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(54) Control knob for household electrical appliance provided with an easy viewing sign carrying element

(57) A control device for a household electrical appliance allowing easy viewing of signs (13) carried by a sign-carrying element (6) associated with a knob (4) for controlling the appliance operational functions, in which the sign-carrying element (6) is cup-shaped and is mounted rockable on the operating shaft (1A) on which the knob is mounted, said element (6) cooperating with a fixed thrust member (7) acting on the lateral surface (35) of the element (6), so as to maintain this latter in a position such that its longitudinal axis of symmetry (W) cuts the axis of rotation (F) of the knob (4) at an angle (α) which remains substantially constant for any position of the knob.

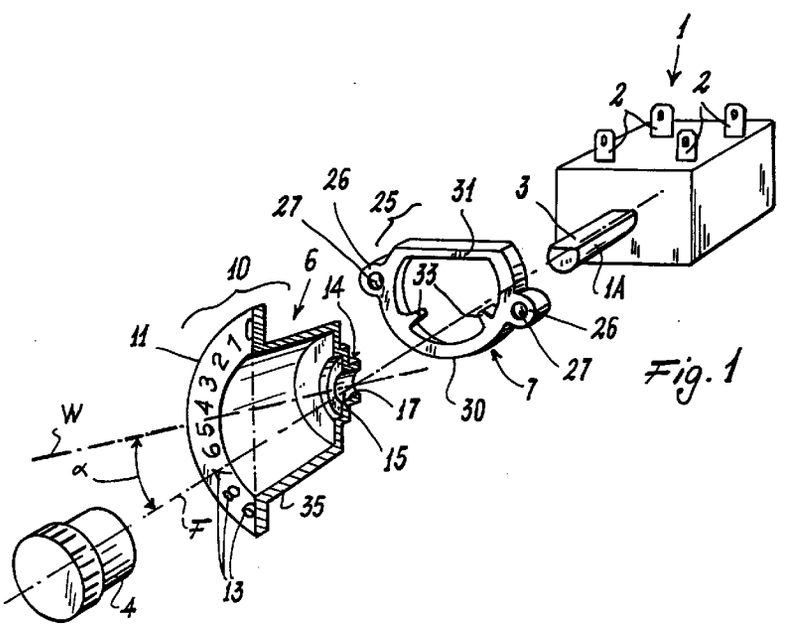

Fig. 1

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Description

This invention relates to a control device for a household electrical appliance in accordance with the introduction to the main claim.

A knob for controlling the operational functions of a household electrical appliance, such as an oven, a free-standing cooker, a washing machine or the like, is known to usually have an associated sign-carrying element, which is torsionally rigid with the knob. The signs carried by this element correspond to different operational stages of the appliance or to different values of the physical quantity (for example temperature) controllable by the corresponding knob. Generally this latter projects (or can be extracted in known manner) from an appliance control panel usually positioned on a vertical face of the appliance. In this control panel there is a window through which the user can see that sign carried by the sign-carrying element which corresponds to the angular position of the knob on the panel.

Various forms of control devices comprising at least one knob with an associated sign-carrying element are known. These known constructions generally have the drawback of not allowing easy viewing of the signs carried by said element while operating the corresponding knob. The result is that the user finds it difficult to control the appliance and often, in order to "read" the signs corresponding to the different angular positions of the knob, has to approach very close to said control panel, with obvious drawbacks if the control panel is not positioned at a height easily reachable with the eyes.

An object of the invention is to provide a control device for a household electrical appliance which allows easy and quick viewing of the signs carried by a sign-carrying element torsionally associated with the operating and/or control knob of said appliance and which obviates the drawbacks of the known art.

A particular object of the invention is to provide a device of the aforesaid type which is of simple construction, high reliability and low manufacturing cost, is of small overall size and allows considerable flexibility in the layout of the appliance control panel.

These and further objects which will be apparent to the expert of the art are attained by a device in accordance with the accompanying claims.

The present invention will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and in which:

Figure 1 is an exploded perspective view of the device according to the invention;

Figure 2 is a perspective view of the device of Figure 1 in its position of use;

Figure 3 is a partial cross-section through a control panel of a household electrical appliance provided with the device according to the invention;

Figures 4 and 5 are respectively a plan view and a section on the line 4-4 of Figure 4, showing that part of the device of Figure 1 acting as the sign-carrying element; and

Figures 6 and 7 are respectively a plan view and a section on the line 7-7 of Figure 6, showing a different part of the device of Figure 1.

With reference to said figures, the control device for a household electrical appliance comprises a switch member 1 to be connected, by connection elements 2 in known manner, to usual appliance operating and control members or directly to usual functional members thereof (such as the electrical resistance elements in an oven), neither of which are shown. The member 1 comprises an operating shaft 1A of partly circular cross-section with a flattened part 3. The shaft carries, torsionally rigid therewith, a knob 4 of known type, for example provided with a heart-shaped cam or of the push-pull type. The shaft 1A also carries, angularly free, a sign-carrying element 6 cooperating with a thrust member 7 arranged to maintain it in an inclined position so as to allow easy viewing of the signs carried by it through a window 8 in an appliance control panel 9. The sign-carrying element 6 is torsionally rigid with the shaft 1A and rotates with the knob 4. In this manner, for every angular position of this latter on the panel 9 there corresponds a particular sign readable through the window 8.

Specifically, the element 6 has a cup-shaped body 10 which in the example is of frusto-conical shape. The body 10 has a first flanged end 11 comprising a flange 12 on which signs 13 (in numerical, alphanumerical or other characters) are carried; this body has a partly closed second end 14 provided with a through hole 15 of frusto-conical section. The hole 15 hence tapers in passing from the inside to the outside of the body 10 and has a perimetral rim 17 with one part 15A of circular arc cross-section and another part 15B rectilinear so as to reproduce the shape of the shaft 1A which passes through this hole. This latter has a greater width than the cross-section of said shaft to allow small movements of the body 10 about the region of contact between the shaft 1A and the rim 17 of the hole 15. This contact region is defined substantially by a line about which the sign-carrying element 6 is able to easily rotate under the action of the thrust member 7 (as described hereinafter).

Finally the flange 12 of the end 11 of the element 6 can be flared and bent outwards from said element, as shown in Figures 3 and 5, to improve the reading of the signs 13 through the window 8 in the control panel 9.

As stated, the element 6 is subjected to a thrust action by the member 7. This latter comprises an annular body 25 provided with outer lateral projections 26 with through holes 27 to act as seats for fixing members (such as screws, not shown), which fix this body for example to the switch member 1 directly or indirectly.

The body 25 has a portion 30 substantially of circular arc shape and a rectilinear portion 31. Projections 33 extend radially from the portion 30 towards the interior of the body 25 to act, together with the portion 31, as a

support for the body 10 of the sign-carrying element 6. The portion 31 and the projections 33 cooperate with the lateral surface 35 of the body 10 (shown dashed in Figure 6) such as to maintain this latter inclined to the shaft 1A. This cooperation occurs in substantially point-like regions of the surface 35. In other words, the sign-carrying element 6, cooperating with the member 7 and rocking freely about the shaft 1A, rotates in practice about the axis of symmetry W which cuts the axis (of rotation) F of said shaft, when the knob is rotated.

During the use of the appliance, the thrust member 7 maintains the sign-carrying element 6 constantly with its axis of symmetry W cutting the shaft 1 so that, whatever the angular position of the knob on the control panel 9, the flange 12 carrying the signs 13 remains substantially in a plane parallel to that in which the window 8 of said panel lies, ie inclined towards the interior of the appliance (see Figure 3). In other words the axis W forms with the axis F an angle α which is substantially constant for the entire utilization of the knob 4, ie in every angular position thereof. In this manner a user standing in front of the appliance is able to read the signs by simply lowering his eyes onto the panel 9, there being hence no further need for the user to bend in order to "read" the sign on the panel 9.

One embodiment of the invention has been described. Other embodiments are however possible (such as those in which the body 10 of the element 6 is cylindrical or in which the member 7 is of circular annular shape and comprises a third radial projection defining, with the projections 33, the vertices of an equilateral triangle inscribed within a circumference). These further embodiments are to be considered as falling within the scope of the present document.

Claims

1. A control device for a household electrical appliance allowing easy viewing of signs (13) carried by a sign-carrying element (6) associated with a knob (4) for controlling the appliance operational functions, said knob (4) and said element (6) being torsionally rigid with a shaft (1A) operating a usual switch member (1) connected to known appliance control and/or functional operating elements, characterised in that the sign-carrying element (6) is cup-shaped and is mounted rockable on said shaft (1A), said element (6) cooperating with a fixed thrust member (7) acting on the lateral surface (35) of the element (6), said cooperation maintaining this latter in a position such that its longitudinal axis of symmetry (W) cuts the axis of rotation (F) of the knob (4) at an angle (α) which remains substantially constant for any position of said knob, this enabling the signs (13) to be maintained facing the user operating the knob (4), for all angular positions of this latter.

2. A device as claimed in claim 1, characterised in that the sign-carrying element (6) comprises an end (14) provided with a through hole (15) of varying cross-section which decreases in passing from the inside to the outside of said element, which is preferably of frusto-conical shape and through which the control shaft (1A) passes, the sign-carrying element resting on this latter along a contact region defined substantially by a line.

3. A device as claimed in claim 2, characterised in that the through hole (15) provided at one end (14) of the sign-carrying element (6) has a width greater than the cross-section through the control shaft (1A).

4. A device as claimed in claim 1, characterised in that the sign-carrying element comprises a body (10) provided, at that end (11) distant from the end (14) comprising the through hole, with a flange (12) supporting the signs (13), said flange (12) being flared and bent outwards of said element (6).

5. A device as claimed in claim 4, characterised in that the body (10) of the sign-carrying element is of frusto-conical shape.

6. A device as claimed in claim 1, characterised in that the thrust member (7) supports the sign-carrying element at points defining the vertices of a triangle inscribable within a circumference.

7. A device as claimed in claim 6, characterised in that the thrust member (7) is annular and comprises radial internal projections (33) cooperating with the outer surface of the sign-carrying element (6).

8. A device as claimed in claim 6, characterised in that the thrust member (7) has an annular shape partly in the form of a circular arc (30) and partly rectilinear (31), from the arcuate part (30) there extending the radial projections (33), the sign-carrying element being supported by these latter and by the rectilinear part (31).

9. A device as claimed in claim 1, characterised in that the thrust member is directly or indirectly rigid with the switch member (1).

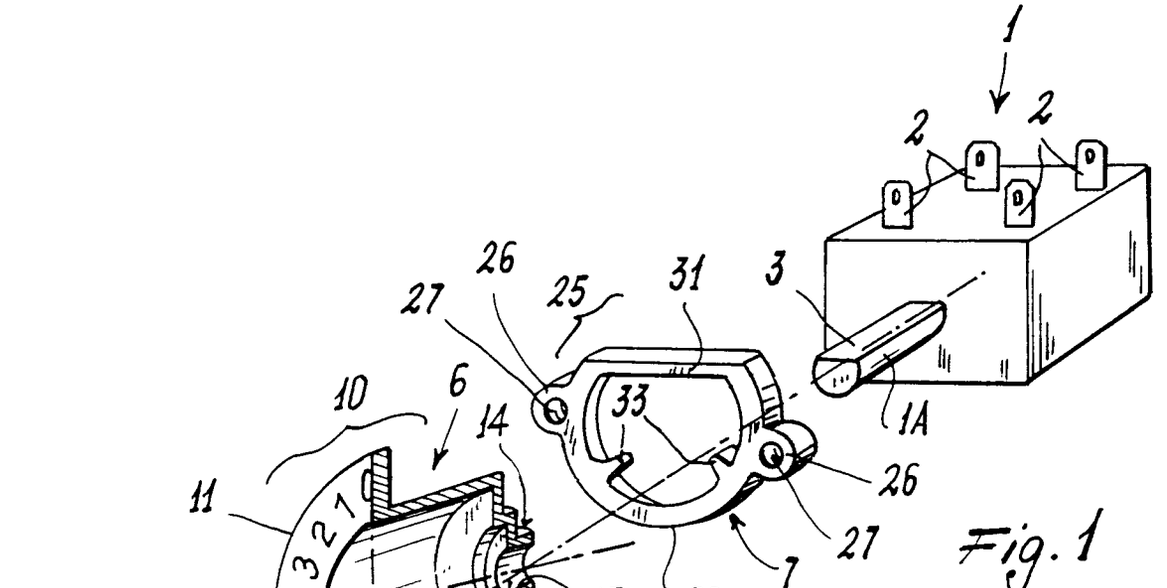
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Fig. 1

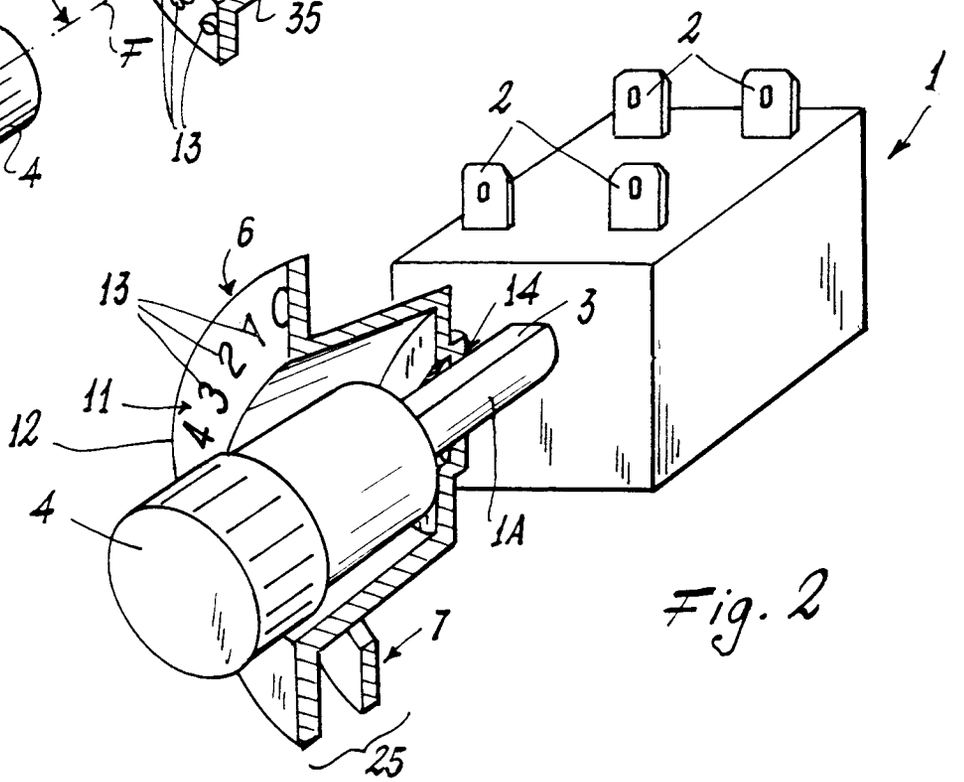
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Fig. 2

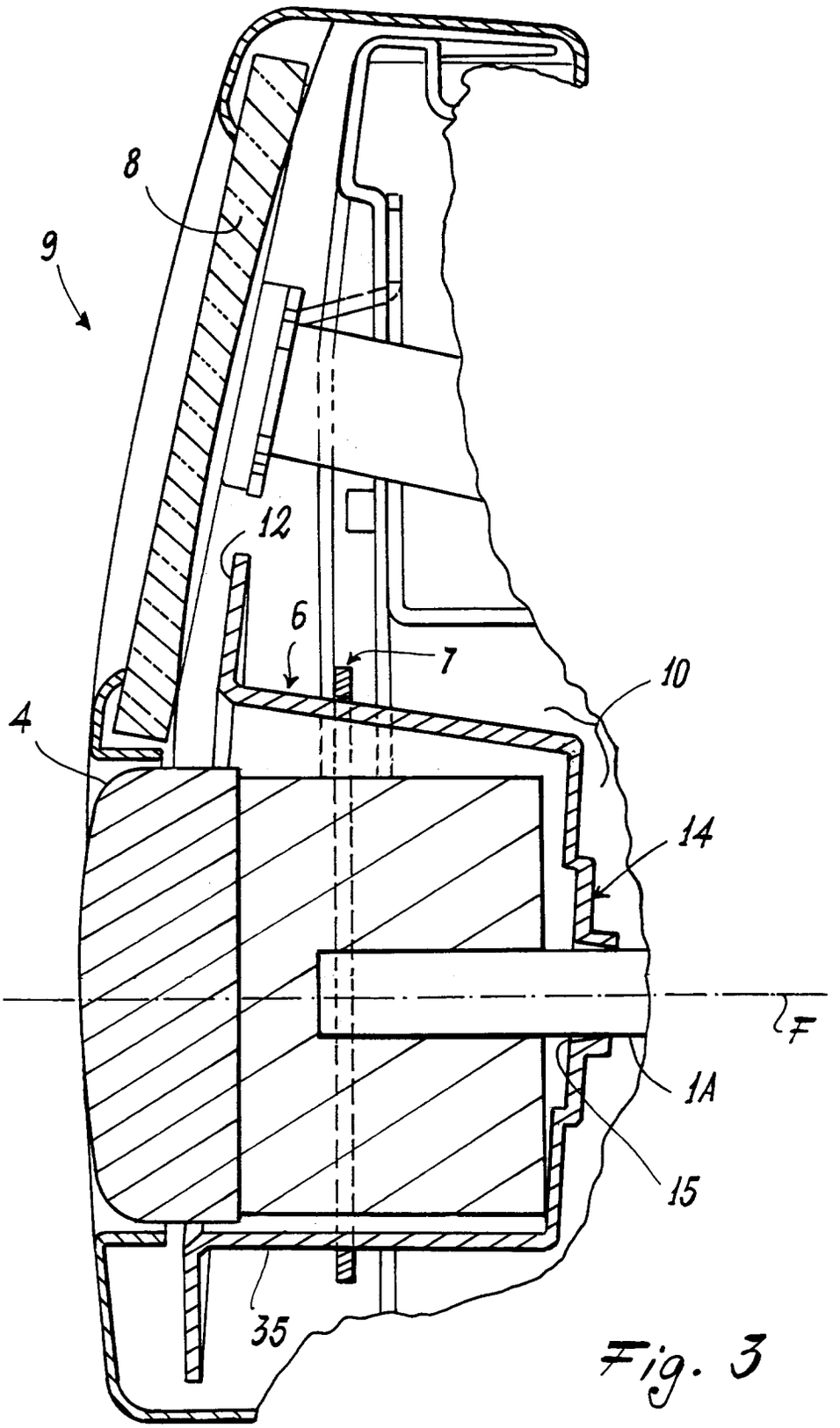

Fig. 3

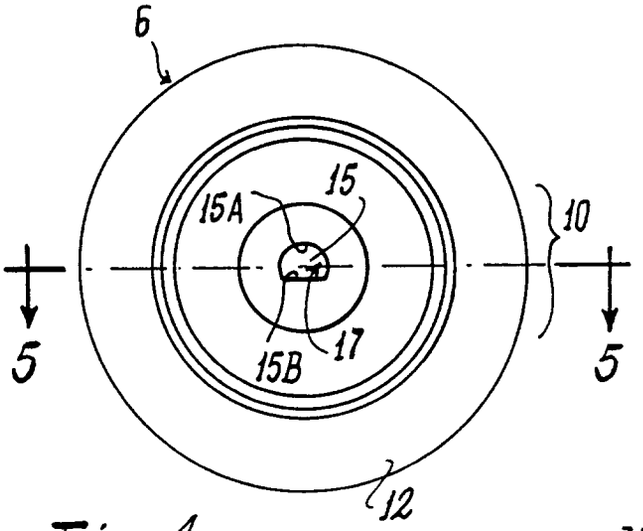

Fig. 4

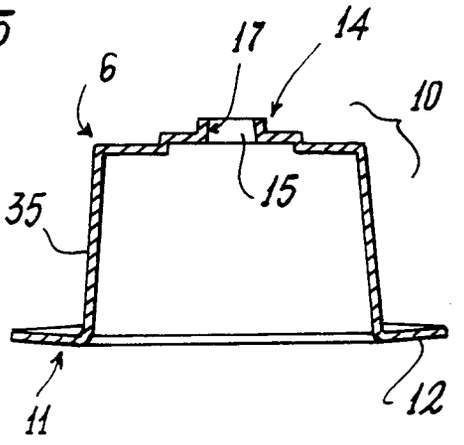

Fig. 5

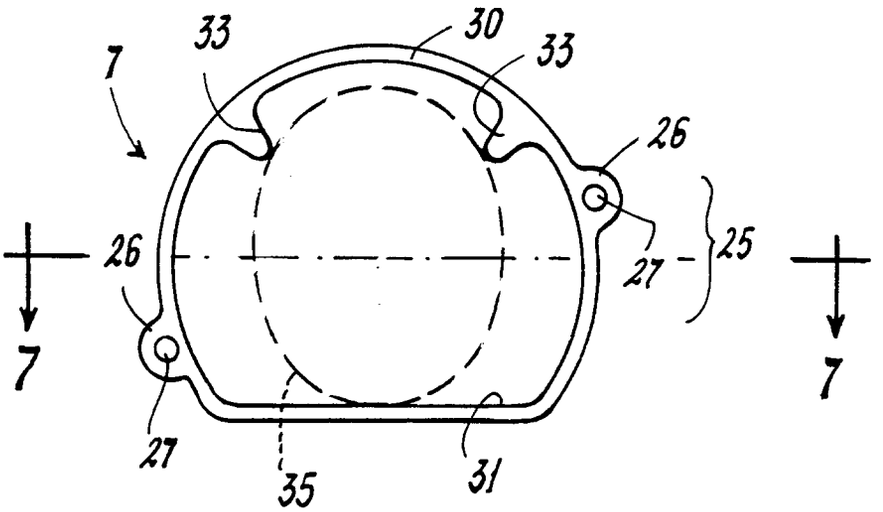

Fig. 6

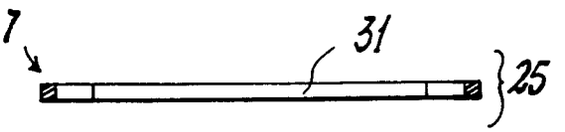

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 3525

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)
A	EP-A-0 179 246 (LICENTIA GMBH) 30 April 1986 * the whole document * ---	1	G05G1/08 G05G1/28
A	US-A-3 446 181 (ROBSON ARTHUR M) 27 May 1969 * the whole document * ---	1	
A	CH-A-414 518 (LICENTIA PATENT-VERWALTUNGS-GMBH) 30 December 1966 * the whole document * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

G05G
H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10 August 1995	De Schepper, H

CATEGORY OF CITED DOCUMENTS

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