

Sept. 1, 1953

M. WATTER ET AL
COMPOSITE DOOR FOR AUTOMOBILES

2,650,857

Filed July 11, 1951

3 Sheets-Sheet 1

FIG. 1

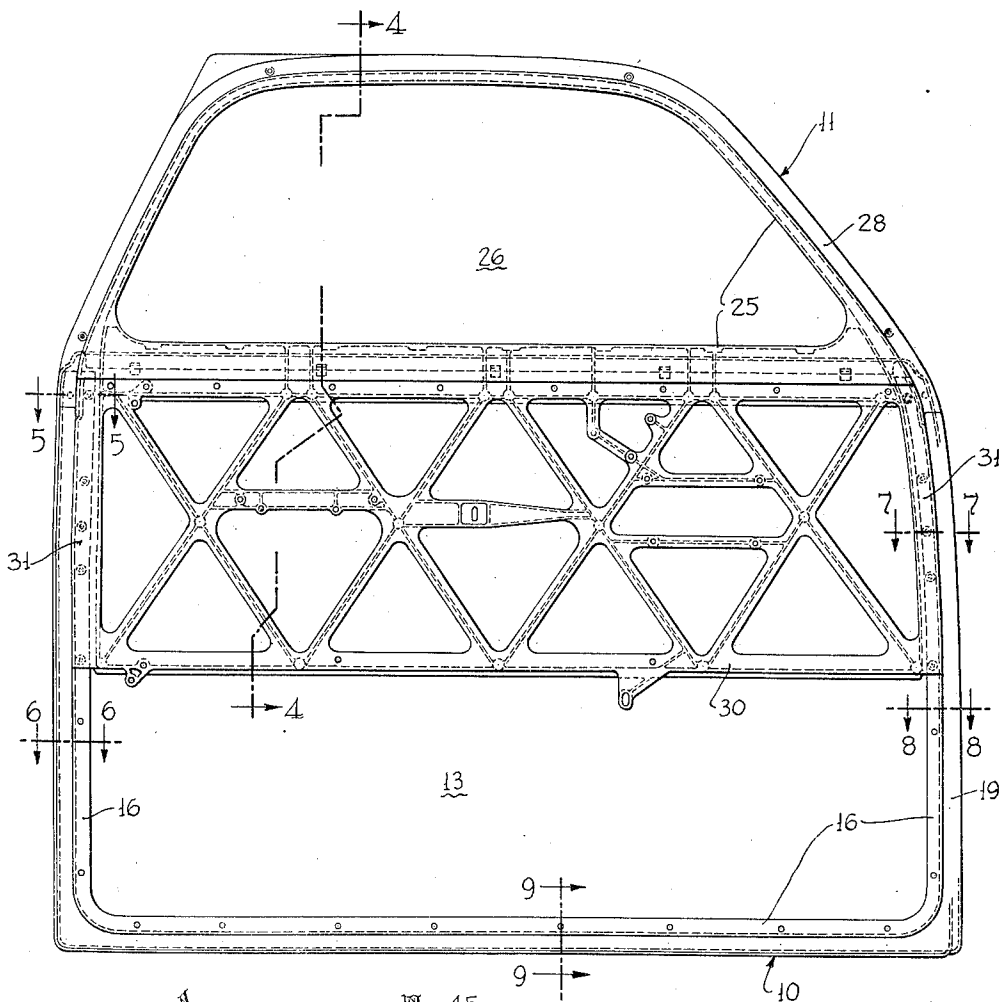
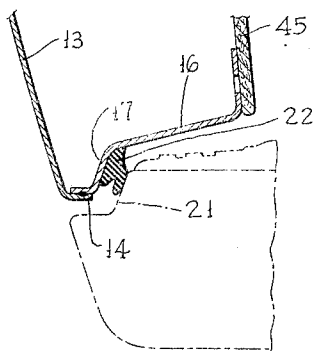


FIG. 9



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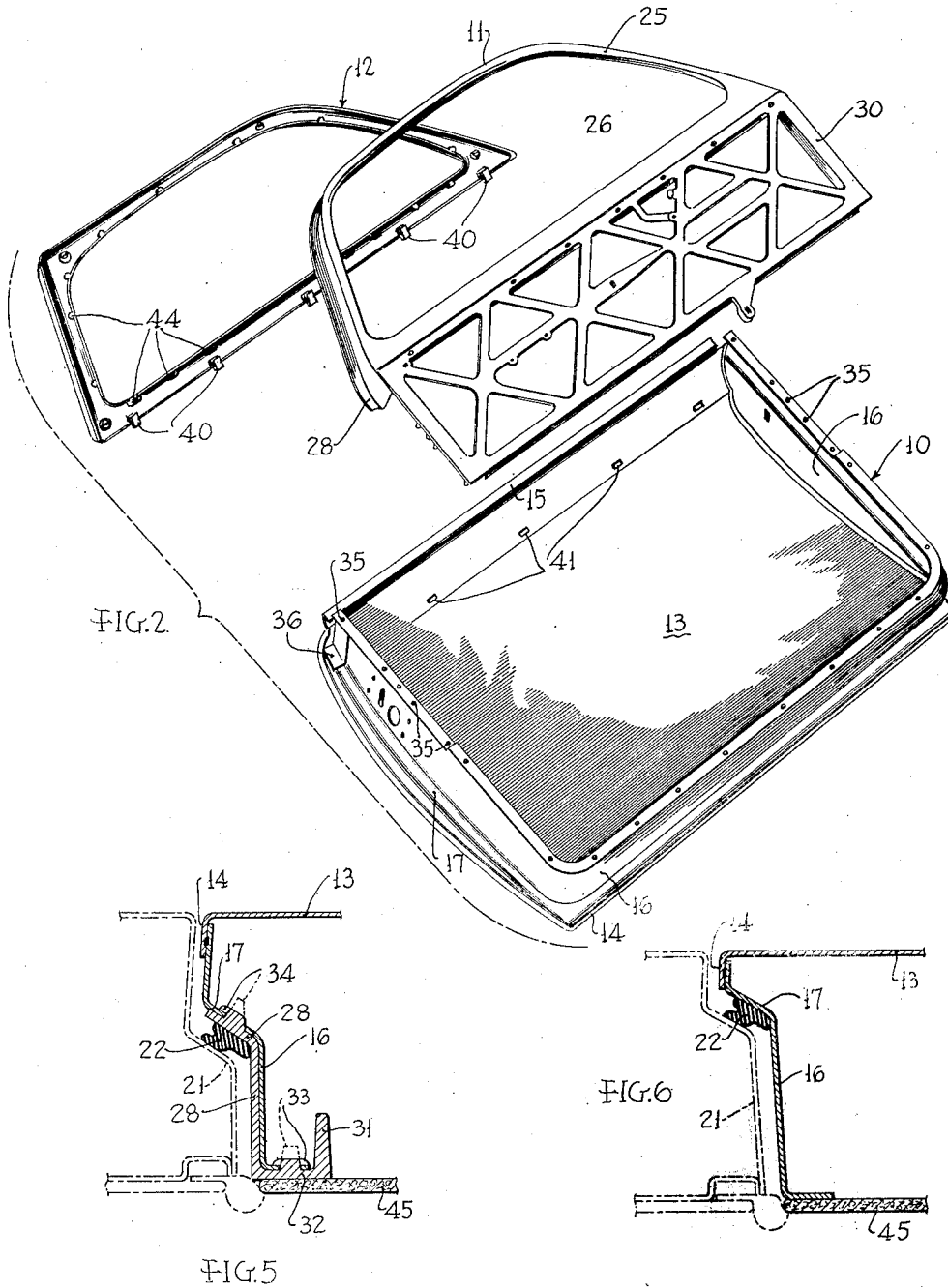
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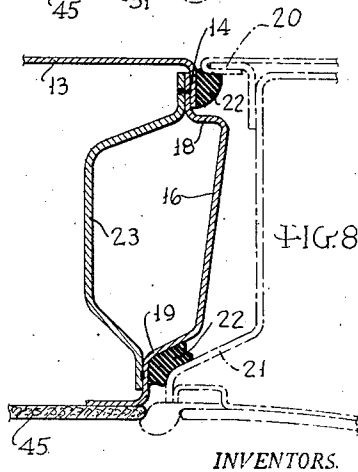
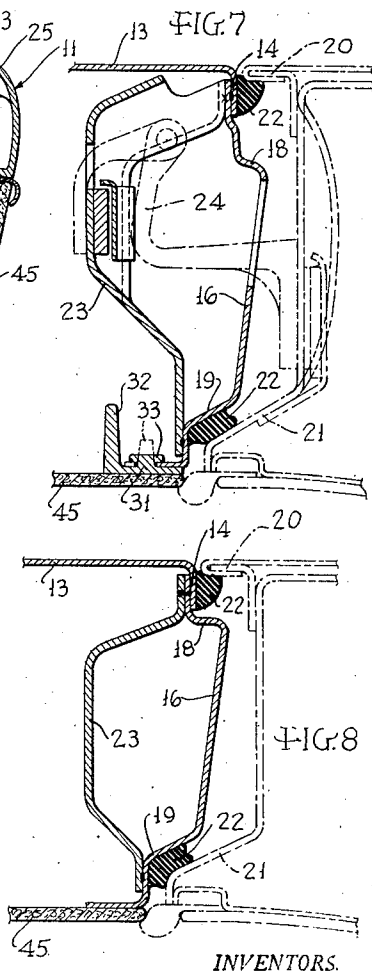
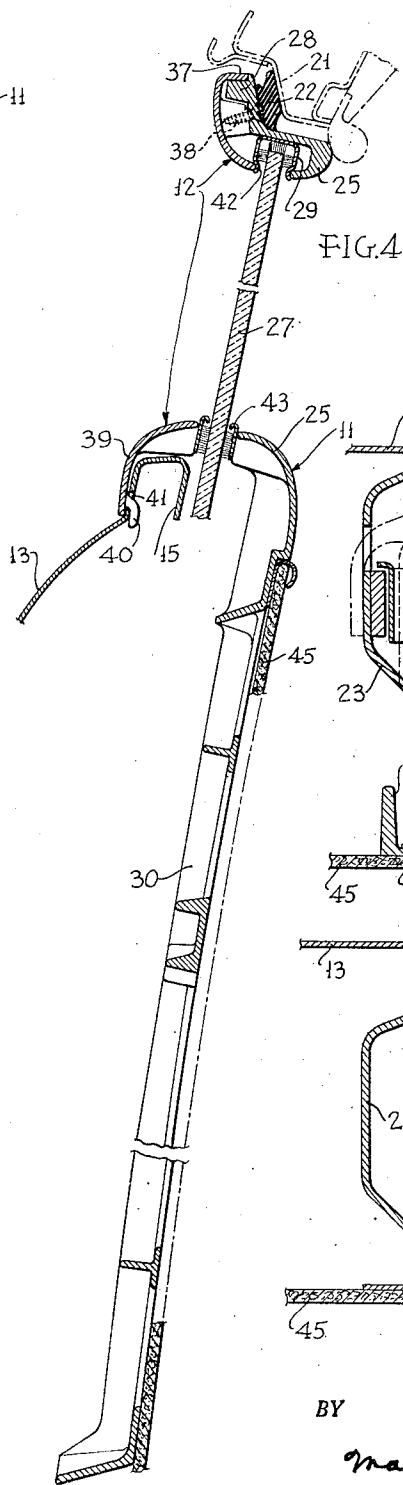
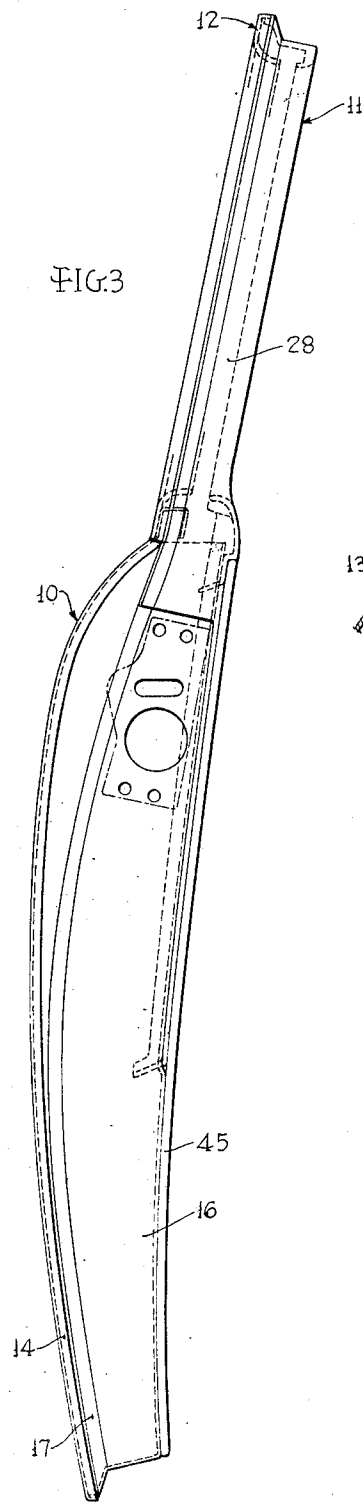
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UNITED STATES PATENT OFFICE

2,650,857

COMPOSITE DOOR FOR AUTOMOBILES

Michael Watter and Walter S. Eggert, Jr., Philadelphia, Pa., assignors to The Budd Company, Philadelphia, Pa., a corporation of Pennsylvania

Application July 11, 1951, Serial No. 236,183

5 Claims. (Cl. 296—44)

1

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The invention relates to improvements in doors for automobiles and has for its object simplification of manufacture, reduction in weight and expense, increased strength, and greater freedom in regard to appearance and shape as compared with customary sheet metal doors.

The objects of the invention are achieved by a construction consisting mainly of a sheet metal structure below the window opening, and of one or two die-castings surrounding the window opening and forming outer and inner window moldings, window guides, and preferably the support for window regulator and lock.

One embodiment of the invention is illustrated in the drawing, in which:

Fig. 1 is an inside elevation of a door for a closed automobile;

Fig. 2 is a perspective exploded view of the main structural elements entering into the door per Fig. 1;

Fig. 3 is a side elevation seen from the left of Fig. 1; and

Figs. 4 to 9 are fragmentary, large scale sections along the correspondingly numbered lines of Fig. 1, indicating in dot-and-dash lines the adjoining body structure.

The illustrated door consists of a lower sheet metal structure 10, inner upper die-casting 11, and an outer die-casting 12. See Fig. 2.

Body 10 is composed of an outer panel 13 inwardly flanged at 14 along its vertical and lower sides and inwardly and downwardly flanged at 15 along its top margin (Figs. 2 and 4).

A generally angle-section frame 16 of sheet metal has its outer margin overlappingly secured, as by spot welding, to flange 14. Frame 16 is provided with offsets 17, 18, 19—the offset 17 presenting the equivalent of a door overlap flange and of recesses receiving projecting portions 20, 21 of the body structure. The offsets and recesses provide attachment regions for weatherstrips 22. Where necessary, frame 16 is interiorly reinforced by members 23, particularly in the attachment zones for hinges 24 (Figs. 7 and 8).

Main die-casting 11 is formed with an outwardly facing channel-section molding 25 surrounding opening 26 for window 27 (Figs. 1, 2, and 4). Along the upper sides and the top of the window opening, casting 11 has an outwardly projecting web 28 which forms the upper part of the door frame and supports window guide 29. Below opening 26, casting 11 has a downward extension 30 in the form of lattice work pre-formed for the attachment of (not shown) window regulator, lock, etc.

The sides of extension 30 are of angle-section having a laterally directed leg 31 and an outwardly directed inner leg 32. Leg 31 and lower part of web 28 are provided with cylindrical or frustro-conical projections or stubs 33, 34, shown in their original form in dot-and-dash lines in Figs. 4 and 7. These projections are arranged for entering into holes 35, 36 of the lower sheet metal frame members 16 and are in final assembly headed so as to form rivet connections. The details of this connection and of the method of making it are disclosed in and form the subject matter of application, Means for and Method of Connecting a Die Casting with an Adjoining Member, of the co-inventor Walter S. Eggert, Jr., Serial No. 236,184, filed simultaneously herewith on July 11, 1951.

Casting 12 forms an outer removable molding around a window opening. Along the upper and top sides of the door, casting 12 is of generally channel-section (Fig. 4). The outer margin of web 28 of the main casting 11 is recessed for the reception of upper arm 37 of this molding. Screws 38 connect the castings 11, 12. Along its lower margin, casting 12 is of generally downwardly and inwardly facing channel-section. The downwardly projecting arm 39 of this section is provided with hook-like projections 40 which enter into corresponding holes 41 of sheet metal stamping 13.

Window guide 29, as shown in Fig. 4, has a sheet metal channel provided with grooves 42 in which the margins of the inner and outer molding enter and thereby hold the window guide. The lower slotted portion 43 of the window guide may be secured to lugs or ears 44 provided on the casting 12. Trim panel 45 covers the door on the inside.

The invention is not restricted to the illustrated embodiment and particularly not to all the details thereof but is susceptible to modifications and adaptations which will occur to those skilled in the art when designing a door having an outer configuration different from the one shown in the drawing. Specifically, the upper die-cast part may consist of a single piece, proper provisions being made for insertion of the window pane. The lower sheet metal part of the door may be made in many different ways, many of which are well known.

What is claimed is:

1. Composite door for automobiles, having an upper part with a window opening therein, said door comprising a sheet metal structure substantially restricted to the region below the window

3

opening, and a die-cast structure forming exclusively said upper part around the window opening, said die-cast structure providing window retaining means and molding around the window opening, said sheet metal and die-cast structures being secured to each other.

2. Composite door for closed automobiles, comprising an upper part with a window opening therein and a lower sheet metal structure substantially restricted to the region below the window opening, said upper part being formed by a die-cast structure and extending around the window opening, said die-cast structure consisting of an inner die-casting and an outer die-casting, said inner and outer die-castings forming the sole window retaining means and moldings, said sheet metal structure and one of said die-castings being rigidly and permanently secured to each other, said other die-casting being removably attached to the unit consisting of said permanently connected sheet metal structure and die-casting.

3. Composite door according to claim 2, having said removable casting provided with hook-shaped extensions entering through holes of the sheet metal structure below the window opening, and additional means such as screws connecting said removable casting to said rigidly connected die-casting.

4. Composite door according to claim 2, having said inner die-casting permanently and rigidly secured to said sheet metal structure, and hav-

4

ing said outer die-casting formed as a window-retaining molding removably secured to the unit consisting of said sheet metal structure and said inner die-casting.

5. Composite door for closed automobiles, comprising an upper part with a window opening therein and a lower sheet metal structure substantially restricted to the region below the window opening, said upper part extending around the window opening and being formed exclusively by a die-cast structure, said die-cast structure presenting window retaining means and molding, said die-cast structure being downwardly extended beyond the lower margin of the window opening for overlapping engagement with and securement to the lower sheet metal structure.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,701,574	Ledwinka	Feb. 12, 1929
2,198,069	Widman	Apr. 23, 1940
2,210,612	Widman	Aug. 6, 1940
2,356,976	Conlon	Aug. 29, 1944
2,361,609	Doty	Oct. 31, 1944
2,455,462	Bader	Dec. 7, 1948
2,566,871	Bedford	Sept. 4, 1951
2,567,153	Jackson	Sept. 4, 1951