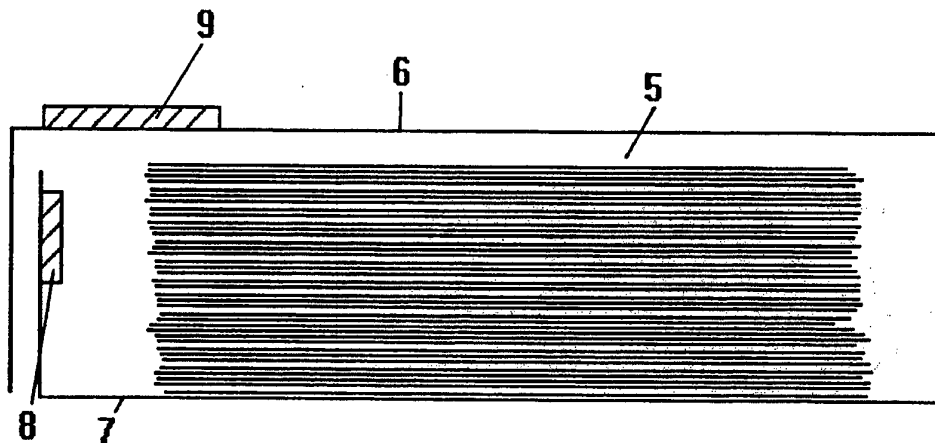




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : G08B 21/00	A1	(11) International Publication Number: WO 94/18651 (43) International Publication Date: 18 August 1994 (18.08.94)
(21) International Application Number: PCT/EP94/00331 (22) International Filing Date: 7 February 1994 (07.02.94) (30) Priority Data: 9302458.6 8 February 1993 (08.02.93) GB (71)(72) Applicant and Inventor: DAWOOD, Andrew, Joseph, Stanley [GB/GB]; 3 Harcourt House, 19A Cavendish Square, London W1M 9AD (GB). (74) Agent: GOLD, T., Z.; Stephenson Harwood, One, St. Paul's Churchyard, London EC4M 8SH (GB).	(81) Designated States: JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>	

(54) Title: CONTAINER HAVING AN AUDIBLE WARNING DEVICE AND DEVICES THEREFOR



(57) Abstract

A container containing or adapted to contain radiation-sensitive media comprises an audible indicator means and a switching means which triggers the audible indicator means when an operator opens the container. It may be used for light-sensitive, and especially photographic, media in order to warn the operator that the box has been opened or is still open.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgystan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

**CONTAINER HAVING AN AUDIBLE WARNING DEVICE
AND DEVICES THEREFOR**

Field of the Invention

5 This invention relates to a container having an audible warning device and particularly to a container for light-sensitive materials.

Background of the Invention

10 A common problem when working with photosensitive media such as photographic or radiographic paper or films or a phosphor material is that if their container is accidentally left open in the dark, the material may become exposed to light and wasted when, accidentally, a light is switched on or a door is
15 opened. Occasionally the container may be opened when the light is on thus fogging the photosensitive contents.

Problem to be Solved by the Invention

20 The problem faced in such circumstances is how to avoid having the container opened or left open in error.

Summary of the Invention

25 According to the present invention, there is provided a container containing or adapted to contain radiation-sensitive media comprising an audible indicator means and a switching means which triggers the audible indicator means when an operator opens the container.

Advantageous Effect of the Invention

30 The alarm will remind the operator that the container is open and needs to be closed.

Brief Description of the Drawings

 In the accompanying drawings:

-2-

Fig 1 is a perspective view of a container according to the present invention,

Fig 2 is a cross-section of another container according to the present invention,

5 Fig 3 is a schematic view of a switching and signal generating device which can be used in the present invention, and

Fig 4 is a schematic diagram of the complete circuitry required for an embodiment of the present
10 invention.

Detailed Description of the Invention

The container must, of course, be light-tight when closed. The preferred container has a body and a lid.

15 The alarm may sound when the container is opened or when it has been open for a period of time, or both.

The present invention also provides a device comprising an audible indicator means, a switching
20 means which is capable of triggering the audible indicator means and a radiation-sensitive means which is capable of modifying the behaviour of the indicator means.

In a preferred embodiment the container comprises
25 thereon or therein radiation sensor means which may modify the behaviour of the audible and/or visible indicator means according to the ambient radiation conditions sensed by said sensor means. Such sensor means may be a radiation-sensitive diode, transistor,
30 resistor or similar electronic component which may, for example, be sensitive to visible light, X-rays, gamma rays, UV or infrared radiation.

In another preferred embodiment the container comprises a second warning means which can emit
35 radiation of a wavelength or level which does not fog

the radiation sensitive media. Examples of such means are an electric light bulb whose light passes through an appropriate filter, and a light-emitting diode which emits radiation of an appropriate wavelength or
5 whose light passes through an appropriate filter. In one embodiment, the radiation emitted comprises radiation, invisible to the human eye, for example infrared or radio frequency.

10 In one embodiment the radiation emitted by the second warning means activates sensing and switching means in the darkroom which is capable of preventing the darkroom lights from being switched on.

15 In a preferred form of the invention, a delay of a few seconds is introduced when the box is opened in a dark environment (sensed by the radiation sensor) and before the alarm is sounded. This allows the material to be removed from the container and the box closed before the alarm sounds. The second warning means, if present, can be activated as soon as the
20 container is sufficiently open.

In an alternative form an audible or visible warning is given immediately the container is opened, after which there is a pause of a few seconds for some media to be removed and then another alarm is
25 triggered to remind the operator to close the container. The first warning is preferably rather short, eg a "bleep", while the second warning is longer or continuous indicating that the container is still open and needs to be shut.

30 In another embodiment the radiation (eg visible light radiation) sensor is provided on the container which will cause a continuous alarm to be triggered when the box is opened sufficiently to trigger the switch in the presence of ambient light which would
35 otherwise fog the radiation sensitive media.

The audible warning device may produce a "bleep", continuous tone or buzz, a musical tune or speech, for example recorded speech or speech from an electronic speech synthesiser.

5 The radiation emitted by the second warning means may remotely activate a sensor in the darkroom which is capable of preventing the darkroom lights from being switched on. Clearly this is wired into the darkroom electrical system and does not form part of
10 the container or device.

 The elements of the warning device may be attached to the lid and body of the container in any suitable location. In one embodiment it is mounted as part of the normal labelling process. The label
15 normally seals the lid to the body of the container hence when the seal is broken the two parts of the switching device are separated and automatically sited in their correct positions. In such an arrangement it is clearly preferred to have components (including the
20 battery) which can be arranged in a flat configuration underneath the label.

 The switching device may use one or two magnets. For example a magnet may be present on the lid and a reed switch mounted in the body of the container.
25 Another arrangement can use two magnets to keep the switch normally open while one of them closes it when moved away. Alternatively a Hall effect device may be used. In still another embodiment the switching device may be a mechanical switch, eg a microswitch. Further
30 useful switching devices are proximity switches, for example of the capacitative or inductive types. Additionally a light-emitting device and a light sensitive device may together be used to detect the opening of the lid by the removal or addition of an

-5-

opaque barrier between them. Other proximity devices can also be used.

The audible warning means may comprise a miniature loudspeaker or, preferably, a piezo-electric transducer driven by a suitable oscillator or other audio frequency signal generating device.

Specific embodiments of the invention will now be described by way of example with reference to the accompanying drawings.

10 Figure 1 illustrates a side-opening film container (1) with lid (2). A magnetic strip (3) is mounted on the lid while the remainder of the device (4) is mounted on the container, for example with double sided adhesive tape or pads. The removal of the
15 magnetic strip (3) from its closed position activates the switching means in (4).

Figure 2 illustrates a top-opening film container (5) comprising a lid (6) and a container body (7). The magnetic strip (8) and the rest of the switching and
20 audible signal means (9) are mounted on the lid and inside the body as shown.

Figure 3 illustrates the electronic componentry and battery arrangement within a device according to one embodiment of the invention. Mounted in casing
25 (10) are batteries (11), a light sensitive device (12), a piezo-electric transducer (13), a reed switch or magnetised reed switching member (14) and a magnet (15) to close the reed switching member. As long as the magnet on the lid (not shown) remains close to the
30 reed (14) the internal magnet's (15) field will be cancelled and the reed switch will remain open. Other components may include an oscillator and a timer.

In use, opening the lid of the container will trigger the reed (14) which then switches on the
35 warning device. As an additional feature the light

sensitive device can be used to determine whether the ambient conditions are light or dark and affect the behaviour of the device accordingly.

Fig 4 is a block diagram showing the essential elements and electrical connections of a device which can be used in the present invention. The device comprises a battery (18), switch (19) operable by opening the lid of the container, an oscillator (16) and piezo-electric transducer (17). The oscillator unit may also contain timing (or delay) circuitry, a light sensitive device and/or other sound generating elements.

The circuitry of fig 3 is designed for two modes of operation:

1. In the presence of low ambient light levels, as detected by a light sensor (12) and optional filter combination sensitive to the same light wavelengths to which the media is sensitive, delay circuitry will be activated by the opening of the lid and consequent closure of the reed switch to allow manipulation of the contents of the container for a predetermined period of time before the alarm is sounded. However a visual indicator such as a light emitting diode may be illuminated with no delay to indicate that the container is open.

2. When significant levels of light are detected the delay is redundant, and the alarm sounds immediately the lid is opened and the reed switch thereby closed.

When the container is empty it may simply be refilled with new film or other media taken from elsewhere. If the condition of the warning device or container deteriorates, either the audible warning device may be removed and the contents of the container transferred to a new alarmed container or,

-7-

the device may be transferred to a new container, respectively. Batteries (11) may be replaceable or the whole assembly may be disposable.

CLAIMS:

1. A container containing or adapted to contain radiation-sensitive media comprising an audible indicator means and a switching means which triggers the audible indicator means when an operator opens the container.
2. A container according to claim 1 which comprises a radiation sensor means thereon or therein whose signal is capable of modifying the behaviour of the indicator means according to the ambient radiation conditions sensed by said sensor means when the container is open.
3. A container as claimed in claim 1 or 2 which comprises a body and a lid.
4. A container as claimed in claim 3 in which a part of the switching device is mounted on the lid with another part mounted in the body of the container.
5. A container according to any of claims 1-4 which further comprises a second warning means which can emit radiation of a wavelength or level which does not fog the radiation sensitive media.
6. A container according to any of claims 1-5 in which the audible warning is provided with delay means such that the alarm is activated a predetermined time interval after the lid has been opened.
7. A container according to any of claims 1-6 in which an audible and/or visible alarm is generated upon opening the lid and, after a predetermined time delay, another visible or audible alarm is generated.
8. A container according to any of claims 1-7 in which the audible warning is provided immediately the lid is opened sufficiently far to trigger the switching means.

9. A container according any of claims 5-8 in which the second warning means is activated while the lid of the container is open.

10. A container according any of claims 5-9 in
5 which the second warning means emits infrared radiation or radiation of radio frequency.

11. A container according any of claims 5-10 in which the radiation emitted by the second warning means activates a sensor in the darkroom which is
10 capable of preventing the darkroom lights from being switched on.

12. A device comprising an audible indicator means, a switching means which is capable of triggering the audible indicator means and a
15 radiation-sensitive means which is capable of modifying the behaviour of the indicator means.

13. A device according to claim 12 having the characteristics defined in any of claims 5-11.

FIG 1

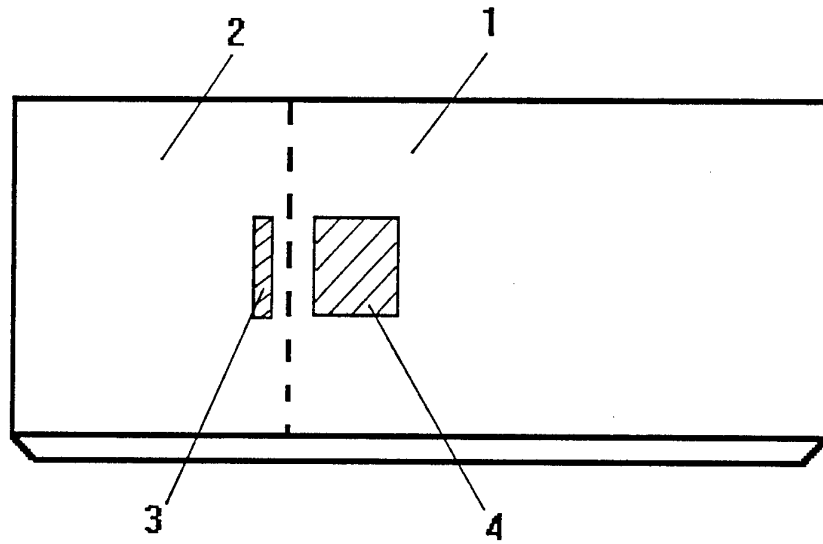


FIG 2

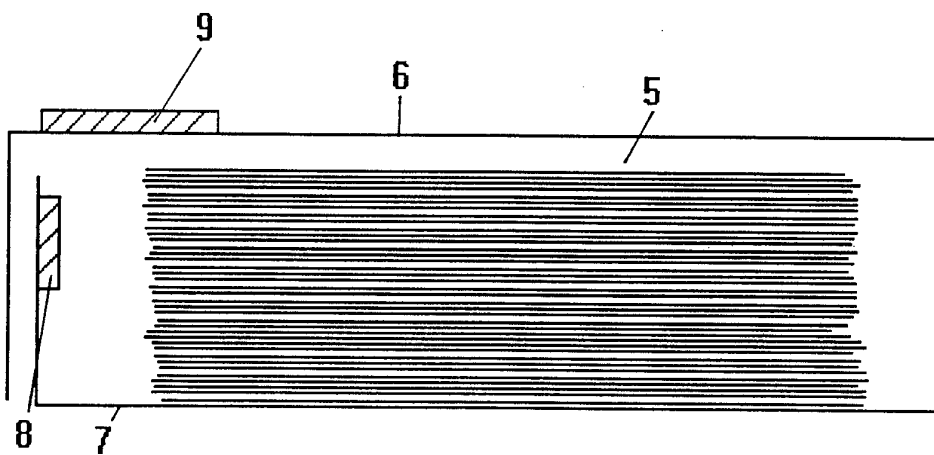


FIG 3

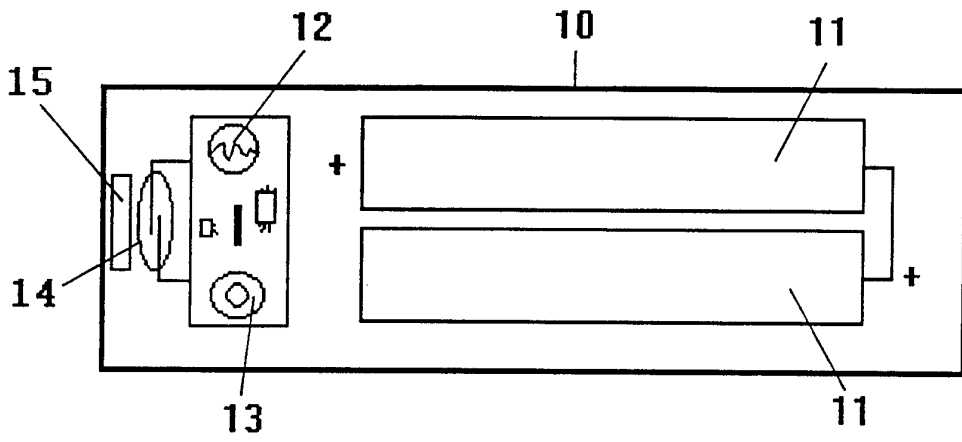
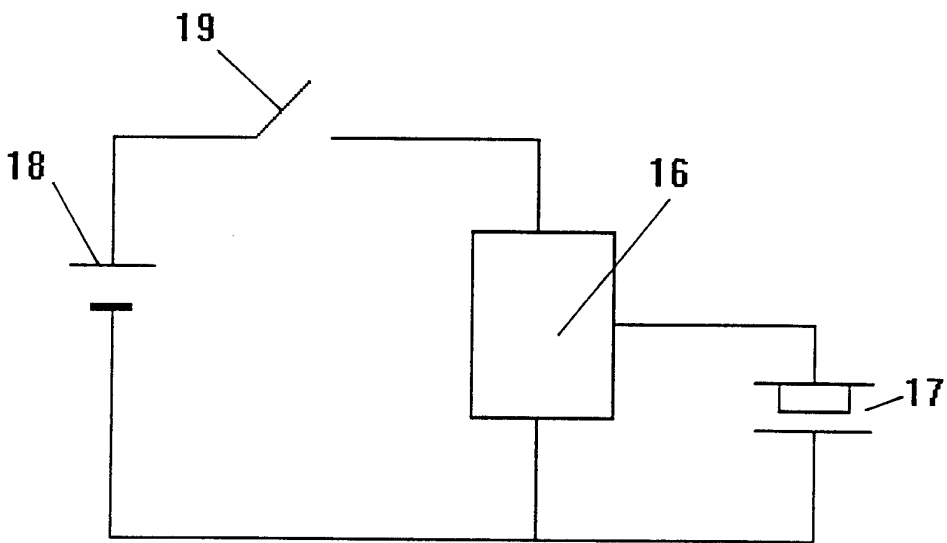


FIG 4



INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 94/00331

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC 5 G08B21/00</p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>														
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC 5 G08B</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used)</p>														
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>US,A,4 750 197 (M. DENEKAMP) 7 June 1988 see column 5, line 30 - column 7, line 23; figures 1,2</td> <td>1-13</td> </tr> <tr> <td>Y</td> <td>US,A,4 151 507 (B. WILLIS) 24 April 1979 see abstract</td> <td>1-13</td> </tr> <tr> <td>A</td> <td>US,A,4 255 745 (J. ROHAN) 10 March 1981 see abstract; figure 1</td> <td>2,12</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	US,A,4 750 197 (M. DENEKAMP) 7 June 1988 see column 5, line 30 - column 7, line 23; figures 1,2	1-13	Y	US,A,4 151 507 (B. WILLIS) 24 April 1979 see abstract	1-13	A	US,A,4 255 745 (J. ROHAN) 10 March 1981 see abstract; figure 1	2,12
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
Y	US,A,4 750 197 (M. DENEKAMP) 7 June 1988 see column 5, line 30 - column 7, line 23; figures 1,2	1-13												
Y	US,A,4 151 507 (B. WILLIS) 24 April 1979 see abstract	1-13												
A	US,A,4 255 745 (J. ROHAN) 10 March 1981 see abstract; figure 1	2,12												
<p><input type="checkbox"/> Further documents are listed in the continuation of box C.</p> <p><input checked="" type="checkbox"/> Patent family members are listed in annex.</p>														
<p>* Special categories of cited documents :</p> <table border="0"> <tr> <td style="vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="vertical-align: top;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>										
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>													
<p>Date of the actual completion of the international search</p> <p>6 May 1994</p>		<p>Date of mailing of the international search report</p> <p>24. 05. 94.</p>												
<p>Name and mailing address of the ISA</p> <p>European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016</p>		<p>Authorized officer</p> <p>Sgura, S</p>												

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 94/00331

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4750197	07-06-88	US-A- 4688244	18-08-87
US-A-4151507	24-04-79	NONE	
US-A-4255745	10-03-81	NONE	