

PATENT SPECIFICATION (11)

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(54) MOUNTING OF SOLAR WATER HEATERS

(71) We, SHELL OIL SOUTH AFRICA (PROPRIETARY) LIMITED, a South African Company registered with limited liability in accordance with the laws of the Republic of South Africa, of Shell House, Greenmarket Square, Cape Town, Cape Province, Republic of South Africa, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to the mounting of solar water heaters on surfaces.

A solar water heater is normally mounted at an angle relative to the horizontal in order to present as much as possible of its heat absorbent upper surface to the direct rays of the sun. Difficulties have been experienced in mounting solar water heaters on a variety of surfaces and it is an object of this invention to offer a solution to this problem.

The invention also provides a mounting device for mounting a solar water heater on a surface, the device including at least one mounting member which is annular and of wedge-like shape, the mounting member having an upper edge and a lower edge which lie in different planes inclined at an angle relative to each other, the upper edge having sufficient outer dimensions to support a base of the solar water heater and the lower edge being locatable on the surface, thereby to permit the solar water heater to be supported at an angle relative to the surface.

The mounting member may support the outer periphery of the base of the solar water heater only. The upper and lower edges may each have an inwardly turned upper and lower flange thereon which serve to add to its rigidity and also serve to facilitate attachment to the surface and to the base of the solar water heater. The inwardly turned upper and lower flanges may have a plurality of equidistant circumferentially spaced apertures therein to permit connection of a plurality of mounting

members in stacked relationship either in the same or in different orientations.

The angle of inclination between the upper and lower edges of the mounting member may be predetermined, e.g. 10 to 30 degrees, preferably 15 degrees, to permit a plurality of mounting members to be stacked one on top of the other to provide a predetermined angle of inclination between the outermost edges of the stack.

The invention is now described by way of example with reference to the accompanying drawings, in which:—

Figures 1 to 6 show schematic views of a mounting device for a solar water heater, in accordance with the invention; and

Figure 7 shows a sectional side elevation of portion of a plurality of mounting members in accordance with the invention.

Referring to the drawings, reference numeral 10 generally indicates a solar water heater which may be of conventional design and which has a base 12 and an upper surface 14 which, for efficiency, should be directed so as to present as much as possible of its surface to the direct rays of the sun. The solar water heater is generally mounted on a surface 16 which may take a variety of forms, e.g. the roof of a building, an awning on the side of a building, a side wall of a building, or the like.

In accordance with the invention, in order to facilitate and provide a fixed angle of inclination relative to the horizontal, one or more wedged-shaped members 18 are provided intermediate the base 12 of the solar water heater and the surface 16.

As shown in Figure 1, a single mounting member 18 is mounted on, say, a roof 16 when the roof 16 has a sufficient angle of inclination. As shown in Figure 2, if the roof 16 has a lesser angle of inclination, two mounting members 18 are used. For a flat roof, as illustrated in Figure 3, or any other horizontal surface, three mounting members 18 are used.

In Figure 4, on a downwardly or reverse sloping roof, four mounting members 18 are used.

In Figure 5, the solar water heater 10 is mounted on a vertical surface 16, e.g. a wall and sufficient mounting members, in this case three, are provided to give the proper angle of inclination.

As shown in Figure 6, if required, e.g. on a roof or surface running generally in a direction other than east-west, a plurality of mounting members 18 are used at different orientations with the narrow portions of the mounting members not all in the same plane so that a tortuous support for the solar water heater 10 is formed.

Referring to Figure 7, the constructional details of the mounting members 18 are shown. Each mounting member comprises a side wall 20 which tapers to form the wedge-shape and which has a pair of inwardly directed flanges 22 and 24 on its upper and lower edges. Suitable holes are provided in the flanges 22 and 24 to permit attachment via bolts or studs 26 to the surface 16, to other flanges, and to the base 12 of the solar water heater 10. The holes are equidistantly spaced in the circumferential direction of the flanges 22 and 24 to permit the mounting members to be fixed together at different orientations as shown in Figure 6. The solar water heater 10 has an inwardly directed L-shaped bracket 28 which is fixed to the base 12 of the solar water heater and which is attached to the uppermost flange 24. The lowermost mounting member is fixed to the surface 16 via a flange 32.

The invention as illustrated provides a neat and effective way of mounting solar water heaters and whereby the mounting can be quickly and easily effected. The mounting members can be inexpensively manufactured and the number of mounting members can be quickly selected to provide an appropriate angle of inclination.

Attention is drawn to our copending Application No. 7095/78 (Serial No.

1,564,887) which describes and claims features of the above apparatus.

WHAT WE CLAIM IS:—

1. A mounting device for mounting a solar water heater on a surface, the device including at least one mounting member which is annular and of wedge-like shape, the mounting member having an upper edge and a lower edge which lie in different planes inclined at an angle relative to each other, the upper edge having sufficient outer dimensions to support a base of the solar water heater and the lower edge being locatable on the surface, thereby to permit the solar water heater to be supported at an angle relative to the surface.

2. A mounting device as claimed in claim 1, in which the upper and lower edges each have an inwardly turned upper and lower flange thereon.

3. A mounting device as claimed in claim 2, in which the flanges have a plurality of equidistant circumferentially spaced apertures therein to permit connection of a plurality of mounting members in stacked relationship either in the same or different orientations.

4. A mounting device as claimed in any one of the preceding claims, in which the angle of inclination between the upper and lower edges of the mounting member is between 10 degrees and 30 degrees.

5. A mounting device as claimed in any one of the preceding claims, in which the angle of inclination between the upper and lower edges of the mounting member is 15 degrees.

6. A mounting device for mounting a solar water heater on a surface, substantially as described and as illustrated herein.

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