

SPECIFICATION

Panel-connector assemblies and building structures

The present invention relates to panel-connectors, and more particularly to connector assemblies for connecting adjacent panels edge to edge and to a building frame to assemble a wall or ceiling.

According to a first aspect of the present invention there is provided a connector assembly for connecting two adjacent panels edge to edge and to a building frame with a joint opening between such adjacent panel edges, said connector assembly comprising:

(a) at least a pair of first members each including

(1) a base having a single first portion adapted to be held in a groove of a respective one only of the panels and a second portion adapted to be secured to a portion of the building frame, said first portion of the base of one of said first members of a pair being received in said groove in one only of said adjacent panels and said first portion of the base of the other of said first members of a pair being received in said groove in the other of said adjacent panels only, and

(2) retainer means formed on said second portion of said base integrally therewith and adapted to be disposed adjacent to one face of the joint opening; and

(b) a second member for covering the joint opening on said one face thereof, said second member having at least one leg extending into said retainer means on said second portion of the base of both of said first members of a pair and being retained thereby.

According to a second aspect of the invention there is provided a building structure comprising a building frame, two adjacent panels and a connector assembly connecting the two adjacent panels edge to edge and to the building frame with a joint opening between such adjacent panel edges, each of the panels having a groove extending longitudinally along the edge thereof, the building frame having a portion disposed adjacent to one face of the joint opening, said connector assembly comprising:

(a) at least a pair of first members each including

(1) a base having a single first portion held in the groove of a respective one only of the panels and a second portion secured to said portion of the building frame, said first portion of the base of one of said first members of a pair being received in said groove in one only of said adjacent panels and said first portion of the base of the other of said first members of a pair being received in said groove in the other of said adjacent panels only, and

(2) retainer means formed on said second portion of said base integrally therewith and disposed adjacent to the other face of the joint opening; and

(b) a second member covering the joint opening

on the other face thereof, said second member having at least one leg extending into said retainer means on said second portion of the base of both of said first members of a pair and being retained thereby.

Many advantages, features and objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying drawings in which preferred embodiments incorporating the principles of the present invention are shown by way of illustrative example. In the drawings:—

Figure 1 is a plan view of two panels connected by a connector assembly embodying the present invention;

Figure 2 is an enlarged cross-sectional view taken along line II—II of Fig. 1, with a building frame fragmentarily shown;

Figure 3 is a perspective view of one of a plurality of first members of the connector assembly;

Figure 4 is a cross-sectional view taken along line IV—IV of Figure 3; and

Figure 5 is a cross-sectional view of a modified connector assembly connecting two panels at right angle.

Figure 1 shows a part of a wall or ceiling 1 in which adjacent wall or ceiling panels 2, 3 are connected edge to edge and to a building frame 4 (Fig. 2) by a connector assembly 5 with a space or joint opening between such panel edges 6, 7 (Fig. 2). The panels 2, 3 are made of a substantially rigid material, such as wood, particle board (or chip board), synthetic resin and the like. As shown in Figure 2, each of the panels 2, 3 has a groove 8, 9 extending along one of the panel edges 6, 7.

The connector assembly 5 comprises a plurality of pairs of first members 10, 11 made of a rigid material such as extruded aluminium, and an elongated second member 12 made of a relatively rigid but slightly resilient synthetic resin such as polyvinyl chloride.

As shown in Figure 2, each of the first members 10, 11 includes a base having a first portion 13 fixedly received in the groove 8, 9 of a respective one of the panels 2, 3, and a second portion 14 secured to a portion 15 of the building frame 4 which portion extends into the joint opening from one face thereof. The second base portion 14 has a hole 16 (Fig. 3 and 4) through which a fastening screw 17 loosely extends, the screw 17 extending threadedly into the building frame portion 15. Formed in the building frame portion 15 is a groove 18 having un-numbered threaded portions engaging the fastening screw 17. The second base portion 14 also has a projection 19 loosely extending into the groove 18. This projection 19 serves as a guide so that, when assembling, the hole 16 of the second base portion 14 can be easily and exactly aligned with the threaded portions of the groove 18 in the building frame portion 15.

Each first member 10, 11 is further provided with a pair of parallel spaced arms 20, 20

projecting from the second base portion 14 toward the other face of the joint opening and terminating in a pair of inwardly directed flanges 21, 21, respectively. The arms 20 serve as a

- 5 retainer means for the second member 12, as described below.
- The second member 12 is elongate and has a generally T-shaped transverse cross section defined by a base 22 (Fig. 2) covering the joint
- 10 opening on the other face and a leg 23 projecting perpendicularly from the base 22 and having on its free end a pair of lateral protruberances 24, 24. The leg 23 on the second member 12 is received in a space between the opposed arms 20, 20 on
- 15 the first member 10, 11, the protruberances 24, 24 being held by or in locking engagement with the flanges 21, 21 of the arms 20, 20, respectively. Thus, the second member 12 is retained by the retainer means.
- 20 The base 22 of the second member 12 has a sufficient width so that the joint opening between the panels 2, 3, when connected, can be covered regardless of dimensional errors of the individual panels, requiring no high degree of accuracy in
- 25 attaching the first members 10, 11 to the respective panels 2, 3 as well as to the building frame 4.

- For assembly, the first base portions 13, 13 of the first members 10, 11 are forced into the
- 30 grooves 8, 9 of the adjacent panels 2, 3, respectively. Then the panels 2, 3 are applied, simultaneously or one after the other, to the building frame 4 with the projection 19 loosely received in the groove 18 of the building frame
- 35 portion 15 so as to have the holes 16 of the first members 10, 11 aligned with the corresponding threaded portions of the groove 18. The individual first members 10, 11 are then fixed at their respective first base portions 13 to the building
- 40 frame 4 by the fastening screws 17. Finally, the second member 12 is forced into the joint opening from the other face thereof until the lateral protruberances 24, 24 on the second member 12 are held by or come into locking engagement with
- 45 the inwardly directed flanges 21, 21 of the arms 20, 20 on the first members 10, 11. Preferably, the first members are arranged in a staggered pattern as shown in Figure 1.

- Figure 5 illustrates a modified connector assembly 25 having a modified second member
- 50 26, with which the panels 2, 3 are connected edge to edge but at a right angle to constitute a corner of the wall and/or ceiling. At such corner the building frame 4 has a pair of grooves 28, 28' so that the first members 10 attached to the panel 2
- 55 are at a right angle with respect to the first members 11 attached to the panel 3, when assembled. The modified second member 26 includes a base 27 generally of L-shaped
- 60 transverse cross section and a pair of parallel spaced legs 29, 30 projecting one from each arm of the "L" (27) into the joint opening and terminating in a pair of inwardly projecting protruberances 31, 32, respectively. The
- 65 protruberances 31, 32 of the legs 29, 30 on the

second member 26 are in locking engagement with the flanges 21 of one of the opposed arms 20 on the first member 10 and that of the first member 11, respectively.

- 70 For assembly, the panels 2, 3 are attached to the building frame 4 by means of the first members 10, 11, respectively, as shown in Figure 5. Then the second member 26 is applied to the joint opening with the arms of the L-shaped base
- 75 27 parallel to the respective panel faces and moved toward the building frame 4 until the protruberances 31, 32 of the legs 29, 30 on the second member 26 come into locking engagement with the flange 21 of one of the
- 80 opposed arms 20 on the first members 10 and the flange 21 of one of the opposed arms 20 on the first member 11, respectively.

- Although various minor modifications may be suggested by those versed in the art, it should be understood that we wish to embody within the scope of the patent warranted hereon, all such embodiments as reasonably and properly come within the scope of this contribution to the art.

CLAIMS

- 90 1. A connector assembly for connecting two adjacent panels edge to edge and to a building frame with a joint opening between such adjacent panel edges, said connector assembly comprising:
- (a) at least a pair of first members each
- 95 including
- (1) a base having a single first portion adapted to be held in a groove of a respective one only of the panel and a second portion adapted to be secured to a portion of the building frame, said
- 100 first portion of the base of one of said first members of a pair being received in said groove in only one of said adjacent panels and said first portion of the base of the other of said first members of a pair being received in said groove in
- 105 the other of said adjacent panels only, and
- (2) retainer means formed on said second portion of said base integrally therewith and adapted to be disposed adjacent to one face of the joint opening; and
- 110 (b) a second member for covering the joint opening on said one face thereof, said second member having at least one leg extending into said retainer means on said second portion of the base of both of said first members of a pair and
- 115 being retained thereby.
2. A connector assembly according to claim 1, in which said base of said each first member has in said second portion thereof a hole to receive a fastening screw.
- 120 3. A connector assembly according to claim 1, in which said retainer means includes a pair of parallel spaced arms projecting from said second portion of said base in a direction such that, in use, they project toward said one face of the joint
- 125 opening and terminating in a pair of inwardly directed flanges, respectively, said one leg of said second member terminating in at least one lateral protruberance engageable at least one of said pair of flanges to retain said leg between said second



projecting from the second base portion 14 toward the other face of the joint opening and terminating in a pair of inwardly directed flanges 21, 21, respectively. The arms 20 serve as a

5 retainer means for the second member 12, as described below.
The second member 12 is elongate and has a generally T-shaped transverse cross section defined by a base 22 (Fig. 2) covering the joint
10 opening on the other face and a leg 23 projecting perpendicularly from the base 22 and having on its free end a pair of lateral protruberances 24, 24. The leg 23 on the second member 12 is received in a space between the opposed arms 20, 20 on
15 the first member 10, 11, the protruberances 24, 24 being held by or in locking engagement with the flanges 21, 21 of the arms 20, 20, respectively. Thus, the second member 12 is retained by the retainer means.

20 The base 22 of the second member 12 has a sufficient width so that the joint opening between the panels 2, 3, when connected, can be covered regardless of dimensional errors of the individual panels, requiring no high degree of accuracy in
25 attaching the first members 10, 11 to the respective panels 2, 3 as well as to the building frame 4.

For assembly, the first base portions 13, 13 of the first members 10, 11 are forced into the
30 grooves 8, 9 of the adjacent panels 2, 3, respectively. Then the panels 2, 3 are applied, simultaneously or one after the other, to the building frame 4 with the projection 19 loosely received in the groove 18 of the building frame
35 portion 15 so as to have the holes 16 of the first members 10, 11 aligned with the corresponding threaded portions of the groove 18. The individual first members 10, 11 are then fixed at their
40 respective first base portions 13 to the building frame 4 by the fastening screws 17. Finally, the second member 12 is forced into the joint opening from the other face thereof until the lateral
45 protruberances 24, 24 on the second member 12 are held by or come into locking engagement with the inwardly directed flanges 21, 21 of the arms 20, 20 on the first members 10, 11. Preferably, the first members are arranged in a staggered pattern as shown in Figure 1.

Figure 5 illustrates a modified connector
50 assembly 25 having a modified second member 26, with which the panels 2, 3 are connected edge to edge but at a right angle to constitute a corner of the wall and/or ceiling. At such corner the building frame 4 has a pair of grooves 28, 28' so
55 that the first members 10 attached to the panel 2 are at a right angle with respect to the first members 11 attached to the panel 3, when assembled. The modified second member 26 includes a base 27 generally of L-shaped
60 transverse cross section and a pair of parallel spaced legs 29, 30 projecting one from each arm of the "L" (27) into the joint opening and terminating in a pair of inwardly projecting
65 protruberances 31, 32, respectively. The protruberances 31, 32 of the legs 29, 30 on the

second member 26 are in locking engagement with the flanges 21 of one of the opposed arms 20 on the first member 10 and that of the first member 11, respectively.

70 For assembly, the panels 2, 3 are attached to the building frame 4 by means of the first members 10, 11, respectively, as shown in Figure 5. Then the second member 26 is applied to the joint opening with the arms of the L-shaped base
75 27 parallel to the respective panel faces and moved toward the building frame 4 until the protruberances 31, 32 of the legs 29, 30 on the second member 26 come into locking engagement with the flange 21 of one of the
80 opposed arms 20 on the first members 10 and the flange 21 of one of the opposed arms 20 on the first member 11, respectively.

Although various minor modifications may be suggested by those versed in the art, it should be
85 understood that we wish to embody within the scope of the patent warranted hereon, all such embodiments as reasonably and properly come within the scope of this contribution to the art.

CLAIMS

90 1. A connector assembly for connecting two adjacent panels edge to edge and to a building frame with a joint opening between such adjacent panel edges, said connector assembly comprising:
(a) at least a pair of first members each

95 including
(1) a base having a single first portion adapted to be held in a groove of a respective one only of the panel and a second portion adapted to be secured to a portion of the building frame, said
100 first portion of the base of one of said first members of a pair being received in said groove in only one of said adjacent panels and said first portion of the base of the other of said first members of a pair being received in said groove in
105 the other of said adjacent panels only, and

(2) retainer means formed on said second portion of said base integrally therewith and adapted to be disposed adjacent to one face of the joint opening; and

110 (b) a second member for covering the joint opening on said one face thereof, said second member having at least one leg extending into said retainer means on said second portion of the base of both of said first members of a pair and
115 being retained thereby.

2. A connector assembly according to claim 1, in which said base of said each first member has in said second portion thereof a hole to receive a fastening screw.

120 3. A connector assembly according to claim 1, in which said retainer means includes a pair of parallel spaced arms projecting from said second portion of said base in a direction such that, in use, they project toward said one face of the joint
125 opening and terminating in a pair of inwardly directed flanges, respectively, said one leg of said second member terminating in at least one lateral protruberance engageable at least one of said pair of flanges to retain said leg between said second



- arms.
4. A connector assembly according to claim 2, in which each said first member has a projection on said second portion of said base for extending into a groove formed in the portion of the building frame.
5. A building structure comprising a building frame, two adjacent panels and a connector assembly connecting the two adjacent panels edge to edge and to the building frame with a joint opening between such adjacent panel edges, each of the panels having a groove extending longitudinally along the edge thereof, the building frame having a portion disposed adjacent to one face of the joint opening, said connector assembly comprising:
- (a) at least a pair of first members each including
- (1) a base having a single first portion held in the groove of a respective one only of the panels and a second portion secured to said portion of the building frame, said first portion of the base of one of said first members of a pair being received in said groove in one only of said adjacent panels and said first portion of the base of the other of said first members of a pair being received in said groove in the other of said adjacent panels only, and
- (2) retainer means formed on said second portion of said base integrally therewith and disposed adjacent to the other face of the joint opening; and
- (b) a second member covering the other face thereof, said second member having at least one leg extending into said retainer means on said second portion of the base of both of said first members of a pair and being retained thereby.
6. A building structure according to claim 5, in which said base of said each first member has in said second portion thereof a hole receiving a fastening screw extending threadedly into said portion of the building frame.
7. A building structure according to claim 5, in which said retainer means includes a pair of parallel spaced arms projecting from said second portion of said base toward the other face of the joint opening and terminating in a pair of inwardly directed flanges, respectively, said one leg of said second member terminating in at least one lateral protruberance engaging at least one of said pair of flanges to retain said leg between said arms.
8. A building structure according to claim 6, in which each said first member has a projection on said second portion of said base extending into a groove formed in the portion of the building frame, the last-named groove having threaded portions with which the fastener screw is threadedly engageable.