April 15, 1930. E. C. G. ENGLAND 1,754,226

DOOR FOR VEHICLES

Filed June 19, 1928

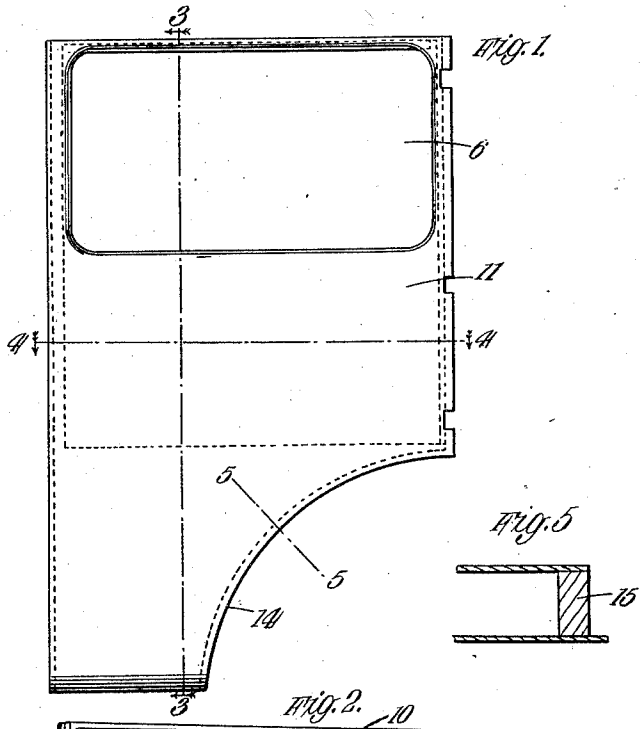


Fig. 1.




Fig. 5.

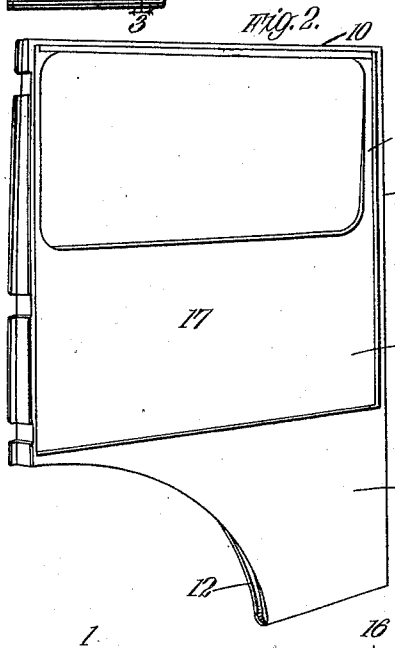


Fig. 2.

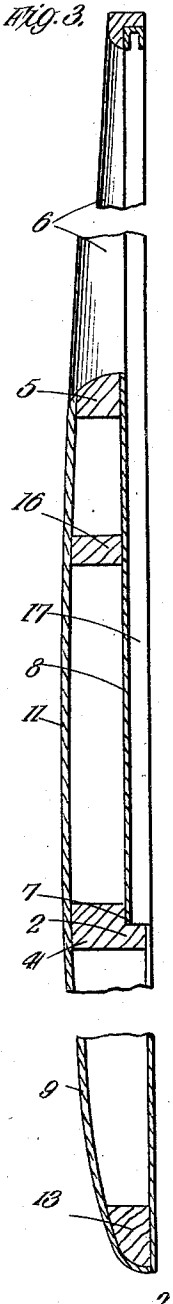


Fig. 3.

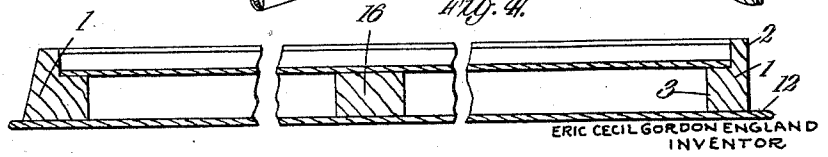


Fig. 4.

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# UNITED STATES PATENT OFFICE

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## DOOR FOR VEHICLES

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The present invention relates to doors for vehicles, more particularly to doors for passenger motor road vehicles having saloon bodies, and wherein the doors are provided with vertically sliding glass windows.

Such doors are frequently constructed with a hollow lower portion comprising back and front panels spaced at sides and bottom by suitable frame elements the side elements extending upwards and connected across the top, the whole being adapted to accommodate the window runs, the window, and the window raising and lowering gear. Such constructions, to give the device strength and rigidity are necessarily heavy in relation to any particular size of door, and moreover replacement of windows or any necessary repair of the window raising and lowering gear necessitates dismantling of the structure of the door to a greater or less degree.

The object of the present invention is to lighten and cheapen the construction of motor body doors and to obviate the necessity of dismantling the structure of the door to insert windows or raising and lowering gear or to effect replacements or repairs thereof.

A door according to the invention is constructed with a hollow box-like or braced lower panel the sides of which extend upwards to form a window opening and the whole is adapted to receive the window and accessories as an addition on the inner side of the main structure of the door. Thus the frame of the door may extend inwardly and be rabbeted to form a recess to accommodate the window runs and window, and a removable trimming board on the inside may serve to accommodate the window when lowered. In one construction the door may comprise a wooden frame substantially of L-section, one limb of the L forming the contour of the door and the other projecting inwards in the plane of the door. The lower portion of this frame may be formed into a hollow box-like panel by fitting plywood over the inside and outside of the said inwardly projecting limb of the L-section frame and over a cross-bar disposed between the sides of the frame at a suitable level. Thus a very light rigid door structure in relation to size of door can be attained, and a recess provided on the inside of the door to accommodate the window &c. as an addition to the door structure as above described. The inner plywood sheet is preferably fitted tightly within the limbs forming the contour of the door and also in a corresponding rabbet formed at the under and inner edge of the cross-bar referred to.

The recessed portion of the door may in some cases extend only partly down the door below the window opening this depending on the depth of the window to be accommodated, the extreme lower part of the door being formed as a hollow box-like or braced panel of the full door thickness. This may be readily carried out in the case of a timber and plywood door by providing a horizontal rabbeted cross-bar in the frame-work at a suitable distance below the rail forming the lower boundary of the window opening, the rabbet in this cross-bar corresponding with the rabbeted sides of the door frame. Plywood may be fitted within the rabbeted portions of the said cross-bar and frame sides and over the inner side of the lower window rail to provide the recessed portion for the window, and below the said cross-bar plywood may be fitted over the extreme inner surfaces of the said rabbeted cross-bar and frame sides to constitute a hollow box-like panel of the full door thickness.

The invention will now be described with reference to one example of construction which is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a door viewed from the outside.

Figure 2 is a perspective view showing the inside of the door.

Figure 3 is a section on a larger scale on the line 3—3 of Figure 1, and

Figures 4 and 5 are sections, also on a larger scale, on the lines 4—4 and 5—5 respectively of Figure 1.

The door illustrated is of timber and plywood construction. It comprises a timber framing 1 of L-section having one limb 2 forming the contour of the door and the other limb 3 projecting inwards in the plane of the door. Between the sides of the frame

there extends a cross-bar 4 rabbeted similarly to the sides. 5 is the cross-rail constituting the lower edge of the window opening 6, the inner surface of this cross-rail corresponding with the ledges 7 of the rabbeted sides and cross-bar 4. Plywood 8 having a window opening cut therein is fitted on to the ledges 7 and the inner surface of the cross-rail 5 and attached by any convenient means such as gluing and nailing or screwing. Below the cross-bar 4 plywood 9 is fitted over the extreme inner surfaces of the limbs 2 of the rabbeted sides and cross-bar so as to constitute a lower hollow box-like panel of the full door width and this plywood may also extend around the sides and top of the door as shown at 10, Figure 2. Plywood 11 is also attached over the outside of the framework, preferably in a single sheet with the appropriate window opening cut therein and this may extend beyond the framing around the door to form door laps 12. The bottom rail 13 of the door frame is a simple cross-bar rabbeting in this case being unnecessary but it may be rabbeted if desired and the plywood 8 carried to the bottom of the door. Similarly at the curved portion of the door at 14 designed to clear a wheel housing the frame may comprise a simple curved piece 15. 16 in Figures 3 and 5 represent sections of a diagonal bracing bar extending from one corner to another between the rail 5 and cross-bar 4.

It will be seen from the foregoing description that a very light, strong and rigid construction of door is provided affording a recess 17 on the inner side to accommodate the window runs, the window and the window raising and lowering gear. The recess when the window and accessories are in position may be covered by a trimming board which may be attached in a readily removable manner as the door is structurally complete without it and does not depend upon any such board to render it structurally strong.

It will be noted that instead of the actual outer frame members as 1 projecting inwardly beyond the bracing or panelling to constitute a recess for the window and accessories, the said members might be of substantially the same thickness as the said panelling or bracing and inwardly projecting fillets or like attachments might be attached to the said frame members to provide the said recess for the window and accessories.

An analagous construction can be carried out in sheet metal and in this case instead of a complete closure or cover on the inner side of the door to form the bottom panel, bracing strips may be provided extending between the frame elements and in planes at right angles to the outer covering or closure and connected with both by brazing or other suitable means. In the case of a metal constructed door the entire frame with the outer part of the lower panel may be formed in one piece by suitable pressing operations.

A similar system of bracing to that just described may be employed in the case of a wooden door but in that case the inner closure or covering of plywood offers probably the simplest and most rigid construction in relation to weight.

I claim:—

1. A door of timber and plywood, comprising timber side frame members rabbeted on the inside, a cross-rail constituting the lower edge of the window opening, the inner surface of the said rail corresponding with the bottom ledges of the rabbeted side frame members, a horizontal cross-bar disposed between the said cross-rail and the bottom of the door and rabbeted similarly to the side frame members, plywood sheeting fitted on to the bottom ledges of the rabbeted side frame members and cross-bar and inner surface of the said cross-rail and extending between the said rail and the said cross-bar, other plywood sheeting fitted over the extreme inner surfaces of the said cross-bar and sides and extending between the said cross-bar and the bottom of the door, and plywood sheeting fitted over the outer surface of the frame to constitute a structurally complete door with a lower hollow box-like panel and a recess on the inside of the door to accommodate the window and accessories.

2. A timber and plywood door comprising timber side frame members rabbeted on the inside, sheet panelling fitted to the outside of said members and having a window opening therein, further sheet panelling secured to the rabbet of said side frame members and having a window opening therein to correspond with the window opening in the outside panelling, the arrangement being such that a recess is left on the inside of the door to receive the window and its accessories.

3. A timber and plywood door comprising timber side frame members rabbeted on the inside, a cross bar between said side frame members at the lower part thereof similarly rabbeted, sheet panelling fitted to the outside of said members and having a window opening therein, further sheet panelling secured to the rabbet of the said side frame members and of said cross bar and having a window opening therein to correspond with the window opening in the outside panelling, the arrangement being such that a recess is left on the inside of the door to receive the window and its accessories.

4. A timber and plywood door comprising timber side frame members rabbeted on the inside, a cross bar between said side frame members at the lower part thereof similarly rabbeted, another plain cross rail disposed at about the middle of said side frame members and of less thickness than the same to constitute the lower edge of the window

opening, sheet panelling fitted to the outside of said members and having a window opening therein, further sheet panelling secured to the rabbet of the said side frame members and of said cross bar and to said rail, the said sheet panelling having a window opening therein to correspond with the window opening in the outside panelling, the arrangement being such that a recess is left on the inside of the door to receive the window and its accessories.

5. A timber and plywood door comprising timber side frame members rabbeted on the inside, a cross bar between said side frame members at the lower part thereof similarly rabbeted, another plain cross rail disposed at about the middle of said side frame members and of less thickness than the same to constitute the lower edge of the window opening, diagonal bracing bars disposed between said rabbeted cross bar and said rail, sheet panelling fitted to the outside of said members and having a window opening therein, further sheet panelling secured to the rabbet of the said side frame members and of said cross bar and to said rail, the said sheet panelling having a window opening therein to correspond with the window opening in the outside panelling, the arrangement being such that a recess is left on the inside of the door to receive the window and its accessories.

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