Feb. 18, 1941. K. L. SCHIFF 2,232,345

DOOR, ESPECIALLY FOR AUTOMOBILES

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Fig.1.

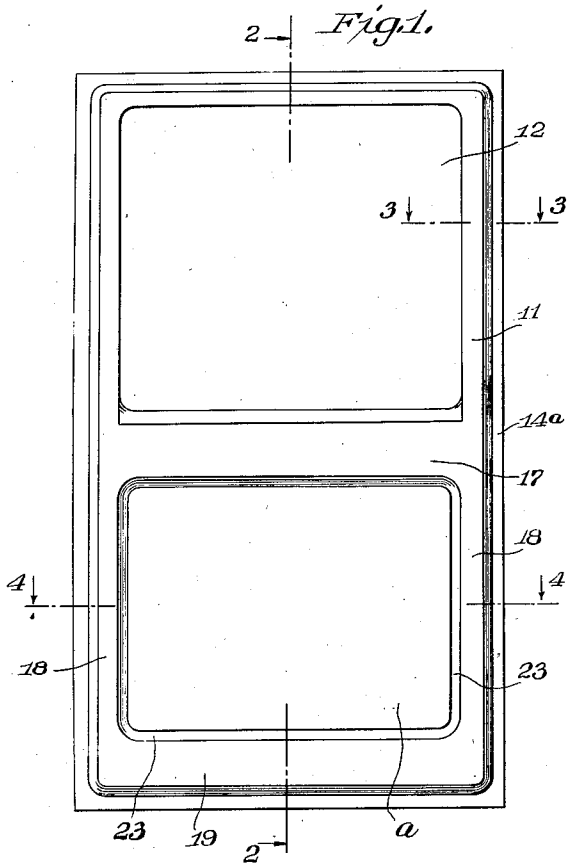


Fig.2.

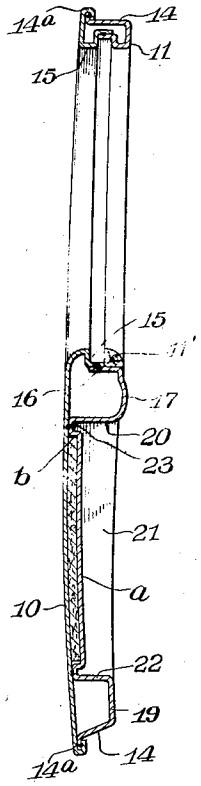


Fig.3.

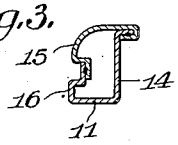
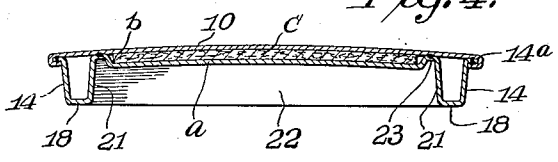


Fig.4.



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Fig. 5.

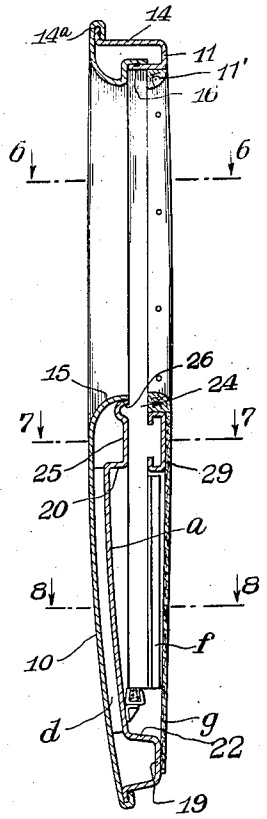


Fig. 6.

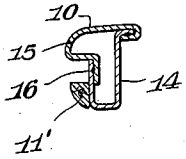


Fig. 7.

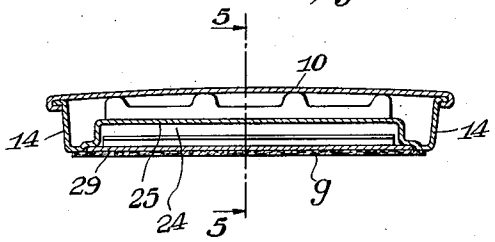
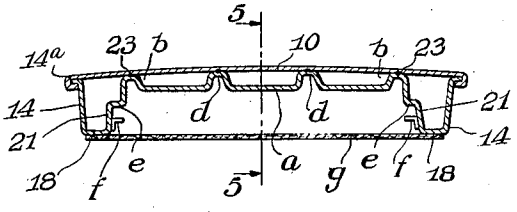


Fig. 8.



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Patented Feb. 18, 1941 2,232,345

UNITED STATES PATENT OFFICE

2,232,345

DOOR, ESPECIALLY FOR AUTOMOBILES

Karl Ludwig Schiff, Philadelphia, Pa., assignor to Edward G. Budd Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania

Application August 23, 1938, Serial No. 226,323
In Germany August 24, 1937

2 Claims. (Cl. 296—44)

The invention refers to such doors as are commonly used for automobiles and which comprise an inner and an outer panel which panels consist mostly of sheet metal.

It is among the objects of the invention to create a door of the type referred to which is relatively light in weight and yet strong and durable, which can easily and cheaply be manufactured and which is simple in construction.

The door according to the invention lends itself especially for manufacture from very thin sheet metal.

The new door is especially designated for closed automobiles, but certain of its features may also be used for open bodies or convertible bodies. Besides the new door may be used without inner upholstery.

The features of the invention will become apparent from the following detailed description when read in connection with the accompanying drawings.

In the drawings,

Fig. 1 is an inside view of a door according to the invention;

Figs. 2, 3 and 4 are sections along the correspondingly numbered section lines of Fig. 1 viewed in the direction of the arrows;

Fig. 5 is a section corresponding to Fig. 2, however, of another embodiment of the invention;

Figs. 6, 7 and 8 are sections along the correspondingly numbered lines of Fig. 5 viewed in the direction of the arrows.

The doors shown in the drawings consist mainly of an outer panel member 10 and an inner member 11, both of which are preferably formed as sheet metal stampings. Both of these members are provided with a window opening 12. The inner member 11 is provided along its outer margins with outwardly directed flanges 14 which form the jamb faces of the door and which are connected to the outer panel 10 by narrow lateral marginal flanges 14a. Along the margins of the window opening the inner wall 10 and the outer wall 11 are provided with flanges 15 and 16 respectively which are directed toward each other and connected with each other. Preferably these flanges form simultaneously wholly or partly the window guide. The lower part of the inner panel 11 comprises an outwardly projecting area a which is surrounded by the sections 17, 18 and 19 and the outwardly bent off parts 20, 21 and 22. Between the part a and the parts 20, 21 and 22 an outwardly projecting beading 23 is provided which rests against and is connected to the outer panel 10. The connection between the beading 23 and the outer panel 10 is preferably effected by electric spot welding.

In the embodiment shown in Figs. 1 to 4, the beading 23 completely surrounds the section a whereby an offset b is formed between those two parts. By said beading and offset, a shallow space is created between part a of the inner panel and the main body of the outer panel 10. This space may be filled by a felt plate c or any other material, having heat insulation, sound deadening or the like properties. The intermediate member c mutually interbraces the central lower parts of the outer panel 10 and of the inner panel 11.

The mutual interbracing of the outer panel and the inner panel may also be effected in the manner shown in Figs. 5 to 8. These figures show ribs d pressed out from part a of the inner panel in the region between the margins confining said part a. These ribs d may either be rigidly connected to the outer panel 10 as by spot welding or they may rest against the outer panel by means of an intermediate layer of felt, fabric or the like.

The door shown in Figs. 1 to 4 is intended for a stationary window or for a window consisting of two parts slidable in horizontal direction. In this embodiment, separate upholstery to be fastened to the parts 17, 18 and 19 may be dispensed with whereby the entire inner panel is suitably painted or provided with a cover of fabric or the like directly attached thereto.

The embodiment shown in Figs. 5 to 8 is intended for an upwardly and downwardly movable window. In this embodiment the window guide channel in the lower part of the door may be formed by offsets e of the parts 21 of the inner panel and by additional members f. Along the lower margin of the window opening the inner panel is provided with an outwardly offset part 25 which is connected along its upper margin 26 to the inner margin of flange 15 of the outer panel, thereby leaving a slot 24 for the passage of the window between itself and a plate 29. Said plate 29 is fastened to the vertical parts 18 of the inner panel and it may preferably serve for the attachment of the window regulator and the lock. The member 29 may be removably fastened to the members 18. The lower part of the inside of the door is covered by an upholstery plate g.

11' in Figure 2, indicates a removable moulding rail and in Figures 5 and 6, a removable window moulding frame.

There are of course many modifications possi-

ble falling into the scope of the appended claims. Certain features of the invention may be used for the stationary walls of a vehicle body, especially at side windows thereof.

What I claim is:

1. In a vehicle door having a lower portion adapted to receive an upwardly and downwardly movable window and comprising outer and inner panels, said outer panel being provided along the upper margin of the lower door portion with an inwardly extending flange ending outside of the path of the window to be inserted, said inner panel having a substantially vertical section at and near the upper margin of said lower door portion, this section being outwardly offset with respect to the plane of the inner surface of the door to a plane outside of the path of said window which plane substantially coincides with the inner edge of said flange but is spaced from the main body of the outer panel, the upper margin of said offset section of the inner panel and the inner margin of said flange of the outer panel being connected to each other, said offset section of the inner panel and said flange of the outer panel extending substantially from a rail portion along the one vertical edge of the door to a rail portion along the opposite vertical edge of the door and form together a hollow reinforcing structure, between said rail portions, a separate member being arranged inwardly of the path of said window with its upper margin at substantially the same height as said flange of the outer panel, said separate member being fastened to said inner panel.

2. In a vehicle door having a lower portion extending up to the belt line of the vehicle and comprising inner and outer panels, a central section of the inner panel below the belt line and constituting a major portion of said panel being outwardly offset to a plane near to but spaced from the inner surface of the outer panel, said inner panel being rigidly connected to the inner surface of said outer panel along the vertical margins of said central section and along its outer vertical margins as to form closed box sectional door rails, additional rigid connections between the inner and outer panel being distributed over the area of said offset portion of the inner panel, the area covered by said additional connections being comparatively small in relation to the entire area of said central section so that by far the greater portion of that central section is spaced from the outer panel.

K. L. SCHIFF.