(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 204 984**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: 86106527.4

(22) Date of filing: 14.05.86

(51) Int. Cl.⁴: D 06 F 39/04

(30) Priority: 10.06.85 ES 287311

(43) Date of publication of application:
17.12.86 Bulletin 86/51

(84) Designated Contracting States:
DE FR GB IT

(71) Applicant: DOMAR S.A.
Poligono Industrial Roca
Martorelles del Valles(ES)

(72) Inventor: Marangoni, Antonio
Rocafort 248
Barcelona(ES)

(74) Representative: Casalonga, Alain et al,
BUREAU D.A. CASALONGA OFFICE JOSSE & PETIT
Morassistrasse 8
D-8000 München 5(DE)

(54) Positioning device for resistor heating elements.

(57) A positioning device for resistor heating elements, particularly for clothes washing machines, characterized essentially in that the element is fitted at its head end using an annular shaped flexible component surrounding the said head and inserted in turn into an orifice provided in the side walls of the tub, ensuring the water tightness and determining the flexible positioning of the element in its equilibrium position relative to the supporting zone while the positioning of the element and the contact of its extremity with the bottom of the tub is ensured by the exterior application of a tractive force to the free extremity forming the connection head by means of a helicoidal spring in permanent tension.

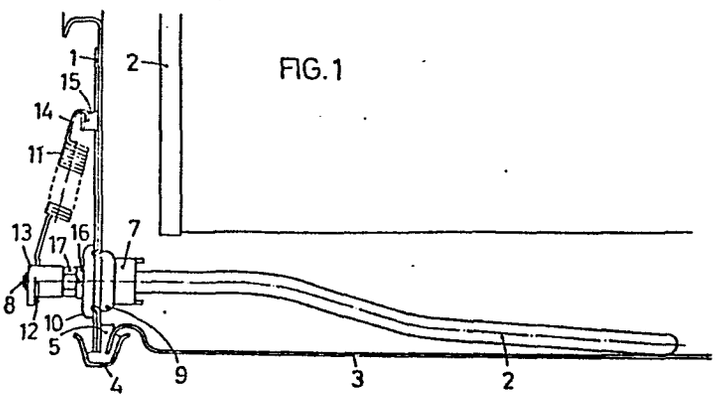

FIG.1

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SPECIFICATION

This Patent refers to a device designed for positioning the shielded resistor element of the type used for heating the water in the tub of a clothes washing machine. Use of this particular device overcomes simply and efficaciously the practical difficulty arising from the necessity of securely locating the resistor in relation to the position of the other components of the washing machine.

As is known, various types of shielded elements are used for heating the washing water and these include the rod type consisting of a metal sheath which contains and protects the resistance component which is in the form of a coil wound on a longitudinal insulator support.

All these heater elements, which advantageously are located close to the bottom of the tub and which are submerged in the mass of the water to be heated, must be retained at an adequate distance from the revolving drum within the tub itself. Given the physical characteristics of these heater elements, fixed at one of their extremities with the other extremity free inside the tub, their position may vary, giving rise to the possibility of occasional contact with the drum, which can be detrimental. This can be avoided by several methods, one being to solder inside the tub a ring or C shaped collar which prevents the heater

element deviating from its correct position by more than an acceptable angle.

The requirement to solder one or more components to the walls of the tub presents a practical difficulty which for preference should be avoided and this present Patent provides an alternative resulting in the same effect but without the need to attach any additional components to the tub.

The object is to ensure the correct positioning of a longitudinal heating element in such a way that its body remains permanently in contact with the bottom of the tub, this being achieved by exerting a force on the outer extremity of the said element by by means of a simple actuating mechanism and accompanied by a highly efficacious and very simple locating means.

To facilitate the explanation there are attached to this specification drawings which illustrate by way of a non limitative example, one embodiment of the heating element positioning device in accordance with the principles recited in the claims.

In the drawings:

Figure 1 is a lateral view of the washing machine tub fitted with the device herein described, holding the heater element against the bottom of the tub.

Figure 2 is an enlarged detail of the element

as fitted, such that its permanent contact with the bottom of the drum is assured.

The numbers in the drawings correspond to the references shown in the text that follows.

The tub -1- of the clothes washing machine houses, in the conventional manner, the revolving drum -2- in which are placed the clothes to be washed. The bottom member -3- is attached to the side walls of the tub by means of a channel shaped joint component -4- together with a flexible sealing member -5- to ensure the water tightness of the join.

The shielded resistor -6- is of elongated form with an obtuse angle double elbow or bend as in Figure 1. It comprises, conventionally a head -7- from which extend suitably insulated electrical connection terminals corresponding to the two extremities of the resistive component of the element. The threaded boss -8- provides the means of its mechanical attachment.

To locate the heater element as shown in the Figure 1, it is fitted in its position using a ring-shaped flexible component -9- surrounding it and which in turn is inserted into an orifice of suitable diameter provided in the wall of the tub -1-. This component serves both as a flexible support for the heater element and as a watertight seal. The metal washer -10- forms a seating for the semi-elastic washer -16- and the fixing nut -17-.

The natural flexibility and elasticity of the component -9-, made in an appropriate composition of rubber, allows, by application of an axial force to the boss -8- by means of tightening the nut -17-, an axial movement of the head -7-, and hence, of the body -6- of the heater element.

This same elasticity of the support component -9- provides the capability,by pulling the boss -8- upwards as shown in the drawings, of the body -6- of the element to move downwards and make contact with the bottom of the tub, this being the desired objective.

To achieve this objective there is fitted a helicoidal spring -11- having at one extremity a hook -12- applied to the tubular component -13- which envelopes the boss -8- with the extremity -14- being held by deformation -15- in the form of a lip or flange, protruding from the body of the tub or by a plate associated with the outer wall of the tub.

As can be seen the simplicity of the above described device ensures its efficacity, providing, on fitting the heater element, the orientation of the body -6- of the element, such that the tensile force of the spring -11- causes the said body to be directed towards the bottom without the need for other components.

CLAIMS

1. A positioning device for resistor heating elements, particularly for clothes washing machines, characterized essentially in that the element is fitted at its head end using an annular shaped flexible component surrounding the said head and inserted in turn into an orifice provided in the side walls of the tub, ensuring the water tightness and determining the flexible positioning of the element in its equilibrium position relative to the supporting zone while the positioning of the element and the contact of its extremity with the bottom of the tub is ensured by the exterior application of a tractive force to the free extremity forming the connection head by means of a helicoidal spring in permanent tension.

2. A positioning device for resistor heating elements, as in the previous claim, characterized in that the helicoidal spring under tractive force has one of its extremities in the form of a hook engaging around the tubular insulator component which envelopes the connection boss at the head end of the resistor element and which is provided with a retention flange, the other extremity of the spring also being in the form of a hook being retained in an extension derived from the outer wall of the tub.

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FIG. 1

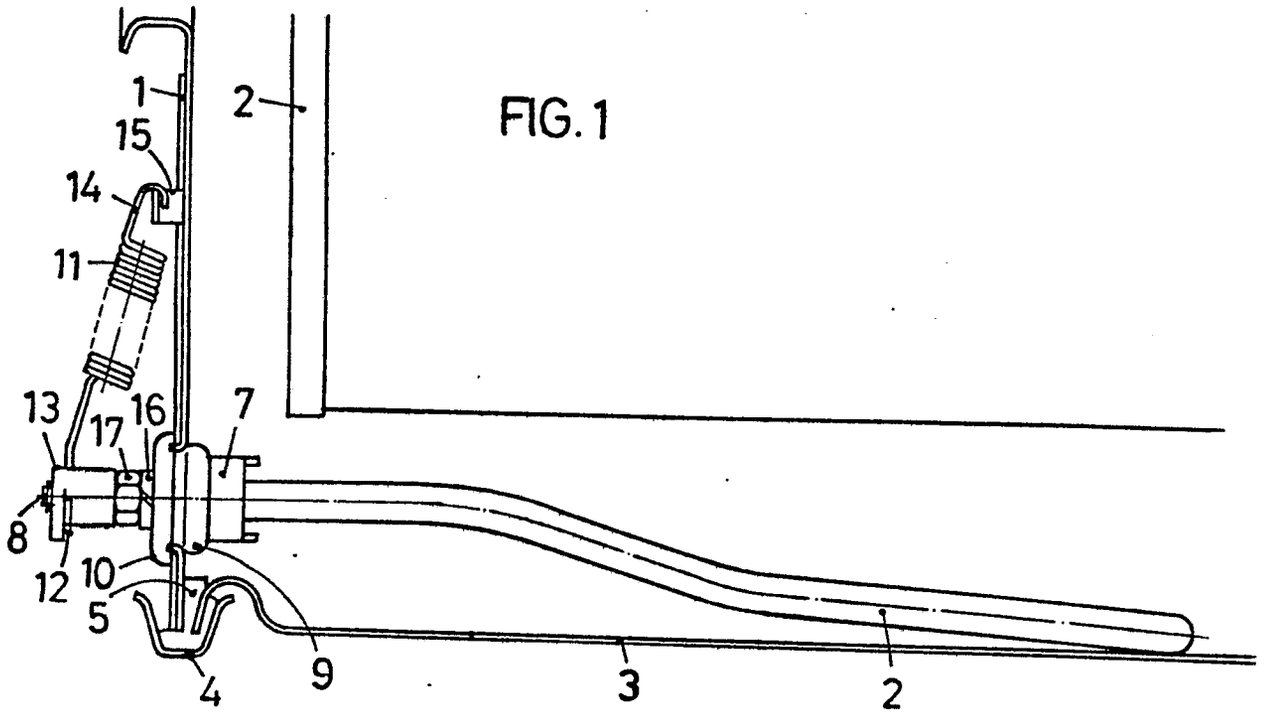

FIG. 2