



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/SE95/00098</p> <p>(22) International Filing Date: 2 February 1995 (02.02.95)</p> <p>(30) Priority Data: 9400349-8 3 February 1994 (03.02.94) SE</p> <p>(71) Applicant (for all designated States except US): HIDE-A-LITE AB [SE/SE]; Skepparegatan 6, S-441 39 Alingsås (SE).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): HÄGGLUND, Bengt [SE/SE]; Skepparegatan 6, S-441 39 Alingsås (SE).</p> <p>(74) Agents: GRAUDUMS, Valdis et al.; Albihn West AB, P.O. Box 142, S-401 22 Göteborg (SE).</p>		<p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Swedish).</i></p>
<p>(54) Title: LIGHT FITTING</p>		
<p>(57) Abstract</p>		
<p>Illuminator consisting of an elongate profile rail which forms a common holder for a number of lighting units (2) and has elongate electrical conductors (7) extending along the rail for current supply to the lighting units irrespective of their placement along the rail. The profile rail forms an elongate space which houses the electrical conductors (7) so that they are outwardly shielded but exhibit inwardly exposed elongate contact surfaces. The space (16) of the profile rail also houses a chosen number of lighting units (2) with chosen placement along the rail.</p>		

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## LIGHT FITTING

## TECHNICAL FIELD

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The present invention relates to an illuminator according to the preamble of claim 1.

## BACKGROUND OF THE INVENTION

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It is known from EP-A2-0 129 325 to provide an illuminator consisting of an elongate profile rail with elongate electrical conductors for current supply to lighting units which can be arbitrarily placed along the rail. The lighting units are hereby arranged exterior of the rail in the form of displaceable units which are easily visible from the outside and which are also poorly protected when placed e.g outdoors.

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## SUMMARY OF THE INVENTION

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The object of the present invention is to provide an illuminator which offers a homogeneous overall impression and protects the lighting units from mechanical damage and from weather and wind.

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Said object is achieved by means of an illuminator according to the present invention, the features of which are apparent from claim 1.

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The invention will be described in greater detail in the following by way of two embodiments and with reference to the attached drawings in which

**CORRECTED**

- Fig. 1 shows a partially sectional perspective view of the illuminator according to the invention,  
Fig. 2 shows a perspective view of a lamp unit associated with the illuminator,  
5 Fig. 3 is an end view of the illuminator,  
Fig. 4 is a perspective view of a lamp unit of a second embodiment,  
Fig. 5 is an end view of the lamp unit of the second embodiment, whilst  
10 Fig. 6 shows an end view of the illuminator with assembled light units of the second embodiment.

#### PREFERRED EMBODIMENTS

The illuminator is primarily designed as a U-shaped  
15 elongate profile rail 1 which forms a holder for a plurality of lamp units 2 which can be arbitrarily placed along the holder. The holder is thus made with a uniform profile shape having a space 6 which is delimited by two opposed side walls 3, 4 and a base 5. In the shown example, the  
20 space 6 which is delimited by these walls 3, 4 and 5 is substantially square in cross section, whereby the surfaces are advantageously provided with a light surface with good reflecting properties, e.g. they can be coated with a reflecting coating which is, however, advantageously non-  
25 electrically conducting, at least on its surface which delimits the space. The electrical current supply is ensured by means of two electrical conductors 7, 8 extending in the longitudinal direction of the space, which conductors in the shown example are in the form of wires or  
30 rods and are shown having a circular cross section, though they can e.g. also be square or rectangular. The side walls 3, 4 present corresponding grooves 9, 10 which are advantageously somewhat greater than a semi-circle in shape, i.e. they present an opening towards the space which is smaller  
35 than the diameter of the groove 9, whereby due to certain elasticity in the material of the profile the conductors

can be snapped into position and maintained there without special retaining means. The profile is thus advantageously made from a resistant plastic material, with good shape permanence and good climatic properties, though with certain elasticity. The electrical conductors 7, 8 are thus outwardly well protected and present exposed elongate contact surfaces 30, 31 only facing inwardly into the space 6, which contact surfaces extend along the entire length of the space. The contact surfaces 30, 31, as best shown in Fig. 3, project somewhat from the side walls 3, 4 to ensure contact even against flat surfaces of the lamp units, see below.

The profile rail 1 is further provided with a separate screen cover 11 which may be transparent and which in a suitable manner possesses light-refracting, light-dispersing properties or may be opaque and form a reflector for guiding the light in a chosen direction. The screen cover 11 may be mounted on the one or the other side of the opening 12 to the space 6. The screen cover 11 is removably attached to either longitudinal edge of the opening 12 in the profile rail by means of providing the rail with two elongate lists 13, 14 which, together with snap-in members 15 on the screen cover 11, form a hinge for adjustment of the screen cover to different angular positions. The screen cover 11 can alternatively be fixed on either one of the lists 13, 14 for direction of the light in a desired manner.

The profile rail is further provided with a bracket 16 in the form of an elongate profile for attachment to a base. The bracket is substantially U-shaped with sideways directed flanges 17, each of which can engage in a respective slot 18 after snapping in due to the fact that the bracket 16 is also made from an elastic plastic material. Opposed facing flanges 18, 19 are arranged on the sides of

the profile rail 1 for retaining decorative strips 29, see Fig. 1, which can have coloured surfaces, wood veneer surfaces, etc. Due to tension against the outwardly directed ribs 32, 33 formed by the grooves 9, 10, a convex playless attachment of the decorative strips 29 is obtained.

According to the invention, the illuminator is of such type that the lamp units 2 are entirely housed in the space 6 and protected by the profile rail 1, whilst an arbitrary number of units may be included and may be randomly placed in the rail. Fig. 2 shows a first example of a light unit which is suitable for the illuminator according to the invention. The light unit consists of a lamp body 20 of a glass or plastic which, in a conventional manner, is provided with a not shown light element which extends between two contact sockets 21, 22, one at either end of the lamp body 20, which is thus of strip light type. The contact sockets 21, 22 are each provided with a contact plate 23, 24 with each contact plate presenting two obliquely arranged contact surfaces 25, 26. The contact plates 23, 24 are arranged in such a manner that irrespective of the assembly position in the profile rail, contact is always ensured with each respective conductor 7, 8, as shown in Fig. 3. The lamp unit has a cross sectional shape of the sockets 21, 22 which substantially corresponds to the inner shape of the space in the profile rail and presents cross sectional dimensions such that the lamp unit with sockets can be inserted between the two conductors 7, 8 with a good fit and good retention against facing contact surfaces 30, 31 so that contact with the contact surfaces of the contact plate occurs. In practice, the contact plates 23, 24 of the lamp unit are advantageously somewhat resilient whereby when assembled, the contact plates are tensioned somewhat against the conductors 7, 8. Due to certain elasticity which is also present in the profile

5 rail, a certain clamping of the lamp units themselves take place. Shape-interlocking is thus not necessary, though the contact plates can advantageously have some depression at a level with the conductors 7, 8 so that a distinct positioning is assured.

10 Fig. 4 shows an alternative embodiment of the lamp unit 3, which is hereby provided with a reflector 27 which is not provided in the lamp body 20 but instead is in the form of a separate element exterior of and at a certain distance from the lamp body, as is apparent from the cross section of Fig. 5. The reflector element 27 is substantially U-shaped with somewhat rounded corners and extends between the two sockets 21, 22 and is coated on its inside with a white or metallic reflecting contact surface 28. In this example, the contact plates 23, 24 do not need to be so large since the lamp unit is intended to be placed only with the reflector 27 arranged towards the base 5. Also in this case, the contact plates are arranged in such a manner that the lamp unit can be rotated with the sockets 21, 22 in either direction in rail. By means of a reflector cooperating with a lamp unit 20 and which is positioned exterior of the lamp body, a simple and effective reflection of the light is obtained without need for particular reflecting surfaces to be arranged in the rail. In addition, the temperature is reduced in the surfaces of the profile rail, whereby relatively high power can be used without the risk of overheating or ageing of the material. In addition, the inner surface of the reflector can be coloured in a desired manner, whereby light coloration can be achieved as desired.

35 The invention is not restricted to the embodiments described above and shown in the drawings, but can be varied within the scope of the appended claims. For example, the profile rail can be produced in relatively long lengths and

joined together from standard lengths with the help of suitable connectors, where both the conductors and the profile surfaces can be joined together with the minimum possible stepped surfaces. Individual feeding can also take place at various connection points in the case of long units in order to avoid unnecessary voltage drop.

The finished illuminator is suitably provided with sealed end portions which are not shown. The lamp units can be in the form of light emitting diodes with suitably adapted sockets. Standard lamps, for example so called strip lights, can also be used, whereby the standard lamps are placed in an adapter or lamp holder which presents the necessary shape and dimensions to fit to the cross sectional shape and dimensions of the profile rail.



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Claims

1. Illuminator consisting of an elongate profile rail  
10 (1) which forms a common holder for a number of separate  
lighting units (2) and which has elongate electrical  
conductors (7, 8) extending along the rail for current  
supply to the lighting units irrespective of the placement  
along the rail, whereby the profile rail (1) forms an  
15 elongate space (6) which is arranged to house said elec-  
trical conductors (7, 8) so that they are outwardly  
shielded but exhibit inwardly exposed elongate contact  
surfaces (3), as well as to house a chosen number of  
lighting units too with selected placement along the rail,  
20 whereby said profile rail (1) is substantially U-shaped with  
three wall portions, namely a base portion (5) and two  
opposed side portions (3, 4) c h a r a c t e r i z e d  
i n that at least of said wall portions is provided with  
shape-locking means (9, 10) to maintain said electrical  
25 conductors (7, 8) in position by means of shape-locking.

2. Illuminator according to claim 1, c h a r a -  
c t e r i z e d i n that two opposed wall portions of  
said wall portions (3, 4) are provided with said shape-  
30 locking means (9, 10).

3. Illuminator according to claim 2, c h a r a -  
c t e r i z e d i n that said shape-locking means are in  
the form of grooves (9, 10) for shape engagement with said  
35 electrical conductors (7, 8).

4. Illuminator according to claim 3, characterized in that said electrical conductors (7, 8) are in the form of stiff wire, rod material or tubes with good electrically conducting properties.

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5. Illuminator according to any one of the previous claims, characterized in that each lighting unit (2) is in the form of a lamp unit having a first contact means (23) arranged to lie against only a first contact surface (3) of the contact surfaces of the electrical conductors, and a second contact means (24) arranged to lie against only a second contact surface of the contact surfaces of the electrical conductor (8).

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6. Illuminator according to claim 2, characterized in that each lamp unit (2) is in the form of a strip light with a contact sockets (21, 22) at each end of the lamp unit, in that the contact means (23, 24) of the contact sockets are each disposed towards its respective contact surface of the conductors and in that the lamp units with the contact sockets have a width which substantially corresponds to the distance between two conductors (7, 8), one in each side portion (3, 4).

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7. Illuminator according to any one of the previous claims, characterized in that the profile rail (1) presents an opening (12) on the longitudinal edges (13, 14) of which a screen (11) or a cover can be attached.

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8. Illuminator according to any one of the preceding claims, characterized in that the interior of the profile rail (1) is totally or partially provided with high-grade light and heat-reflecting surfaces.

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9. Illuminator having a glass body (20) and at least one contact socket (21, 22), characterized

i n that a reflector element (27) is attached to the contact socket (21, 22) and extends along a portion of the lamp body (27) at a distance therefrom.

5 10. Illuminator according to claims 6 and 9, c h a r-  
a c t e r i z e d i n that the reflector element 27 is  
attached to at least the one contact socket (21, 22) and  
extends with a concave reflector surface between the two  
contact sockets.

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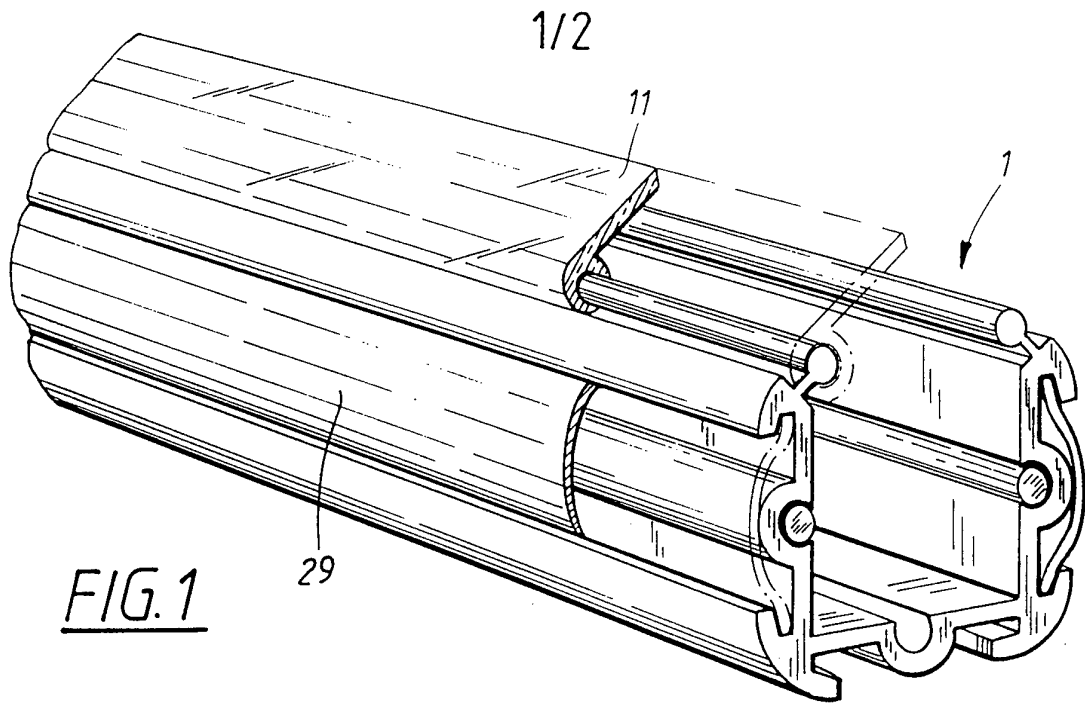


FIG. 1

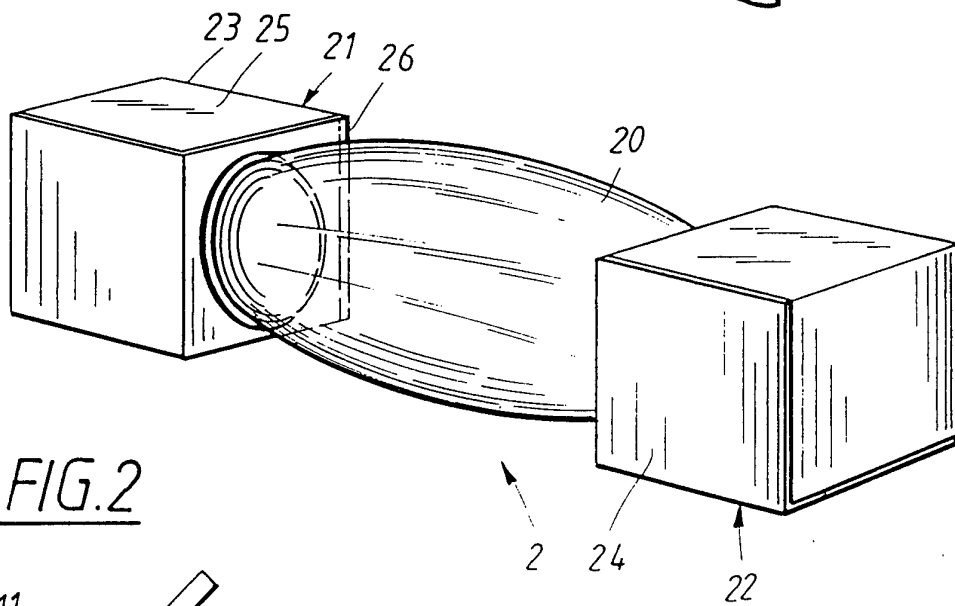


FIG. 2

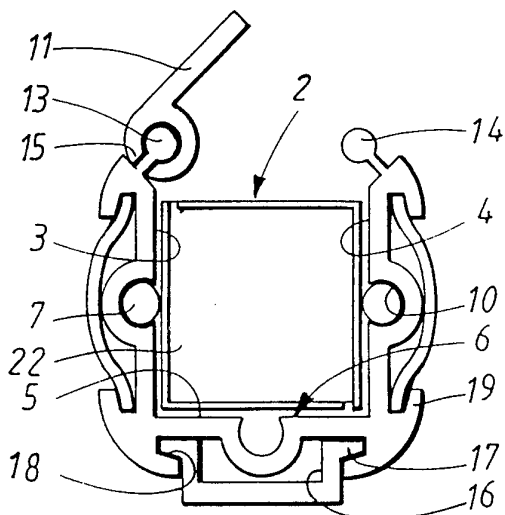


FIG. 3

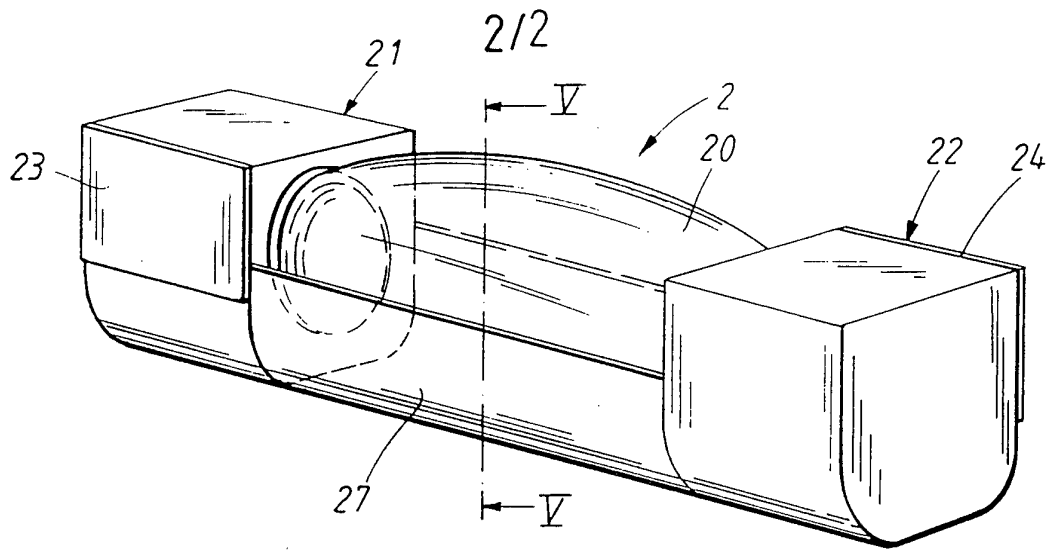


FIG. 4

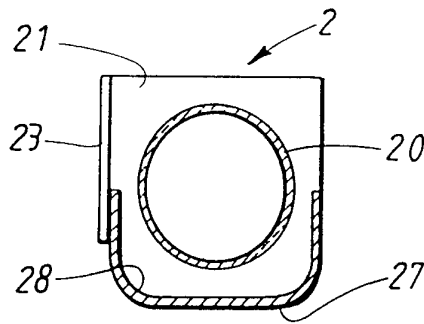


FIG. 5

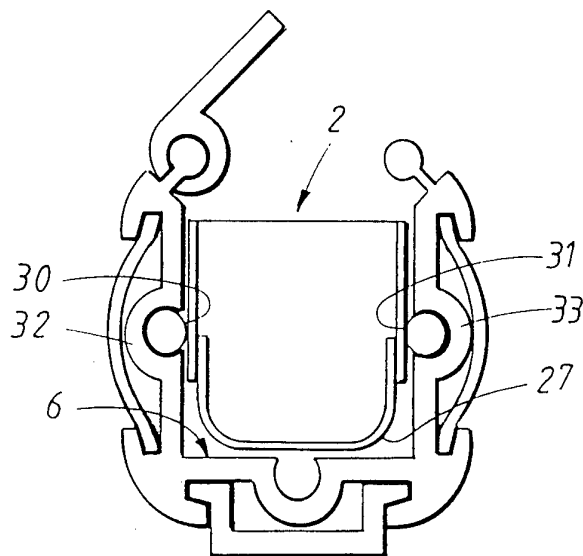


FIG. 6

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 95/00098

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC6: F21V 21/34 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
IPC6: F21V		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
SE,DK,FI,NO classes as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>WPI, CLAIMS</b>		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0460276 A1 (LIN, TAK-HUEI), 11 December 1991 (11.12.91), column 1, line 41 - column 2, line 17, figures 1,3,5,6, abstract --	1-8
X	SE 370780 B (ANETA BELYSNING AB), 28 October 1974 (28.10.74), whole document --	1-8
X	SE 393178 B (ANETA BELYSNING AB), 2 May 1977 (02.05.77), page 1, line 1 - line 18; page 3, line 6 - line 11, figures 1,2 --	1-8
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "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 "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 "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 "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
4 July 1995		06 -07- 1995
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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4861273 A (JAMES A. WENMAN ET AL), 29 August 1989 (29.08.89), column 3, line 49 - line 65, figure 2  --	1-8
A	US 3081442 A (E.T. PLATZ), 12 March 1963 (12.03.63), column 2, line 57 - line 72, figures 1, 3  --	1-8
A	WO 9108600 A1 (ARDEE LIGHTING), 13 June 1991 (13.06.91), figure 1, abstract  -- -----	1-8

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE95/00098

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1-8 define one invention relating to a lampholder. The lampholder consists of an elongated holder containing moveable lamps as well as conductors supplying the lamps with electric current. The invention is characterized by a clamp-tie keeping conductors in place.

Claims 9-10 define a second invention relating to a lamp, including a reflector attached to the lamp-socket.

These inventions may work well together, but there is no technical relationship among them involving one or more of the same or corresponding technical features contributing to the state of the art. Thus, these inventions are not so linked as to form a single general inventive concept (rule 13.1).

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-8

Remark on Protest


The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.



## INTERNATIONAL SEARCH REPORT

International application No.

29/05/95

PCT/SE 95/00098

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A1- 0460276	11/12/91	US-A- 4999755 US-A- 5113329	12/03/91 12/05/92
SE-B- 370780	28/10/74	NONE	
SE-B- 393178	02/05/77	NONE	
US-A- 4861273	29/08/89	NONE	
US-A- 3081442	12/03/63	NONE	
WO-A1- 9108600	13/06/91	AU-A- 7062791 GB-A,B- 2238671	26/06/91 05/06/91