

PATENT SPECIFICATION

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(19)



(54) SLAT ASSEMBLIES

(71) We, MEYERS TAYLOR PTY. LIMITED of 1840 Sandgate Road, Virginia, Queensland, 4014, Australia, a Company incorporated under the laws of Queensland, Australia, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

10 This invention relates to improvements in slat assemblies of the type disclosed in our prior Australian Patents No. 411,669 and 258,630.

15 These patents are directed to slat joints for slats having interengaged rolled longitudinal edge portions provided with interengaging indentations to prevent relative movement of the slats in their longitudinal direction while allowing limited pivoting about the axis of said portions between adjacent slats.

20 In particular Patent 411,669 discloses pairs of indentations of generally triangular plan and oppositely directed, so that the steep faces at the base of the triangular indentations face oppositely and prevent relative longitudinal movement of the slats in either direction.

30 While it is found that this arrangement usually operates effectively, it is an object of the present invention to provide specially-shaped indentations which have certain advantages.

35 These advantages are in the main: more positive prevention of longitudinal relative movement between the slats; and the elimination of need for an internal plastic plug within the rolled edges of adjacent slats although the plug may be retained if required.

40 According to the invention there is provided a slat joint between a pair of slats each having a rectangular body and two 45 rolled longitudinal edge portions which are

each substantially part-circular in cross-section, the slat joint being formed by hooked engagement of the adjacent rolled edge portions of the respective slats with each other permitting limited pivoting movement about the joint axis and defining a central space of substantially round cross-section, wherein indentations are provided longitudinally along said slat joint, the indentations being of substantially rectangular shape in plan, concave between the edges parallel to the slat edges and substantially vertical to the slat surface at their other edges.

Each indentation therefore presents two abutting faces rather than one to resist longitudinal relative movement. The indentation is also curved circumferentially in a symmetrical manner.

The slat material is preferably sheared at said other ends of the indentations, so that these ends allow vertical abutment of the two slats with very positive prevention of relative movement in their longitudinal direction.

In another aspect, the invention resides in a slat assembly having a plurality of slats, each adjacent pair of which are connected by a slat joint as described in the preceding paragraph.

The indentations are preferably provided in fairly closely-spaced pairs longitudinally along the slat joint.

Other features of the invention will become apparent from the following description of a preferred embodiment with reference to the accompanying drawings wherein:

Figure 1 shows in perspective view one end of a pair of slats in position to be punched by a punch member;

Figure 2 is a longitudinal section of the punched joint formed by the punch member shown in Figure 1;

Figure 3 is a cross-section on a lateral plane of the punched joint in an embodi-

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ment where a plug is provided in the central space;

Figure 4 is a plan view of a number of slats (broken away as to length) having joints as illustrated in Figures 2 and 3; and

Figure 5 is a side elevation of the punch member used to produce the indentations of the joint.

Referring initially to Figures 1-4 of the drawings, the slat assembly 10 may suitably be of rectangular shape and is made up of a series of parallel narrow metal slats which are either flat, as shown, or are of arcuate cross-section as described in our said Australian specifications referred to above. Each slat has its longitudinal edge portions rolled in the same sense, but with the actual edge terminating each roll directed towards respective opposite faces of the slat so that each edge of a slat can be engaged hingedly with the rolled edge portion of the next adjacent slat to form a joint 12. These slats 11 may be substantially identical with those illustrated in our earlier Australian Patent Nos. 411,669 and 258,630 referred to above.

It will be seen that each slat 11 has a first edge portion 13 (hereinafter termed the "inner" edge) simply rolled in the direction of curvature of the body of the slat, but the other edge portion 14 (hereinafter termed the "outer" edge) is rolled adjacent a longitudinal shoulder 15 of the slat with the result that the crust 16 of the outwardly-rolled edge portion 14 is disposed on or near to the arc of curvature of the main body of the slat 11 while the joints 12 protrude on that side of the assembly 10 on which the slats 11 have their centres of curvature. This is the "inner" side of assembly 10, whereas the other or outer side of the assembly is that which is normally arranged to face upwards in an assembled awning. The joints 12 are punched on their inner faces, and so the assembly 10 would be disposed with its inner side upwards (as shown in Fig. 1) during the punching operation, the joints 12 then also facing upwards.

The degree of roll of each edge portion 13, 14 is such that a full circle is not formed, the extreme edge being spaced by a short distance from the body of the slat. Thus, when the inner edge portion 13 is engaged with the outer edge portion 14 of another slat to form a joint, the two actual edges are spaced from each other, and an inner central space 17 (Fig. 3) is defined by the joint which is of generally round cross-section except for the protrusions of said edges. For preference, each rolled edge portion is in the shape of an flat spiral, although uniformly arcuate shapes would operate relatively satisfactorily.

The indentations 18 in each slat joint 12 are of substantially rectangular shape in

plan (see Figure 4), the longitudinal axis of the indentations being parallel to the rolled edges of the slats. The indentations 18 have concave sides 19, curved circumferentially in a symmetrical manner, between rims 20 parallel to the rolled edge portions 13, 14 of the slats.

The ends 21 of the indentations are substantially, normal to slat surfaces 22 and rims 20 and are formed by normal shearing of the slat material as the indentation 18 is punched. As can be easily seen from Figures 2 and 3, the slat material is deformed by the punch into the central space 17 so that the cross-section of the central space 17 at this point becomes a semi-V shape, as viewed in figure 3, and the base 23 of the indentation lies parallel to the slat surface 22 (see Figure 2). The end faces 21a (Fig. 2) of the deformed material at the base 23 of the indentation are sheared from the adjacent parts of surfaces 22 and displaced to form vertical abutments with end faces 21 of said adjacent parts to prevent relative longitudinal movement of the slats 11.

As shown in Figure 4, the indentations 18 are provided in fairly closely-spaced pairs along each slat joint 12.

In normal use, the central space 17 is left empty as shown in Figure 2 but if specifically required, longitudinally arranged plastic plugs 24 may be provided in the space, as shown in Figure 3. These plugs 24 are of substantially constant round cross-section, having a diameter just less than the effective diameter of the central space. The plugs are formed of non-brittle but deformable material, such as polyvinylchloride or equivalent plastics material.

A single plug may be provided for each slat joint 12, or a series of smaller plugs may be used, one for each pair of indentations 18 in the slat joint 12. The provision of plugs 24 is purely optional and determined by the customer's needs as the shape of the indentations 18 holds the rolled edges 13, 14 in more effective radial contact than the indentation configurations disclosed in our earlier Australian Patents referred to above which required the provision of plugs to achieve the slat joint desired.

The punch member 25 for forming a pair of indentations is in the form of chisel-shape having two chisel points 26 connected by a cross-piece 27, the chisel-points 26 being separated by a slot 28.

The chisel-points 26 have an included angle of substantially 90° and the central edges 29 of each of the chisel points are co-axial with each other and are applied parallel to the axis of the slat joint 12.

A slot 30 may be provided on the upper side of the punch member 25 to provide a simple form of attachment to the punch holder of a punching machine (not shown).

The indentations 18 are formed in the slat joint 12 by assembling a pair of slats 11 as shown in Figure 1 and applying the punch to deform the slat material thereunder until the slat material is deformed to produce a pair of indentations having the shape and configuration illustrated in Figures 2, 3 and 4 of the drawings.

WHAT WE CLAIM IS:—

10 1. A slat joint between a pair of slats each having a rectangular body and two rolled longitudinal edge portions which are each substantially part-circular in cross-section, the slat joint being formed by
15 hooked engagement of the adjacent rolled longitudinal edge portions of the respective slats with each other permitting limited pivoting movement about the joint axis and defining a central space of substantially round
20 cross-section, wherein indentations are provided longitudinally along said slat joint, the indentations being of substantially rectangular shape in plan, concave between
25 edges parallel to the slat edges and substantially vertical to the slat surfaces at their other edges.

2. A slat joint as claimed in Claim 1 wherein said other edges of each indentation provides two vertical abutments to resist longitudinal relative movement of the
30 respective slats in said slat joint.

3. A slat joint as claimed in Claim 2 wherein said slats are normally sheared at said other edges of the indentations to provide said vertical abutments of the slats to
35 prevent longitudinal relative movement thereof.

4. A slat joint as claimed in any one of the preceding claims wherein the indentations are curved circumferentially of the
40 slat joint in a symmetrical manner.

5. A slat joint as claimed in any one of the preceding claims wherein the indentations are provided in fairly closely-spaced
45 pairs longitudinally along the slat joint.

6. A slat joint as claimed in any one of the preceding claims wherein a longitudinally arranged plug of substantially
50 constant cross-section and of non-brittle but deformable material is provided in the central space.

7. A slat joint as claimed in Claim 6 when appended to Claim 5 wherein a plug
is provided for each pair of indentations.

8. A slat joint as claimed in Claim 6
55 or 7 wherein the plug is produced from polyvinylchloride or equivalent plastics material.

9. A slat assembly having a plurality of slats, each adjacent pair of which is connected by a slat joint as claimed in any one
60 of the preceding claims.

10. A slat joint substantially as hereinbefore described with reference to Figures
2 to 4 of the accompanying drawings. 65

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The indentations 18 are formed in the slot joint 12 by assembling a pair of slats 11 as shown in Figure 1 and applying the punch to deform the slot material thereunder until the slot material is deformed to produce a pair of indentations having the shape and configuration illustrated in Figures 2, 3 and 4 of the drawings.

WHAT WE CLAIM IS:—

1. A slot joint between a pair of slats each having a rectangular body and two rolled longitudinal edge portions which are each substantially part-circular in cross-section, the slot joint being formed by hooked engagement of the adjacent rolled longitudinal edge portions of the respective slats with each other permitting limited pivoting movement about the joint axis and defining a central space of substantially round cross-section, wherein indentations are provided longitudinally along said slot joint, the indentations being of substantially rectangular shape in plan, concave between edges parallel to the slot edges and substantially vertical to the slot surfaces at their other edges.
2. A slot joint as claimed in Claim 1 wherein said other edges of each indentation provides two vertical abutments to resist longitudinal relative movement of the respective slats in said slot joint.
3. A slot joint as claimed in Claim 2 wherein said slats are normally sheared at said other edges of the indentations to provide said vertical abutments of the slats to prevent longitudinal relative movement thereof.

4. A slot joint as claimed in any one of the preceding claims wherein the indentations are curved circumferentially of the slot joint in a symmetrical manner.

5. A slot joint as claimed in any one of the preceding claims wherein the indentations are provided in fairly closely-spaced pairs longitudinally along the slot joint.

6. A slot joint as claimed in any one of the preceding claims wherein a longitudinally arranged plug of substantially constant cross-section and of non-brittle but deformable material is provided in the central space.

7. A slot joint as claimed in Claim 6 when appended to Claim 5 wherein a plug is provided for each pair of indentations.

8. A slot joint as claimed in Claim 6 or 7 wherein the plug is produced from polyvinylchloride or equivalent plastics material.

9. A slot assembly having a plurality of slats, each adjacent pair of which is connected by a slot joint as claimed in any one of the preceding claims.

10. A slot joint substantially as hereinbefore described with reference to Figures 2 to 4 of the accompanying drawings.

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