G. W. KITE, Jr.

WATER HEATER.

APPLICATION FILED OCT. 18, 1916.

Patented Feb. 12, 1918.

1,256,328.

FIG. I

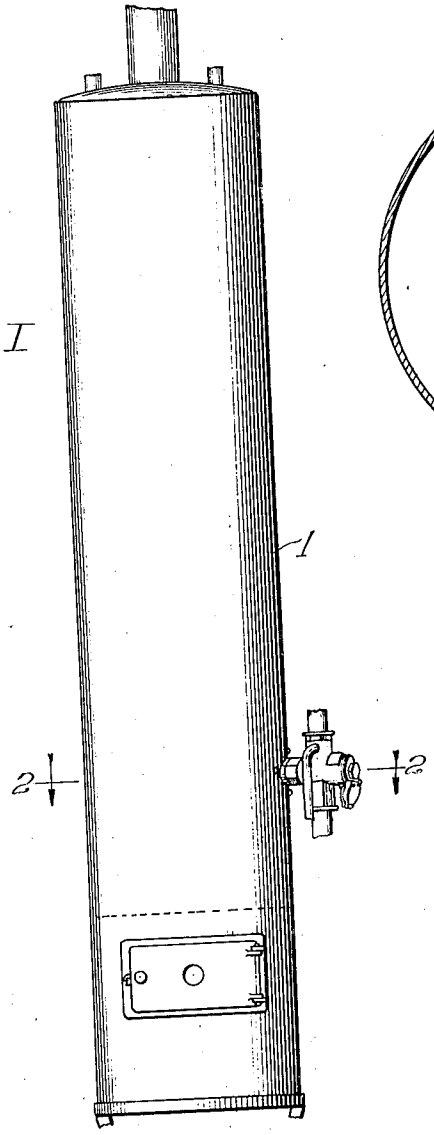


FIG. II

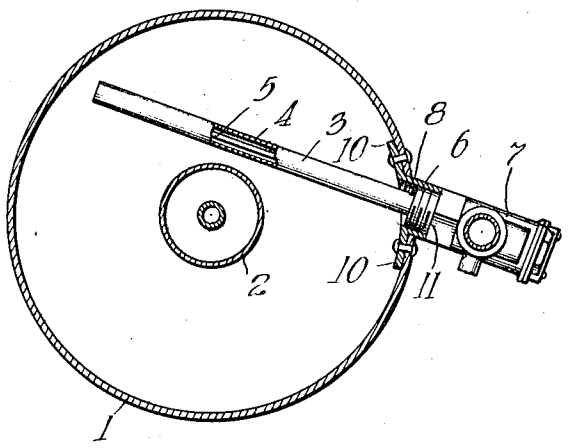


FIG. III

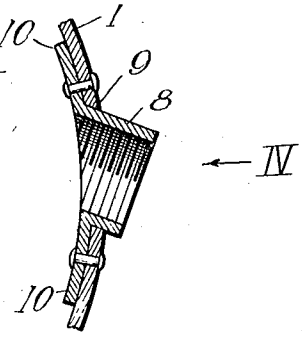
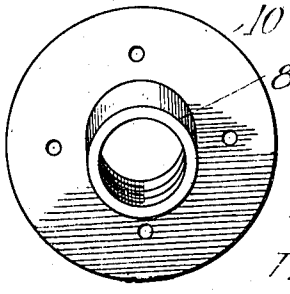


FIG. IV



Witnesses:
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UNITED STATES PATENT OFFICE.

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WATER-HEATER.

1,256,328. Specification of Letters Patent. Patented Feb. 12, 1918.

Application filed October 18, 1916. Serial No. 126,337.

To all whom it may concern:

Be it known that I, GEORGE W. KITE, Jr., a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Heaters and Similar Devices, of which the following is a specification.

The invention relates to the means for and manner of associating a thermostat or other attachment or appliance with the boiler or tank of a water heater, or the like, but more particularly to water heaters of that class in which a flue is located centrally within the tank and there is a thermostat having a thermal member located within the tank. With a tank having a centrally located flue, if the thermal member is disposed radially with respect to the tank its end must terminate before reaching the flue, and this imposes a limitation on the length of the member. It is desirable however, to use a thermal member as long as circumstances will permit, because by so doing a maximum amplitude of relative movements of the elements of the thermal member is attained and the themostat made more positive and certain in its action.

With these desiderata in view the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawing which is made a part of this specification and in which:—

Figure I is a side elevation of a water heater with a thermostat, embodying the invention.

Fig. II is a horizontal section thereof on a larger scale, on the line II, Fig. I looking downward.

Fig. III is a horizontal section, on a still larger scale, of the spud and a fragment of the tank.

Fig. IV is an elevation of the spud viewed in the direction of the arrow IV, Fig. III.

In the drawing, 1, represents the boiler or tank and 2 a flue located centrally within it, these parts being constructed and arranged as and for the purpose described in Letters Patent No. 1,072,072 granted September 2, 1913, to W. B. Bastian. The thermostat has a thermal member, 3, located in a chord of an arc of the circle described by the inner surface of the tank and lying at one side of the central flue. One element of this thermal member consists of a tube, 4, and the other element of a rod, 5, located within the tube, said rod and tube being made of materials of different expansibility and being connected at their inner ends so that as they expand and contract under the influence of variations in temperature they will move endwise relatively to each other in customary manner. The thermal member preferably extends practically from side to side of the tank in the chord aforesaid, which brings said member quite close to the side of the flue, 2, and the outer end of the tube, 4, is rigidly connected to a nipple, 6, projecting from the side of a casing, 7, which houses the valve and other parts of the thermostat-mechanism which is not shown in the drawing since it forms no part of the present invention. This nipple is threaded on its exterior, and is screwed into the internally threaded bore of a hollow spud, 8, which passes through an opening, 9, formed through the side of the tank, the inner end of the spud being provided with a flange, 10, which lies against and conforms to the inner surface of the tank to which it is secured by any suitable means. The axis of the spud is concentric with the axis of the tube 4 and its outer extremity at right angles to said axis. Adjacent the base of the nipple, 6, the casing, 7, has a flat surface, 11, which is at right angles to the axis of said nipple, the axes of said nipple, the spud and the tube, 4, being all concentric, so that when the tube is passed through the spud and rotated about its axis by turning the casing around and around about the axis of the spud the flat surface, 11, of the casing will be brought to a firm bearing upon the outer inclined end of the spud. It will be observed that the spud has a straight opening through it and this has advantages over a plug occupying an opening through the side of the tank and having through it an opening, the ends of which are angularly related, the axis of the inner end lying in a chord of an arc of the circle described by the inner surface of the tank for the purpose above described and the axis of the outer end being radial with relation to the tank.

In the foregoing description I have described the invention as an improvement in water heaters but it is manifest that the improved hollow spud is applicable to other devices having a cylinder to which it is de-

sired to apply or attach a tube or the like which is located within the cylinder and lies in a chord of an arc described by the inner surface of the cylinder after the manner of the thermostatic element above described. In fact the present invention relates more particularly to the hollow spud construction as shown and described, regardless of the device which it carries and supports, whether this latter be a tube, or what not. The advantage of a spud constructed as shown and described is that it does not require the cylinder to be of special construction or to have any special features. It simply requires the making of an opening through the wall of the cylinder and does not require even the thickening of the wall of the cylinder around this opening either on the inner or the outer surface of the cylinder. With a spud having a base flange which conforms to the curvature of the cylinder the device is self adjusting, and this is true whether the flange be placed against the inner or the outer surface of the cylinder, although I prefer to place it against the inner surface as this arrangement makes a more rigid construction.

What I claim as new is:

1. A water heater having a cylindrical boiler or tank and a flue located centrally within it, in combination with a thermostat having a thermal member located in a chord of an arc of the circle described by the surface of the tank and lying at one side of the central flue one element of said thermal member consisting of a tube, and a hollow spud with which said tube has threaded engagement, the axis of said spud being coincident with the axis of the tube, and the spud having a flange lying against and conforming to the surface of the tank, to which it is secured, and the tank having an opening through which the tube passes.

2. A water heater having a cylindrical boiler or tank and a flue located centrally within it, in combination with a thermostat having a thermal member located in a chord of an arc of the circle described by the inner surface of the tank and lying at one side of the central flue, one element of said thermal member consisting of a tube, a valve casing located on the outside of the tank and joining the outer end of the tube, a hollow spud through which the tube passes, the tube and spud having threaded engagement with each other, the spud having a flange conforming to and fitting against the inner surface of the tank to which it is secured, and the tank having an opening through which the spud passes, the axis of the spud being coincident with the axis of the tube and the outer end of the spud and adjacent surface of the valve casing being at right angles to said axis.

3. A water heater having a cylindrical boiler or tank and a flue located centrally within it in combination with a thermostat having a thermal member located in a chord of an arc of the circle described by the inner surface of the tank and lying at one side of the central flue, one element of said thermal member consisting of a tube, a valve-casing located on the outside of the tank and having an externally threaded nipple with which said tube is rigidly connected, a hollow spud having internal threads engaging the external threads of the nipple, the spud, nipple and tube having a coincident axis, the outer end of the spud being at right angles to said axis and the valve casing having a flat surface also at right angles to said axis and adapted to bear against the outer end of the spud.

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Witnesses:
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