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(71) Applicant: **WHIRLPOOL CORPORATION**
Benton Harbor
Michigan 49022 (US)

(72) Inventors:
- **Jasch, Michael**
  Patent Dept. Whirlpool Europe s.r.l.
  21025, Comerio (IT)
- **Nachtmann, Werner**
  Patent Dept. Whirlpool Europe s.r.l.
  21025, Comerio (IT)

(74) Representative: **Guerci, Alessandro**
Whirlpool Europe S.r.l.
Patent Department
Viale G. Borghi 27
21025 Comerio (VA) (IT)

(54) **Program selector for domestic appliances**

(57) A program selector for a domestic appliance, particularly for a washing or dishwashing machine, comprises a rotating knob for the manual selection of the washing programme or the like. The selector comprises a cylindrical support structure adapted to be fixed to a control board of the domestic appliance and around which such knob is rotatably mounted. The cylindrical support structure has longitudinal seats in which are slidably mounted two button-shaped elements which are adapted to be independently pushed by the user, particularly for switching on and off the appliance.

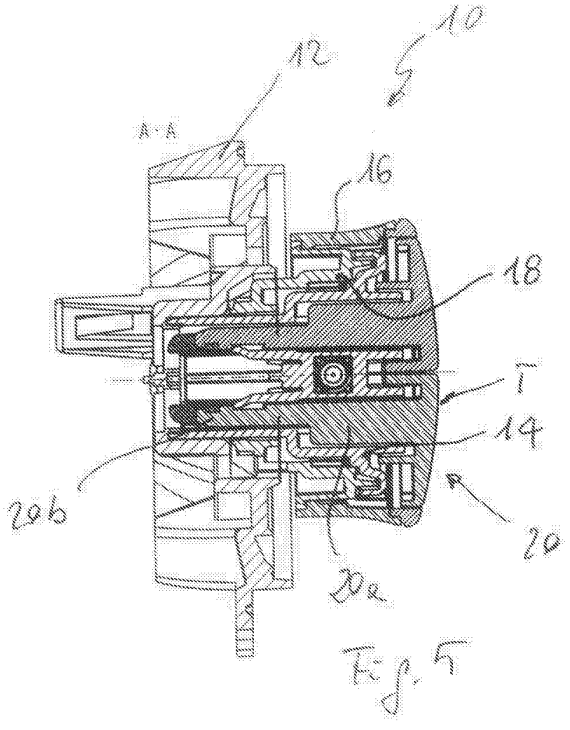

Fig. 5

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Description

[0001] The present invention relates to a program selector for a domestic appliance, particularly for a washing machine, of the type comprising a rotary knob for the manual selection of a washing programme or the like.

[0002] In the technical field of domestic appliances (washing machines, dishwashers and the like) the use of a rotary knob for selecting a programme or a function is well known. In washing machines such knob is associated to an electromechanical component ("timer") or to a position sensor linked to an electronic control circuit. In the known solution the rotating knob is mounted on a control panel of the appliance, where there are also placed other buttons, for instance for switching on and off the appliance. This use of knobs, buttons and the like makes the user interface of the appliance not very simple, in the sense that the user can have some difficulties in understanding how to control and to set the appliance.

[0003] One object of the present invention is to provide a program selector with a clear and understandable usage, and which can also be used for starting and stopping the appliance.

[0004] Said object is reached thanks to the features as listed in the appended claims. The program selector according to the invention has a rotating knob with clearly defined positions and two integrated buttons, one for starting the appliance and the other one for stopping it. The integration of the two buttons inside the program selector knob does save space on the control panel of the washing machine and allows having the main function of the machine (selection, start, stop) all combined together. Another advantage is the very stiff guidance for the start/stop buttons and the minimised wobbling of the program selector which leads to a real good touch and feel for the user.

[0005] Other features and advantages of the program selector according to the present invention will be clear from the following detailed description of one embodiment of the invention, with reference to the appended drawings in which:

- figure 1 is a perspective exploded view of the program selector according to the invention;
- figure 2 is a front view of the program selector of figure 1;
- figure 3 is an enlarged view of a detail o the selector;
- figure 4 is a section view along line B-B of figure 2;
- figure 5 is a section view along line A-A of figure 2;
- figure 6 is a cross section view along line C-C of figure 4;
- figure 7 is a side view of one of the two button elements used in the program selector of figure 1; and
- figure 8 is a longitudinal section of one of the components of the program selector of figure 1.

[0006] With reference to the drawings, with 10 it is indicated a program selector installed on a control panel P of a washing machine. The selector 10 comprises six main components, i.e. a base 12, a support cylindrical body 14 mounted on the base 12, a knob ring 16 coaxial with an internal toothed ring 18 rotatably mounted on the support body 14, and two mushroom-shaped buttons 20, substantially identical, slidably mounted in the support body 14.

[0007] As it is clearly shown in figures 1, 4 and 5 the support cylindrical body 14 presents longitudinal bores 22 with a cross section shape corresponding to the shape of stem portions 20a of the buttons 20. The support body 14 further presents a central cross bore 24 of square cross section in which two piston elements 26 are slidably mounted. In the bore 24, between two facing flat ends of the piston elements 26, there is installed a helical compression spring 28 whose function is to urge the piston elements 26 towards the inside surface of the internal ring 18. The zone of such internal ring 18 where the piston elements 26 are urged present a toothed surface 30 adapted to cooperate with wheels 32 supported by fork shape ends 26a of the piston elements 26 (see also figure 3). Wheels 32 have a rubber co-moulded tread portion 32a in order to reduce noise when wheels 32 roll on the toothed surface 30. The tread portion 32a, instead of being co-moulded with the wheels 32, can be also an O-ring mounted in an external groove of the wheel. Moreover, as an alternative solution to the use of rubber tread portions 32a, the toothed surface 30 can be provided with a layer of rubber material.

[0008] The outside surface of the internal ring 18 (indicated with reference 18a in the drawings) presents teeth which cooperate with a corresponding internal surface of the knob ring 16 in order to make such rings linked together in the rotational movement.

[0009] The base 12 is fixed by screws 33 to the support body 18 and it is also provided with a seat 12a for a toothed pinion 34 adapted to cooperate with a corresponding toothed surface 36 of the internal ring 18. The pinion 34 is coupled to an encoder (not shown) for detecting the position of the knob ring 16.

[0010] Each stem portion 20a of the buttons 20 presents an end 20b adapted to cooperate with corresponding switching elements, carried for istance by a printed circuit board (not shown) associated to the program selector. Moreover each button 20 has, below its flat semicircular portion indicated in the drawings with reference T, an integral resilient element 36 adapted to cooperate with a front face 14a of the support body 14 for urging the button towards its idle position as shown in figures 4 and 5. Each portion T has a semicircular shape so that both such flat portions cover the frontal circular aperture of the knob.

[0011] The way in which the program selector works is quite evident from the previous description: the user can acts on the knob ring 16 for selecting the desired program. In doing this the wheels 32, urged by the spring 28 towards the toothed internal surface 30 of the internal ring 18, help the user in positioning the knob in a plurality

of stable positions. Moreover, by pushing one of the buttons 20 the user can start or stop the program selected by means of the knob ring 16.

Claims

1. Program selector for a domestic appliance, particularly for a washing or dishwashing machine, of the type comprising a rotating knob (16, 18) for the manual selection of the washing programme or the like, **characterised in that** the selector (10) comprises a cylindrical support structure (14) adapted to be fixed to a control board (12, P) of the appliance and around which such knob (16, 18) is rotatably mounted, said support structure (14) having longitudinal seats (22) in which are slidably mounted at least two button-shaped elements (20) which are adapted to be independently pushed by the user, particularly for switching on and off the appliance.

2. Program selector according to claim 1, **characterised in that** between the knob (16, 18) and the cylindrical support structure (14) there are comprised rack means (26, 28, 30, 32) adapted to define a plurality of stable positions of the rotary knob.

3. Program selector according to claim 2, **characterised in that** the rack means comprise a positioning element (26) which is slidable mounted in an auxiliary seat (24) of the support structure (14), such element (26) being pushed towards a rack annular internal portion (30) of the rotary knob (18) by elastic means (28).

4. Program selector according to claim 3, **characterised in that** between the positioning element (26) and the rack annular portion (30) of the rotating knob (18) there is interposed a wheel or roller (32).

5. Program selector according to claim 3, **characterised in that** the wheel or roller (32) has an external rim portion (32a) made of rubber-like material.

6. Program selector according to claim 1, **characterised in that** each button element (20) has a stem portion (20a) adapted to cooperate with a corresponding switch and integral with a substantially flat portion (T) adapted to be pushed by the user and having a semicircular shape so that both such flat portions cover the frontal aperture of the rotary knob (16, 18).

7. Program selector according to any of the preceding claims, **characterised in that** the rotating knob (16, 18) has an outside toothed portion (36) adapted to cooperate with a corresponding pinion (34) rotatably mounted within the structure (12) for driving an encoder or the like.

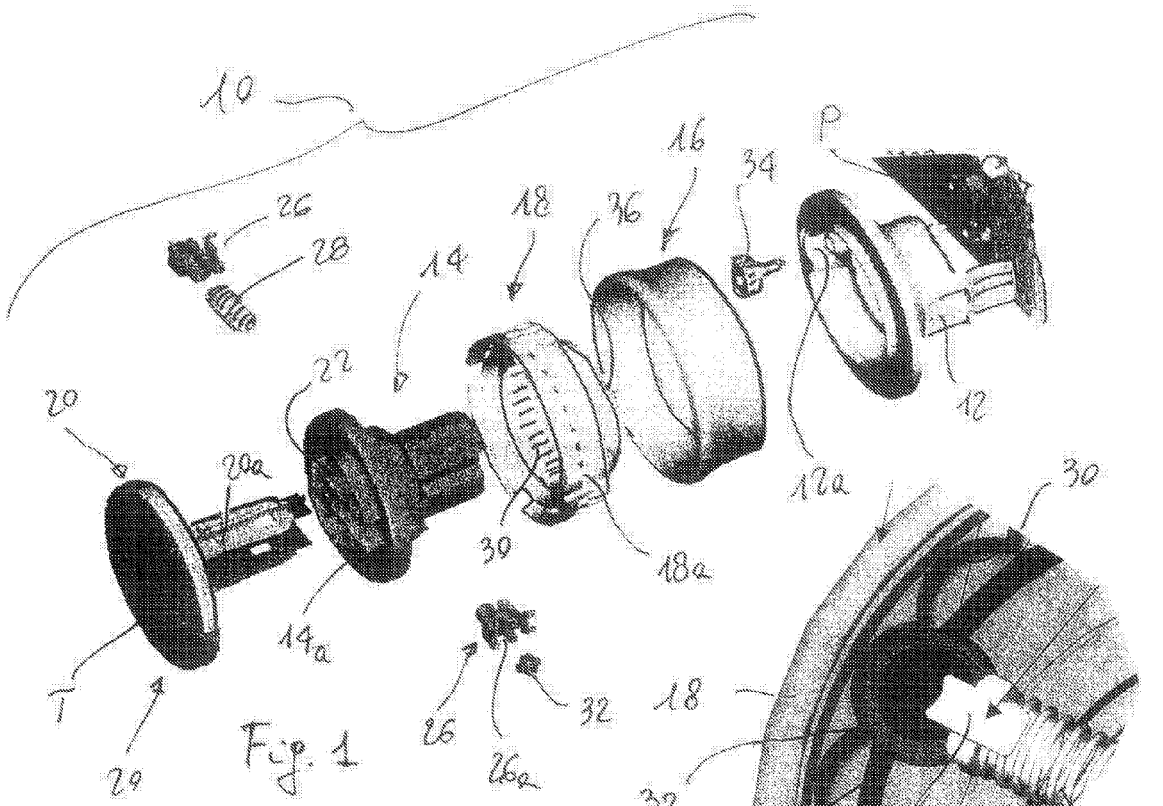

Fig. 1

Fig. 3

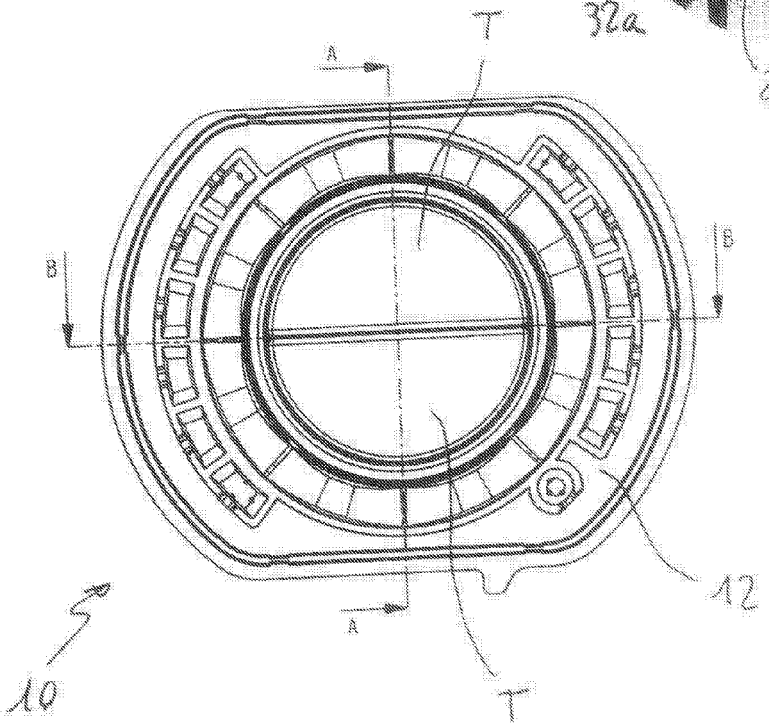

Fig. 2

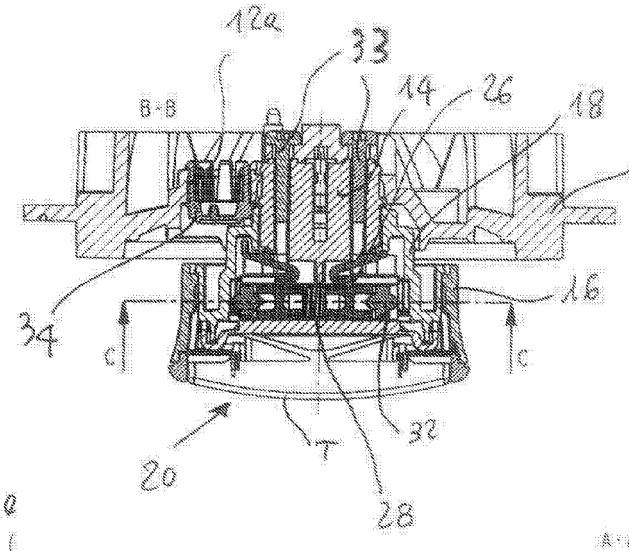

Fig. 4

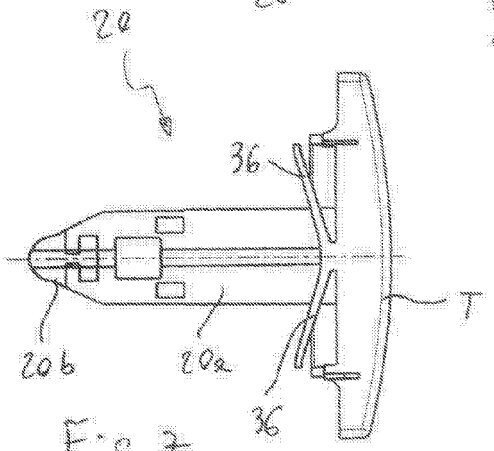

Fig. 7

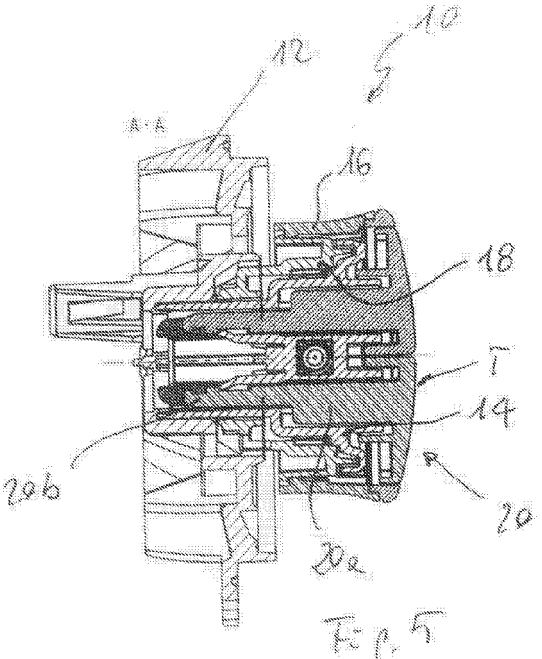

Fig. 5

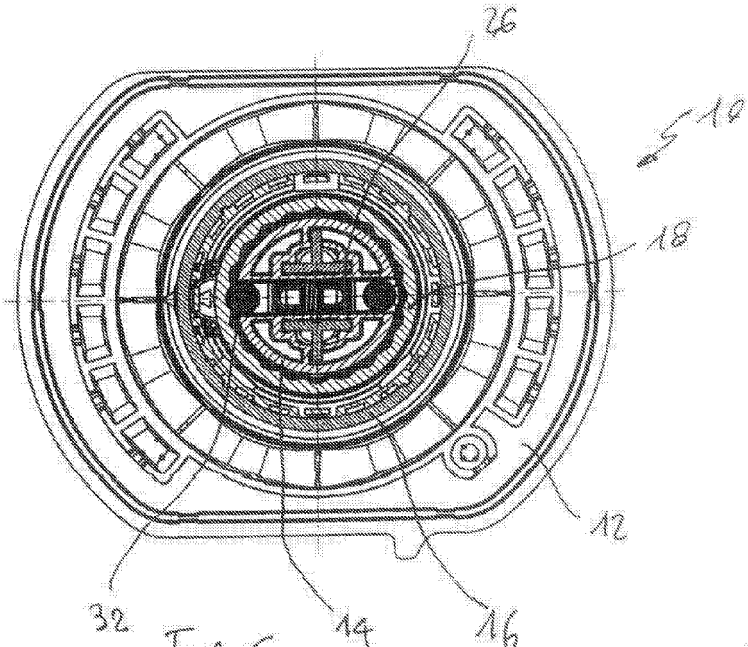

Fig. 6

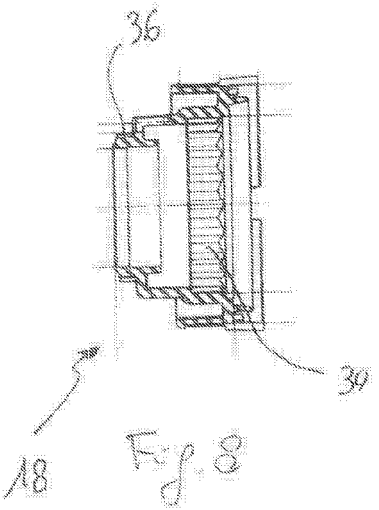

Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 06 11 4969

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 November 2006	Ruppert, Christopher

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