

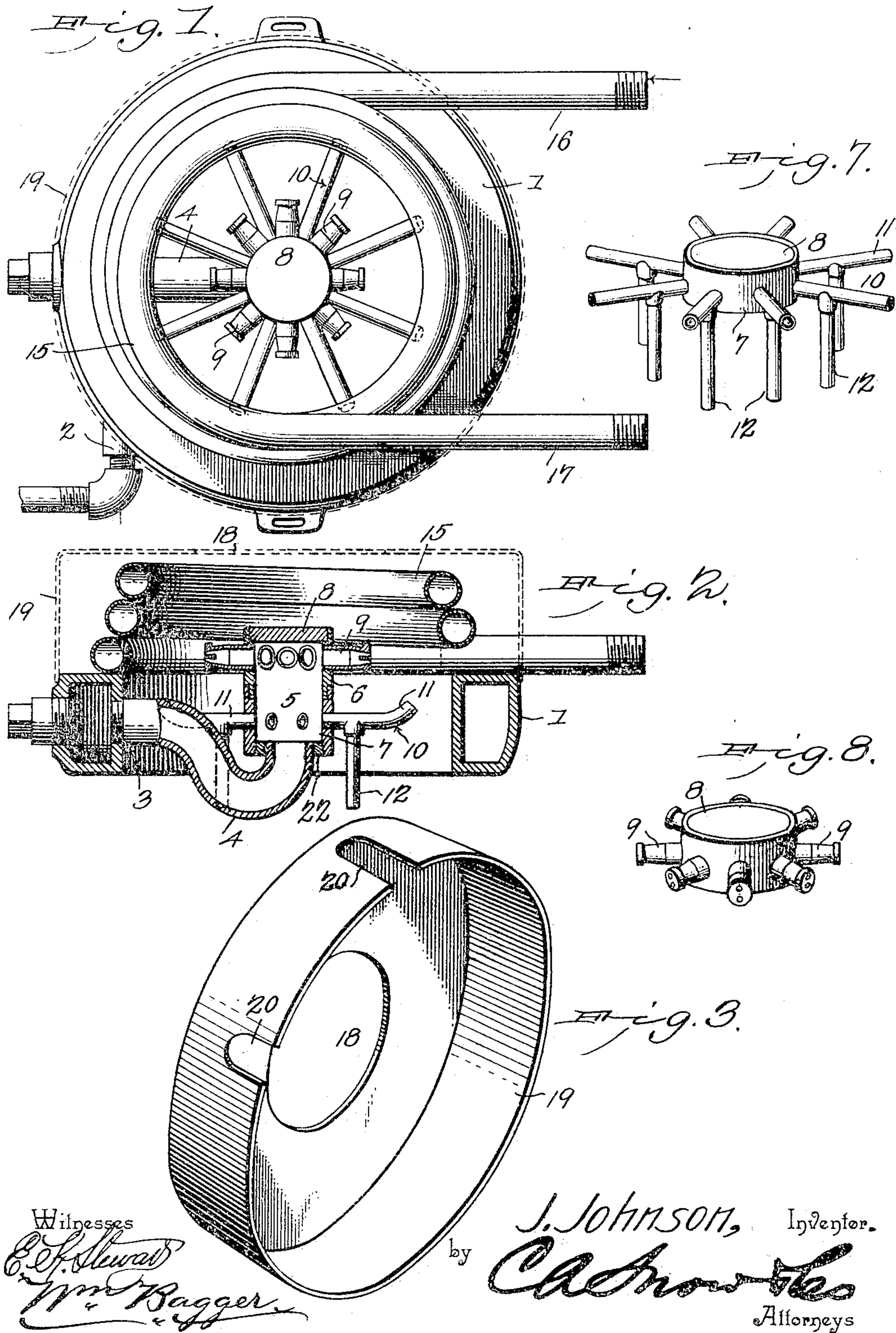
No. 766,147.

PATENTED JULY 26, 1904.

J. JOHNSON.  
BURNER FOR GAS STOVES.  
APPLICATION FILED SEPT. 25, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



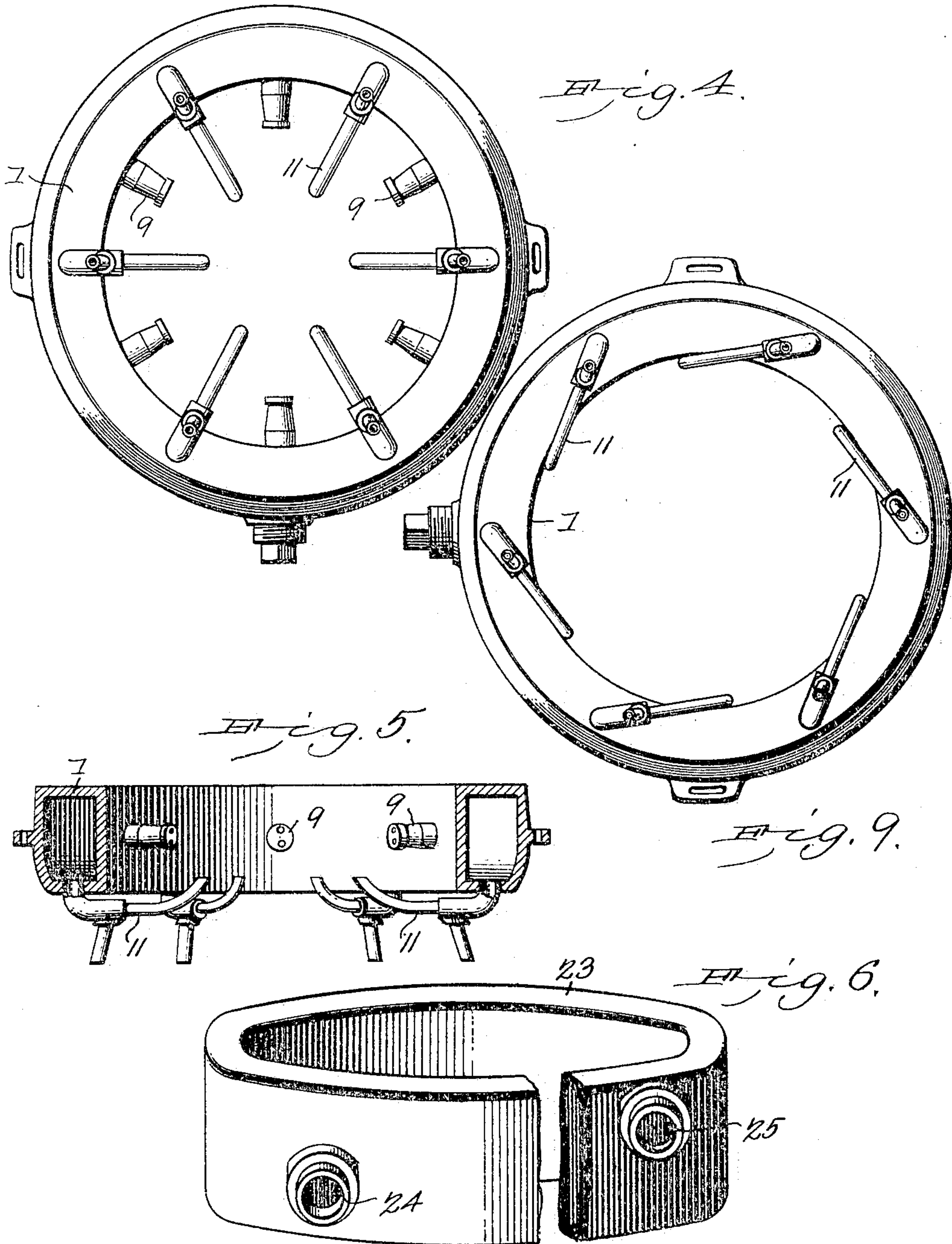
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2 SHEETS—SHEET 2.



Witnesses  
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## UNITED STATES PATENT OFFICE.

JONATHAN JOHNSON, OF LOWELL, MASSACHUSETTS.

## BURNER FOR GAS-STOVES.

SPECIFICATION forming part of Letters Patent No. 766,147, dated July 26, 1904.

Application filed September 25, 1902. Serial No. 124,829. (No model.)

*To all whom it may concern:*

Be it known that I, JONATHAN JOHNSON, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Burner for Gas-Stoves, of which the following is a specification.

This invention relates to burners for gas-stoves; and it has for its object to produce a burner which shall be simple and inexpensive and to provide in connection with the same a water coil or heater, as will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my improved gas-stove burner, showing the water-coil in position thereon. Fig. 2 is a vertical sectional view of the burner with the water-coil in position and showing in dotted lines a shield extending over the same. Fig. 3 is a perspective view showing the shield detached. Fig. 4 is an inverted plan view illustrating a modification. Fig. 5 is a transverse sectional view of the same. Fig. 6 is a perspective view illustrating a modified construction of the water-heater. Figs. 7 and 8 are perspective detail views illustrating modifications. Fig. 9 is an inverted plan view showing another modification.

Corresponding parts in the several figures are indicated by similar numerals of reference.

In carrying out my invention I prefer to avail myself of the ordinary circular gas-chamber shown at 1 and which consists of an annular hollow casting having a gas-inlet 2 formed in the outer side thereof and a gas-exit 3 formed in its inner side wall. This gas-chamber, while forming the base and support of what is known in its entirety as the "burner," is actually nothing more than a chamber in which the gas may be permitted to expand and from which it is supplied to the parts which are properly known as the "burners."

In the preferred form of my invention I connect with the gas-chamber 1 an exit-pipe 4, suitably curved and rising centrally in the interior open space of the gas-chamber. With this pipe is connected an auxiliary gas-cham-

ber 5, in which further expansion of the gas may take place and with which the burners which radiate from said auxiliary gas-chamber are in turn connected. The auxiliary gas-chamber 5 is by preference composed of two independent sections 6 and 7, screwed or otherwise connected together. The upper chamber may have an integral closure at the top, or it may be topped with a detachable cap 8, which when desired may be transferred to the lower section 7 when said upper section 6 is detached.

The two burner-sections 6 and 7 are provided, as already stated, with radiating burners, and these are of different construction, as will be clearly seen in Fig. 2 of the drawings. The burners 9, radiating from the upper section 6, are the ordinary "fish-tail" burners, while those radiating from the lower section and which are designated 10 are of the T type, being composed of a head or cross-bar 11, which in this instance is preferably curved upwardly at its outer end, and a stem 12, serving as an air-inlet. It will be seen that oxygen being thus largely supplied to the lower burners a blue flame will result, while a white flame will be emitted from the upper burners. An air-draft in an upward direction being constantly supplied through the annular space of the main gas-chamber, an entire combustion will be the result, and an intense heat will be developed by the combination of the two sets of burners. For the better mixture of the flames I prefer that the upper and lower burners should be arranged in such a manner as to alternate with each other, as will be plainly seen in Fig. 1 of the drawings.

15 designates a water-coil, consisting of a spirally-coiled pipe-section the ends of which are extended to form an inlet 16 and an outlet 17. This coil is made coniform, as clearly shown in Figs. 1 and 2 of the drawings, the uppermost coil having the smallest diameter, thus causing what may be termed the "air-shaft" to be of decreasing diameter in an upward direction, and thereby concentrating the heat in the direction of the central opening 18 of the shield 19, which is supported upon the gas-chamber above and surrounding the said



coil and which is provided with slots 20 for the passage of the pipe ends 16 and 17.

The shield 19 may be omitted when desired; but it should be observed that the coils of the water-coil must be made to abut closely against each other, the object being to form what may be termed an "air-shaft," through which air admitted at the lower part of the burner will rise and assist in the entire combustion of the flames issuing from the fish-tail or white-flame burners. If the coils of the water-coil do not closely engage each other, the shield 19 will be a necessity in order to exclude atmospheric air at this point.

By the construction thus far described I produce a burner by means of which heat of great intensity may be developed, and this heat is utilized not only for the purpose of heating the material contained in such vessels as may be placed upon the shield or support 19, but the water-coil also receives the direct impact of the flames, which are thereby utilized to heat a water-supply passing through said coil, the ends of which may be connected in the usual well-known manner with a boiler or tank of ordinary construction.

The white-flame burners, it will be observed, are disposed above the blue-flame or Bunsen burners, and the reason for using them, it may be stated, is that I have found them to be more economical in use than the blue-flame burners alone. The fact is that an ample upward current of air is admitted between the inner and outer gas-chambers, which will be sufficient to insure practically complete combustion, the air being heated by contact with the blue flames before it impinges upon the white flames issuing from the white-flame burners, thus insuring complete combustion of the gas issuing from said white-flame burners. I have in practice found this to be an efficient and useful arrangement.

Sometimes it may be desired to dispense with one of the series of burners, and this may be easily accomplished in the following manner: When it is desired to use the lower or T burners only, the upper section of the auxiliary gas-chamber is disconnected and the top closure 8 of the upper section may be transferred to the lower section, or a similar closure may be kept in readiness for such purpose. This arrangement has been illustrated in Fig. 7 of the drawings. Similarly when it shall be desired to use the fish-tail burners only the entire auxiliary gas-chamber is unscrewed from the pipe connection, with which it is preferably connected by means of a reducing-plate 22. The upper and lower sections 6 and 7 are then disconnected and the upper section is connected with the reducing-plate, thus effecting the change at very little expense of time and trouble. It will be specially noticed that by such construction only a very few fittings are required.

In some cases it may be found preferable

to connect the two types of burners directly with the main gas-chamber, which is then bored for the direct reception of said burners. These are then connected with said gas-chamber in alternate series, the fish-tail burners alternating with the T-burners, the flames of the several burners being thus projected in an inward direction. My preference in this case is to connect the T-burners with the bottom wall of the gas-chamber, this necessitating no change beyond the necessary curving of the connecting ends of the said burners in an upward direction. The air-inlet pipes, as before, extend downwardly from the heads or cross-bars of said burners.

Fig. 6 illustrates simply a modified construction of the water-heater, which in this instance consists simply of an annular chamber 23, adapted to be supported upon the gas-chamber and provided with means for the attachment of the inlet and exit pipes, as shown at 24 25.

Fig. 9 shows a modification whereby the fish-tail burners illustrated in Fig. 4 are dispensed with and the T-burners are adjusted tangentially with relation to the gas-chamber 1.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood.

In the several forms of my invention the space confined within the annular gas-chamber 1 or between the latter and the auxiliary gas-chamber 5 constitutes a combustion-chamber, within which the white and blue flames projected, respectively, by the burners 9 and 10 mingle together, the combustion thus taking place evolving an intense degree of heat. As hereinbefore set forth, the blue-flame burners are disposed below the white-flame burners, so that the air rushing in through the combustion-chamber and the air-shaft shall become intensely heated prior to its mingling with the white flames, and perfect combustion is thus permitted at an expense for gas which has in practice been found extremely trifling as compared with other gas-consuming apparatus.

I desire it to be understood that while I have shown and described the preferred form or forms of my invention I do not limit myself as regards the structural details of the same, but reserve the right to any changes, alterations, or modifications which may be resorted to without detracting from the utility or departing from the spirit and scope of the invention.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A burner for gas-stoves comprising an annular gas-chamber and two sets of burners, respectively of the white and blue flame types connected therewith and disposed to project



their flames into the combustion-space surrounded by said annular chamber, said blue-flame burners being disposed below said white-flame burners.

5 2. A burner for gas-stoves comprising an annular gas-chamber surrounding a combustion-space, and a plurality of burners, respectively of the white and blue flame types connected with said gas-chamber in alternate series and projecting their flames into the combustion-space surrounded thereby, said blue-flame burners being disposed below said white-flame burners.

15 3. A burner for gas-stoves comprising an annular gas-chamber surrounding a combustion-space, an auxiliary gas-chamber supported within the latter, and two sets of burners, respectively of the white and blue flame types, disposed to project their flames into the combustion-space surrounded by the outer, annular gas-chamber, said blue-flame burners being disposed below said white-flame burners.

25 4. A burner for gas-stoves comprising an annular gas-chamber inclosing a combustion-space, two sets of burners, respectively of the white and blue flame types, connected therewith and projecting their flames into the combustion-space,

said blue-flame burners being disposed below said white-flame burners and a water-coil constituting a shaft for the upward passage of air through the combustion-space, said water-coil being supported upon the gas-chamber.

5. A burner for gas-stoves comprising an annular gas-chamber surrounding a combustion-space, an expansion gas-chamber connected with the annular gas-chamber and supported centrally therein, two sets of burners, respectively of the white and blue flame types connected with the expansion gas-chamber and projecting their flames into the combustion-space, said blue-flame burners being disposed below said white-flame burners, and a suitably-supported water-coil extending above the burner and constituting a shaft for the upward passage of air.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JONATHAN JOHNSON.

Witnesses:

ALICE GILMAN,  
EDWARD FISHER.