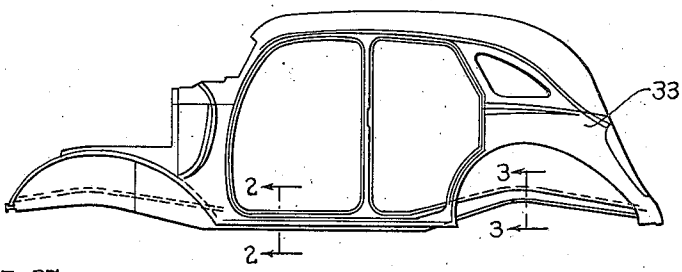
Aug. 6, 1946. J. LEDWINKA ET AL 2,405,260

COMBINED BODY AND CHASSIS STRUCTURE

Original Filed April 20, 1936

FIG.1.



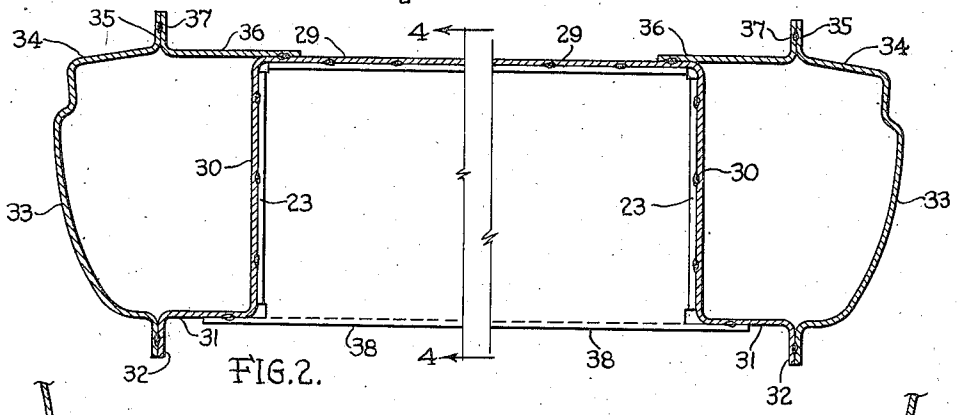




FIG.2.

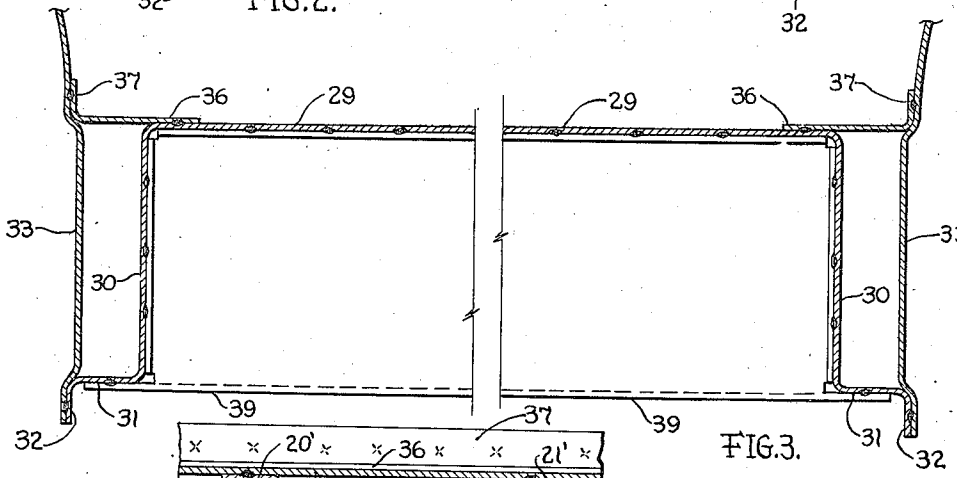



FIG.3.

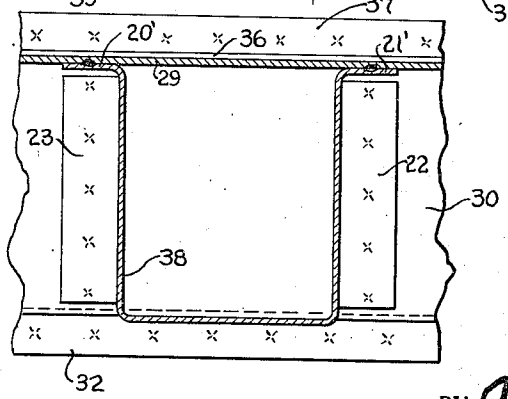



FIG.4.

INVENTORS.
JOSEPH LEDWINKA.
JOHN W. KELLY.
BY John P. Talbot
ATTORNEY

Patented Aug. 6, 1946

2,405,260

# UNITED STATES PATENT OFFICE

2,405,260

## COMBINED BODY AND CHASSIS STRUCTURE

Joseph Ledwinka, Philadelphia, and John W. Kelly, Elkins Park, Pa., assignors to Edward G. Budd Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania

Application April 1, 1939, Serial No. 265,456 which is a division of application Serial No. 75,375, April 20, 1936. Divided and this application January 24, 1944, Serial No. 519,422

4 Claims. (Cl. 296—28)

1

The invention relates to a combined body and chassis construction, and particularly to that type of combined body and chassis construction in which the combined underframe is coordinated with the body superstructure to provide box-section side sills extending from end to end of the combined structure.

It is an object of the invention to simplify the construction of such structures and to lighten their weight without materially affecting their strength.

A further object of the invention is to provide a construction which permits the use of light-gauge stock, which is easy to manufacture, and to so arrange the joints entering into the structure as to facilitate their attachment by spot welding.

Other and further objects and advantages and the manner in which they are attained will become apparent from the following detailed description when read in connection with the drawing forming a part hereof.

In the drawing,

Figure 1 represents in side elevation a sedan type of combined body and chassis structure in accordance with the invention;

Figures 2 and 3 are enlarged detailed fragmentary sectional views through the side sills substantially along lines 2—2 and 3—3, respectively, of Figure 1; and

Figure 4 is a detailed fragmentary sectional view through a cross member taken substantially on the line 4—4 of Figure 2.

According to the invention, the sheet metal body floor panel comprises a main element of the combined underframe structure and may extend from the extreme rear of the combined structure to the extreme front and from side to side of the structure. At the front, it may be cut away in the central portion to accommodate the motor and at each side of this central opening it may be suitably reinforced by a marginal reinforce extending around the opening. Alternatively, the floor panel may end at the front in the region of the cowl, and suitable separate forward extensions for supporting the motor and the front wheel suspension may be provided, such extensions being secured to the reinforced box-section side sills of the underframe rearwardly thereof by a telescoping or other suitable joint.

The present invention is concerned more particularly with utilization of this floor panel to form elements of the combined body and chassis side sills of box-section, and the sheet metal body side panel indicated generally by the numeral 33

2

and extending from extreme front to extreme rear of the structure cooperates with the floor panel in forming these box-section side sill structures. In this way, the combined structure may be built up with the minimum number of parts and the marginal portions of the parts entering into the structure are so shaped as to facilitate their joinder by spot welding.

In the illustrated embodiment, the floor plate designated generally by numeral 29 is formed with a deep vertical web or arm 30 which in turn is formed with a horizontally extending bottom flange or arm 31 terminating in a downwardly extending edge flange 32. The body side panel 33 is joined at the bottom to the flange 32 and at the top the threshold portion 34 terminates in an upwardly extending flange 35 which is joined to the top of the floor plate 29 by a longitudinally extending bridging strip closing the box and designated 36, this bridging strip being formed with an upwardly extending flange 37 overlapping and spot welded to the flange 35 of the outer body panel, its inner margin overlapping the top of the floor plate 29 and being spot welded thereto. In the wheel housing region where the outer panel 33 extends upwardly to form the upper part of the wheel housing, the flange 37 seats in an offset provided in the outer panel and is spot welded thereto in the offset. To space the top and bottom walls of the box in this region the outer panel 33 is offset slightly between the top bridging plate 36 and the bottom outwardly extending flange 31 of the floor plate as clearly appears in Fig. 3.

At suitable points the floor panel which itself forms a cross connection between the side sills is further reinforced by transverse members of channel section, as indicated at 38 and 39 which are preferably formed of upwardly facing channel members secured to the floor panel to form a strong box section transverse reinforce between the sills.

In the region of the thresholds as shown in Figs. 2 and 4, the upwardly facing channel cross member 38 extending from side sill to side sill is formed at the top with the laterally extending flanges 20' and 21' from its side walls, which flanges are welded to the floor plate 29 to form therewith box section cross members between the sills.

To further strengthen the connection between these cross members and the side sills, the laterally extending flanges 20' and 21' are welded not merely to the single sheet of the floor panel but are extended underneath the inwardly ex-

tending double thickness of metal formed by the joinder between the bridging strip 36 and the floor plate 29 and spot welded to this double thickness extension from the inner side of the box section sills. To still further strengthen the joinder between the cross members and the side sills the side walls of the cross member 38 are laterally flanged at their ends as indicated at 22 and 23, see Figs. 2 and 4, and these lateral flanges overlap the vertical web 30 of the floor panel forming the inner wall of the box section and are secured thereto by spot welding. Similarly, an extension of the bottom wall of the channel 38 is extended and spot welded to the lower wall 31 of this box section side sill.

In the region of the wheel housing the cross member 39 forms in similar manner a box section cross member with the floor plate 29 and is secured to the box section side sill extending through this region in substantially the same manner as in the form shown in Figs. 2 and 4.

In the illustrated and described structure the floor plate combines with the outer side wall panel to form elements of the box section side sill structure and a third member cooperates with the floor plate and the side panel to form the complete box section.

The disclosed structure lends itself very readily to manufacture out of light gauge metal, although in some cases the separate third member 36 may be made of heavier gauge than the floor plating and the side paneling if desired for greater strength, and in this construction use is made of both the side paneling and the floor plating to form elements of the box section side sill structure and the parts are so formed as to facilitate their joinder by simple spot welding operation.

The present application is a division of application Serial No. 265,456, filed April 1, 1939, for "Body and chassis unerframe," now Patent 2,357,043, issued August 29, 1944, which in turn is a division of application Serial No. 75,375, filed April 20, 1936, for "Combined body and chassis underframe," now Patent 2,188,267, issued January 23, 1940.

Modifications of the invention may occur to those skilled in the art, and it is desired in the following claims to include such modifications within the purview thereof.

What is claimed is:

1. In a vehicle body, a sheet metal panel forming the body floor, a sill member and an outer upstanding wall panel; said sill member having an upstanding arm formed as an integral one-piece part of the floor panel and arranged in spaced relation from the main body of said wall panel; a connection between the lower margins of said wall panel and said sill member; and a separately made bridging member connected along its longitudinal margins to the said one-piece part forming the floor and the upstanding arm in the region where the upper margin of said upstanding arm and the floor forming panel meet and to said wall panel at some distance above the lower margin of the latter; said bridging member closing the open mouth between said wall panel and said floor panel with its sill member and forming with said wall panel, said sill member and said connection the walls of a closed box sectional combined body and chassis sill structure.



2. In a vehicle body, an outer upstanding panel, a floor panel, said floor panel having a generally horizontal main body and a substantially vertically bent-off flange near at least one of its margins, said flange being inwardly spaced from the lower marginal part of said outer panel, connecting means between a portion of said flange which is vertically spaced from said floor panel main body and said outer panel, a separate strip-form bridging member of web material permanently connected along its longitudinal margins respectively to the floor panel near the edge between the floor panel and its marginal flange and to said outer panel and forming with said marginal flange, said outer panel and said connecting means a closed box sectional sill structure.

3. In a vehicle body a sheet metal floor panel, a sheet metal body sill comprising a lower portion of an outer upright side panel, an arm forming an integral one-piece part of and extending downwardly from the floor panel, said arm being arranged in spaced relation from the main body of said side panel, a connection between the lower margins of said panel and said arm, a bridging member in the form of a web manufactured separately from said panels and arranged substantially horizontally in transverse cross section at the level of the adjoining part of the floor panel, said bridging member overlapping and being connected along its longitudinal margins to the floor panel near the upper margin of said upstanding arm and to said outer panel at some distance above the lower margin of said side panel, said bridging member closing the open mouth between said side panel and said arm so as to form a marginal extension of the body flooring; said side panel, said arm, said connection between said side panel and said arm, and said bridging member forming together a closed box sectional sill structure.

4. In a vehicle body, a sheet metal floor panel provided along at least one of its margins as an integral one-piece part thereof with an angle section flange having one upright arm and one outwardly extending arm, a sheet metal strip attached to said floor panel so that it extends outwardly in generally parallel relation to said outwardly extending arm, said two arms and said strip forming together an outwardly open channel section structure along the margin of the floor panel, a body panel secured to the outer margins of said outwardly extending arm and strip and closing the mouth of the channel section and completing it into a closed box-section structure.

JOSEPH LEDWINKA.
JOHN W. KELLY.