

O. P. SCOTT.
WATER HEATER.
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1,389,166.

Patented Aug. 30, 1921.

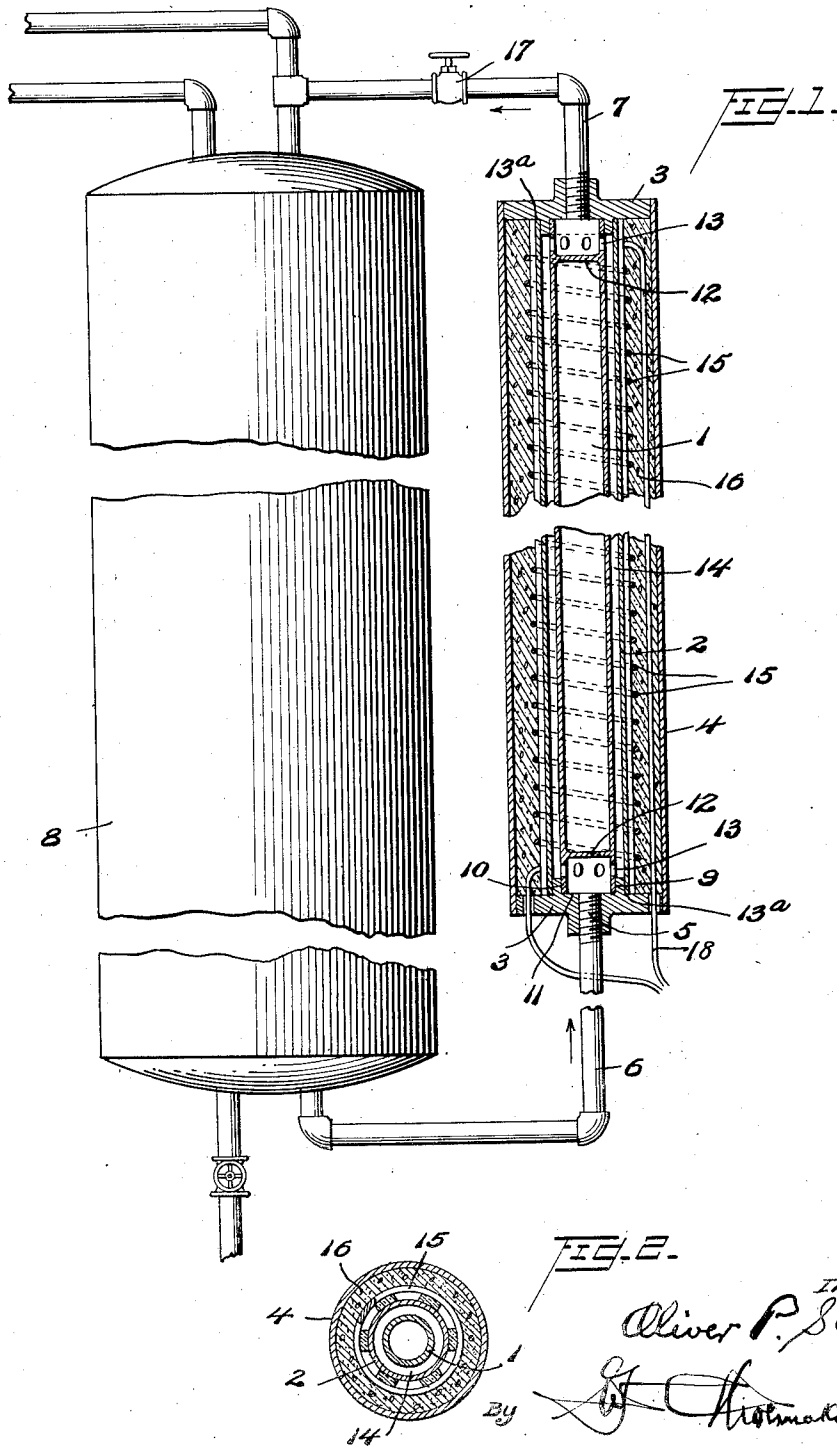


FIG. 2.

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Att'y

UNITED STATES PATENT OFFICE.

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WATER-HEATER.

1,389,166.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OLIVER P. SCOTT, a citizen of the United States of America, and a resident of Tacoma, Washington, have invented certain new and useful Improvements in a Water-Heater, of which the following is a specification.

The invention relates to improvements in water heaters.

The object of the present invention is to improve the construction of water heaters and to provide a simple, practical and comparatively inexpensive electric water heater of strong and durable construction designed for heating the water for use in a domestic water tank and capable of causing the water passing through the heater to flow in a thin sheet within the heating means whereby the water will be rapidly raised to the required temperature before it is delivered to the water tank.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the appended claims, may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawing, in which like characters of reference designate corresponding parts in the several figures:

Figure 1 is a vertical sectional view of an electric water heater constructed in accordance with this invention and shown applied to a water tank.

Fig. 2 is a horizontal sectional view of the water heater.

In the accompanying drawing, in which is illustrated the preferred embodiment of the invention, the water heater comprises in its construction an inner vertical tubular member 1 and an outer vertical tubular member 2 arranged in spaced relation with the inner vertical tubular member and connected with the same at each end thereof by a head 3. The inner and outer tubular members, which may be arranged within an outer casing 4, are designed to be constructed of brass or other suitable material and the head 3 is also constructed of brass but any other suitable material may of course be employed if de-

sired. The upper and lower heads 3 are provided with a central threaded opening 5 for enabling pipe connections 6 and 7 to be connected with the bottom and top of the heater for connecting the heater with the water supply and with a water tank 8. The supply pipe 6 is screwed into the threaded opening 5 and the upper portion of the head is enlarged or counterbored at 9 to receive the lower terminal portion 10 of the inner tubular member 1 and to form a seat 11 for the same. The upper head 3 is constructed in a similar manner and the terminal portions 10 of the tubular member 1 are closed by disks 12 or other suitable means and are provided beyond the partitions or closures 12 with openings 13 for the passage of the water into the intervening space 14 between the inner and outer tubular members. The water space 14 between the inner and outer tubular members divides the water into a thin sheet and the water in passing through the heater flows into the water space 14 at the lower end thereof and passes through the perforations or openings 13 in the upper terminal portion of the inner tubular member and is delivered to the water tank through the hot water pipe 7. Each end of the outer tubular member fits on the exterior of the counterbored portion of the head 3 and is preferably brazed to the same, but any other suitable means may of course be employed for securing the heads to the outer tubular member and for forming water tight joints. The heads are exteriorly enlarged to form seats or abutments 13^a for the terminals of the outer tubular member 2.

Around the outer tubular member and between the same and the outer casing 4 is arranged a heating coil 15, the convolutions being spaced apart and embedded in a plastic body 16 of plaster of Paris or other suitable material. The heating coil has a relatively large number of convolutions so that it will not be heated to too high a temperature and injure the heating coil. The heating coil may be constructed of any suitable material and in practice it is wound on and suitably insulated from the outer tubular member and the annular space between the outer tubular member and the outer casing is then filled with the plaster of Paris or other suitable material to maintain the convolutions of the wire in proper position. Glass strips may be employed for insulation but any other suitable insulating means may of course be pro-

vided and by maintaining the heating coil at a temperature below the point of glow the material will be prevented from burning out. Also the relatively large number of convolutions will distribute the heat and afterward a sufficient amount of the same to effectively heat the water which passes in a thin sheet through the heater. The flow of water through the heater may be controlled by valve 17 so that the water may be subjected to the action of the heating element the desired length of time to heat the water to the required temperature. The terminals 18 of the heating coil are preferably provided with glass insulation but any other suitable material or insulating means may of course be employed.

The outer casing 4 may be connected with the heads 3 in any suitable manner and there is provided the intervening space between it and the outer tubular member 2 for the heating element and the plastic filling.

What is claimed is:

1. A water heater of the class described including inner and outer tubular members spaced apart to provide an intervening water space, heads provided with threaded openings to receive pipe connections and counterbored at the inner portion to form seats for the ends of the inner tubular member; the latter being provided in its terminal portions with openings communicating with the said water space, said outer tubular member being secured to the exterior of the counterbored

portions of the heads and the latter being enlarged exteriorly to form seats for the outer tubular member, spaced closures arranged within the inner tubular member and located between the openings, a heating coil, and a body of non-conducting material also supporting the heating coil.

2. A water heater of the class described including inner and outer tubular members spaced apart to provide an intervening water space, heads provided with threaded openings to receive pipe connections and counterbored at the inner portion to form seats for the ends of the inner tubular member, the latter being provided in its terminal portions with openings, communicating with the said water space, said outer tubular member being secured to the exterior of the counterbored portions of the heads and the latter being enlarged exteriorly to form seats for the outer tubular member, spaced closures arranged within the inner tubular member and located between the openings, an outer casing surrounding the outer tubular member and spaced therefrom and connected with the said heads, a heating coil located within the space between the outer tubular member and the outer casing and a plastic filling also located between the outer tubular member and the outer casing and supporting the heating coil.

In testimony whereof I have hereunto set my hand.

OLIVER P. SCOTT.