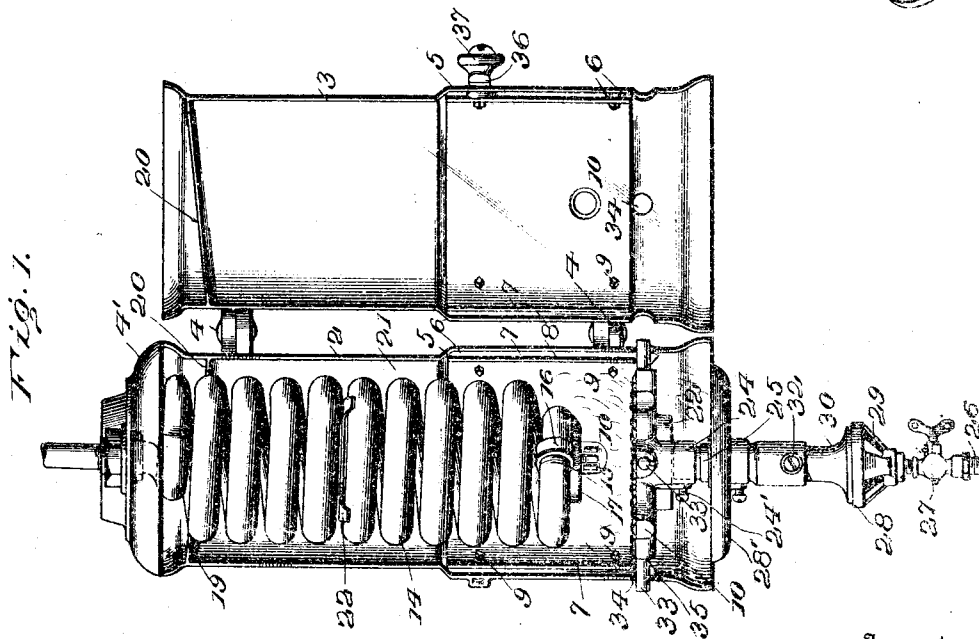
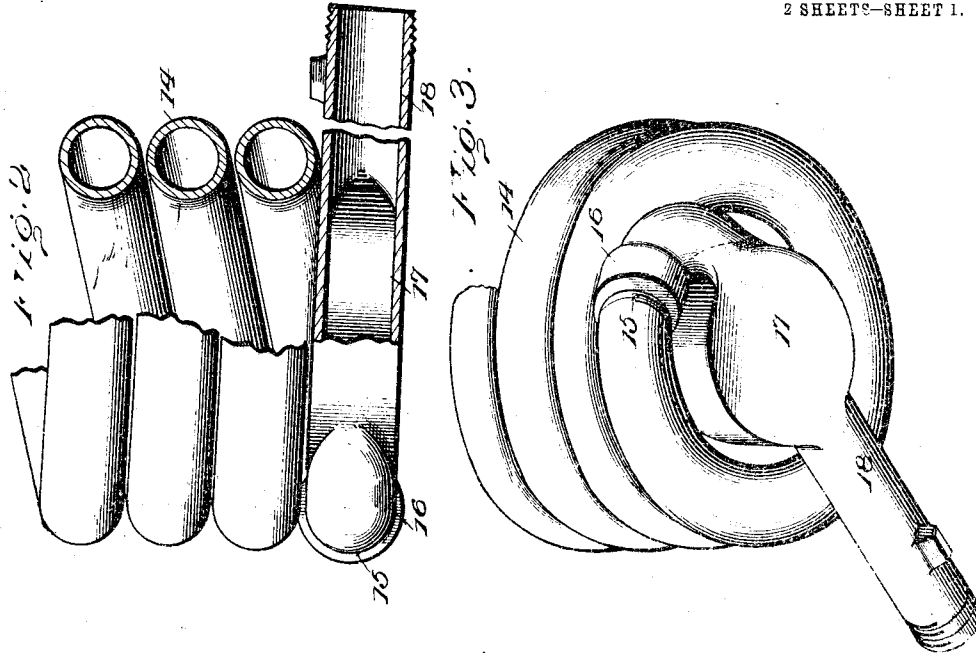


C. MUNZNER.  
GAS WATER HEATER.  
APPLICATION FILED AUG. 7, 1911.

1,065,165.

Patented June 17, 1913.

2 SHEETS—SHEET 1.



Witnesses  
W. A. Williams  
L. L. Burkett.

Inventor  
Charles Munzner

34

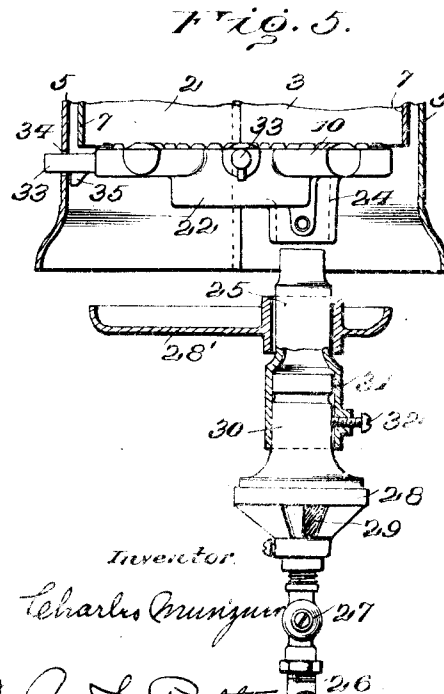
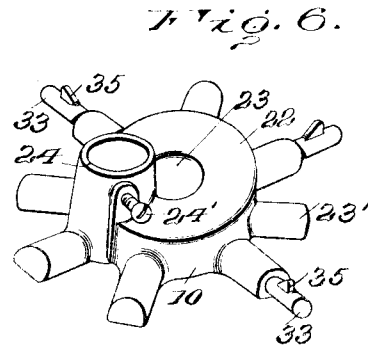
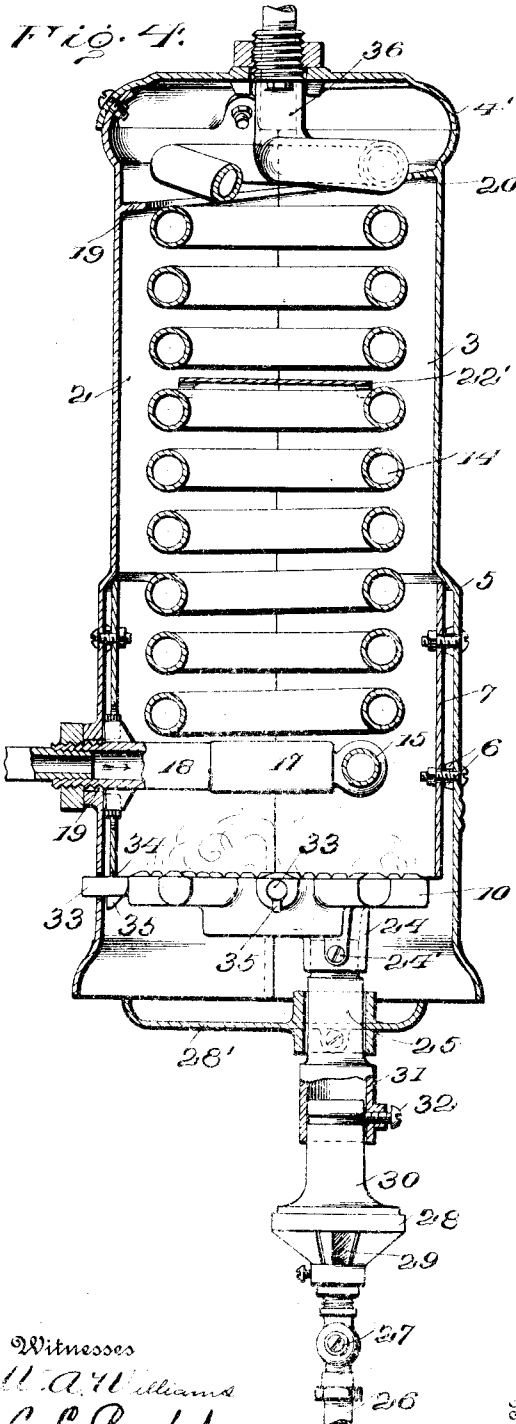
A. J. Patterson.  
Attorney

C. MUNZNER.  
GAS WATER HEATER.  
APPLICATION FILED AUG. 7, 1911.

1,065,165.

Patented June 17, 1913.

3 SHEETS—SHEET 2.



Witnesses  
W. A. Williams  
L. L. Burkett.

Inventor.  
Charles Munzner  
By A. S. Patton.  
Attorney

# UNITED STATES PATENT OFFICE.

CHARLES MUNZNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMERICAN STOVE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

## GAS WATER-HEATER.

1,065,165.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed August 7, 1911. Serial No. 642,667.

*To all whom it may concern:*

Be it known that I, CHARLES MUNZNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas Water-Heaters, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in water heaters and pertains more particularly to heaters adapted to be connected up to kitchen boilers.

The object of my invention is to provide a heater of this character in which the coil is thoroughly heated and at the same time producing a heater in which access to the coil may be readily had, and also providing means whereby the burner may be readily removed without disturbing the gas supply pipe connection.

Another object of my invention is to provide a heater of this character in which the water is more rapidly heated and at less expense, having certain details of structure hereinafter fully set forth.

In the accompanying drawings—Figure 1 is a side view of my improved heater embodying my invention, and showing one section swung open to expose the coil and the burner. Fig. 2 is an enlarged side elevation of the lower end of the coil partly in section. Fig. 3 is an enlarged bottom perspective view of the coil. Fig. 4 is a vertical sectional view of Fig. 1, showing the burner in full lines. Fig. 5 is a vertical sectional view of the lower end of the heater, showing the gas connection in its lower position, so that the burner can be removed. Fig. 6 is a perspective view of the bottom of the burner.

Referring now to the drawings, 1 represents the outer casing of my improved heater, which is made in two sections, 2 and 3, hinged at 4, so that the section 4 may be swung outwardly as shown in Fig. 1 of the drawings. The section 2 has rigidly secured thereto the cover or upper end 4' of the heater, thus the said section is the supported portion of the heater. The hinged section 3 allows the coil and the burner to be readily exposed for the purpose of lighting and cleaning or making any repairs which may be necessary.

The lower end of the casing is bulged outwardly, as indicated at 5, and is provided with a series of inwardly extending lugs 6, the inner ends of which are in a line approximately with the inner wall of the upper portion of the casing. Within said bulged lower end of the casing is a sheet metal casing 7, resting against the lugs. These lugs hold the sheet metal casing away from the outer casing forming the air space 8, between the inner casing 7 and the outer jacket 5, this space acts, as insulation and reduces the radiation of the heat from the casing. The inner casing 7 is preferably bolted to the outer casing against the lugs by means of bolts 9.

Within the lower end of the outer casing is mounted a burner 10, which is of the structure shown in the drawings, and hereinafter more fully described. This burner, as shown, is below the inner casing 7 and is of the Bunsen type, and is composed of a central chamber 22 having the openings 23 therethrough and said chamber having radial arms 23' communicating with the said chamber. The upper face of said chamber and also the arms are provided with the usual gas orifice which can be arranged in any manner desired.

The lower face of the chamber 22, at one side of the openings 23, is provided with the downwardly extending nipple 24' having communication with the said chamber and through which the gas passes to the burner. This nipple is provided with a set screw 24 which extends through the wall thereof and engages and holds the short section 25 of the gas pipe in said nipple. The main gas supply pipe 26 is supported in any desired manner and having a turning plug 27 by means of which the supply of gas is regulated. Secured on said pipe is the air mixing chamber 28 having the usual air receiving openings 29. The upper end of said gas mixing chamber is reduced, as indicated at 30, and extends into the socket 31, carried by the lower end of the short section 25. This socket is of an elongated form and having a set screw 32 to lock the reduced end of the mixing chamber therein, as shown in Fig. 1.

The burner as heretofore described has a series of radially arranged arms 23', and the outer ends of several of these arms are pro-

vided with outwardly extended reduced portions 33, which extend through openings 34 in the casings, and whereby the burner is removably supported. The said reduced portions are provided with stops 35, which hold the burner centrally within the casing and prevents it from moving in any direction.

The burner, as heretofore stated, is solely supported in the casing by the portions 33, and when it is desired to remove the burner the section 3 is swung open. The setscrews 24 and 32 are withdrawn allowing the socket 31 to slide down upon the reduced portion of the mixing chamber bringing the upper end of the short section out of the nipple, so that the burner may be moved horizontally from the heater without disturbing the gas supply pipe. The short section 25 is provided with the plate, 28' which is of a diameter less than that of the lower end of the casing to form a narrow circular air-supplying space, as shown in the drawings. Within said casing 1 is a vertically disposed coil 14 having the convolutions thereof spaced slightly apart. The lower end of the coil extends within the inner casing 7 a considerable distance toward the burner 10, so as to bring the coil close to the burner. This coil is preferably made of copper and has its lower end brazed, as indicated at 15, to the chamber 17, which is preferably made of brass. This chamber 17, as shown, is of a circular flat form and comparatively shallow. The circumference of this receptacle or chamber is slightly less than the distance between the inner faces of the coils 14, so that there is a slight space surrounding the chamber, as shown in Figs. 2 and 3.

The chamber 17 is provided with an outwardly extending pipe 18, which extends through an opening 19 of the casing, to which is connected the water supply pipe from the boiler or other source of supply. As heretofore stated, the chamber 17 is directly below the center of the coil and directly above the burner 10.

The cold water being fed through the pipe 18 to the chamber 17, becomes thoroughly heated as the chamber 17 affords a greater heating surface and performs the function of a baffle plate and spreads the flames to cause the same to pass upwardly around and outside of the coil.

Part of the gases pass to the central chamber and, about the middle of the coil, a diaphragm 22' preferably steel is inserted to throw the hot gases through the convolutions to the outside of the coil. The upper ends of the two sections 2 and 3 of the casing 1, are provided with spiral baffle plates 19 and 20, so arranged that when the two sections of the casing are closed, the passage around the coil is practically closed and the products of combustion are caused to travel

inwardly into the coil and out through the smoke flue at the upper end of the casing. The upper end of the coil 14 extends upwardly through the cover 4' of the casing and is connected to the boiler in any desired manner and forms the water return for said boiler.

In operation the heat and products of combustion from the burner strike the chamber 17 and are deflected outwardly against the copper coil and travel upwardly through the space 21 surrounding the coil and through the center of the coil. The air or insulating space 18 prevents the heat from radiating from the lower end of the heater. The column of hot gases in the center of the coil is thrown to the outside by baffle 22 and then all of the gases are forced through the coil to the center by baffle plates 19 and 20 and they then pass through the smoke flue secured to the upper end of the casing just above the center of the coil. The casing 1 is preferably made of cast-iron and baffle plates 19 and 20 are cast thereon. The casing 7 is preferably made of steel. The coil 14 is made of copper and the chamber 17 is made of cast brass which does not corrode or pit as copper usually does with burners of this character.

The two sections 2 and 3 are held together by a spring latch 36 engaging a lug 27 and said sections adapted to be opened and closed by the knob 37.

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

1. A water heater comprising a casing, a coil vertically disposed in said casing, a chamber connected to the coil at one side below the central portion of the coil, a water supply for the chamber opposite the connection with the coil and a burner below said chamber.

2. A water heater comprising a casing, a coil vertically disposed in the casing, a circular flat chamber in communication at one side with the coil below the central portion of the coil, a water supply for said chamber on the opposite side from the communication with the coil and a gas burner below said chamber and coil, substantially as shown and described.

3. A water heater comprising a casing, a coil vertically disposed within the casing, a chamber secured at one side to the lower end of the coil directly below the center of the coil, a water supply connected to the chamber at the opposite side from the connection with the coil, a burner below said chamber, and the casing having an insulating space surrounding the lower end of the coil.

4. A water heater comprising a casing, made in two sections and hinged together, a coil supported by one section, a chamber

secured to the lower end of the coil and of a circular form arranged directly below the open center of the coil, spiral baffle plates carried by the two sections of the casing and extending inwardly to the coil and a burner below the chamber carried by the coil.

5. A water heater comprising a casing, a coil vertically disposed in said casing, a burner below the lower end of the coil and a spiral baffle plate carried by the upper end of the casing and extending inwardly to the coil whereby the products of combustion are caused to travel inwardly through the coil.

6. A water heater comprising an outer casing, having its lower ends bulged outwardly, an inner casing abutting the bulged portion of the outer casing and forming an insulating space surrounding the lower end of the coil having its lower end open and a burner carried by the casing below the lower end of the coil.

7. A water heater comprising a casing, a coil vertically disposed within the casing, a chamber connected to the lower end of the coil below the central passage of the coil, a spiral baffle plate carried by the upper end of the casing and extending inwardly to the coil, a burner below the chamber and said casing having an insulating space surrounding the lower end of the coil.

8. A water heater comprising a casing, a coil vertically disposed within the casing, a circular flat chamber connected at one side to the coil below the central opening through the coil, a water supply connected to the flat chamber at the opposite side from the connection with the coil and a burner below the chamber whereby the said chamber forms a baffle plate to cause the flame to spread upwardly around the coil.

9. A water heater comprising a casing, formed of two sections hinged together, a vertically disposed coil carried by one section and spaced from the casing to form a passage therearound, baffle plates carried by the inner walls of said sections and extending inwardly adjacent the coil, a chamber secured to the lower end of the coil and through which the water passes to the coil and forming a baffle plate, substantially as shown and described.

10. A water heater comprising a casing having an outwardly flared lower end, an inner casing within said flared lower end leaving a space between the casings at its upper end, a vertically disposed coil within the casing and spaced therefrom, a circular chamber secured to the lower end of the coil and of a diameter slightly less than the central passage through the coil, a water supply for said chamber, a spiral baffle plate carried by the upper end of the casing and extending inwardly to the coil, and a burner

below the chamber whereby the flames from the burner engage the chamber and are deflected outwardly and travel upwardly around the coil until they engage the baffle plates and are diverted inwardly and pass outwardly through a central flue above the central passage of the coil.

11. A water heater comprising a casing, a vertically disposed coil within the casing and spaced therefrom, a circular chamber secured to the lower end of the coil and directly below the central opening of the coil, a water supply for the chamber opposite the connection with the coil, and a burner below the chamber and the coil and adapted to direct the flame upon the bottom of the chamber and the lower convolutions of the coil.

12. A water heater comprising a casing formed of two hinged sections, a coil within said casing and supported by one section, a burner below the coil and removably supported casing and adapted to be moved horizontally when one section is swung open, and baffle plates on the outside and inside of the convolutions of said coil.

13. A water heater comprising a casing, a coil vertically disposed within the casing, a chamber connected to the lower end of the coil below the central passage of the coil, spiral baffle plates carried by the casing and extending inwardly to the coil, a baffle plate extending across the space formed within the coil intermediate the spiral baffle-plates and a burner removably supported below the chamber.

14. A water heater comprising a casing formed of two hinged sections, a coil centrally disposed within the casing and supported by one hinged section, a chamber connected to the lower end of the coil below the central passage of the coil, spiral baffle plates carried by the sections of the casing and extending inwardly to the coil, a baffle plate extending across the space formed within the coil intermediate the spiral baffle-plates, a burner supported by the two sections of the casing and removable when the sections are open, and a vertically movable gas connection between the gas supply and burner.

15. A water heater comprising a casing, a coil vertically disposed within the casing, a chamber connected at one side to the lower end of the coil below the central passage of the coil, a water supply connected to the chamber on the opposite side from the connection with the coil, spiral baffle plates carried by the casing and extending inwardly to the coil, a baffle plate extending across the space formed within the coil intermediate the spiral baffle plate and a burner removably supported in the chamber.

16. A water heater comprising a casing, a coil vertically disposed within the casing, a chamber connected to the lower end of the

coil below the central passage of the coil, spiral baffle plates carried by the casing and extending inwardly to the coil, a baffle plate extending across the space formed within the coil intermediate the spiral baffle plates, and a burner below the chamber and coil.  
In testimony whereof I hereunto affix

my signature in the presence of two witnesses.

CHARLES MUNZNER.

Witnesses:

G. B. CHILD,

L. B. DARROW.