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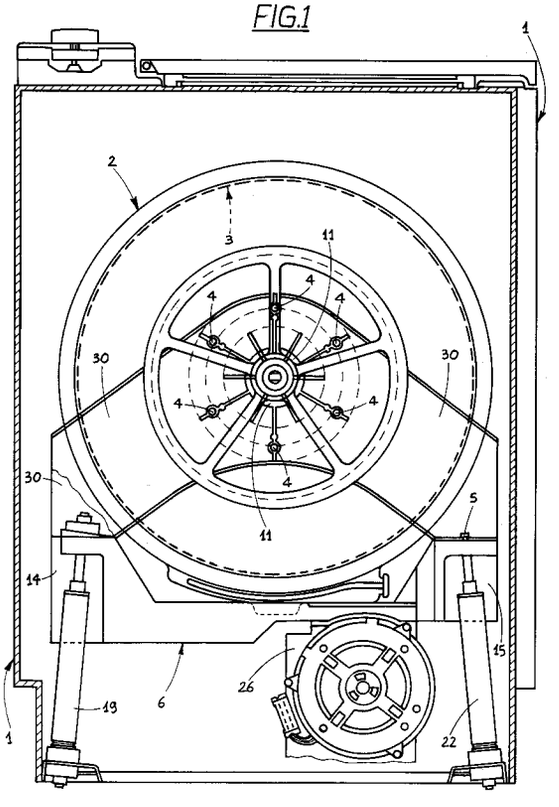
(54) Support structure for the washing tub of a washing machine.

(57) A support structure for the washing tub of a washing machine comprises a support cradle (6) for the washing tub (2), integral with the latter and connected flexibly to a frame (1) of the washing machine; the support cradle (6) is shaped so as to comprise parts (14,15) of considerable mass, suitable for acting as balancing counterweights.

FIG.1



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The present invention relates to a support structure for the washing tub of a washing machine.

Normally, in washing machines, the washing tub is connected flexibly to the frame of the machine itself by means of springs or shock absorbers, or by means of a combination of springs and shock absorbers, so as to be suspended. Fixed masses are also provided, integral with the washing tub and acting as counterweights, distributed in such a way as to balance the machine, above all during the centrifugation phase.

Another known solution provides a support axle or cradle in sheet metal rigidly connected to the washing tub, a cradle which is then connected flexibly to the frame by means of shock absorbers. In this case the masses acting as counterweights are mounted, by means of bolts, to the support cradle, forming in any case parts which are separate from the cradle itself.

This prolongs the times of assembly of the washing machine, in that mounting of counterweights on the cradle is required, and hence increases production costs.

In view of the state of the art described, the object of the present invention is that of providing a support structure for the washing tub of a washing machine which does not require the assembly of separate parts with counterweight functions.

In accordance with the present invention, this object is achieved thanks to a support structure for the washing tub of a washing machine, comprising a support cradle for the washing tub, integral with the latter and connected flexibly to a frame of the washing machine, characterised in that said support cradle is shaped so as to comprise parts of considerable mass, suitable for acting as balancing counterweights.

Thanks to the present invention, it is possible to provide a support structure for a washing tub which also has counterweight functions, and which therefore does not require assembly of the separate parts for performing the counterweight function.

The features of the present invention will therefore be made clearer by the following detailed description of its embodiment, illustrated by way of a non-limiting example in the accompanying drawings, in which:

Figure 1 is a section along a vertical plane of a washing machine provided with a support structure for a washing tub according to the present invention;

Figure 2 is a side view from the right in relation to Figure 1;

Figure 3 is a plan view of a support cradle for a washing machine according to the present invention;

Figure 4 is a raised view of said support cradle;

Figure 5 is a sectioned view along line V-V of Figure 3 of said support cradle;

Figure 6 is a sectioned view along line VI-VI of Figure 3 of said support cradle.

Figures 1 and 2 show a washing machine of the so-called top-loader type. Such a machine comprises, in a manner in itself known, an external framework 1 enclosing a washing tub 2, inside whereof a loading drum 3 is mounted freely rotatably.

The washing tub 2 is attached by means of screws 4, and hence rigidly, to a pair of arched brackets 30 in sheet metal, which are in turn attached by means of screws 5 to a support cradle 6.

More specifically, attached to the washing tub 2, substantially a drum, in an axially opposite position, are a pair of circular flanges 7, each fitted with a circumferential series of holes 8, coinciding with respective holes made in the washing tub 2, and a central hollow hub 9. The brackets 30 are in turn provided with a circumferential series of holes 10 coinciding with the holes 8 of the flanges 7, and a central hole 11 for the passage of the hub 9. A reinforcement of a ball bearing 12 is keyed inside each hub 9, the other reinforcement whereof being keyed to a hub 13 integral with the loading drum 3. In this way the drum 3 is supported, freely rotating, inside the tub 2 (Fig. 2).

The support cradle 6, shown in Figures 3-6, has a substantially rectangular plan (Fig. 3) and an upper profile raised at the two smaller sides, and lowered in the centre, to allow housing of the washing tub 2, without increasing the overall dimensions (Fig. 4).

According to the known art, the support cradles are made by means of bent sheets, and counterweights in concrete or cast iron are mounted thereon by screws to perform balancing functions. In accordance with the present invention, however, the cradle 6 is made in cast iron or concrete, by means of moulds, and is shaped in such a way as to have parts of significant mass which act as counterweights. In the example shown, the support cradle 6 has two parts 14 and 15, placed along the two smaller sides of the cradle 6, where the thickness of the material constituting the cradle 6 itself is considerably greater compared to the remaining parts of the cradle 6. These parts 14 and 15, positioned opposite to a transverse axis of the cradle 6, form blocks of material which act as counterweights.

The block 14 is distributed in an essentially symmetrical manner in relation to a longitudinal axis of the cradle 6, and two undercuts of material 16 and 17 are provided at its sides, at which two respective holes 18 (Figs. 3 and 6) are formed for assembly of the rod of two respective telescopic shock absorbers 19 (Figs. 1 and 2), whose cylinder

is attached below to the frame 1. At said material undercuts 16 and 17 two respective, smaller, holes 20 are provided for assembly by means of screws of the brackets 30.

At the side of the block 15 which, unlike the block 14, is distributed asymmetrically in relation to the longitudinal axis of the cradle 6, a hole 21 is provided for assembly of the rod of an additional telescopic shock absorber 22, also attached below to the frame 1. At the ends of the side of the cradle 6 whereon the block 15 is positioned, two holes similar to the holes 20 are formed, likewise for assembly of the brackets 3.

A hole 23 is also formed in the lowered part of the cradle 6 for connection of a drain pipe (not shown in the drawings) to the tub 2, and four holes 25 for the attachment, below the cradle 6, of a pair of flanges 26 which support, by screws, an electric motor 27 for moving the drum 3.

The support cradle 6, in addition to being produced as mentioned previously in cast iron or concrete, can usefully be made according to a patented system, comprising a shell acting as an external casing in plastic for a solidified compound injected in the fluid state in said shell.

The shock absorbers 19 and 22, which in the example shown connect the cradle 6 flexibly to the base of the frame 1, could also be of a different number, and could be connected to the frame 1 above, instead of below, the cradle 6.

Claims

1. Support structure for the washing tub of a washing machine, comprising a support cradle (6) for the washing tub (2), integral with the latter and connected flexibly to a frame (1) of the washing machine, characterised in that said support cradle (6) is shaped so as to comprise parts of large mass (14,15) suitable for acting as balancing counterweights.

2. Support structure according to claim 1, characterised in that said support cradle (6) is connected to the frame (1) of the washing machine by means of shock absorbers.

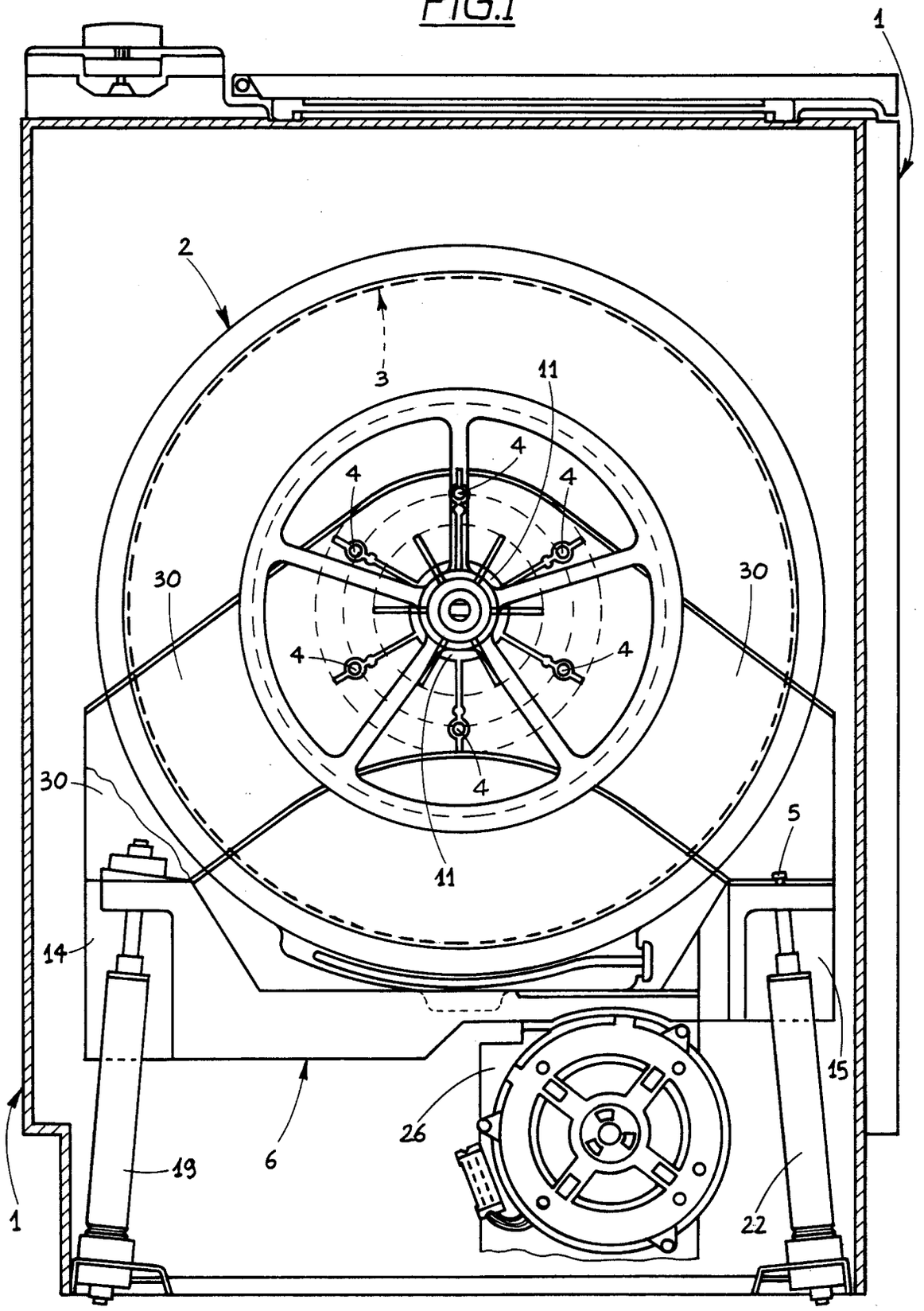
3. Support structure according to claim 1, characterised in that said support cradle (6) is rigidly connected to the washing tub (2) by means of rigid brackets (30) integral both with the support cradle (6) and with the washing tub (2).

4. Support structure according to one of the previous claims, characterised in that said support cradle (6) is made in cast iron.

5. Support structure according to any one of claims 1 to 3, characterised in that said support cradle (6) consists of a cement mix.

6. Support structure according to one of claims 1 to 3, characterised in that said support cradle (6) comprises an external casing filled with a solidified compound introduced into said casing in the fluid state.

FIG.1



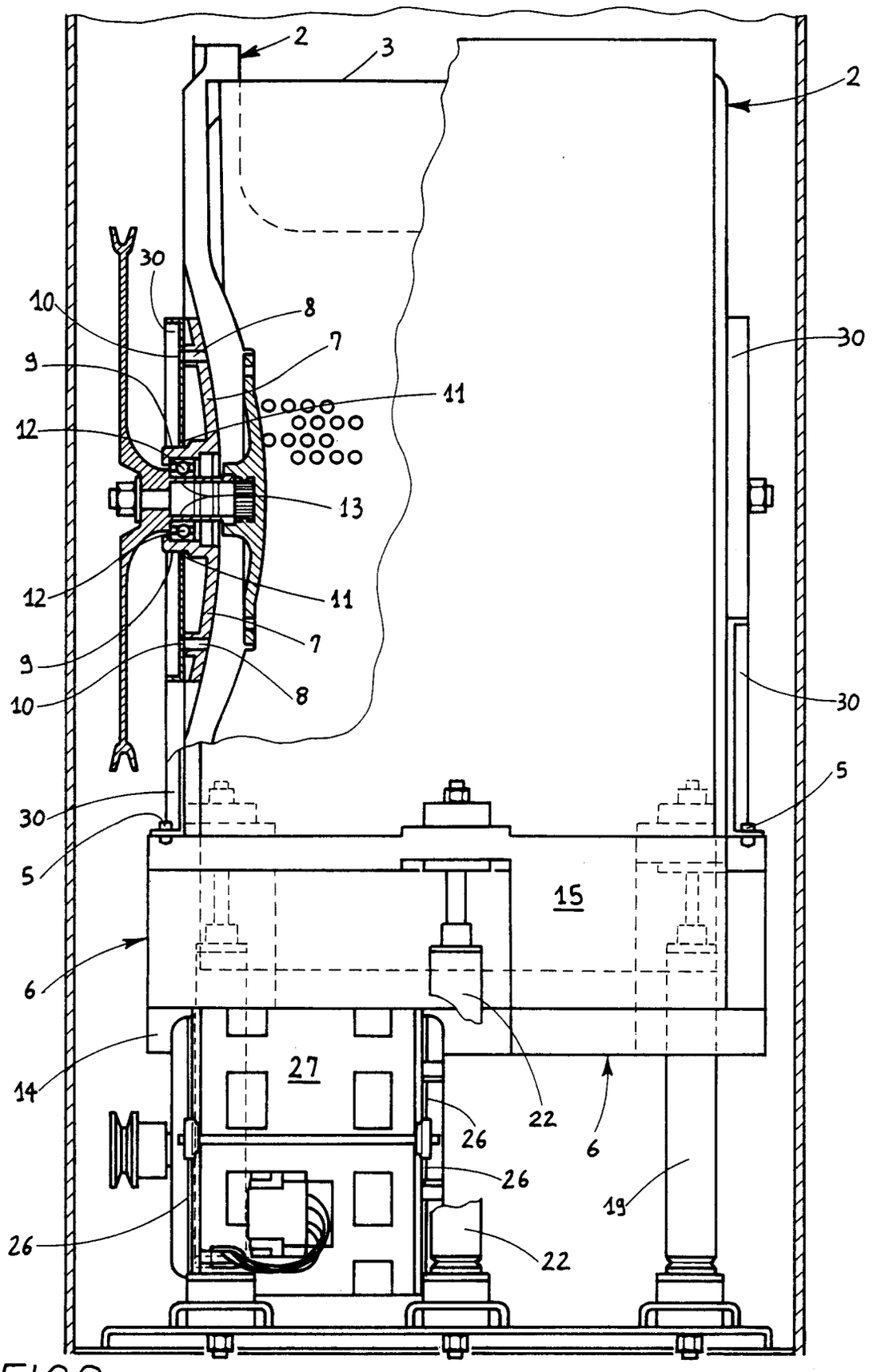

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FIG.2

FIG.3

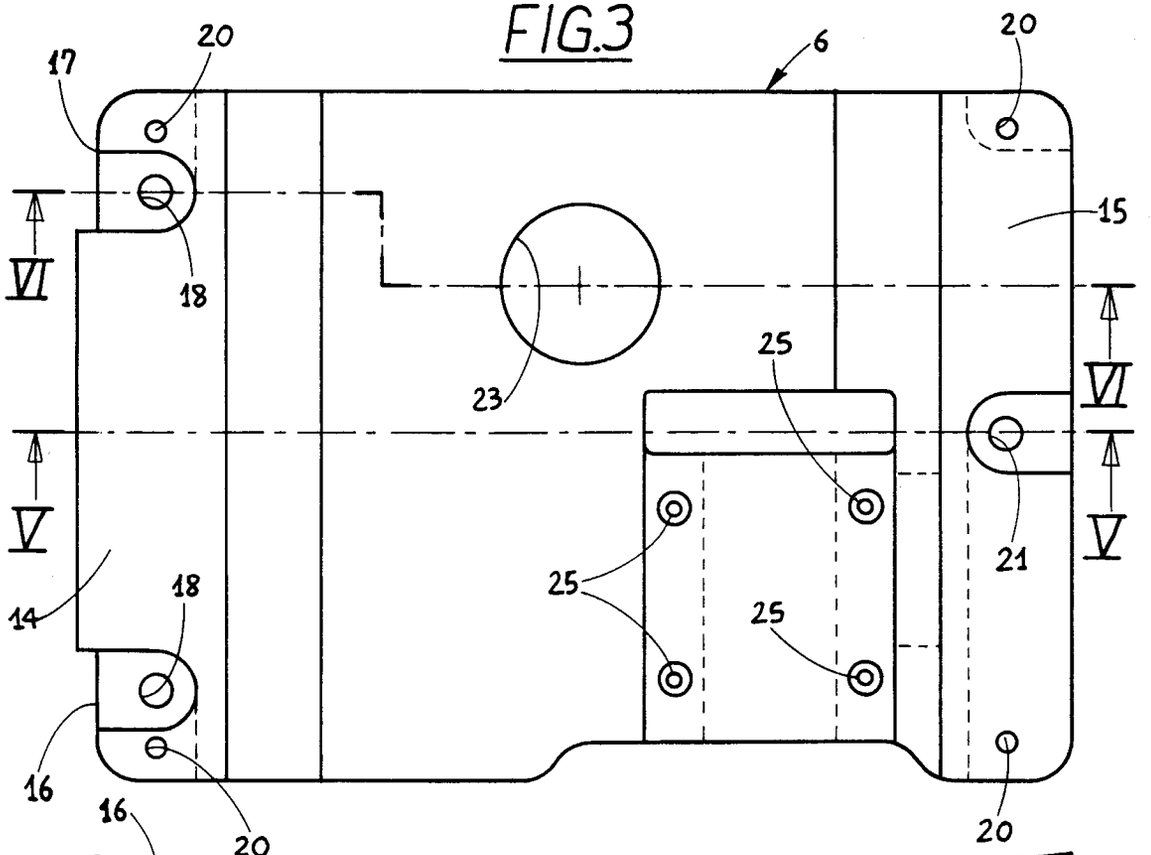


FIG.4

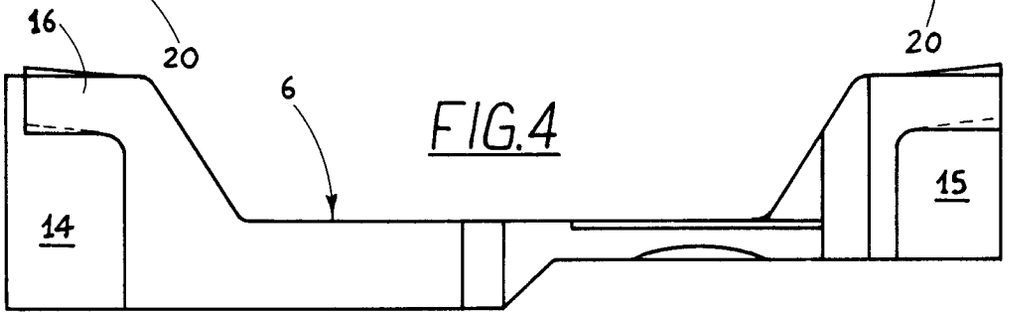


FIG.5

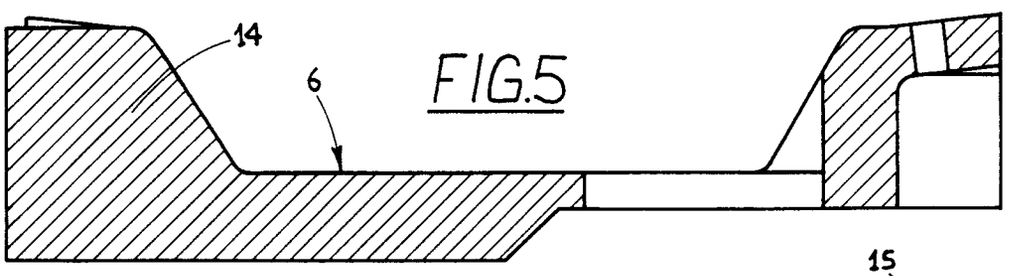
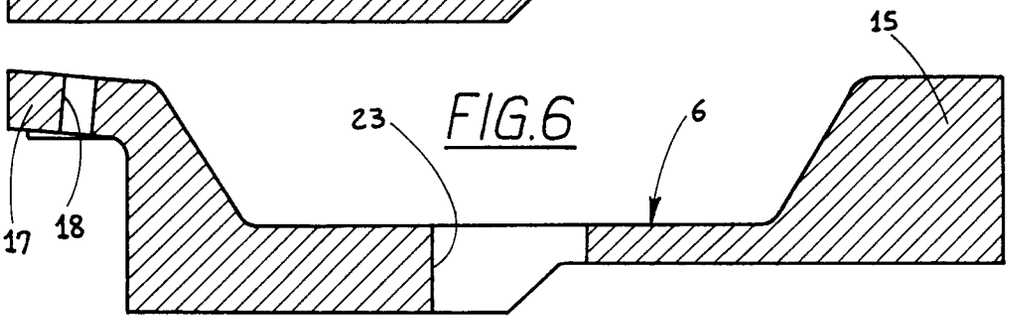


FIG.6



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EUROPEAN SEARCH REPORT

Application Number EP 95200689.8

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.6)
X	GB - A - 1 414 294 (HOTPOINT) * Page 1, lines 33-41; page 2, line 67 - page 3, line 63 *	1-5	D 06 F 37/22
A	--	6	
A	AT - B - 242 652 (BOSCH) * Fig 1 *	1-6	
A	--		
A	GB - A - 2 148 953 (ITW) * Fig. 5 *	1-6	

TECHNICAL FIELDS SEARCHED (Int. Cl.6)

D 06 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	29-06-1995	HUBER

CATEGORY OF CITED DOCUMENTS

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