

M. J. OTTO.
 FLUID HEATING AND COOKING STOVE.
 APPLICATION FILED FEB. 21, 1918.

1,312,804.

Patented Aug. 12, 1919.

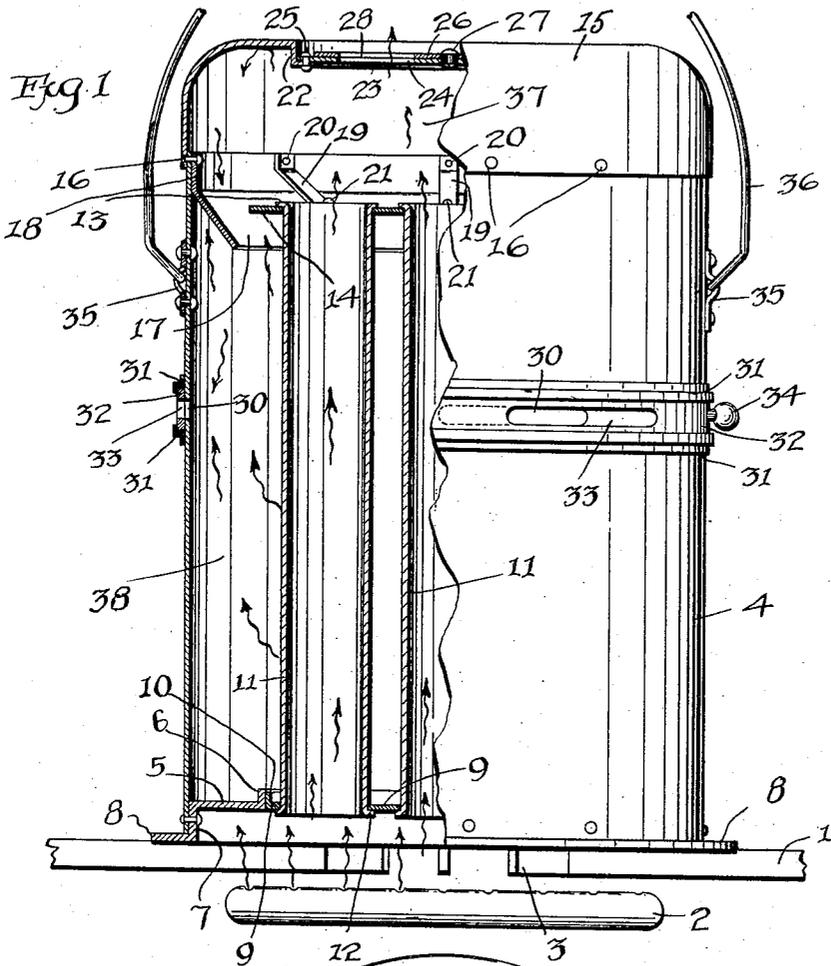
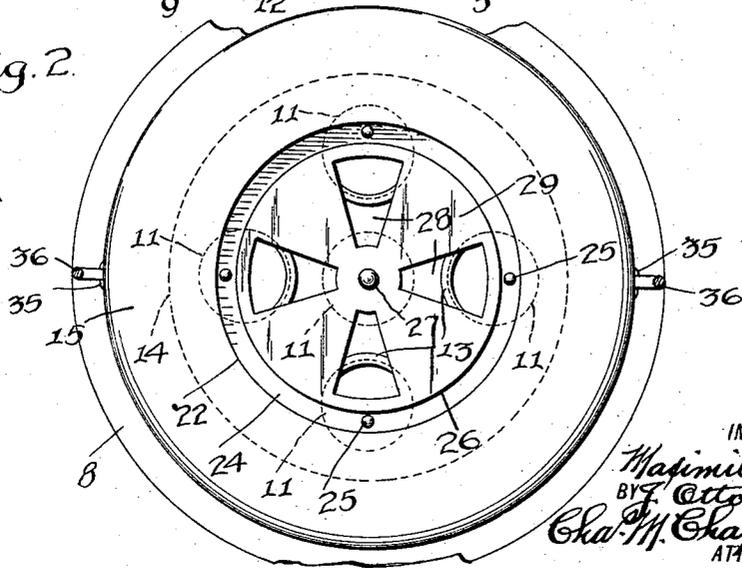


Fig. 2.



INVENTOR:
Maximilian
BY J. Otto.
Cha. M. Chalmers,
 ATTORNEY

UNITED STATES PATENT OFFICE.

MAXIMILIAN J. OTTO, OF NEW YORK, N. Y.

FLUID HEATING AND COOKING STOVE.

1,312,804.

Specification of Letters Patent. Patented Aug. 12, 1919.

Application filed February 21, 1918. Serial No. 218,416.

To all whom it may concern:

Be it known that I, MAXIMILIAN J. OTTO, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented a new and useful Improvement in Fluid Heating and Cooking Stoves, of which the following is a description.

This invention has reference to heating and cooking apparatus and, particularly, to a device applicable to gas stoves or other fluid burners for both heating and cooking purposes.

Among the objects of my invention may be noted the following: to produce a portable device which may be applied to a gas stove of the single-burner type, or to a gas burner or other fluid burner for the purpose of heating or cooking or both; to provide a device by which a room, or large inclosure, may be quickly and sufficiently heated in the coldest weather; to provide a device such as noted in the foregoing which can be utilized either as a heating or as a cooking medium, and which is simple in construction, efficient in operation, strong and durable, and by which a very high degree of heat can be developed for all purposes.

With the above objects in view and others which will be detailed during the course of this description, my invention consists in the parts, features, elements, and combinations thereof hereinafter described and claimed.

In order that my invention may be clearly understood, I have provided drawings wherein:

Figure 1 is an elevation of my device or stove shown applied to a single-burner gas-stove, parts being broken away, and other parts being in section to show clearly the interior details of construction; and

Fig. 2 is a top plan view calculated to show both the form of the stove and the damper structure.

Referring to the drawings, the numeral 1 indicates the top of a fluid-burning stove, the burner thereof being indicated at 2, and the grid thereof at 3. The source of heat may be either gas or liquid fuel, and may be a usual single-burner gas-stove or one of the several burners of such stoves, or a specially-made device to be placed on the floor or on a low support and connected with a pipe, in turn connected with the source of fuel supply.

The body of the heater is indicated at 4 and may be made of sheet iron or a casting. The base of the heater has the circular portion 5, below which an open bottom chamber is formed, provided with an upturned flange 6, and with a vertical portion 7, terminating in a flat, ring-like support 8, forming the base of the heater and arranged at a right-angle to the vertical portion 7. The body 4 fits snugly the vertical portion 7 of the base, and the parts may be riveted together. Set within the flange 6 of the base is a circular plate 9 having at its circumference an upturned flange 10 which is secured in any suitable manner to the flange 6 of the base. The plate 9 is provided with a plurality of holes, preferably five in number, and one of which is centrally arranged, as shown in Fig. 2. The said holes each receives a cylinder or heating tube 11, the lower end of which is outwardly turned or flanged, as at 12, to engage the plate 9, the said flange being secured to the plate in any suitable manner. At its upper end, each of the tubes is also outwardly turned or flanged, as at 13, and secured to a circular plate 14 similar to the plate 9, said plate 14 having holes therethrough in position corresponding with the holes through the plate 9. The upper end of the heater body has a cover 15, which is riveted to said body, as at 16, the same rivets securing in position the deflecting member or baffle 17, the same being secured in place by its flange 18, to which are also secured a plurality of arms or supports 19, as by rivets 20, the lower ends of which are riveted to the plate 14, as at 21. This construction rigidly supports the tubes or cylinders 11 in vertical position, against displacement or jarring, shocks, or other means, and likewise maintains the plate 14 in its position relatively to the tubes, the plates 9 and 14 also forming spacing devices for said tubes. If desired, the rivets 16, at the proper positions, may also secure the arms 19 in place, thus economizing rivets 20, and simplifying the construction.

It will be noted that the deflector 17 extends from the body of the heater inwardly and downwardly toward the tubes 11. The cover or top 15 of the heater is centrally depressed, as at 22, to provide a ledge or support 23 for a damper-plate 24, which is riveted, as at 25, to the ledge 23. A damper or slide 26 is journaled at 27 to the center

of the damper-plate 24, so as to move circularly and provide passages, as at 28, through the damper and plate into the top of the heater, the said slide and plate being apertured for the purpose, and the slide being provided with webs 29 to close the passages 28, when desired, or to partially close the same for regulation of heat emission. The body portion 4, at any point desired between the bottom and top of the heater, is provided with a plurality of elongated slots 30, a couple of flanged rings 31 being arranged above and below the said slots to form a guide or slide-way for a circularly movable damper 32, provided with apertures 33 cooperating with the apertures 30. A handle 34 is secured to the damper 32 to enable the same to be moved circularly with ease, and without burning the fingers, upon the body 4. By forming the depression in the cover 15, the top thereof is left flat or without obstruction to the setting thereon of a pan, basin or other holder for the purpose of heating water or cooking, as desired. Brackets 35 are secured at opposite sides to the body 4 by riveting or otherwise, and through the same may be hooked or looped the lower ends of the bail 36, the center of which may be provided with a grip, not shown, for lifting and carrying the heater from place to place.

With the above details of construction, the mode of operation will be understood readily, the same being as follows:

The flame from the burner 2 extends upwardly and the heat therefrom passes into the tubes 11 from the space or open bottom chamber below the same in the base, as shown by the arrows at the bottom of Fig. 1. Passing through the tubes 11, the heat reaches the dome or chamber 37 at the top of the heater, and, if the damper 26 be open, will pass through the passages 28. Heat, of course, will be radiated from the sides of the tubes 11 into the chamber 38 of the body and between the latter and the tubes, and, if the damper 32 be closed, will pass therefrom under the baffle 17 and over the said baffle, as shown by arrows pointing upwardly in the chamber 38. This will add the heat radiated from the tubes 11 to the heat passing directly through the tubes into the chamber 37, and increase the heat in the latter, which passes through the damper 27. The heat thus enters the dome-chamber 37 from two different sources. The heat caught by the baffle 17 will become superheated, or its temperature considerably raised, by the continual addition of radiated heat from the tubes 11, thus increasing the temperature of the body 4 and causing it to radiate a considerable amount of heat while being used as a cooking stove. If the device is desired merely for a heater, the damper 26 will be closed, whereupon the

heat passing through the tubes will strike the top of the cover 15 and be deflected downwardly against the member 17, which operates as a deflector to carry the heat downwardly into the body-chamber 38, the heat passing through the space between the member 17 and tubes 11, as shown by the downwardly pointed arrows, and engaging the tubes 11, thus becoming superheated and also encountering the heat radiated from the tubes 11 directly into the body-chamber 38. Now, the damper 32 should be opened to the desired extent, thus enabling the heat within the chamber 38 to pass through the apertures 30—33 in regulated amount; and it will be understood that, under these conditions, the heat within the chambers 37 and 38 will very materially rise in temperature, which latter is added to by the heat caught under the baffle 17, as well as by the heat ascending directly from the base-chamber, as will be readily understood. Thus the heat radiation from the device is materially increased. The importance of my invention as a heater for rooms cannot be overestimated and, particularly, when it is considered that it comprises three chambers which are contributed to and which contribute to the heat radiation, viz.: The base-chamber at the bottom of the body 4, produced by the members 5, 7 and 9; the top, or dome-chamber 37, produced by plate 14, baffle 17, and cover 15; and body chamber 38 between body 4 and tubes 11, and base 5 and baffle 17 and plate 14. The walls of these chambers become excessively heated since the gas therein becomes superheated; for, with the damper 26 closed, superheating in chambers 37 and 38 occurs by contributions through tubes 11 and by radiation from base 5, tubes 11, plate 14, baffle 17 and cover 15, and the gas in the base-chamber becomes superheated by radiation from base 5 and direct supply from the burner 2. Furthermore, it will be understood that, when base 5 becomes excessively heated, which occurs after very short operation of the stove, it will continue to radiate heat into chamber 38 long after the source of heat at 2 has been extinguished. Hence, it follows that my stove economizes the heating fluid employed, since, after a while, the source can be reduced considerably in severe cold weather, or cut off entirely in moderately cold weather.

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

1. A combination cooker and heater comprising a body portion having located therein a plurality of parallel and co-extensive heat conducting and radiating tubes, and having an unobstructed heating chamber encircling the tubes, the outer wall of which is exposed for radiating heat, and another heating chamber above said tubes, and a

member between the two said chambers extending from one into the other and operating both as a baffle and a deflector.

2. A heating device having a body provided with a chamber entirely open at its bottom for the reception of heat from a burner, a plurality of parallel and co-extensive tubes extending from the said chamber to a point near the top of the body, the top of the body having a cover applied thereto with a damper therein, and means within the body near its top adapted to both deflect the heat downwardly and retard the heat upwardly.

3. A heater consisting of a body portion having a plurality of heat conducting tubes arranged therein, the said body portion having an unobstructed chamber surrounding the tubes, and a chamber above the tubes, the two chambers being separated from each other by a baffle member, a regulating damper in the top of the body, and a regulating damper in the body portion located below the baffle.

4. A heater comprising a cylindrical body portion having a circumferential, flat supporting means at the bottom thereof, a cover for closing the top of the body, a damper located in the cover, a plurality of parallel and co-extensive tubes extending from near the bottom of the body to near its cover, a

damper in the said body, and means for deflecting the heat in one direction and retarding the passage of heat in the opposite direction within the body.

5. A heater provided with a chamber in its bottom and a chamber in its top, a plurality of parallel and co-extensive tubes connecting the two chambers and providing thereby a chamber within the body surrounding the tubes, and a member located between the body and the tubes and between the body-chamber and top chamber for both deflecting and corralling the heat.

6. A heater consisting of a body portion closed at its top and bottom and provided with damper openings in its sides and top, and tubes extending through the bottom and discharging into the space at the upper end of the body portion, said space and the space surrounding the tubes being in communication with each other, whereby when the dampers in the side and top of the body portion are open, air and the products of combustion may be commingled and discharged at the top of the body portion, and when the upper damper is closed the products of combustion may be discharged through the openings in the sides of the body portion.

MAXIMILIAN J. OTTO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."