into tubes 12, near the closed lower ends thereof, as clearly shown in Fig. 2. Tubes 12 are connected directly to plate 14 and open into chamber 11.

18 denotes a gas-supply pipe, and 19 a burner of any ordinary or preferred construction, depending, of course, upon the gas which is to be used and upon the general shape and design of the heater. It is contemplated that a jet be provided for each depending tube 12, the blue flame of the jet impinging upon the lower end of the pipe and extending up the sides thereof.

The circulation will be readily understood from the arrows in Fig. 2. Water passes

from pipe 5 into the reservoir, thence through pipe 7 into chamber 9, thence through tubes 10 into tubes 12, where the water is heated, and thence into chamber 11, from whence it passes
5 into the reservoir through pipe 8.

In the drawings I have shown the heater as suspended from plate 15 by means of rods 20. It is wholly immaterial, however, so far as my present invention is concerned, how the
10 burner is supported. It will of course be understood that when the reservoir, heater, and stand are sold together the reservoir may be made substantially as in Fig. 2 and may rest upon a low stand. Where the heater is used
15 in connection with a reservoir already in use, it may rest upon a stand made substantially as in Fig. 1, it being simply necessary to provide sufficient room under the reservoir to receive the heater. I have shown plates 13,
20 14, and 15 as secured together by bolts 21 passing through the three plates, suitable packing 22 being placed between the plates, as clearly shown in Fig. 2, thereby securing perfectly-tight joints.

25 Having thus described my invention, I claim—

1. A water-heater comprising an upper chamber, a lower chamber, depending tubes closed at their lower ends and opening into

the lower chamber, open-ended tubes open- 30 ing into the upper chamber and passing downward through the lower chamber and nearly to the bottom of the tubes having closed ends, a cold-water pipe communicating with the upper chamber and a hot-water pipe leading 35 from the lower chamber, substantially as described and shown.

2. In a water-heater the combination with plates 13 and 14 having between them an in- 40 termediate plate whereby upper and lower water-chambers are formed, of a cold-water pipe leading into the upper chamber, depending tubes 12 closed at their lower ends and opening into the lower chamber, open-ended 45 tubes 10 which open into the upper chamber and extend downward through the lower chamber and nearly to the bottom of tubes 12 and a hot-water pipe leading from the lower chamber and passing through the up- 50 per chamber and through the cold-water pipe, substantially as described and shown.

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

MICHAEL G. CUNNINGHAM.

Witnesses:

A. M. WOOSTER,
S. V. HELEY.