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(71) Applicant(s):  
**The Aluminium Lighting Company Limited**  
 (Incorporated in the United Kingdom)  
 Unit 8, Croeserw Industrial Estate, Cymmer,  
 PORT TALBOT, SA13 3PB, United Kingdom

(56) Documents Cited:  
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 US 6880279 B2 US 6064005 A  
 US 5847318 A US 20090095500 A1

(72) Inventor(s):  
 Craig Thomas williams  
 Wayne Anthony Lovatt

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(74) Agent and/or Address for Service:  
 Agile IP LLP  
 Airport House, Purley Way, Croydon, Surrey,  
 CR0 0XZ, United Kingdom

(54) Title of the Invention: **Street lighting columns**  
 Abstract Title: **Street lighting columns**

(57) An aluminium lighting column includes an access opening and an external strengthening clamp which is dimensioned to extend around and encircle the column with its internal face in close contact with the opposed face of the column and includes a side opening 14 which is dimensioned and positioned to at least partially overlie the access opening of the column. The clamp comprises a plurality of separable arcuate segments 1a, 1b and means for assembling these segments into a circular array for location about the outer face of the column.

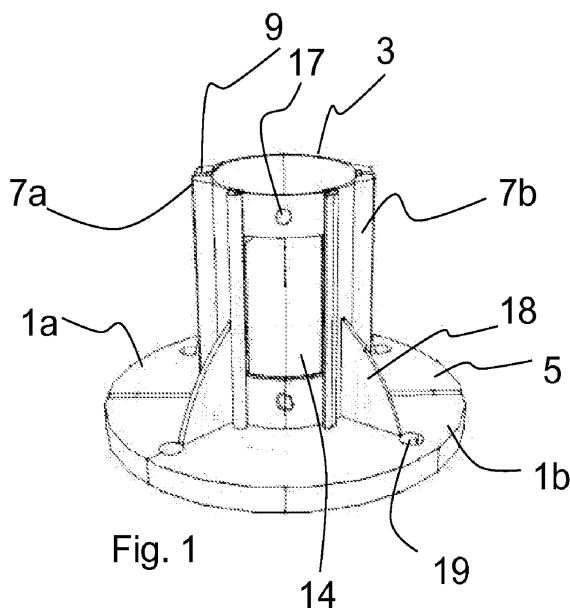
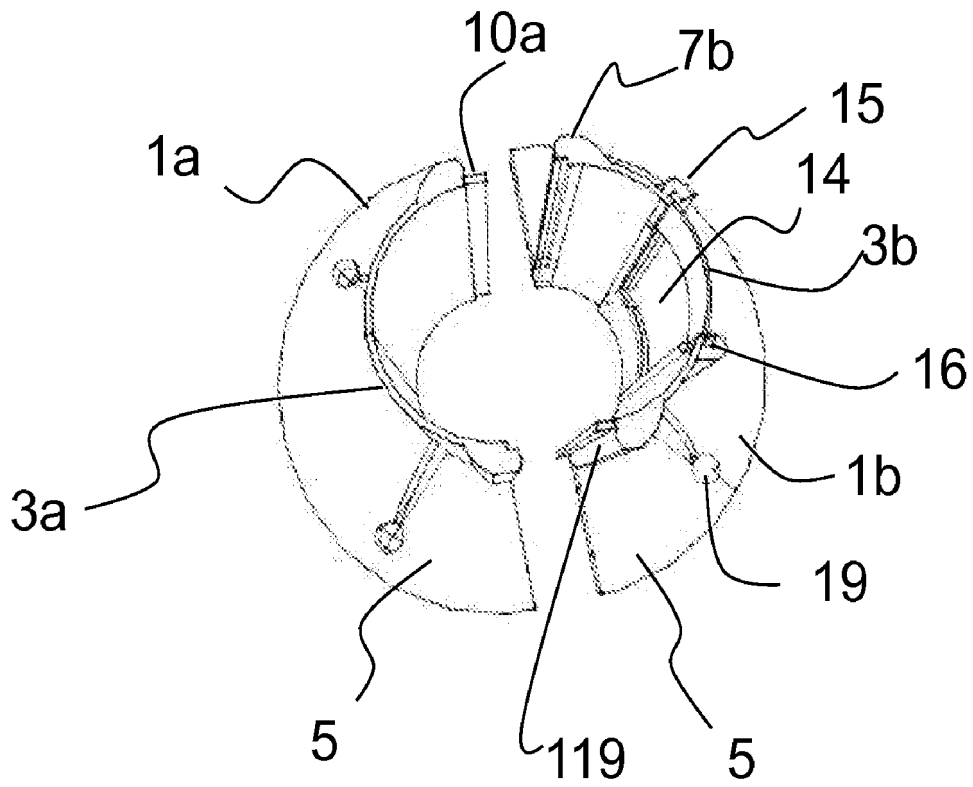
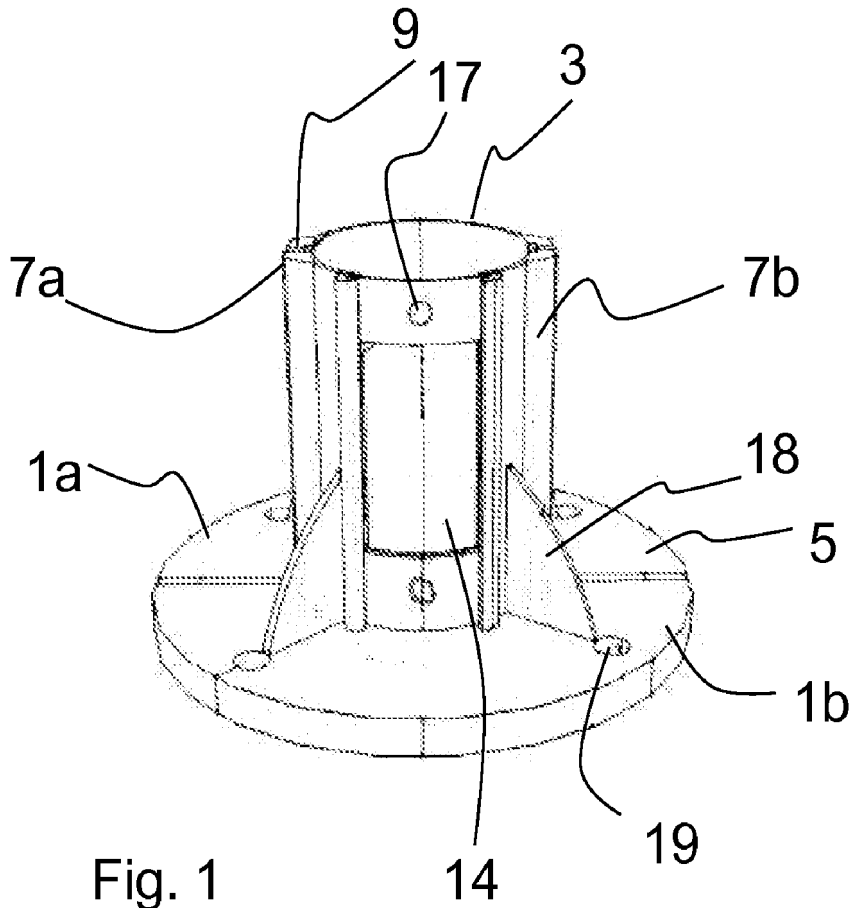


Fig. 1

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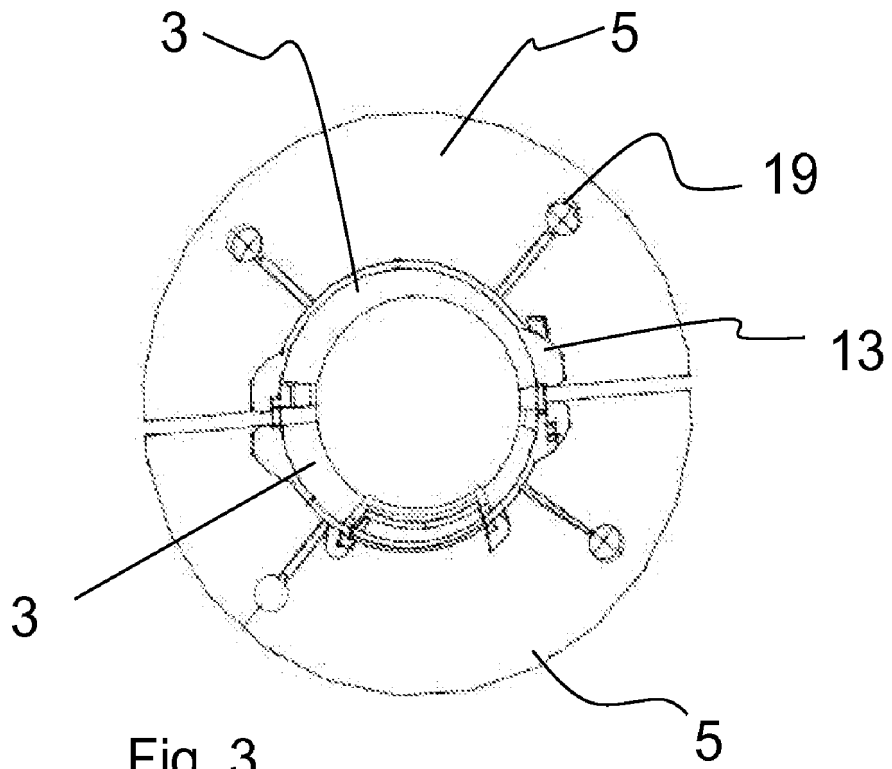


Fig. 3

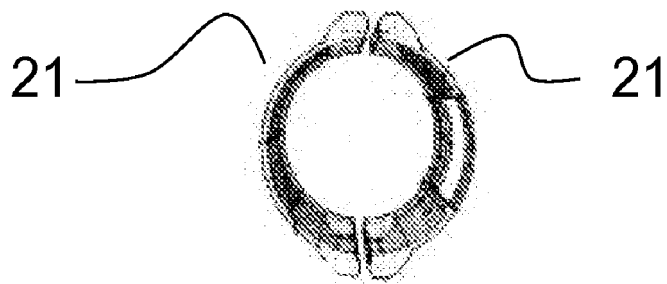


Fig. 4

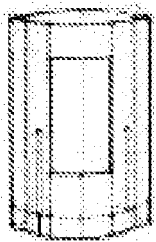


Fig. 5

**STREET LIGHTING COLUMNS**

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This invention relates to an external clamp for strengthening an aluminium lighting column at a location where an opening is formed in the column for access to the column interior.

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Conventionally an aluminium street lighting column comprises an elongate aluminium tube which includes one or more openings to provide access to the column interior for maintenance or repairs to cabling and other parts located within the column interior. Any such opening is necessarily of sufficient width

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and height to provide good access to the column interior and is conventionally closed by a hinged or removable door. The presence of any such access opening produces areas of weakness within the column which have in the past been compensated for by, for example, providing an internal sleeve which is forced under pressure during a manufacturing process into the interior of the column in the region of the or each access opening and which includes an opening which coincides with the respective access opening of the column.

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The provision of these internal sleeves is expensive and at times difficult to position accurately within the column. Their presence also has effect of producing internal space within a column.

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Alternative methods have included welding a section of a tube over the or each area of weakness, and welding a section into the door opening to close the same. Although each of these known procedures leads to an increase in column wall thickness, the welding process will itself weaken the

aluminium of the column in the heat affected zone by some 40%. The welding process would also make the structure in the heat affected zone prone to failure through fatigue.

5 A lighting column is typically supported in an upright position by embedding its lower end in the ground or by locating the column lower end in an upstanding tubular section of a ground embedded base plate. In the past such an upstanding tubular section extends upwardly towards but not  
10 over any access opening of the lighting column.

According to the present invention in one aspect there is provided a lighting column which includes an access opening and an external clamp which is dimensioned to extend around  
15 and encircle the column with its internal face in close contact with the opposed face of the column and includes a side opening which is dimensioned and positioned to at least partially overlie the access opening of the column, the clamp comprising a plurality of separable arcuate segments and means  
20 for assembling these segments into a circular array for location about the outer face of the column.

In a preferred embodiment the clamp comprises two generally semi-circular segments each of which includes an upstanding  
25 rib alongside each of its two upstanding side edges, each rib including means for enabling the two segments to be connected together about the outer surface of the column.

Each clamp segment may include a plate which projects at right  
30 angles from its lower edge and which on assembly of the clamp defines with the plate(s) of the other segment(s) an annular base plate for the clamp.

At least one clamp segment may include an upstanding rib or indent which co-operates with a complimentary indent or rib formed in the external surface of the column to assist torsional forces imposed on the column during use.

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The side opening of the clamp may be covered by a vertically slideable door.

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Security bolts may be provided to secure the assembled clamp to the column.

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Each clamp segment may include one or more gussets positioned between the upstanding wall and base plate sections of the segment.

The invention will now be described by way of example only with references accompanying diagrammatic drawings in which:

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Figure 1 is an isometric view of a first embodiment of a clamp in accordance with the invention;

Figure 2 is a partially exploded isometric view of the clamp illustrated in Figure 1;

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Figure 3 is a plan view from above of the clamp illustrated in Figures 1 and 2; and

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Figures 4 and 5 are respectively a side view and a plan view from above of an alternative clamp in accordance with the invention.

The clamp illustrated in Figures 1 to 3 of the drawings comprises two separable semi-circular segments (1) each of which includes an upstanding collar section (3) and a base

plate section (5) which projects generally radially from the lower edge of the respective column section. As will be seen from Figures 1 to 3, two segments together define an annular clamp for the positions about the outer surface of a lighting column (not shown).

Each semi-circular clamp segment (1) includes an upstanding rib (7a/7b) extending alongside each of its side edges (9). Each rib 7a is formed with a lip (9a) which locates within a recess (11a) formed in the adjoining rib (7b). Threaded through holes (13) extend through the ribs (7a, 7b) to receive bolts to connect the clamp segments (1) tightly together.

One collar section (3) of the two clamp segments (1) includes an access opening (14) which in use at least partially overlies an access opening of a lighting column about which the clamp is to be fitted.

Gussets (15) extend between the column and base section of each clamp segment to add strength to the clamp when assembled to prevent bending of the base plate sections relative to the column sections.

Slotted holes 17 are provided in the base plate (5) to enable the assembled clamp to be connected to upstanding bolts protruding from the upper surface of ground embedded supporting structure (not shown).

The clamp illustrated in Figures 4 and 5 comprises two separable collar sections (19) similar to the collar sections (3) of Figures 1 to 3, but no base plate section. This clamp is primarily for use with ground embedded lifting columns.

It would be appreciated that the foregoing is merely exemplary of external clamps for strengthening lightened columns and that modifications can readily be made thereto without departing from the true scope of the invention as set out in  
5 the appended claims.

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CLAIMS

1. An external clamp for an aluminium lighting column which  
5 includes an access opening and which is dimensioned to  
extend around and encircle the column with its internal  
face in close contact with the opposed face of the column  
and which includes a side opening which is dimensioned  
10 and positioned to at least partially overlie the access  
opening of the column, the clamp comprising a plurality  
of separable arcuate aluminium segments and means for  
assembling these segments into a circular array for  
location about the outer face of the column.
- 15 2. An external clamp as claimed in claim 1 which comprises  
two generally semi-circular segments each of which  
includes an upstanding rib alongside each of its two  
upstanding side edges, each rib including means for  
enabling the two segments to be connected together about  
20 the outer surface of the column.
3. An external clamp as claimed in claim 1 or claim 2  
wherein each clamp segment includes a plate which  
projects generally radially from its lower edge and which  
25 on assembly of the clamp defines with the plate(s) of the  
other segment(s) an annular base plate for the clamp.
4. An external clamp as claimed in any one of claims 1 to 3  
30 wherein at least one clamp segment includes an upstanding  
rib or indent which co-operates with a complimentary  
indent or rib formed in the external surface of the  
column to resist torsional forces imposed on the column  
during use.

5. An external clamp as claimed in any one of the preceding claims wherein the side opening of the assembled clamp is covered by a vertically slidable door.
- 5 6. An external clamp as claimed in claim 5 wherein security bolts are provided to secure the assembled clamp to the column.
- 10 7. An external clamp as claimed in any one of the preceding claims wherein each clamp segment includes one or more gussets positioned between the upstanding wall and base plate sections of the segment.
- 15 8. An aluminium lighting column which includes an access opening and an external aluminium clamp which is dimensioned to extend around and encircle the column with its internal face in close contact with the opposed face of the column and includes a side opening which is dimensioned and positioned to at least partially overlie  
20 the access opening of the column, the clamp comprising a plurality of separable arcuate segments and means for assembling these segments into a circular array for location about the outer face of the column.
- 25 9. A lighting column as claimed in claim 8 wherein the clamp comprises two generally semi-circular segments each of which includes an upstanding rib alongside each of its two upstanding side edges, each rib including means for enabling the two segments to be connected together about  
30 the outer surface of the column.
10. A lighting column as claimed in claim 8 or claim 9 wherein each clamp segment includes a plate which projects at right angles from its lower edge and which on

assembly of the clamp defines with the plate(s) of the other segment(s) an annular base plate for the clamp.

11. A lighting column as claimed in any one of claims 8 to 10  
5 wherein at least one clamp segment includes an upstanding rib or indent which co-operates with a complimentary indent or rib formed in the external surface of the column to resist torsional forces imposed on the column during use.

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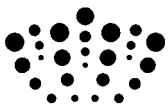
12. A lighting column as claimed in any one of claims 8 to 11  
wherein the side opening of the clamp is covered by a vertically slidable door.

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**Application No:** GB1220376.6  
**Claims searched:** 1-12

**Examiner:** Vaughan Phillips  
**Date of search:** 18 January 2013

**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	EP 1512811 A2 (CONCHIGLIA) see abstract
A	-	US 2009/0095500 A1 (YGNELZI) see abstract
A	-	US 7884283 B1 (LIGHTING SECURITY) see abstract
A	-	US 6880279 B2 (HANYANG) see abstract
A	-	US 6064005 A (RAASCH) see abstract
A	-	US 5847318 A (CHAPMAN) see abstract & Fig. 1

**Categories:**

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

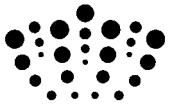
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Worldwide search of patent documents classified in the following areas of the IPC

F21S; F21V
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The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC
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**International Classification:**

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
F21S	0008/08	01/01/2006
F21V	0021/088	01/01/2006