

DOOR PANEL ASSEMBLY**Field of the Invention**

This invention relates to reinforcement of panels, particularly but not exclusively, a door panel.

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Background of the Invention

It is known to reinforce a door by providing reinforcing sections in lateral side edges of the door. EP 280306, for example, discloses a "U"-shaped section which is arranged at an edge of a door panel. Free ends of metal sheeting, forming leaves of the panel, may be folded about the edge of the door and into a channel defined by the section. U.S. 5,417,029 also discloses a metal door where free ends of the metal door leaves are folded into a channel provided down an edge of the door.

In both the above described doors, the channel is relatively wide, being formed between free ends of the relevant section. The open nature of the sections may adversely affect the aesthetic appearance of the door and may to some extent compromise the structural strength of the door.

Summary of the Invention

The present invention seeks to provide a panel assembly which addresses these disadvantages.

In accordance with the invention there is provided a panel assembly including a panel formed of a frame and at least one leaf arranged over the frame, wherein the frame includes a reinforcement tube provided along a lateral edge of the panel and wherein the tube is



recessed to define an elongate groove extending lengthwise thereof, the groove receiving a free edge of the at least one leaf.

Preferably, the panel has two leaves and a free edge of each of the leaves is secured within the groove, the width dimension of the groove being in the order of the combined width of the free ends of the leaves.

Preferably, the frame includes two tubes, with respective grooves, provided at opposite lateral edges of the panel.

Preferably, one of the tubes houses a latch and is provided with an adjacent buttress portion projecting laterally of the panel.

10 Preferably, the assembly includes a second panel for coupling to a support structure, the second panel being formed by a second frame with associated leaves secured thereto, the second frame including at least one additional reinforcing tube formed with an aperture for receipt of the latch and a rebate for receipt of the buttress portion, such that the panels interlock when the latch is located in the aperture.

15 Preferably, the tubes are roll formed.

Preferably, the first panel is a door and the second panel is a door jamb component.

Preferably, the support structure forms a door frame and the jam component is hingedly coupled thereto.

20 Brief Description of the Drawings

The invention is more fully described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

Figure 1 is a cross-sectional plan view of a panel assembly of the invention;



Figure 2 is an enlarged cross-sectional view of reinforcing tubes of the panel assembly;

Figure 3 is a cross-sectional plan view of an alternative panel assembly;

Figures 4 and 5 illustrate enlarged cross-sectional views of the reinforcing tubes of the assembly Figure 3; and

Figure 6 is a front view of the panel assembly of Figure 3.

Detailed Description of a Preferred Embodiment of the Invention

The panel assembly 1 is shown in Figure 1 as a panel 2 formed of a frame 3 and two metal leaves 4, 5 secured thereto. The panel 2 is in the form of a door 6 which is also provided with handles 7, 8 a latch 9 and a hinge 10. The hinge 10 serves to pivotally mount the door at one side 11 of a door frame 12 while the latch 9 serves to secure the door to an opposite side 13 of the frame 12.

The frame 3 of the panel 2 includes two reinforcement tubes 14, 15, which are shown in more detail in Figure 2. The tubes 14, 15 are preferably formed of steel which is roll formed in a box section with a respective recess 16, 17 so as to define an associated elongate groove 18, 19 extending lengthwise of the tubes 14, 15. The grooves 18, 19 receive free edges 20, 21, 22, 23, respectively, of the associated leaves 4 and 5. The grooves 18, 19 are preferably of a width dimension in the order of the combined width of the free ends of the leaves so that there is minimal space therebetween. As a result, the panel 2 presents a relatively smooth and neat external appearance since the free end of the leaves 4, 5 are neatly secured within the grooves 18, 19. The closed nature of the tubes 14, 15 also ensures a high degree of strength is provided by the tubes.

An alternative panel assembly 30 is shown in Figure 3. The assembly includes a first panel 31 which is formed generally in accordance with the panel 2. The only difference is that the previously described tube 15 is replaced with a modified tube 32 which is shown more clearly in Figure 4 as including a buttress portion 33 which projects laterally of the panel. The assembly 30 also includes a second panel 50 which is shown in Figure 5 as being formed of a frame 34 comprising tubes 35 and 36 with associated leaves 37, 38 secured thereto. The tubes 35, 36 are formed in a similar manner to the tubes 14, 15 described with reference to Figures 1 and 2 in that roll formed grooves 39, 40 are provided for receipt of free ends of the respective leaves 36, 37. The tube 35 is, however, formed with an aperture (not shown) for receipt of the latch 9 of the first panel 31 and is roll formed to include a rebate 41 for receipt and abutment with the buttress 33 so that the two panels 31, 33 interlock when the latch is engaged in the aperture. The panel 33 thereby serves as a door jam component, which is in turn hingedly attached to a door frame 42. The overall arrangement of the assembly 30 is shown in Figure 6 where the panel 31 is shown as being coupled to the frame 42 by hinges 43 and the second panel 33 is likewise hingedly coupled to the door frame 42 by hinges 44.

The invention has been described by way of non-limiting example only and many modifications and variations may be made thereto without departing from the spirit and scope of the invention as described.



The claims defining the present invention are as follows:

1. A panel assembly including a panel formed of a frame and at least one leaf arranged over the frame, wherein the frame includes a reinforcement tube provided along a lateral edge of the panel and wherein the tube is recessed to define an elongate groove extending
5 lengthwise thereof, the groove receiving a free edge of the at least one leaf.

2. A panel assembly as claimed in claim 1, wherein the panel has two leaves and a free edge of each of the leaves is secured within the groove, the width dimension of the groove being in the order of the combined width of the free ends of the leaves.

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3. The panel assembly as claimed in claim 1 or 2, wherein the frame includes two tubes, with respective grooves, provided at opposite lateral edges of the panel.

4. The panel assembly as claimed in claim 3, wherein one of the tubes houses a latch and
15 is provided with an adjacent buttress portion projecting laterally of the panel.

5. The panel assembly as claimed in claim 4; wherein the assembly includes a second panel for coupling to a support structure, the second panel being formed by a second frame with associated leaves secured thereto, the second frame including at least one additional
20 reinforcing tube formed with an aperture for receipt of the latch and a rebate for receipt of the buttress portion, such that the panels interlock when the latch is located in the aperture.

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REPLACED



6. The panel assembly as claimed in any one of claims 1 to 5, wherein the tubes are roll formed.
7. A panel assembly as claimed in claim 5, wherein the first panel is a door and the
5 second panel is a door jamb component.
8. A panel assembly as claimed in claim 5, wherein the support structure forms a door frame and the jam component is hingedly coupled thereto.