

No. 775,333.

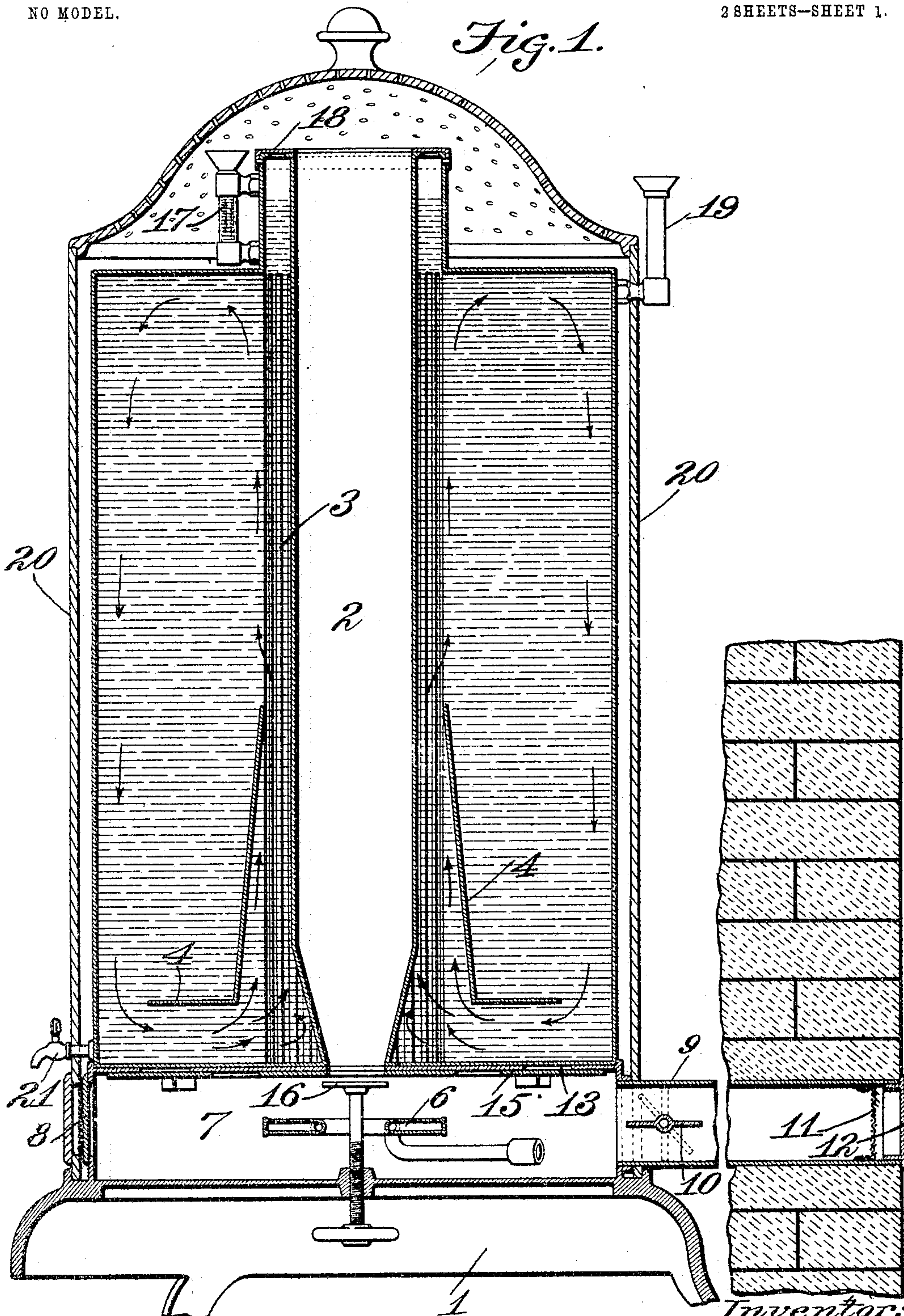
PATENTED NOV. 22, 1904.

J. J. KULAGE.
HEAT RADIATOR AND VENTILATOR.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
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2 SHEETS—SHEET 2.

Fig. 2.

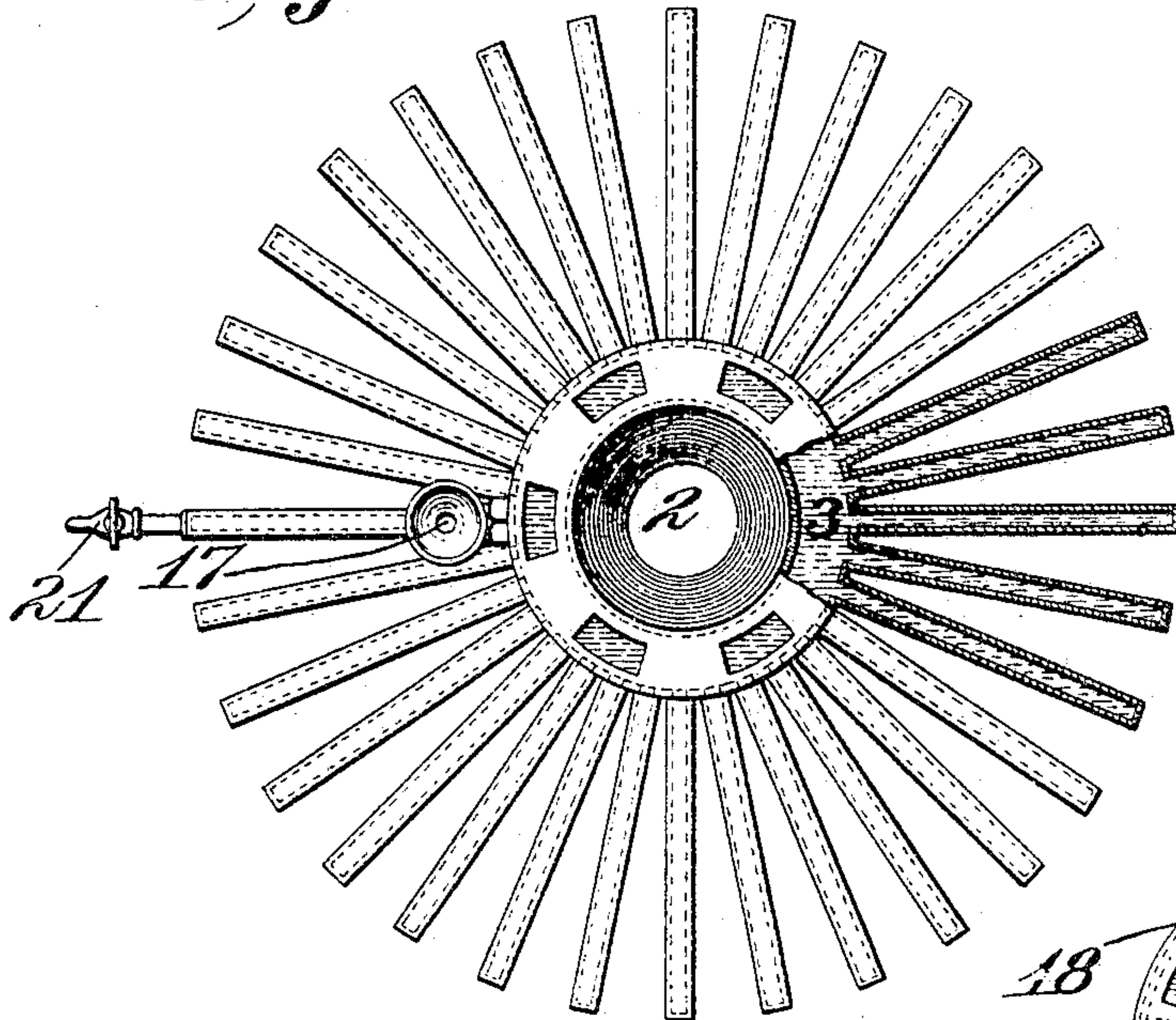


Fig. 3.

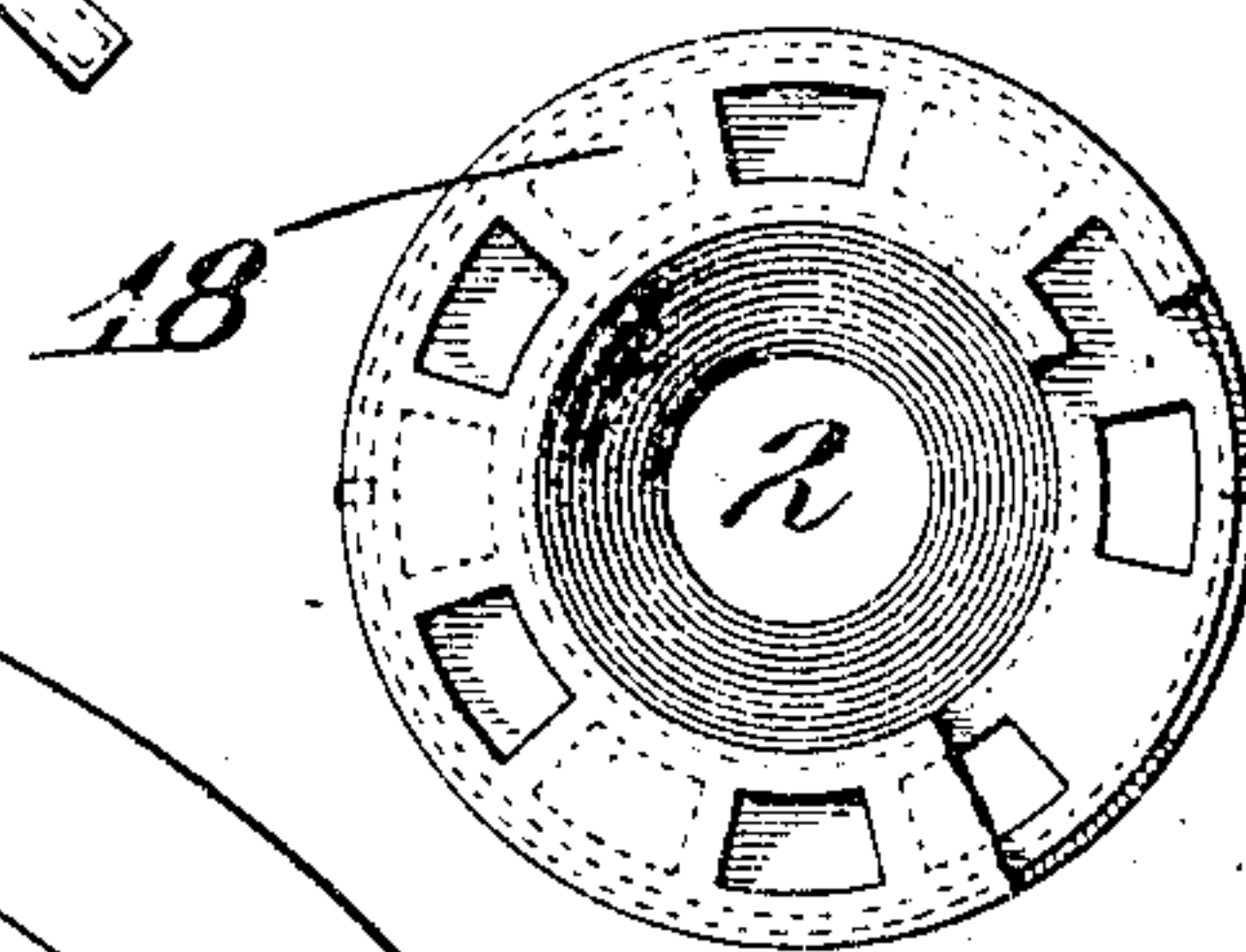
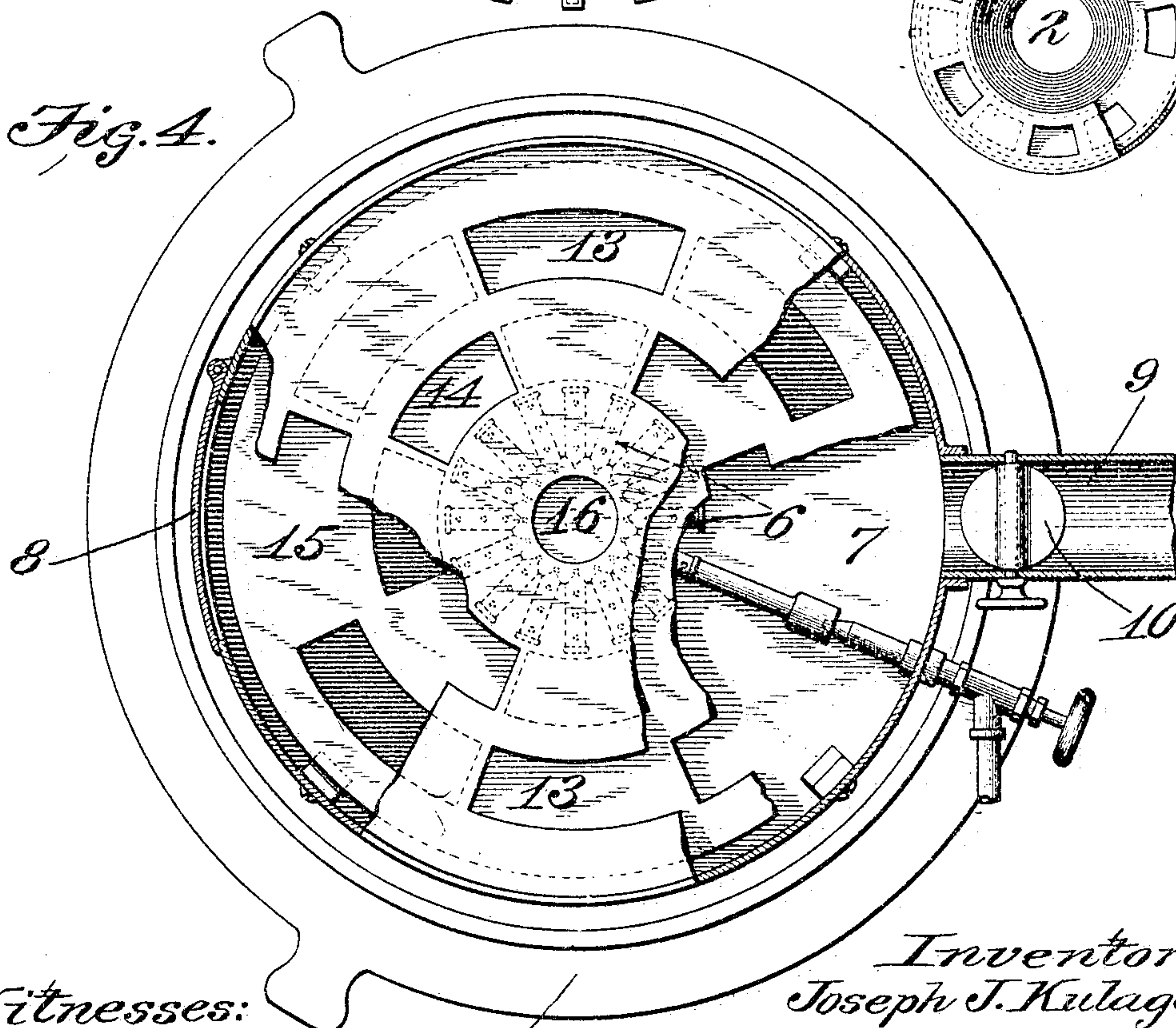


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH J. KULAGE, OF ST. LOUIS, MISSOURI.

HEAT-RADIATOR AND VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 775,333, dated November 22, 1904.

Application filed October 12, 1903. Serial No. 176,703. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH J. KULAGE, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Heat-Radiators and Ventilators, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view of my improved heat-radiator and ventilator. Fig. 2 is a top plan view, partly in section. Fig. 3 is a detail view of the damper arranged at the top of the heater, and Fig. 4 is a horizontal sectional view showing the arrangement of the dampers for controlling the passage of the induced fresh air and the products of combustion through the heater.

This invention relates to a new and useful improvement in heat-radiators and ventilators, the object being to construct a heater in a small compact form and which has considerable radiating-surface for the purpose of imparting heat to the atmosphere of a room. The heater is designed to be operated effectively and economically with a very small amount of fluid or water in connection with gas; but it is obvious that other fuels may be employed. I prefer to supply not only the oxygen necessary to support the combustion of the fuel from the exterior through a pipe leading into the combustion-chamber in which the burner is located, but also an additional large surplus of fresh air, which the apparatus when in operation will induce or draw into the room, thereby acting as a perfect and effective ventilator.

With these objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as hereinafter described and afterward pointed out in the claims.

In the drawings, 1 indicates a base-casting upon which my improved heater is supported. This casting supports the heater as an entirety, which heater consists of a central flue 2, preferably having a contracted or frusto-conical lower portion to provide a valve-seat as well

as permit a greater heating-surface to be acted upon by the products of combustion. Surrounding this flue 2 is a circular water-chamber 3 from which radiate a number of vertically-disposed hollow wings communicating at their lower and upper portions with the central water-chamber. In these wings are deflectors 4, said deflectors consisting of inclined portions whose upper ends terminate at the water-chamber 3 and whose lower ends extend horizontally to form shelf-like partitions. These deflectors 4 define the paths of the descending cold and the ascending hot water in the direction of the arrows in Fig. 1.

6 indicates the burner, which may be of any form, said burner being located in a combustion-chamber 7, having a solid bottom.

8 indicates a door through which access may be gained for the purpose of controlling damper-plate 15, lighting the burner 6, and of admitting air for combustion.

9 indicates a pipe leading into the chamber 7, preferably from the exterior, said pipe being provided with a damper 10 for well-understood purposes and a screen 11. A cap 12 may be employed to close the pipe when the heater is not in operation or at any other time whenever desired.

The induced fresh air and the products of combustion from the chamber 7 may escape upwardly through the heater either by passing through the central flue or through the spaces between the various wings. In order to control the path of escape of these products of combustion, I provide openings 13 and 14 in the top wall of the combustion-chamber, which openings are controlled by a rotatable damper-plate 15, having corresponding openings adapted to register with the openings 13 and 14. When these openings 13 and 14 are opened, it is obvious that the fresh air and the products of combustion from chamber 7 can escape upwardly between the radiating wings and that when said openings are closed this path of escape is shut off. To control the passage of the fresh air and the products of combustion through the central flue 2, I adjustably mount a damper-plate 16 on a threaded stem passing through the bottom of the combustion-chamber. When this damper-

plate is adjusted upwardly to close the entrance of flue 2, no products of combustion can escape through this path; but when the damper-plate is lowered the flue is opened.

5 The central flue 2 preferably extends upwardly above the wings, as shown in Fig. 1, and a shell is spaced therefrom to form a continuation of the circular water-chamber 3. This water-chamber may be provided with a
10 glass gage 17, whereby the height of water in the heater may be determined. A rotatable damper-plate 18 is arranged at the upper end of the circular water-chamber 3 for the purpose of permitting and regulating the
15 escape of moisture into the room.

A filling-funnel 19 may also be employed in connection with the heater for well-understood purposes.

If desired, a perforated shell or casing
20 may inclose the heater, said shell or casing being supported upon the base-casting. Said shell may also be so constructed to contain warming-ovens, &c., in the usual manner of such devices. A draw-off cock 21 may also
25 be used for well-understood purposes, said cock being arranged at the lower portion of the heater.

In operation the heater is filled with a liquid, such as water, to a height preferably
30 above the wings. The burner is now started and the dampers 15 and 16 adjusted to direct the products of combustion either through the flue 2 or between the wings, as desired. The heated water rises in the circular water-
35 chamber and enters into the upper portion of the wings, where upon losing its heat by radiation it descends in the wings, the deflectors preventing its commingling with the ascending hot water. Thus a constant circula-
40 tion is kept up, the heated water ascending in the centrally-located water-chamber and the colder water descending to the extremities of the wings.

From the above it will be seen that the fresh
45 air admitted to the combustion-chamber will not only support combustion, but upon becoming heated will ascend through the central flue or between the wings and in this way furnish a supply of heated fresh air to the
50 room. This supply of heated fresh air being induced by the burner is an advantage possessed by the use of my invention, which contributes materially to its efficiency as a heating apparatus.

55 I am aware that minor changes in the construction, arrangements, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from
60 the nature and principle of my invention.

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

1. In a heat-radiator and ventilator, the com-

65 bination of an annular water-chamber forming a central flue for the escape of the induced fresh air and the products of combustion, communicating wings radiating from said water-chamber, a burner, and means for cutting
70 off the flame from the flue or the wings; substantially as described.

2. In a heat-radiator and ventilator, the combination of an annular water-chamber forming a central flue having a contracted lower end, radiating wings communicating with said
75 chamber, a combustion-chamber, a burner located in said combustion-chamber, and means for separately permitting and obstructing the escape of the induced fresh air from said chamber through the flue or between the wings;
80 substantially as described.

3. In a heat-radiator and ventilator, the combination of an annular water-chamber forming a central flue, radiating wings communi-
85 cating with and surrounding said chamber, rotating means for separately shutting off the induced fresh air and the products of combustion from said chamber through the flue and between the wings; substantially as de-
90 scribed.

4. In a heat-radiator and ventilator, the combination with an annular water-chamber forming a central flue, wings communicating with said chamber, means for controlling the pas-
95 sage of the air and the products of combustion to both or either the flue or the wings and comprising an adjustable damper-plate for closing the lower end of the flue, a rota-
table damper-plate for closing openings to the spaces between the wings, and a burner; sub-
100 stantially as described.

5. The combination with a plurality of radial hollow wings having a communicating concentric annular water-chamber forming a flue whereby a water-space is provided between
105 the flue and the wings, of baffle-plates carried by the respective wings and interposed between the ends thereof, said baffle-plates having portions approximately parallel with the heat-contacting surfaces of the respective
110 wings, and damper mechanism for separately opening and closing the spaces between the wings and the flue; substantially as described.

6. In a heat-radiator and ventilator, the combination with an annular water-chamber forming a central flue, of radiating wings surround-
115 ing said water-chamber and communicating therewith, deflectors 4 located in said wings, a combustion-chamber beneath the flue and wings, and a burner in the combustion-cham-
120 ber; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 9th day of October, 1903.

JOSEPH J. KULAGE.

Witnesses:

GEORGE BAKWELL,
RALPH KALISH.