



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 457 446 A2

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **91303686.9**

(51) Int. Cl.⁵: **E06B 3/76**

(22) Date of filing: **24.04.91**

(30) Priority: **16.05.90 GB 9010979**

(43) Date of publication of application:
21.11.91 Bulletin 91/47

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB IT LI LU NL SE

(71) Applicant: **P.C. HENDERSON Limited**
Tangent Works Harold Hill
Romford Essex RM3 8UL(GB)

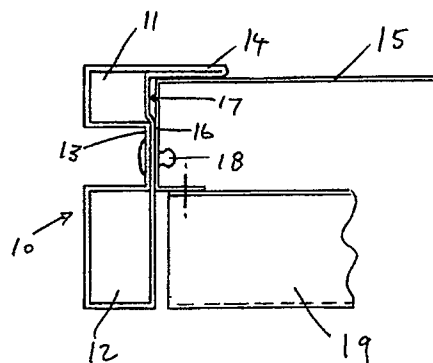
(72) Inventor: **Haslam, Brian**
63 Wheatal Drive
Whitburn, Sunderland SR6 7HQ(GB)

(74) Representative: **Virr, Dennis Austin et al**
Urquhart-Dykes & Lord Floor B Milburn
House Dean Street
Newcastle upon Tyne NE1 1LE(GB)

(54) **Panelled door.**

(57) A panelled door, for example for a garage, devised to allow fabrication in a range of different sizes while being of sound construction and attractive appearance, comprises a box-section frame (10) having a peripheral flange (14) extending into the plane of the door and a flat zone (13) of reduced thickness perpendicular to the plane of the door. One or more, for example three, door panels (15; 20; 23, 24) are located within the frame against the rear of the peripheral flange and are secured in that position by fixing means (18; 22; 25) passing through the flat zone.

Fig. 1



EP 0 457 446 A2

The present invention relates to panelled doors, such as may be installed as the vehicle access doors of garages, especially domestic garages, but including similar doors for other purposes. The invention will be described as applied to doors for garages.

Garage doors are required to be produced in a wide range of different sizes and it is therefore common for manufacturers to make such doors in the form of a generally rectangular frame into which one or more panels may be fitted. This approach allows doors to be assembled from different numbers of differently-sized panels and also permits panels of different designs to be assembled. However existing doors of the panelled type suffer from various disadvantages. First of all, the panels are usually secured to peripheral flanges extending into the plane of the door from the supporting frame and, in order to make the panel fixings invisible from the front of the door, the panels are mounted forward of the flanges and secured thereto from the rear. A result is that the maximum thickness of door panel that is aesthetically acceptable is determined by the distance from the front of the frame to the flange. Panels whose thickness differs much from this distance tend to give the assembled door an unattractive appearance. Secondly, if the panels are of timber, aesthetic considerations have led them to be secured with screws from the rear but, when the timber is relatively thin, fixing in this way does not produce a satisfactorily strong construction.

It is an object of the present invention to provide a panelled door which is a significant improvement over such doors of the above-described, presently-available type and wherein some at least of the disadvantages of such doors are reduced or eliminated.

The panelled door of the present invention comprises a generally rectangular frame formed from lengths of a metal box section, a peripheral flange extending into the plane of the door from said frame along a line in the region of the front of the door, a zone of said box section of reduced thickness having a generally flat surface extending generally perpendicular to the plane of the door, and one or more flat door panels located within the frame, abutting a rearward face of said peripheral flange and secured in said position by fixing means passing through said generally flat surface.

Thus it is characteristic of the door of the present invention that the frame is of box section, that the panel or panels are fitted into the frame behind the peripheral flange and that the panel or panels are secured from the side. As a result, the appearance of the front of the door will be independent of the thickness of the panel(s), the fixing of the panel(s) is not visible from the front or even the

back of the door, and even relatively thin timber panels can be well secured in a manner which is not dependent on the panel thickness.

The door frame is formed from metal lengths of box section, as indicated, and this structure itself contributes significantly to the overall rigidity of the door. However it is particularly preferred that the metal section should have a profile formed as two parallel box sections, spaced apart by the flat zone of reduced thickness through which the panel(s) are secured. The flat zone may comprise a single thickness of metal but it is preferred that it comprise two thicknesses of metal, for example as described in more detail hereinafter with reference to the accompanying drawings. When the frame comprises a double-box profile as referred to above, the two box sections may be of different dimensions, at least in the direction of the thickness of the door.

The peripheral flange against which the panel(s) are secured preferably extends from the foremost edge of the frame but may if desired be located a little to the rear of that edge. The width of the flange in the direction of the plane of the door is determined by both structural and aesthetic considerations but may typically lie within the range from 1 cm. to 2 cm. The metal frame overall may typically have a thickness perpendicular to the plane of the door within the range from 4 cm. to 8 cm., especially from 5 cm. to 7 cm.

Although the door according to the present invention may comprise a single panel within the frame, usually it will comprise two or more panels. Typically the door will comprise at least three panels in its width. In subsequent description in this specification, reference will be made to the door having "panels" (in the plural) but it will be understood that this is not intended to limit the invention to doors having more than one panel.

The panels may be of metal, timber or glass-reinforced plastic and their thickness is independent of the front-to-back thickness of the frame. However the structure of the door according to the invention is such that the panels may be relatively thin; thus the panels will usually be less in thickness than the frame. For example, a suitable metal panel may comprise a single thickness of pressed metal, formed with a peripheral flange extending generally perpendicular to the plane of the panel to enable the panel to be secured to the frame or to an adjacent panel.

The method of securing the panels to the frame will be determined in part by the material of the panels. Thus timber panels will preferably be secured by wood screws passing through the flat zone of the frame into the panel. Metal panels may be secured by rivets or similar methods of fixing. As one alternative, the panels may be secured in

place against the peripheral flange by lengths of metal of angle section, abutting the rear of the panel and secured to the frame by fixing means passing through the generally flat zone of the frame.

Preferably the door is given additional strength by means of one or more bracing struts, extending across the frame at the rear of the panels.

The invention will now be further described, by way of example only, with reference to the accompanying drawings, wherein:-

Fig. 1 is a partial view, in horizontal cross-section, of a first preferred embodiment of the door according to the present invention; and

Figs. 2 and 3 are corresponding views, respectively, of second and third preferred embodiments of the door.

In each of the illustrated embodiments of the door, the frame is formed from four lengths of double-box section steel, only one of which is visible in these partial views. These steel sections are formed from sheet steel by roll forming and seaming and are assembled into the frame by welding at the four corners of the generally rectangular frame.

The steel section 10 comprises a first box section 11, joined to a second box section 12 by a narrow double-thickness neck forming a generally flat zone 13 extending throughout the length of each steel section. The dimensions of the second box section 12 are increased as shown in Fig. 1 as compared with the corresponding box section 12 in Figs. 2 and 3, to provide additional strength for a relatively larger door. From the box section 11, a flange 14 extends into the plane of the door around the whole of the door periphery, at the front face of the door.

The door of Fig. 1 is formed from three pressed steel panels 15, only one of which is visible. Each panel 15 is formed with a pair of opposed side flanges 16, with an external locating rib 17 in one side flange and a corresponding groove in the other; the rib 17 and grooves assist location and correct orientation of the panels and also assist in forming a seal between adjacent panels. The panels 15 are secured in place against the rearward face of the peripheral flange 14 by means of rivets 18 passing through the flat zone 13 and the flange 16. The whole door assembly is given added rigidity by cross-bracing struts 19.

In the door illustrated in Fig. 2, the relatively thinner panels 20 are held in place by lengths 21 of L-section steel, in turn secured by rivets 22 to the flat zone 13 of the frame sections 10.

Fig. 3 shows a third form of door, in which the door panels each comprise a structure of timber members 23 and a flat sheet of plywood 24. In this case the panels are secured by wood screws 25

passing through the flat zone 13 into the timber members 23, and by L-section lengths 26, secured by rivets 27 extending into the box section 12.

As can be seen, the door according to the present invention is able to present a neat front surface independently of the thickness of the various forms of panel illustrated and even timber panels may be securely held in place by fastening from the side of the frame. In addition, the channel formed between the two box sections in the region of the flat zone 13 may be used for mounting optional additional features of the doors, including, for example, snap-in plastics rubbing strips and/or lower dust seals.

Claims

1. A panelled door comprising a generally rectangular frame and one or more flat door panels fitted therein, characterised in that the frame is formed from lengths (10) of a metal box section having a peripheral flange (14) extending into the plane of the door from along a line in the region of the front of the door and a zone (13) of reduced thickness having a generally flat surface extending generally perpendicular to the plane of the door, and in that the door panel or panels (15; 20; 23, 24) is/are located within the frame in a position abutting a rearward face of said peripheral flange (14) and secured in said position by fixing means (18; 22; 25) passing through said generally flat surface.
2. A panelled door according to claim 1, characterised in that said lengths (10) of metal section have a profile formed as two parallel box sections (11, 12) spaced apart by said zone (13) of reduced thickness.
3. A panelled door according to claim 2, characterised in that said two parallel box sections (11, 12) are of different dimensions in the direction of the thickness of the door.
4. A panelled door according to any of the preceding claims, characterised in that said zone (13) of reduced thickness comprises two thicknesses of metal.
5. A panelled door according to any of the preceding claims, characterised in that the width of said peripheral flange (14) in the direction of the plane of the door lies within the range from 1 cm to 2cm.
6. A panelled door according to any of the preceding claims, characterised in that the overall

thickness of the frame (10) in a direction perpendicular to the plane of the door lies within the range from 4 cm to 8 cm.

7. A panelled door according to any of the preceding claims, characterised in that the thickness of each panel (15; 20; 23, 24) is less than that of the frame (10). 5

8. A panelled door according to any of the preceding claims, characterised in that each panel (15) comprises a single thickness of pressed metal, formed with a peripheral flange (16) extending generally perpendicular to the plane of the panel. 10
15

9. A panelled door according to any of the preceding claims, characterised in that each panel (15; 23, 24) is secured in place by said fixing means (18; 25) passing through said flat zone (13) into the panel. 20

10. A panelled door according to any of claim 1 to 8, characterised in that each panel (20) is secured in place by lengths of metal (26) of angle section, abutting the rear of the panel and secured to the frame (10) by fixing means (22) passing through said flat zone (13) of the frame. 25
30

35

40

45

50

55

FIG. 1

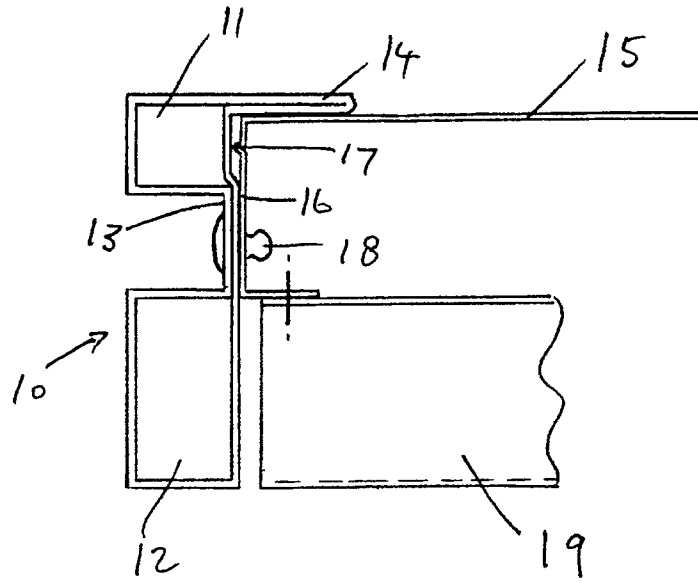


FIG. 2

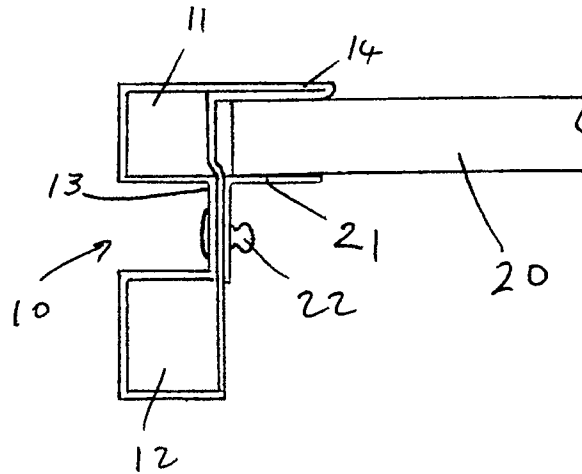


FIG. 3

