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54 Control knobs.

57 A flush control knob (1) is disclosed having a pair of flaps (2) which lie in substantially the same plane and which are pivoted so that they are rotatable to afford a finger grip portion by means of which the control knob may be rotated (Fig. 3).

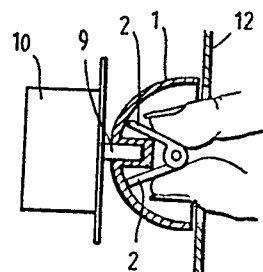


FIG. 3.

CONTROL KNOBS

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This invention relates to control knobs.

It has become desirable for safety and aesthetic reasons to provide controls, such as the controls on
5 electric or gas cookers, fires etc., with knobs which are substantially flush with the casing or fascia of such appliances.

Such knobs are advantageous in that they give the appliance a streamlined look, they are difficult to
10 inadvertently turn ON and they tend to be, to some extent, childproof.

According to the present invention there is provided a control knob comprising a pair of laterally disposed flap members which are pivoted relative to one
15 another and which are spring biased so that they normally lie substantially in the same plane, the flap members being rotatable against the spring bias to afford a finger grip portion by means of which the control knob may be operated.

20 In carrying out the invention, the flap members may be rotated to afford the finger grip portion, or they may be rotated to afford access to a finger grip portion.

By way of example only, some exemplary embodiments
25 of the invention will now be described reference being made to the accompanying drawings, in which:

Fig. 1, is an exploded view of one form of control knob in accordance with the present invention.

Fig. 1a, is a detail view of an alternative construction of part of the control knob of Fig. 1;

5 Fig. 2, is a cross-sectional side view depicting a control knob in accordance with Fig. 1 assembled on the spindle of a typical control device;

Fig. 3, depicts the operation of the control knob of Fig. 2;

10 Fig. 4, is a cross-sectional side view of an alternative construction of the control knob of Fig. 1;

Fig. 5, is a cross-sectional side view of the control knob of Fig. 1 provided with a cylindrical information carrying skirt;

15 Fig. 6, is a perspective view of the control knob of Fig. 5;

Fig. 7, is a cross-sectional side view of the control knob of Fig. 1 provided with radially disposed information carrying skirt;

20 Fig. 8, is a perspective view of the control knob of Fig. 7;

Fig. 9, is a cross-sectional view of an alternative form of construction of the control knob of Fig. 1, provided with integral hinge flaps;

25 Fig. 10, is a perspective view of another form of control knob in accordance with the present invention;

Fig. 11, is an exploded view of the control knob of Fig. 10; and

Fig. 12, is a cross-sectional side view of the control knob of Fig. 10.

5 The control knob depicted in Fig. 1 of the drawings comprises a hollow, generally hemispherical body 1, into the opening of which is designed to fit a pair of laterally disposed semi-circular shaped flap members 2. The flap members 2 are provided over
10 approximately half the length of their straight edge with an inward flange 3 in which is a through bore 4 which is aligned with the straight edge. The two flap members 2 are assembled together by means of a pivot pin 5 which extends through the bores 4 in the flap
15 members 2 and which also engages diametrically opposed holes 6 in the body 1. As an alternative to using holes 6, the body 1 may be provided with grooves 6a, as shown in the detail drawing of Fig. 1a, into which the pivot pin 5 may be snapped. Between the flap members 4
20 and on the pivot pin 5 is disposed a spring 7, which is contained in an enlarged area 8 of the through bore 4, the spring 7 having the effect of biasing the flap members 2 outwards so that they are substantially flush with the outside rim of the body 1.

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In Fig. 2 of the drawings the control knob of Fig.

1 is shown assembled on the spindle 9 of a control device 10 which may, for example, be an energy regulator of an electric cooker, or a gas tap of a gas cooker. The control device 10 may, of course, take any convenient form. The knob is fitted behind a suitable hole 11 in a fascia panel 12 so that the front surface of the knob is substantially flush with the fascia panel 12.

10 The spindle 9 of the control device 10 is conveniently of 'D' shaped cross-section and engages with a corresponding shaped hole 13 in the body 1, an inner boss 14 being formed in the body 1 into which the hole 13 extends.

15 Operation of the control knob, as is depicted in Fig. 3, is effected by causing the flap members 2 to be pushed rotatively inwards towards each other, using a finger and thumb, against the bias of the spring 7, whereby the flap members 2 form a finger grip portion which may be gripped to effect rotation of the spindle 20 9 of the control device 10. When the finger and thumb are removed, the flap members 2 assume their normal 'flush' position under the action of the spring 7.

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As is depicted in Fig. 4, the flap members 2 may be made completely flush with the outer surface of the fascia panel 12 by providing that the outer rims of the flap members 2 are recessed to take account of the thickness of the fascia panel 12.

Although, as described in relation to Figs. 2 and 3, the control knob is used to effect rotation of the spindle 9 of a control device 10, it is envisaged that it may also be used in conjunction with a linear (slide)-control device.

It will be appreciated that the shape of the flap members 2 may be of any convenient form depending upon the particular application. Thus, for rotary operation, the flap members 2 are conveniently of semi-circular shape, whereas for linear operation they may be of square or rectangular shape.

In some applications it is necessary to provide a rotary control knob with information indicative of its rotary position, and in Figs. 5 and 6 of the drawings there is shown the control knob of Fig. 1 provided with a cylindrical skirt 15 which is formed integrally with the body 1 and on which is provided numerical information 16.

In Figs. 7 and 8, the control knob of Fig. 1 is shown provided with a radially disposed skirt 17 which is formed integrally with the body 1 and flush with the flaps 2 and on which is provided numerical information 18.

Although in Figs. 5 and 6 and Figs. 7 and 8 the information carrying skirts 15 and 17 are shown as being formed integrally with the body 1 of the control knob, it will be appreciated that they could be separate from the body 1 and attachable to it. It will also be appreciated that the information provided on the skirts 15 and 17 may take any form.

In Fig. 9 of the drawings there is shown an alternative form of construction of the control knob of Fig. 1, in which the body 1 thereof is provided with an internal, diametrically formed bar 19, the top of which is provided with integrally formed 'living hinges' 21 which connect the flaps 2 to the bar 19, thereby dispensing with the spindle 9 and spring 7 of the control knob of Fig. 1. The operation of the control knob of Fig. 9 is identical to that of Fig. 1.

In Figs. 10 to 12 of the accompanying drawings there is shown an alternative form of construction of the control knob of Fig. 1 in which the flaps 2, instead of being pivoted along their straight edges are provided with tangentially disposed outer pivots 23

which, when the flaps 2 are deflected inwards permits access to a diametrically disposed central bar 24 which forms a finger grip for the control knob.

As can be seen from Fig. 11, the flaps 2 are
5 provided with a tangentially disposed flange 25 having a through bore 26 in which locates a pivot pin 27 which slots into grooves 28 in the body 1 of the control knob. In order to maintain the flaps 2 in their normal 'flush' position, they are each provided with an angled
10 leaf-spring element 29 a lower part 30 of which slides into opposed slots 32 in the body 1 of the control knob, and an upper part 31 of which locates under the respective flap 2 to bias it in the 'flush' position but which enables it to be deflected inwards as
15 required to provide access to the finger grip bar 24.

As shown in Fig. 12, the control knob may be mounted on a control spindle 9 and may be located in a hole in a fascia plate 12.

CLAIMS

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1. A control knob characterised by a pair of laterally disposed flap members (2) which are pivoted relative to one another and which are spring biased
5 (7) so that they normally lie substantially in the same plane, the flap members (2) being rotatable against the spring bias to afford a finger grip portion by means of which the control knob may be operated.

2. A control knob as claimed in claim 1, in
10 which the flap members (2) are of generally semi-circular shape, and are pivoted along the straight edges thereof.

3. A control knob as claimed in claim 2, having a generally diametrically disposed pivot (5) for
15 pivoting the flap members (2), and spring means (7) disposed between the flap members (2) for biasing them so that they lie substantially in the same plane.

4. A control knob as claimed in claim 2, having a generally diametrically disposed bar member (19) to
20 which the flap members (2) are pivotally attached by integrally formed hinges (21).

5. A control knob as claimed in claim 3 or claim 4, in which the flap-members (2) are rotated and together afford the finger grip portion of said control
25 knob.

6. A control knob as claimed in claim 1, in which the flap members (2) are of generally semi-circular shape, and are provided with generally tangentially disposed pivots (27) on their outer
5 periphery.

7. A control knob as claimed in claim 6, in which the flap members (2) are rotated to afford access to a centrally disposed member (24) which constitutes the finger grip portion of said control knob.

10 8. A control knob as claimed in any preceding claim, comprising a body member (1) having a generally circular opening in which said flap members (2) are located.

9. A control knob as claimed in claim 8, in
15 which the body member (1) is adapted to cooperate with the spindle (13) of a control device (10), whereby rotation of said spindle (13) may be effected.

10. A control knob as claimed in claim 8 or claim 9, in which the body member (1) is provided around its
20 periphery with an information carrying skirt (15,17).

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FIG. 1.

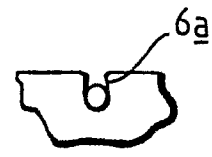
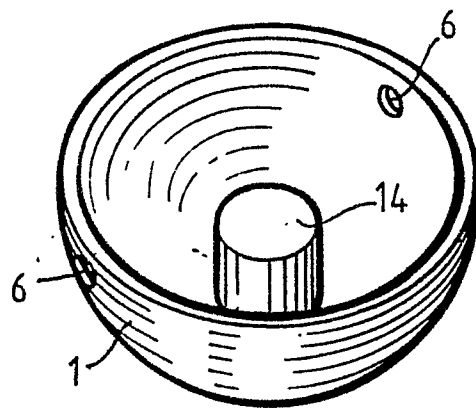
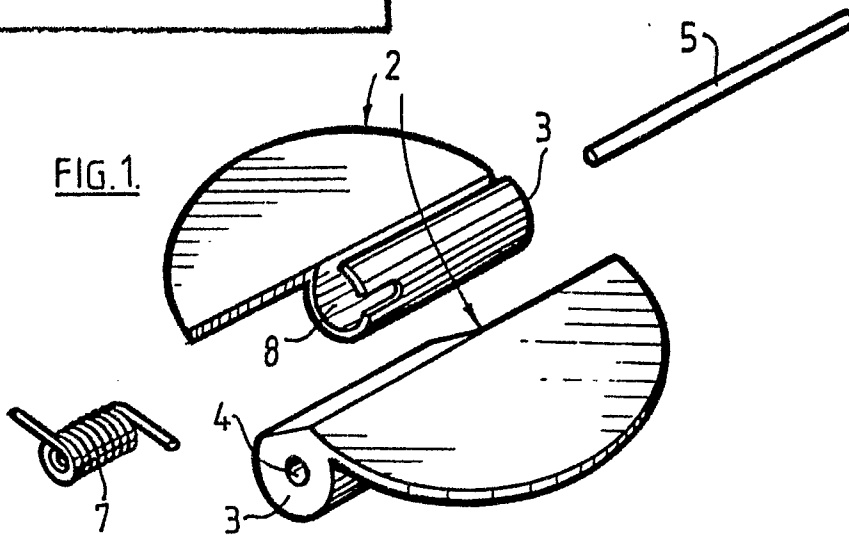


FIG. 1a

FIG. 2.

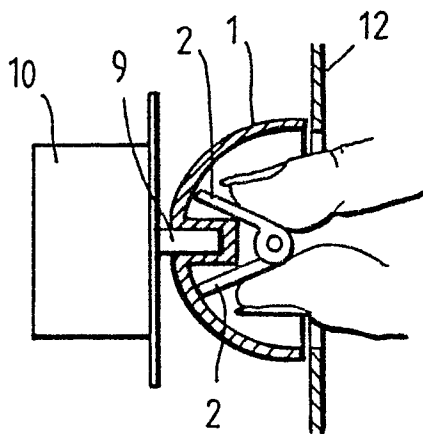
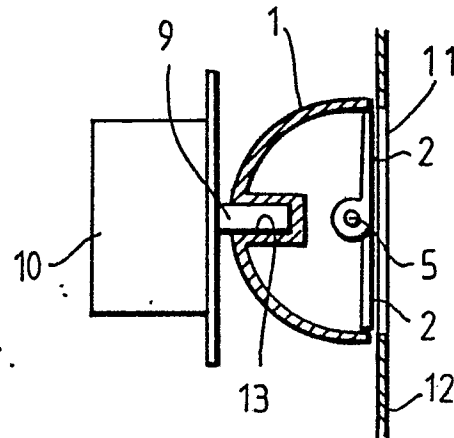


FIG. 3.

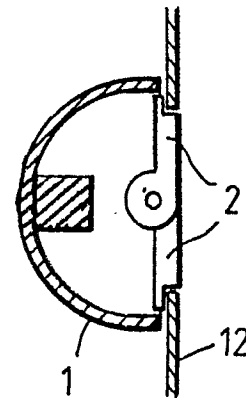


FIG. 4.

FIG. 5.

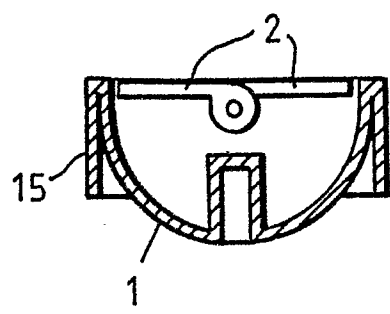


FIG. 6.

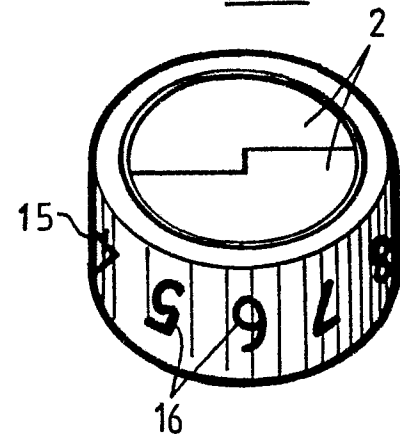


FIG. 7.

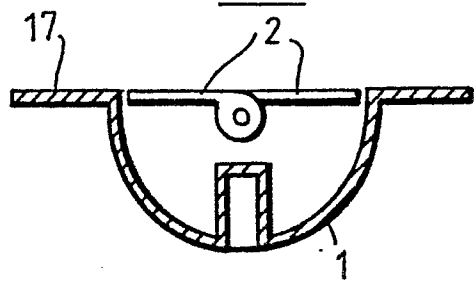


FIG. 8.

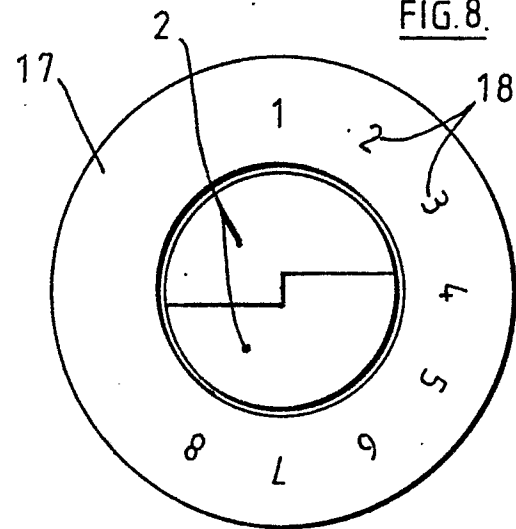
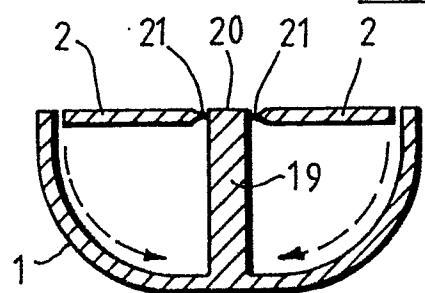


FIG. 9.



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FIG. 10.

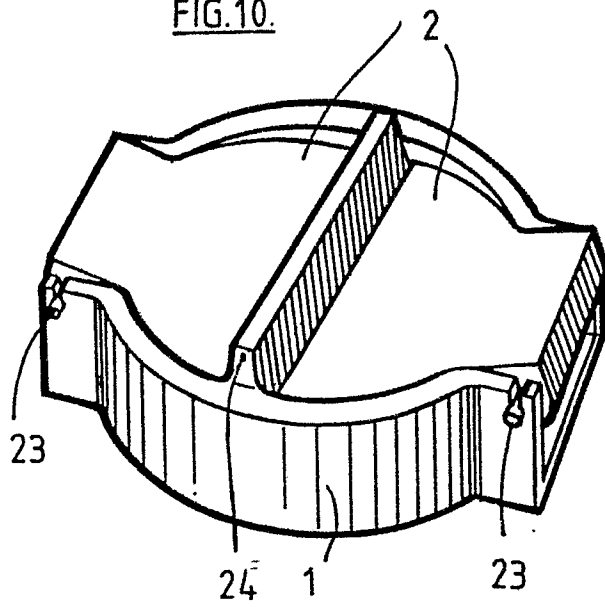


FIG. 11.

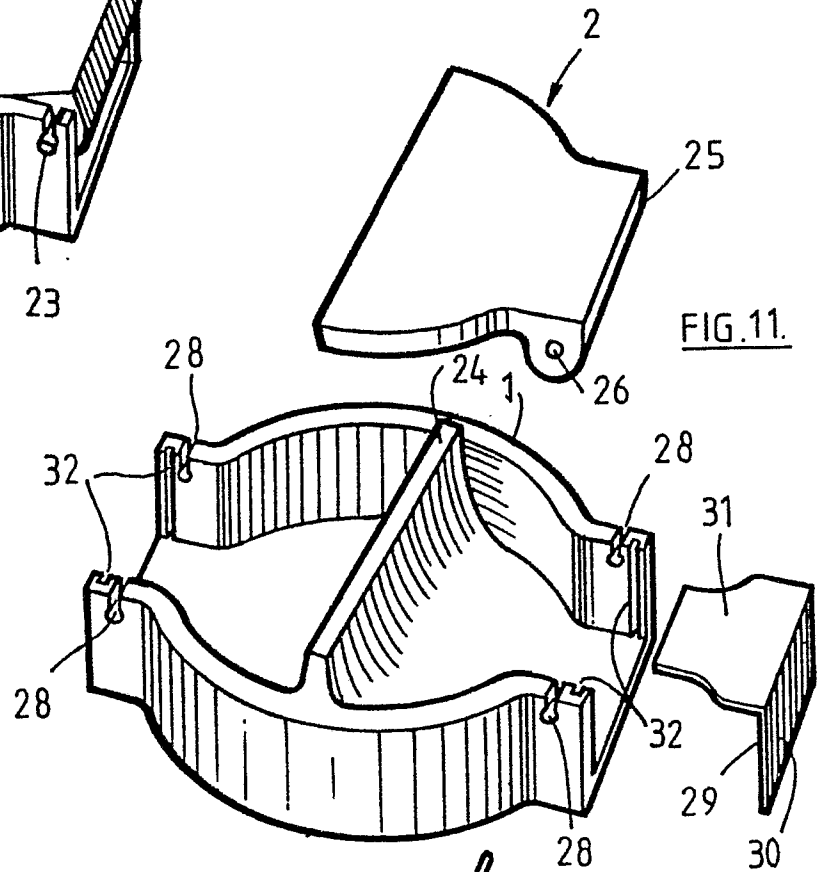
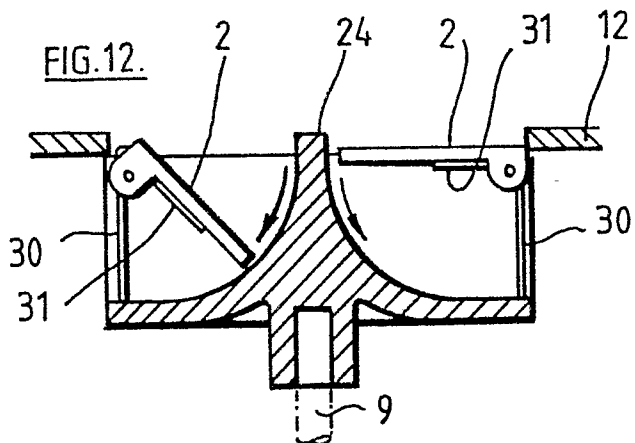


FIG.12.





EP 86 30 9255

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. 4)
A	US-A-3 066 550 (SUNDBERG) * Column 2, lines 22-59; figures 3,4 *	1	G 05 G 1/10 // F 24 C 3/12
A	--- GB-A-2 109 535 (THORN GAS APPLIANCES) * Abstract; figure 2 *	1	
A	--- GB-A-2 157 800 (HOOVER PLC) * Abstract; figure 5 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			G 05 G F 24 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 05-03-1987	Examiner MENDE H.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	