J. P. SMYTHE.

HOT WATER HEATER CASING.

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1,198,675. Patented Sept. 19, 1916.

Fig. 1.

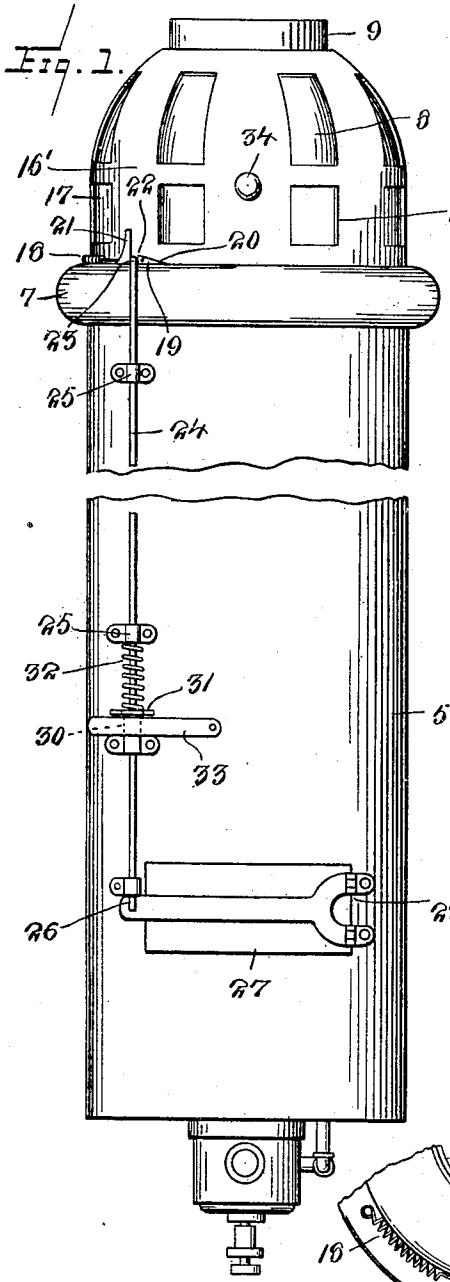


Fig. 2.

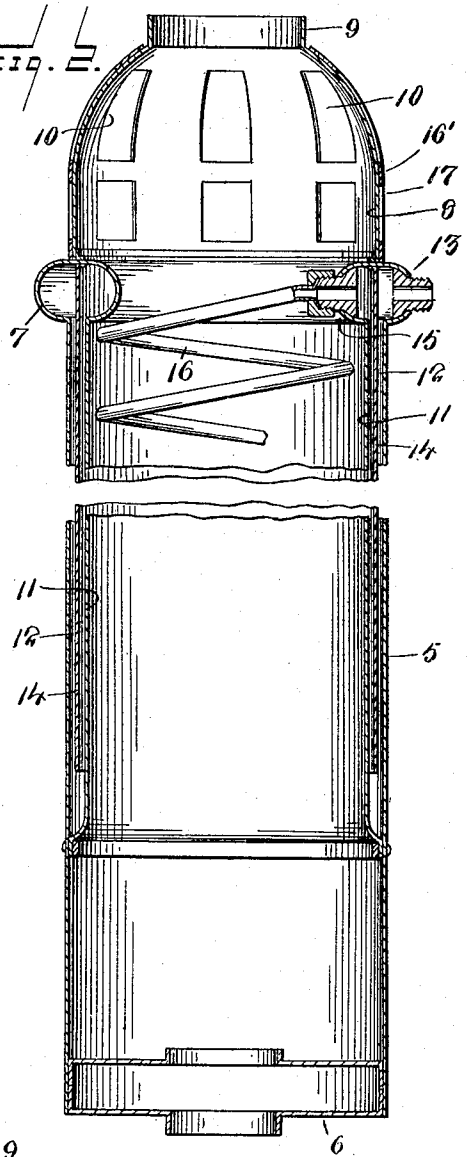
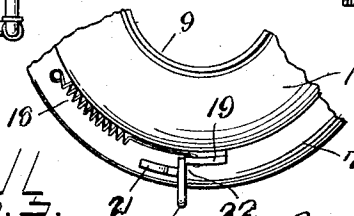


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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HOT-WATER-HEATER CASING.

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To all whom it may concern:

Be it known that I, JONATHAN P. SMYTHE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Hot-Water-Heater Casings, of which the following is a specification.

The invention relates to hot water heaters, and more particularly to the class of hot water heater casings or water jackets.

The primary object of the invention is the provision of a casing wherein the water jacket extends throughout a greater portion of the area of the same so that cold water will first flow in one direction in the jacket and thence in a reverse direction prior to its admission to the copper coil of the heater, and in this manner the outside wall of the casing is sustained cool while the inner wall of the jacket absorbs heat, thereby pre-heating the water before it reaches the coils and also eliminating the condensation of the atmospheric water upon the coils which necessarily results in a bad effect upon the burners in the heater.

Another object of the invention is the provision of a heater of this character wherein the casing thereof is formed with a water jacket which is of novel construction so as to direct the water entering the heater and divide it into inner and outer columns so that the casing of the heater will be sustained cool by the outer column of water while the inner column of water will be initially heated by absorbing waste heat or such heat present within the casing so that the water will be pre-heated before circulating through the coil of the said heater.

A further object of the invention is the provision of a heater of this character which is extremely simple in construction, thoroughly reliable and efficient in its purpose, strong, durable, and inexpensive in manufacture.

With these and other objects in view, the invention consists in the construction, combination and arrangement of parts as will be hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereunto appended.

In the drawings:—Figure 1 is a side elevation of a hot water heater casing constructed in accordance with the invention. Fig. 2 is a vertical longitudinal sectional view through the casing and its water jacket. Fig. 3 is a fragmentary top plan view.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, the casing comprises a cylindrical body 5, which may be of any preferred length, preferably constructed from metal, and has fitted in one end a bottom 6 which may be of any desirable construction to support the burner for the hot water heater, while formed at the opposite end of the said body is a hollow water ring 7 to which is secured a dome or crown 8, formed with a central chimney or flue nipple 9 to which is connected the flue or chimney pipe in the ordinary well-known manner, the dome or crown 8 being formed with openings 10 which are closed in a manner presently described.

Arranged interiorly of the casing 5 is a lining 11 forming a water jacket, and is spaced from the casing 5 to provide a water space 12 therebetween, the said lining or jacket 11 being extended longitudinally within the casing 5 for a greater portion of its length, and the space 12 communicates with the water ring 7 throughout the circumference thereof. Suitably mounted in the water ring 7 at the outer side thereof is a water inlet nipple 13 which is adapted to admit cold water to the ring 7, while suitably fixed to the inner surface of the said ring 7 at the top thereof is a tube 14 which extends downwardly into the space 12 centrally thereof, the lower end of the tube 14 being spaced from the closed end of the water jacket 11 so that water admitted to the ring 7 on the outer side of the tube 14 will flow downwardly between the casing 5 and the said tube 14 to the lower end of the water jacket, whence the said water will rise therefrom between the tube 14 and the lining or water jacket 11 and again enter the ring 7 at the inner side of the tube 14 which forms a partition in the ring 7 and the water jacket, whence the said water will flow through a nipple connection 15 for a copper heating coil 16 which is arranged centrally within the casing 5, the coil being of any ordinary well-known construction.

Surrounding the crown 8 is a rotatable cut off gate or cap 16′ which is formed with openings 17 adapted to register with the openings 10 in the crown 8 when the cap 16′

is in one position, the cap being designed to rest upon the water ring 7 and is adapted to be shifted to normally close the openings 10 in the crown 8 through the medium of a coiled retractile spring 18 which is connected to the water ring 7 and also connected to a keeper 19 integrally formed with the cap 16', and is provided with a beveled edge 20 and an abutment 21 which is spaced therefrom to form a notch 22 in which is adapted to engage the upper hook end 23 of a releasing rod 24 slidably fitted in bearings or guides 25 mounted exteriorly on the casing 5, the latch 24 being also designed to serve as a catch 26 at its lower end for engagement with a swinging door 27 hinged at 28 exteriorly on the casing 5, the door being designed when opened to permit access to the interior of the casing for the lighting of the pilot (as called) of the water heater.

Fixed to the rod 24 is a sleeve 30, which is formed with a finger nib 31 so that the rod can be manually raised for releasing the door 27 and the cap 16 so that the said door can be opened and the cap will automatically shift to open position. Surrounding the rod 24 is a coiled expansion spring 32, one end of which works against one of the bearings 25, while its opposite end works against the sleeve 30, the spring being designed to move the rod 24 to locking position.

Secured to the casing 5 is a resilient finger or leaf spring 33 which extends across the rod 24 at right angles thereto into the path of the nib 31 so that on the raising of the rod 24 the leaf spring 33 will lock it to hold it in raised position for freeing the door and the cap, whereby the latter will automatically open under the action of the spring 18, and also the door can be swung to open position. On pulling outwardly upon the leaf spring 33 it will be moved out of the path of the nib 31, thereby permitting the rod 24 to be lowered under the action of the spring 32 so that the said rod will assume locking position.

Suitably mounted in the cap is a hand knob 34 which permits the closing of the cap, and during such movement thereof the beveled edge 20 will ride under the hook end 23 of the rod 24 so that the said hook end 23 will engage in the notch 22, the abutment 21 serving as a stop to limit the rotation of the cap 16 in one direction. On the opening of the door 27 for the lighting of the pilot burner within the heater the cap 16 is automatically turned so that the openings 10 and 17 will register with each other, thereby permitting the escape of waste gas from the burner prior to the lighting thereof, and in this manner back fire is avoided when the burner is lighted.

In the operation of the heater the water entering the jacket through the nipple 13 is cold, and the same passes downwardly around the outside of the partition or tube 14 so that the outer wall of the casing is maintained cool, and by reason of the novel construction of the water jacket the water circulating therein to the coil is pre-heated before it reaches the coil. Also condensation of atmospheric water upon the coils is eliminated as will be clearly apparent.

From the foregoing it is thought that the construction and manner of operation of the device will be clearly apparent, and therefore a more extended explanation has been omitted.

What is claimed is:—

1. In a water heater, a casing having a water ring, a water jacket mounted interiorly of the casing and having one end communicating with the water ring, and a partition extending through the water ring and partially through the water jacket, and means for admitting water to the ring at one side of the partition.

2. In a water heater, a casing, a water jacket at the inner side of the casing and terminating at one end in a water channel, and a partition arranged within the water jacket and having one end spaced from the end of the water jacket opposite the channel and also having its other end fixed to the wall of the channel for dividing the same and a portion of the jacket into inner and outer water spaces communicating with each other only about the free end of the said partition.

3. In a water heater, a casing, a water jacket at the inner side of the casing and terminating at its uppermost end in a water channel, a partition arranged within the water jacket and having its lowermost end spaced from the lower end of the water jacket and also having its upper end fixed to the uppermost point of the channed for dividing the same and a portion of the jacket into inner and outer water spaces communicating with each other only below the lower end of the said partition, means for connecting a water heating coil with the inner space of the channel, and means for admitting water to the outer space of the channel.

In testimony whereof I affix my signature in presence of two witnesses.

JONATHAN P. SMYTHE.

Witnesses:

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