

AUSTRALIA  
Patents Act 1990

**PATENT REQUEST: STANDARD PATENT**

We, being the person identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow.

[71] **Applicant:**  
SOLAR PERGOLA PTY LTD

**Address:**  
A. C. N. 007 886 848 A South Australian Company of C/- P J Hood & Co.,  
110 Hutt Street, Adelaide, State of South Australia, Australia

[70] **Nominated Person:**  
SOLAR PERGOLA PTY LTD

**Address:**  
A. C. N. 007 886 848 A South Australian Company of C/- P J Hood & Co.,  
110 Hutt Street, Adelaide, State of South Australia, Australia

[54] **Invention Title:**  
BUILDING ARRANGEMENT

[72] **Names and addresses of actual Inventors:**  
ARTHUR MURRAY ROSSER of 2/1 Watershipdowns Close, Terrigal,  
State of New South Wales, ROGER WAYNE CHASE of 16 Wilcovie Street,  
Eden Hills, State of South Australia, DARYL JOHN LAMBERT of  
13 Toolaby Avenue, Beaumont, State of South Australia and  
PETER ANTONIOU of 5 Woodbrook Avenue, Windsor Gardens, State of  
South Australia, All of Australia

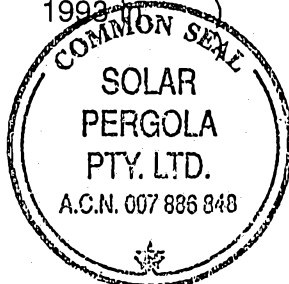
[74] Address for service in Australia  
**COLLISON & CO.**, 117 King William Street, Adelaide, S.A. 5000  
Attorney Code CO

**ASSOCIATED PROVISIONAL APPLICATION DETAILS**

[60] Application Number PL1/436 and Dated 19th March 1992

THE COMMON SEAL OF  
SOLAR PERGOLA PTY LTD  
was hereunto affixed this 15th  
day of March 1992  
in the presence of:

B. Lambert  
Director  
D. Lambert  
Secretary



41630 HKS:PFB

P/00/008  
Section 29(1)  
Regulation 3.1(2)

AUSTRALIA  
Patents Act 1990

**NOTICE OF ENTITLEMENT**

We, SOLAR PERGOLA PTY LTD A. C. N. 007 886 848  
of C/- P J Hood & Co., 110 Hutt Street, Adelaide, State of South Australia,  
Australia

being the Applicant in respect of the Application filed herewith state the  
following:-

The person nominated for the grant of the patent;

has, for the following reasons, gained entitlement from the actual  
Inventors:

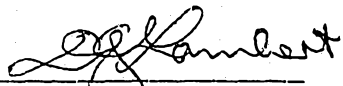
The Nominated Person is entitled by Deed of  
Assignment between the Inventors and the Nominated  
Person dated *March 15, 1993*

~~The Inventors devised the invention in the course of~~  
normal employment with the Nominated Person who  
are entitled to the granted patent under the provisions  
of ~~Sub-section 15(1)(c) of the Patents Act 1990.~~

The person nominated for the grant of the patent is;

the applicant of the provisional application listed on the patent  
request form.

The basic application listed on the patent request form referred to is the first  
application made in a Convention country in respect of the invention.

  
Signature  
Name: DARYL J. LAMBERT  
Position: DIRECTOR

*15/3/93*  
Date



AU9335243

**(12) PATENT ABRIDGMENT (11) Document No. AU-B-35243/93**  
**(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 652510**

- (54) Title  
**BUILDING ARRANGEMENT**
- International Patent Classification(s)  
(51)<sup>5</sup> **E04B 007/16**
- (21) Application No. : **35243/93** (22) Application Date : **17.03.93**
- (30) Priority Data
- |               |                 |                     |
|---------------|-----------------|---------------------|
| (31) Number   | (32) Date       | (33) Country        |
| <b>PL1436</b> | <b>19.03.92</b> | <b>AU AUSTRALIA</b> |
- (43) Publication Date : **14.10.93**
- (44) Publication Date of Accepted Application : **25.08.94**
- (71) Applicant(s)  
**SOLAR PERGOLA PTY LTD**
- (72) Inventor(s)  
**ARTHUR MURRAY ROSSER; ROGER WAYNE CHASE; DARYL JOHN LAMBERT; PETER ANTONIOU**
- (74) Attorney or Agent  
**COLLISON & CO , 117 King William Street, ADELAIDE SA 5000**
- (56) Prior Art Documents  
**AU 527356 90411/82 E04B 7/12**  
**AU 600371 18661/88 E04B 7/00**  
**AU 21134/83 E04C 1/08**
- (57) Claim

1. A structure including:
  - at least one transparent or translucent sheet forming part of the roof of the structure;
  - at least one moveable panel including a plurality of spaced apart parallel opaque battens, the at least one panel being adapted to move relative to the at least one transparent or translucent sheet such that in one position the at least one panel provides a partial sun shading effect on the at least one transparent or translucent sheet .

41630 HKS:SJC:PFB

P/00/011  
Regulation 3.2

AUSTRALIA  
Patents Act 1990

# COMPLETE SPECIFICATION

FOR A STANDARD PATENT

ORIGINAL

652510

---

**Name of Applicant:**

SOLAR PERGOLA PTY LTD

**Actual Inventors:**

ARTHUR MURRAY ROSSER, ROGER WAYNE CHASE, DARYL JOHN  
LAMBERT AND PETER ANTONIOU

**Address for Service:**

COLLISON & CO., 117 King William Street, Adelaide, S.A. 5000

**Invention Title:**

BUILDING ARRANGEMENT

**Details of Associated Provisional Application:**

AUSTRALIAN Patent Application No. PL1436 Dated 19th March 1992

**The following statement is a full description of this invention,  
including the best method of performing it known to us:**

The invention disclosed herein relates to structures such as conservatories, pergolas, verandahs or atriums fully or partially clad with transparent, translucent or opaque sheet material.

5 In such structures temperature control can be difficult. Accordingly, it is desirable to be able to enjoy the advantages of having significant glazed areas. However, at some times of the year, if these allow for direct sunlight to pass therethrough then there is a potentially unpleasant heat build up. The use of blinds on the inside of the glazed structure allows the heat into the enclosed covered area and this results in heat build up. Alternatively, if a  
10 blind is located on the outside of the glazed structure there are problems associated with weathering of the blind. Furthermore, the potential for making noise by flapping in the wind and possible unsightliness are all strong reasons for this being undesirable.

15 It is an object of this invention to alleviate one or more of the abovementioned problems or at least provide the public with a useful alternative.

Accordingly in one form of the invention there is provided a structure including:

- at least one transparent or translucent sheet forming part of the roof of the structure;
- 20 at least one moveable panel including a plurality of spaced apart parallel opaque battens, the at least one panel being adapted to move relative to the at least one transparent or translucent sheet such that in one position the at least one panel provides a partial sun shading effect on the at least one transparent or translucent sheet.

LS

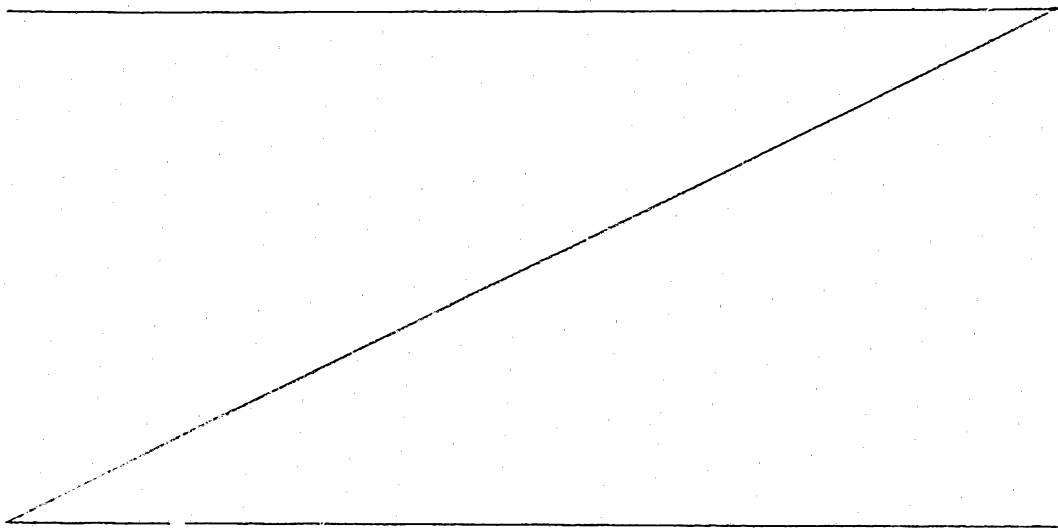


In preference the shape, position and orientation of the battens is such that more of the suns rays will pass between the battens when the sun is at a lowest winter elevation than when the sun is at a highest summer elevation sun rays .

- 5 When conditions make it desirable for more or less shading one or more of the panels can be moved into place or away from the sunward covering position with respect to the transparent or translucent sheet.

10 In preference, the locating and moving means are arranged to slide the panel or panels between a first and second position. The slide movement can be effected by an electric motor which can be turned on and off as desired. In an alternative preferred form, a manually operatable pulley system can used, or if desired the panel or panels may be hinged and rotated from the covering position to the uncovering position.

15 Preferably the structure has a wall a first portion of which is covered with sheet material where the sheet material is transparent or translucent, at least one moveable panel covering on a sunward side at least part of the wall with each panel including a frame supporting a plurality of spaced apart parallel opaque battens, and the battens being supported on the frame such that the length of the battens aligns transverse to the pitch of the roof and at an inclined angle  
20 with respect to the plane of the frame, panel locating and moving means adapted to cover the first portion of the wall in one position with a panel or



2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30



panels and in another position substantially uncover the first position with the panel or panels, and the orientation of the battens when covering the first portion is such that sun rays will pass between the battens and through the sheet material when the sun is at a highest winter elevation and when the sun is at a highest summer elevation sun rays will be blocked by the battens from passing through the sheet .

It will be appreciated that with adjustments the principle outlined in respect of the panels and the roof can be applied to the walls . Therefore, sunrays may be substantially limited from entering the structure walls during summer whilst in winter be permitted.

In preference the battens and the frame are made from wood.

Preferably, each batten is located a constant distance apart from adjacent battens and of the shape of the battens in cross-section including two side edges one parallel to the other and a bottom edge, the bottom edge being at an inclined angle to the side edges, and the frame including at least two spaced apart parallel bearers supporting the battens with each batten resting on the bearers with the lowermost edge adjoining an uppermost edge of each bearer.

In an alternative form of the invention there is provided a structure including a pitched roof, a first portion of the roof transverse to the roof pitch being a translucent or transparent sheet material, at least one moveable panel adapted to cover from a sunward side in a first position and in a second position not substantially cover the first portion of the roof, means to slide the panel or panels between the first and second position, each panel including a frame adapted to support a plurality of parallel wood opaque battens transverse to the pitch of the roof, each batten being located a constant distance apart from adjacent battens and of the shape of the battens in cross-section including two side edges one parallel to the other and a bottom edge, the bottom edge being at an inclined angle to the side edges, the frame including at least two spaced apart parallel bearers supporting the battens with each batten resting on the bearers with the lowermost edge adjoining an uppermost edge of each bearer and aligning thereby the angle of inclination of each batten, the thickness of each batten, the depth of each batten and the distance apart of each batten being selected so that at least if the structure top is supported in a selected orientation with respect to the axis of the Earth, the

rays of the sun will be substantially blocked by the battens at least during the period of the seasons that the sun is at the highest inclination, while the distance apart of the battens one from the other is at least equal to the distance apart of the side faces of each individual batten.

- 5 In preference the structure includes at least one wall with a second portion being of sheet material, at least one moveable wall panel adapted to cover in a first position and in a second position not substantially cover the second portion of the wall, means to slide the wall panel or panels between the first and second position, each wall panel including a frame adapted to support a
- 10 plurality of parallel wood opaque battens transverse to the pitch of the roof, each batten being located a constant distance apart from adjacent battens and of the shape of the battens in cross-section including two side edges one parallel to the other and a bottom edge, the bottom edge being at an inclined angle to the side edges, the frame including at least two spaced apart parallel
- 15 bearers supporting the battens with each batten resting on the bearers with the lowermost edge adjoining an uppermost edge of each bearer and aligning thereby the angle of inclination of each batten, the thickness of each batten, the depth of each batten and the distance apart of each batten being selected so that at least if the structure top is supported in a selected orientation with
- 20 respect to the axis of the Earth, the rays of the sun will be substantially blocked by the battens at least during the period of the seasons that the sun is at the highest inclination, while the distance apart of the battens one from the other is at least equal to the distance apart of the side faces of each individual batten.

- 25 Preferably the sheet may take various shapes and forms. Glass, polycarbonate and fibreglass sheeting are examples of suitable materials.

- Alternatively, according to another form of the invention there is provided a method of controlling the transmission of the sun rays through a structure including a pitched roof a first portion of which is covered with sheet material
- 30 where the sheet material is transparent or translucent, at least one moveable panel covering at least part of the roof with each panel including a frame adapted to support a plurality of spaced apart parallel opaque battens, and the battens being supported on the frame such that the length of the battens aligns transverse to the pitch of the roof and at an inclined angle with respect
- 35 to the plane of the frame, panel locating and moving means adapted to cover the first portion of the roof in one position with a panel or panels and in



another position substantially uncover the first position with the panel or panels, the orientation of the battens when covering the first portion is such that sun rays will pass between the battens and through the sheet material when the sun is at a highest winter elevation and when the sun is at a highest summer elevation sun rays will be blocked by the battens from passing through the sheet materials, and the method characterised by the selective movement of the panel or panels between the first and second positions.

To assist with the understanding of the invention a preferred embodiment will now be described with reference to the accompanying FIGs in which:

- 10           FIG. 1 illustrates a plan view of a section of a panel,  
               FIG. 2 illustrates an elevation view of the section in FIG. 1,  
               FIG. 3 illustrates a perspective sketch of the section illustrated in FIG. 1,  
               FIG. 4 illustrates a cross-sectional view of a panel,  
               FIG. 5 illustrates a plan view of the panel,  
 15           FIG. 6 illustrates a schematic plan view of a number of sliding panels,  
               FIG. 7 illustrates an end view of the panels illustrated in FIG. 6,  
               FIG. 8 illustrates a cross-sectional view of a structure such as conservatory, and  
               FIG. 9 illustrates in block diagram form the control of the means to move  
 20           the panel between the first and second position.

Referring to the preferred embodiment of the FIG's, a panel 1 consists of a plurality of battens 2 upon bearers one is shown as 3. The battens 2 and bearers 3 are preferably made of wood such as western red cedar or pine. Alternatively, in other preferred forms the battens 2 and bearers 3 could be made of a plastics or other materials. As can be seen the battens 2 have a bottom face 4 attached against the top face 5 of the bearer 3. Due to the selected angle of inclination of the bottom face 4 of with respect to the side face 6, the spacing between the battens 2 and the selected pitch of the bearers 3 (or roof pitch) the sun rays 7 in winter are substantially permitted to pass between the battens and sun rays 8 in summer are substantially limited or blocked from passing between the battens 2.

In this embodiment, for a 5° bearer pitch 3 (or roof pitch), in Adelaide, latitude 35° south, with the battens made from 100 X 35 mm western red cedar, or other materials, spaced 90° the angle of inclination between the side face 6 and the bottom face 4 is 40°. Thus with a maximum winter sun elevation of approximately 30° as illustrated by 7, the sun rays will substantially pass with limited interference between the battens 2 but with a maximum summer sun elevation of approximately 80° sun ray 8 will be substantially limited or blocked by the battens 2. This embodiment thereby provides a greater shading effect of the battens 2 in summer as opposed to winter.

The arrangement of the bearers 3 supporting a plurality of battens 2 form the panel 1 as illustrated in FIG's 4 and 5. Four such panels 9, 10, 11 and 12 are slidably assembled side by side as illustrated in FIG's 6 and 7. Underneath these panels 9, 10, 11 and 12 are translucent or transparent sheets 20 (refer to FIG. 7). The electric motor 13 provides the power via the chain means 15 to slide the panels so that they slide over or on top of the areas numbered 27, 28, 29 and 30.

The conservatory, pergola, verandah or atrium illustrated in FIG. 8 has a wooden frame 18 supporting the transparent or translucent sheeting 19 and 20. The panel (or panels) when at position 16 covers the sheeting 20 and thereby provides a shading effect. To hide the panels and remove the shading effect the panels are slid into position 17 and are substantially hidden behind the preferable match board ceiling 21 in which insulation 22 can be provided above the match board ceiling 21.

The panel is moved from position 16 to 17 (or to positions therebetween) by the effect of the motor 13 moving the chain 15 around the pulleys 14 and 33. The chain is attached to the panel by the attachment means 31 and 32 and thereby provides a means of sliding the panel along the frame of the conservatory, pergola, verandah or atrium.

To control the electric motor 13 a control box 23 (refer to FIG. 9) is provided preferably in a convenient position in the conservatory, pergola, verandah or atrium. The control box 23 in one form is preferably adapted to connect the rectified AC mains rectified by the rectification means 24 to the motor 13 in one polarity sense to move the panel up the pitch of the roof and in another polarity sense to move the panel down the pitch of the roof. To prevent the motor 13 being run when the panel is at one of the two extreme positions, that



is lowermost or uppermost position, the micro switches 25 and 26 are positioned to provide signals if the panel 9, 10, 11 or 12 is at either of the extreme positions. These micro switches 25 and 26 are activated, in one preferred form, by the panel mechanically activating the micro switches.

- 5 A significant advantage of the arrangement is that any external surface of the sheet 20 can be accessed by sliding the sun control panel and therefore be more easily cleaned. However, the battens need not be angled, although this is preferable and the roof pitch is preferably at an angle this need not be the case.
- 10 Further the appearance of the underneath side of the battens in this arrangement is such that these being of and presenting a substantial wood or timber face means that there is a pleasant aspect viewable to the inhabitant.

- 15 Although an electric motor has been described in the preferred embodiment, other forms of effecting the movement of the panels can be used. Whilst this description has been directed to a particular embodiment, it is understood that those skilled in the art may conceive modifications and/or variations to the specific embodiment shown and described herein. Any such modifications or variations which fall within the scope of this description are intended to be included therein.

20  
25  
30  
35  
40  
45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100



## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A structure including:  
at least one transparent or translucent sheet forming part of the roof of the structure;
- 5 at least one moveable panel including a plurality of spaced apart parallel opaque battens, the at least one panel being adapted to move relative to the at least one transparent or translucent sheet such that in one position the at least one panel provides a partial sun shading effect on the at least one transparent or translucent sheet .
- 10 2. A structure according to claim 1, in which the shape, position and orientation of the battens is such that more of the suns rays will pass between the battens when the sun is at a lowest winter elevation than when the sun is at a highest summer elevation sun rays .
- 15 3. A structure according to claim 1 or 2, in which there is a locating and moving means adapted to slide the at least one panel between first and second positions, the moving means including an electric motor.
- 20 4. A structure according to any one of claims 1 to 3, in which the structure has a wall a first portion of which is covered with sheet material where the sheet material is transparent or translucent, at least one moveable panel covering on a sunward side at least part of the wall with each panel including a frame supporting a plurality of spaced apart parallel opaque battens. and the battens being supported on the frame such that the length of the battens aligns transverse to the pitch of the roof and at an inclined angle with respect to the plane of the frame, panel locating and moving means adapted to cover  
25 the first portion of the wall in one position with a panel or panels and in another position substantially uncover the first position with the panel or panels, and the orientation of the battens when covering the first portion is such that sun rays will pass between the battens and through the sheet material when the sun is at a highest winter elevation and when the sun is at  
30 a highest summer elevation sun rays will be blocked by the battens from passing through the sheet .
5. A structure according to any one of claims 1 to 4, in which each batten is located a constant distance apart from adjacent battens and of the shape of the battens in cross-section including two side edges one parallel to the other



and a bottom edge, the bottom edge being at an inclined angle to the side edges, and the frame including at least two spaced apart parallel bearers supporting the battens with each batten resting on the bearers with the lowermost edge adjoining an uppermost edge of each bearer.

- 5 6. A structure including a pitched roof, a first portion of the roof transverse to the roof pitch being a translucent or transparent sheet material, at least one moveable panel adapted to cover from a sunward side in a first position and in a second position not substantially cover the first portion of the roof, means to slide the panel or panels between the first and second position, each panel
- 10 including a frame adapted to support a plurality of parallel wood opaque battens transverse to the pitch of the roof, each batten being located a constant distance apart from adjacent battens and of the shape of the battens in cross-section including two side edges one parallel to the other and a
- 15 bottom edge, the bottom edge being at an inclined angle to the side edges, the frame including at least two spaced apart parallel bearers supporting the battens with each batten resting on the bearers with the lowermost edge adjoining an uppermost edge of each bearer and aligning thereby the angle of inclination of each batten, the thickness of each batten, the depth of each batten and the distance apart of each batten being selected so that at least if
- 20 the structure top is supported in a selected orientation with respect to the axis of the Earth, the rays of the sun will be substantially blocked by the battens at least during the period of the seasons that the sun is at the highest inclination, while the distance apart of the battens one from the other is at least equal to the distance apart of the side faces of each individual batten.
- 25 7. A structure according to claim 6 including at least one wall with a second portion being of sheet material, at least one moveable wall panel adapted to cover in a first position and in a second position not substantially cover the second portion of the wall, means to slide the wall panel or panels between the first and second position, each wall panel including a frame
- 30 adapted to support a plurality of parallel wood opaque battens transverse to the pitch of the roof, each batten being located a constant distance apart from adjacent battens and of the shape of the battens in cross-section including two side edges one parallel to the other and a bottom edge, the bottom edge being at an inclined angle to the side edges, the frame including at least two
- 35 spaced apart parallel bearers supporting the battens with each batten resting on the bearers with the lowermost edge adjoining an uppermost edge of each bearer and aligning thereby the angle of inclination of each batten, the



thickness of each batten, the depth of each batten and the distance apart of each batten being selected so that at least if the structure top is supported in a selected orientation with respect to the axis of the Earth, the rays of the sun will be substantially blocked by the battens at least during the period of the seasons that the sun is at the highest inclination, while the distance apart of the battens one from the other is at least equal to the distance apart of the side faces of each individual batten.

8. A structure as in any one of the above claims in which the sheet or sheet material is made of glass, polycarbonate or fibreglass.

9. A method of controlling the transmission of the sun rays through a structure including a pitched roof a first portion of which is covered with sheet material where the sheet material is transparent or translucent, at least one moveable panel covering at least part of the roof with each panel including a frame adapted to support a plurality of spaced apart parallel opaque battens, and the battens being supported on the frame such that the length of the battens aligns transverse to the pitch of the roof and at an inclined angle with respect to the plane of the frame, panel locating and moving means adapted to cover the first portion of the roof in one position with a panel or panels and in another position substantially uncover the first position with the panel or panels, the orientation of the battens when covering the first portion is such that sun rays will pass between the battens and through the sheet material when the sun is at a highest winter elevation and when the sun is at a highest summer elevation sun rays will be blocked by the battens from passing through the sheet materials, and the method characterised by the selective movement of the panel or panels between the first and second positions.

10. A structure as substantially described herein with reference to and as illustrated by the accompanying drawings.

11. A method of controlling the transmission of the sun rays through a structure as substantially described herein with reference to and as illustrated by the accompanying drawings.

Dated this 22nd day of June 1994

SOLAR PERGOLA PTY LTD  
By their Patent Attorneys,  
COLLISON & CO.

## ABSTRACT

A structure such as a conservatory or pergola having at least one transparent or translucent sheet forming part of the roof of the structure. The roof also has at least one moveable panel including a plurality of spaced apart parallel opaque battens, the panel being adapted to move relative to the transparent or translucent sheet such that in one position the panel provides a partial sun shading effect on the transparent or translucent sheet .

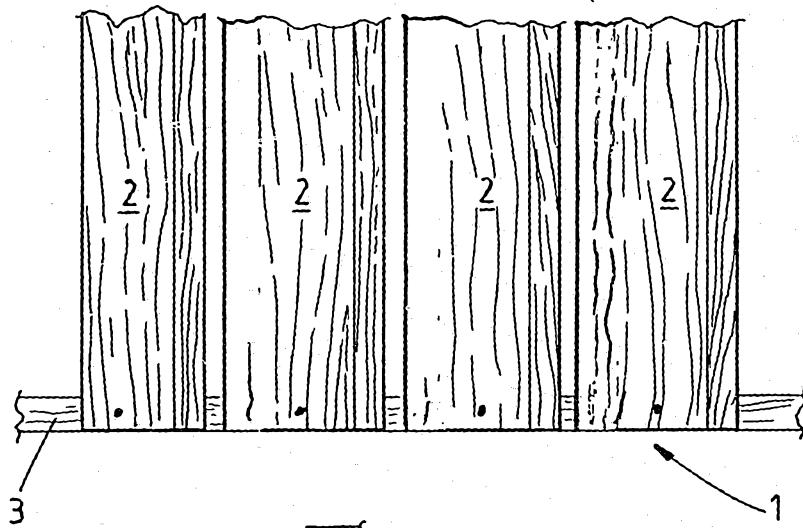
5

11 00  
1002  
0  
E  
1111  
E  
1  
2 0  
2 0  
7 0  
1 0  
1 0  
1 0  
1 0

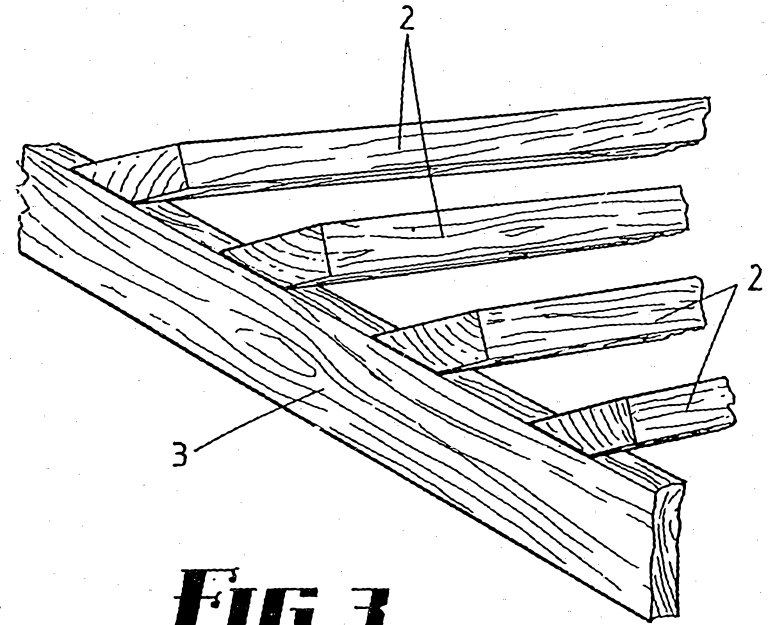
00 00  
0 0 0  
0 0 0  
0 0 0  
0 0 0

00 00  
0 0 0  
0 0 0  
0 0 0  
0 0 0

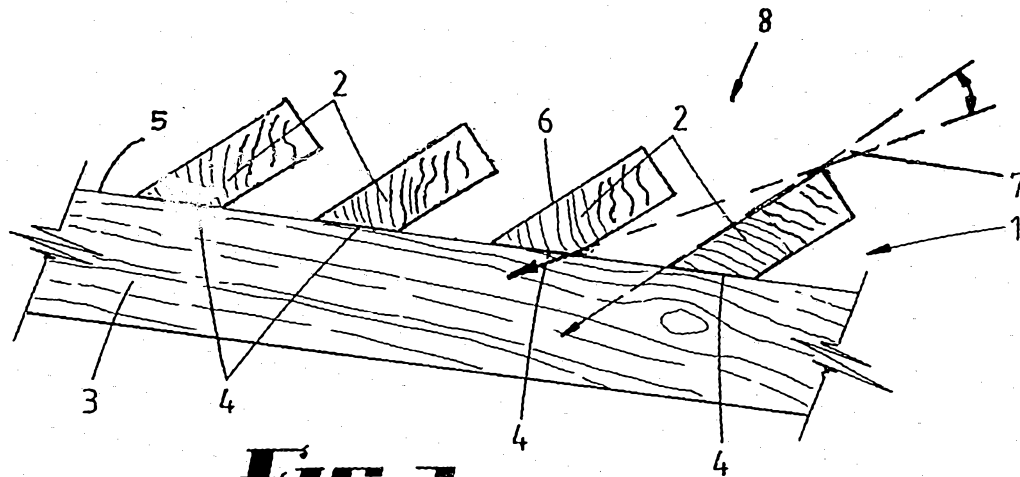
21  
E  
E  
001  
E



**FIG 1**



**FIG 3**

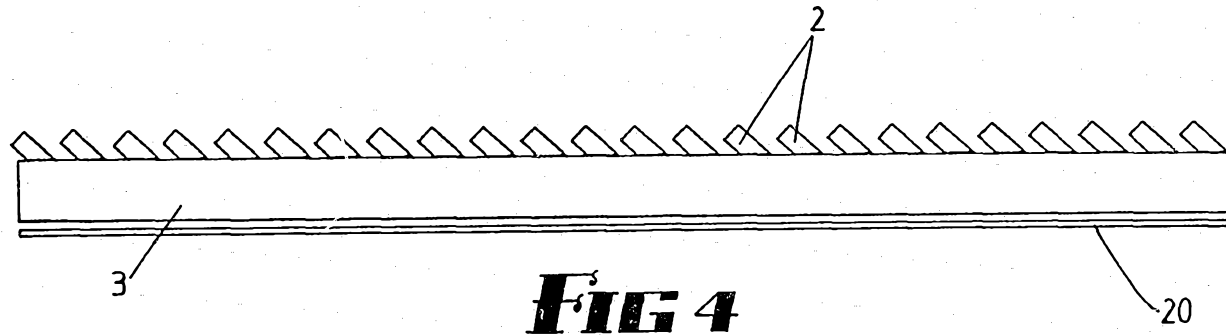


**FIG 2**

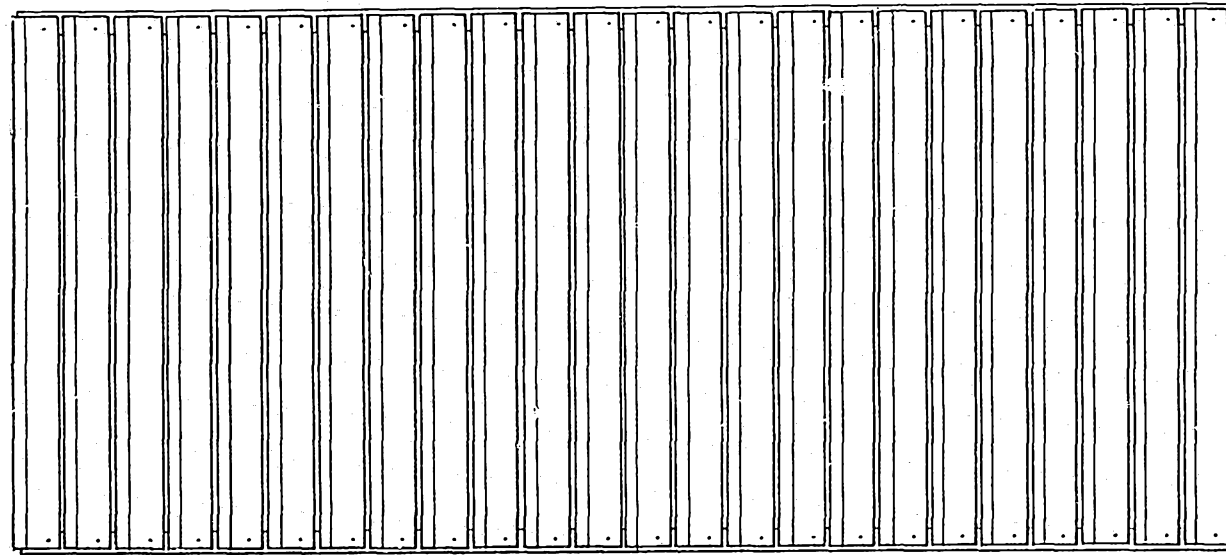
1/4

35243/93

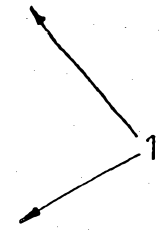




**FIG 4**



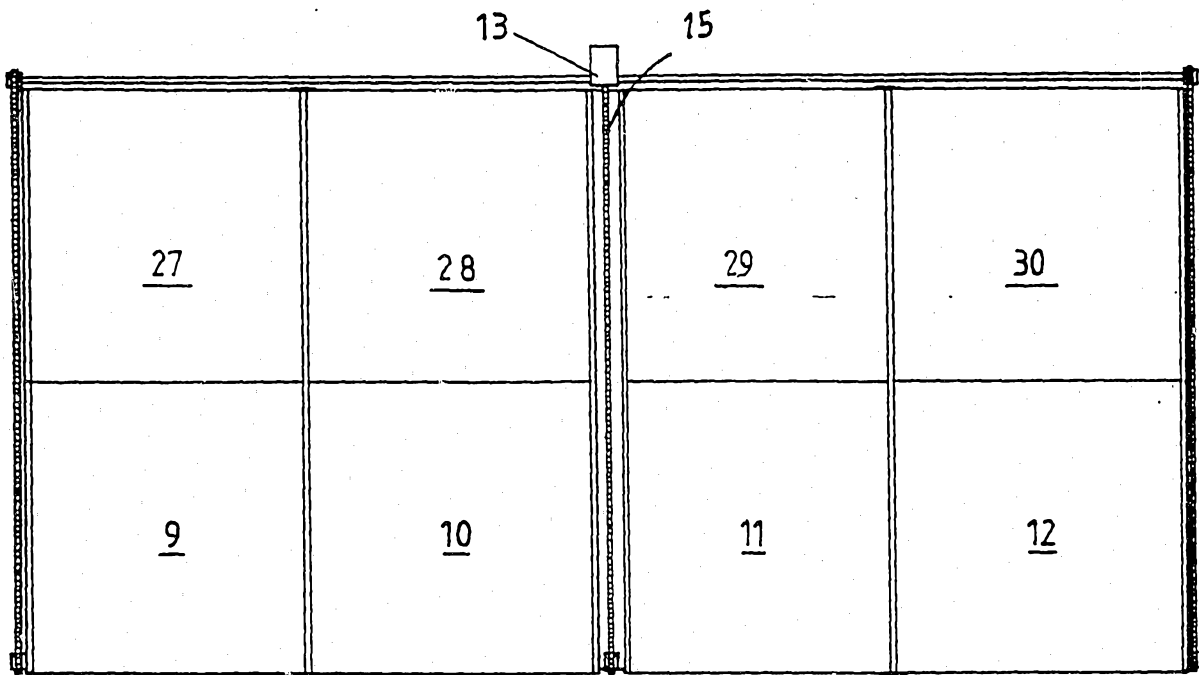
**FIG 5**



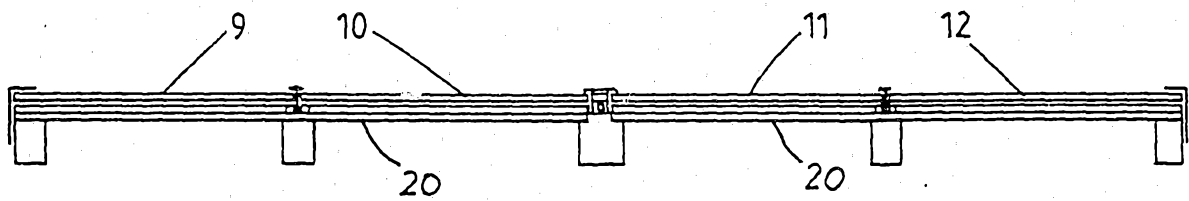
2/4

3/4

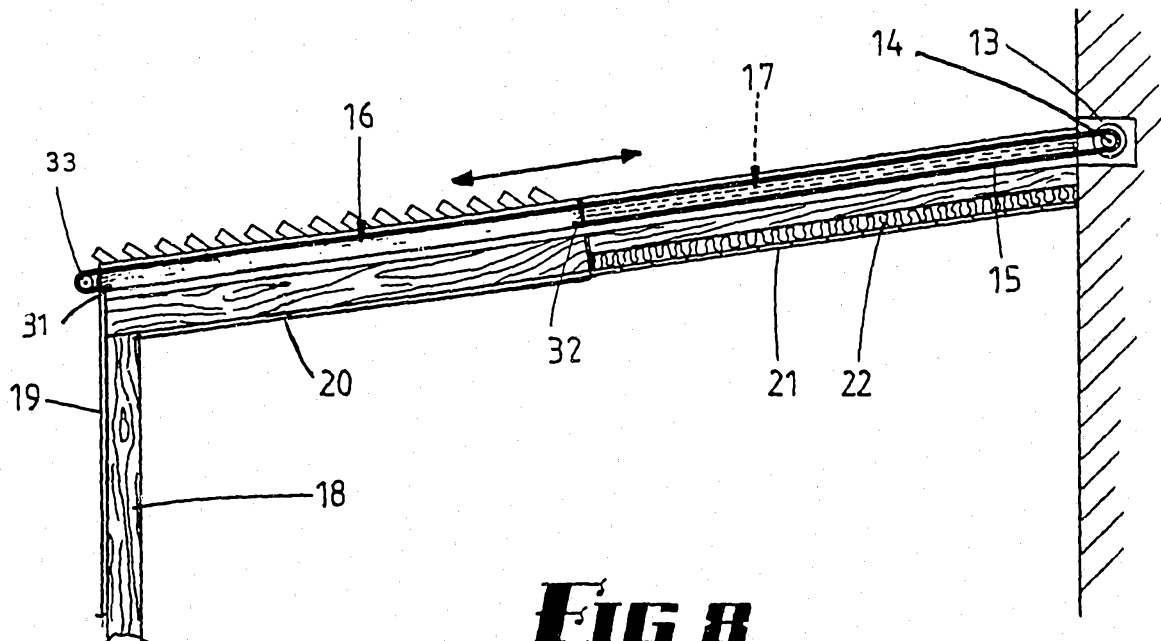
35243/93



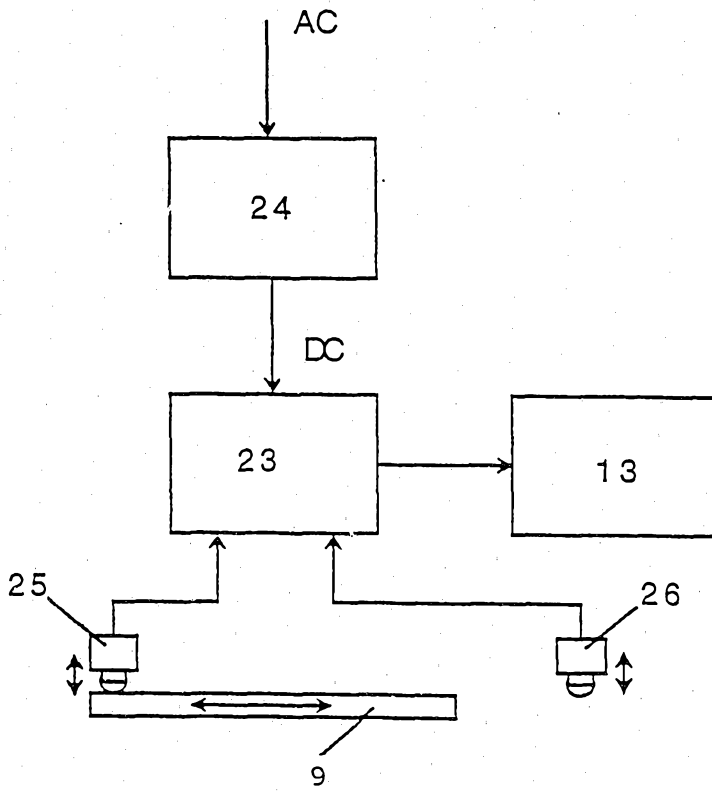
**FIG 6**



**FIG 7**



**FIG 8**



**FIG 9**