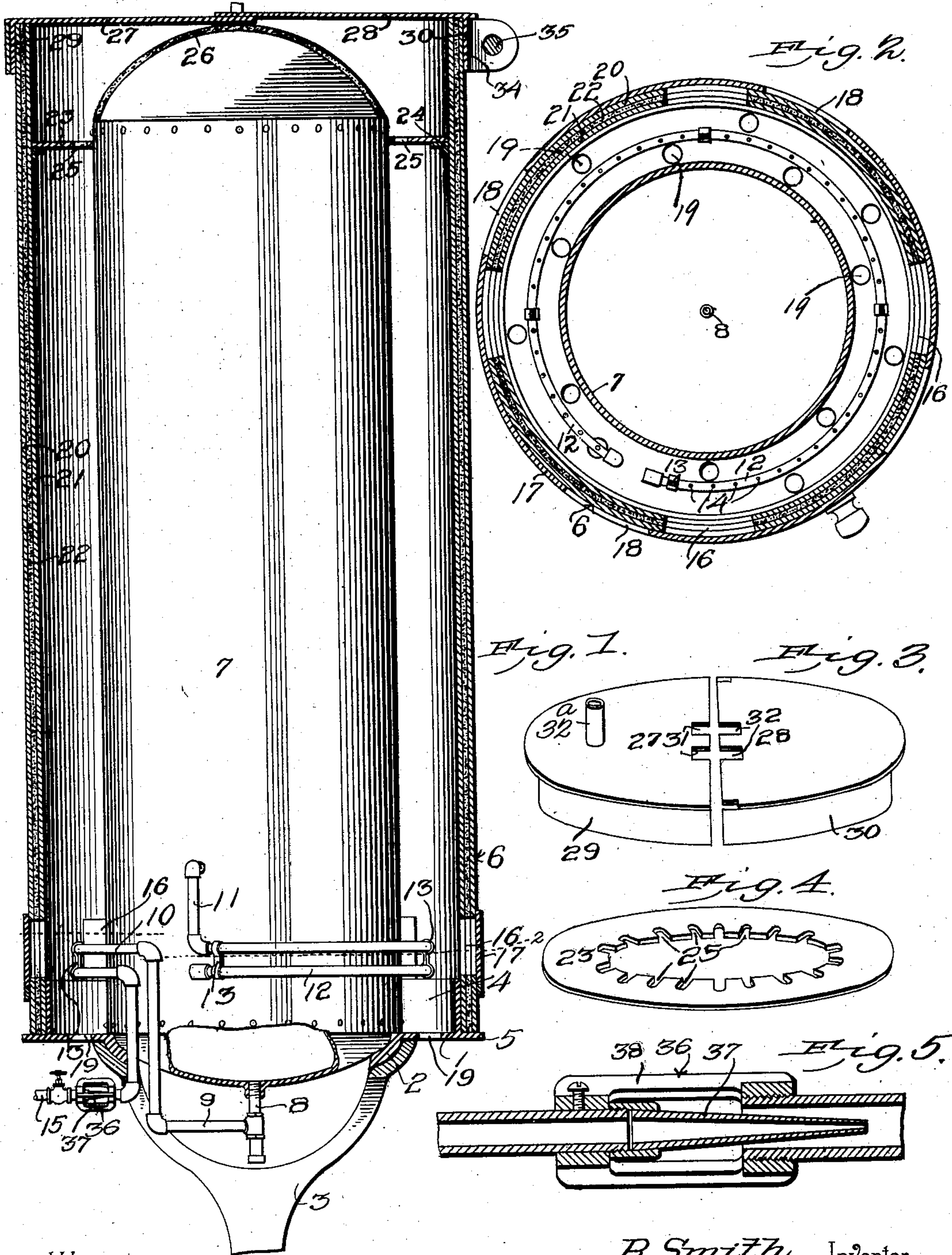


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PATENTED SEPT. 29, 1903.

R. SMITH.  
WATER HEATER.  
APPLICATION FILED FEB. 17, 1902.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ROSE SMITH, OF CLEVELAND, OHIO.

## WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 739,938, dated September 29, 1903.

Application filed February 17, 1902. Serial No. 94,553. (No model.)

*To all whom it may concern:*

Be it known that I, ROSE SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Water-Heater, of which the following is a specification.

The invention is an improvement in water-heaters.

The object of the present invention is to improve the construction of water-heaters and to provide a simple and comparatively inexpensive construction designed to be applied to an ordinary tank or boiler and adapted to afford a constant supply of hot water and to relieve a range or stove of the heating of the same and capable of utilizing the heat thoroughly and of preventing the same from escaping into the room, thereby enabling the device to be operated without discomfort in summer and at the same time secure the maximum effect of the heat during winter.

A further object of the invention is to provide a device of this character which may, if desired, be employed in summer for heating water and which will not have to be removed from the tank or boiler should it be desired to use an ordinary stove or range for supplying hot water in winter.

The invention also has for its object to provide a device of this character which will enable the temperature of the water within the tank or boiler to be controlled and which will permit the surplus heat to be thrown out into a room, should it be desired to do so; and another object of the invention is to prevent a tank or boiler from radiating heat, thereby greatly economizing the fuel employed for heating the same.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a vertical sectional view of a water-heater constructed in accordance with this invention and shown applied to a tank or boiler. Fig. 2 is a horizontal sectional view on the line 2-2 of Fig. 1. Fig. 3 is a detail view of one of the sections of the top or cap. Fig. 4 is a detail view of the horizontal ring or diaphragm for causing the heat to escape at the top of the tank

at points adjacent to the latter. Fig. 5 is a detail view of the air and gas mixer.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates the base of the heater, consisting of a disk or plate having a depressed central portion 2 to fit into a stand 3 and provided with an upwardly-extending annular flange or wall 4, located at a point adjacent to the periphery of the disk or plate, which forms a projecting horizontal flange or ledge 5 for supporting a cylindrical casing 6. In applying the heater to a tank in use the connections at the base of the tank are removed and the stand 3 is detached. The base of the heater is then placed on the stand and both of these parts are then placed in position beneath the tank, which is received upon the base of the heater. The tank 7 rests upon the base of the heater and is spaced from the upwardly-extending flange or wall 4 and the cylindrical casing 6 to provide an intervening hot-air space and to accommodate the heating device hereinafter described. The tank may be supplied with water in any suitable manner, and the service-pipe 8, which may be connected with a coil of a stove or range, is also connected at the base of the tank with an exterior water-pipe 9, extending upward at one side of the tank through the base of the heater and provided with a curved horizontally-disposed portion 10, extending around the tank to a greater or less extent and communicating with the same by a short arm 11, forming the upper terminus of the exterior water-pipe 9. The exterior water-pipe 9 is designed to contain a small quantity of water, which is heated by means of a burner 12, suspended from the horizontal portion of the water-pipe by bands or clips 13 and curved to conform to the configuration of the same and provided at intervals with suitable jet-openings 14, located directly beneath the water-pipe. One end of the burner is connected with a gas-supply pipe 15, and the cylindrical casing 6 is provided with apertures 16, and it has a suitable slide 17, consisting of a band and provided with openings or apertures 18, adapted when the slide is partially rotated to register with the openings or apertures 16 to afford access to the gas-burner, and the said slide,



which may be mounted in any suitable manner, is adapted to normally cover the said opening 16 to prevent any draft at those points. The base of the heater is provided  
 5 beneath the burner with perforations 19, which afford the necessary draft. The horizontal portion of the exterior water-pipe may be of any desired length to provide for the use of a burner of the desired heating capacity, and as the water-tube contains only  
 10 a comparatively small quantity of water only a very small quantity of gas will be required for heating the same and for maintaining a continuous supply of warm water.

15 The cylindrical casing 6, which may be secured to the base in any suitable manner, is preferably composed of inner and outer shells 20 and 21 and an intermediate layer 22 of asbestos, and the said cylindrical casing is  
 20 adapted to prevent the tank from radiating heat, and the heat rising from the burner is also confined and held close to the tank, whereby the greatest effect of the heat is obtained. The heat ascending the annular hot-air space  
 25 between the tank and the cylindrical casing is caused to escape at the top at points adjacent to the tank by means of a horizontal ring or diaphragm 23, supported by the tank and by suitable brackets 24, arranged as  
 30 clearly illustrated in Fig. 1 of the accompanying drawings. The brackets 24 consist of L-shaped plates, and the ring, which rests upon the brackets and upon the tank, is provided at its inner edge with a series of recesses  
 35 or openings 25, through which the heat slowly escapes. The tank is provided with an asbestos cap or covering 26 to prevent the escape of heat at that point, and the casing is provided with a sectional top or cap composed  
 40 of sections 27 and 28 of approximately segmental shape consisting of semicircular plates and curved flanges 29 and 30. The semicircular plates which form the body portions of these sections have their transverse edges overlapped and resting upon the top of the tank  
 45 to prevent any escape of vapors through the apertures for the pipes for conveying the hot water to different points of a house or building. The sections 27 and 28 are provided at their overlapped edges with recesses  
 50 31 and 32 for the passage of the hot-water pipe or pipes, and the section 27 is also provided with a flue 32<sup>a</sup>, designed to be coupled to a suitable pipe for the escape of the heat.

55 The sections of the top or cap of the casing are clamped to the cylindrical body portion of the casing by a suitable clamping-band 34 of any desired construction and preferably provided with outturned ends, which are perforated for the reception of a connecting-bolt  
 60 35. The inner and outer shells of the cylindrical body portion of the casing may have overlapped vertical edges to render the casing adjustable, and the shells may be firmly  
 65 secured by means of a series of clamping-bands; but the said body portion of the casing may be constructed in any other suitable

manner. Should it be desired to reduce the temperature of the contents of the tank, the side apertures 16 may be opened and the flue  
 70 32<sup>a</sup> may be uncoupled. This will permit the escape of the heat into the room in which the device is placed, and the heater will then assist in warming the room.

It will be seen that the device is exceedingly simple and inexpensive in construction, that it is adapted to be readily placed around an ordinary tank or boiler, and that it will not interfere with the operation of a stove or range, but will when used in connection with  
 80 the same relieve such stove or range of the heating of the water and will thereby enable it to operate more satisfactorily; also it will be clear that it will prevent a tank or boiler from radiating heat, and that the heat from the  
 85 burner will be confined within the casing and utilized to the greatest extent, and that in preventing loss of heat from the device a construction is provided that is especially adapted for use in summer-time, as it will not materially affect the temperature of a room.

The device is provided with an air and gas mixer 36, having a tapering nozzle 37, connected with the gas-supply pipe and extending into the adjacent end of the burner-tube,  
 95 which is connected with the gas-supply pipe by a suitable frame 38. The frame 38 consists of two bands or sleeves and connecting-bars. The bands or sleeves are secured to the pipes or tubes, as shown, and the spaces  
 100 between the bars form openings for the passage of air. The gas is injected into the burner-tube with sufficient force to cause it to thoroughly mix with the air, and the burner will produce a blue smokeless flame which  
 105 will be free from smoke or soot. The ring or diaphragm 25, besides operating to confine the heat around the boiler, also serves as an efficient brace for preventing any lateral movement of the casing.

What I claim is—

1. In a device of the class described, the combination of a stand, a base supported upon said stand, said base having an annular flange, a supporting-ledge, a plurality of draft-openings and a central recess, a boiler seated in said recess, a casing surrounding and spaced from the boiler, engaging the annular flange and resting upon the supporting-ledge of the base, a hood for said casing comprising two  
 115 flanged sections slotted to receive the exit-pipe of the boiler, a clamp connecting said hood-sections, a water-supply pipe coiled in the annular space between the boiler and the surrounding casing and connected with the boiler near the lower end of the latter, and a burner-pipe disposed below said water-supply pipe.

2. In a device of the class described, a stand, a base supported upon said stand and having  
 130 an annular flange, a supporting-ledge, draft-openings and a central recess, a boiler seated in said recess, a casing surrounding and spaced from the boiler engaging the annular



flange and resting upon the supporting-ledge of the base and having openings near its lower end, a diaphragm within the casing having slots adjacent to the boiler, closures 5 for the upper end of the casing, a water-supply pipe coiled in the space between the boiler and the casing and connected with the boiler, a burner-pipe disposed below said water-pipe, and a damper-ring to regulate the 10 openings at the lower end of the casing.

3. In a device of the class described, the combination with a boiler, and a stand, of a casing surrounding the boiler and having a base interposed between the same and the

stand, a circular water-pipe surrounding the 15 boiler and located above the bottom of the same in the space between the boiler and the casing, and a burner consisting of a circular tube suspended from the water-pipe and provided with apertures, substantially as de- 20 scribed.

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

ROSE SMITH.

Witnesses:

W. D. POST,  
EDWIN HEMA.