

Aug. 6, 1940.

A. J. FISHER ET AL

2,210,533

METAL BODY

Original Filed June 21, 1935 16 Sheets-Sheet 1

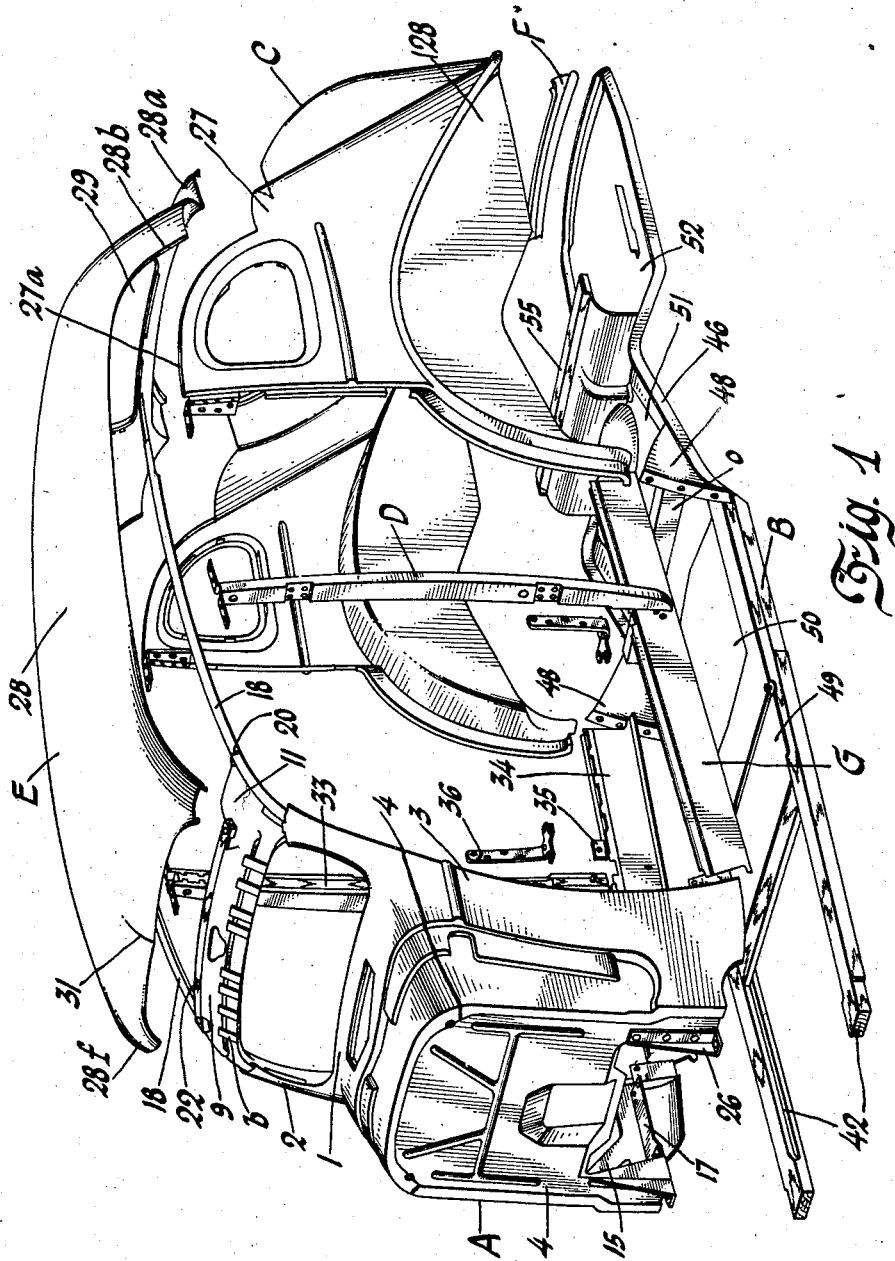


Fig. 1

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METAL BODY

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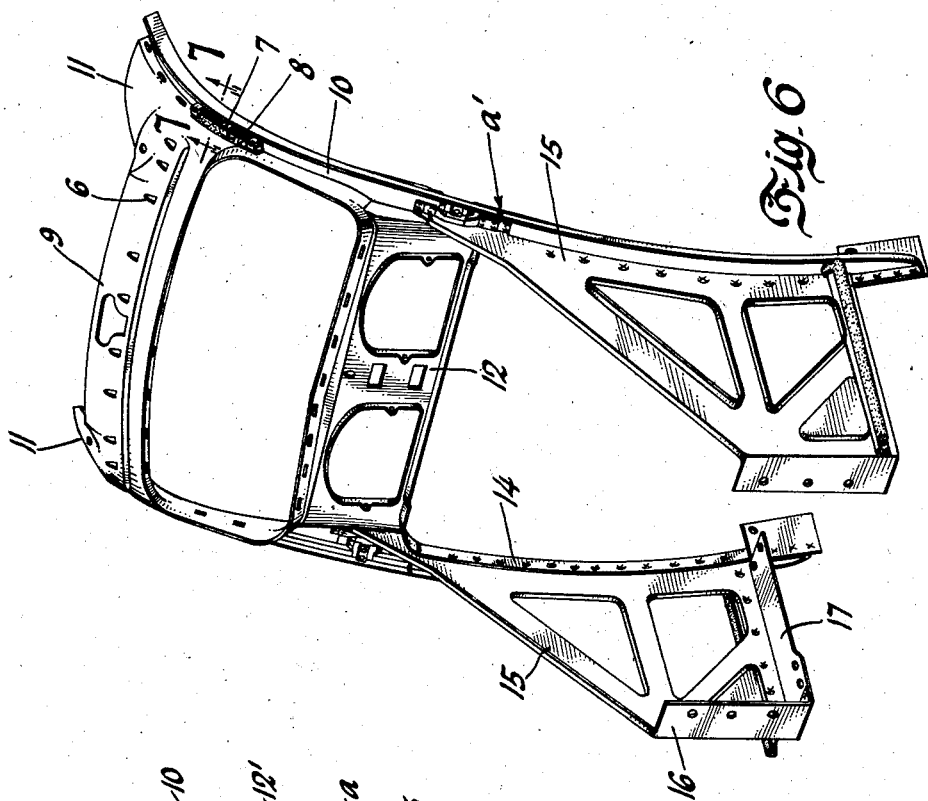


Fig. 6

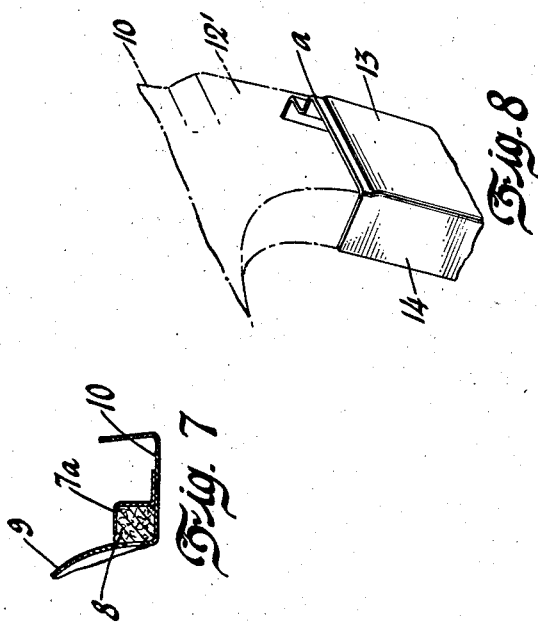


Fig. 7

Fig. 8

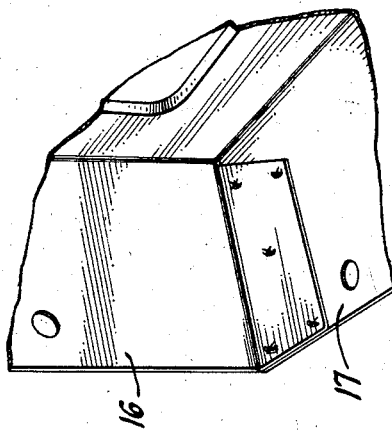


Fig. 9

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METAL BODY

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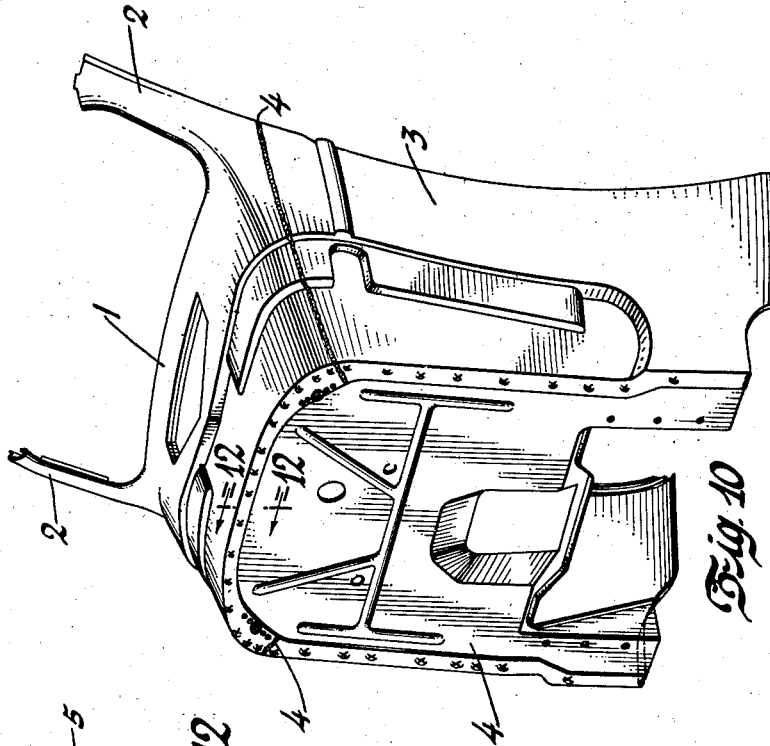


Fig. 10

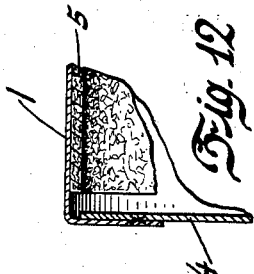


Fig. 12

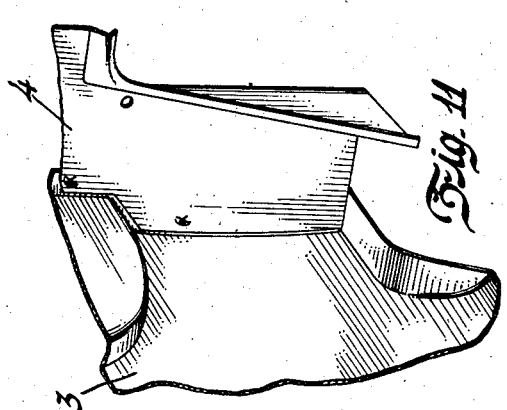


Fig. 11

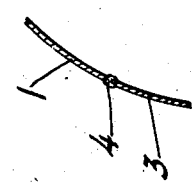


Fig. 13

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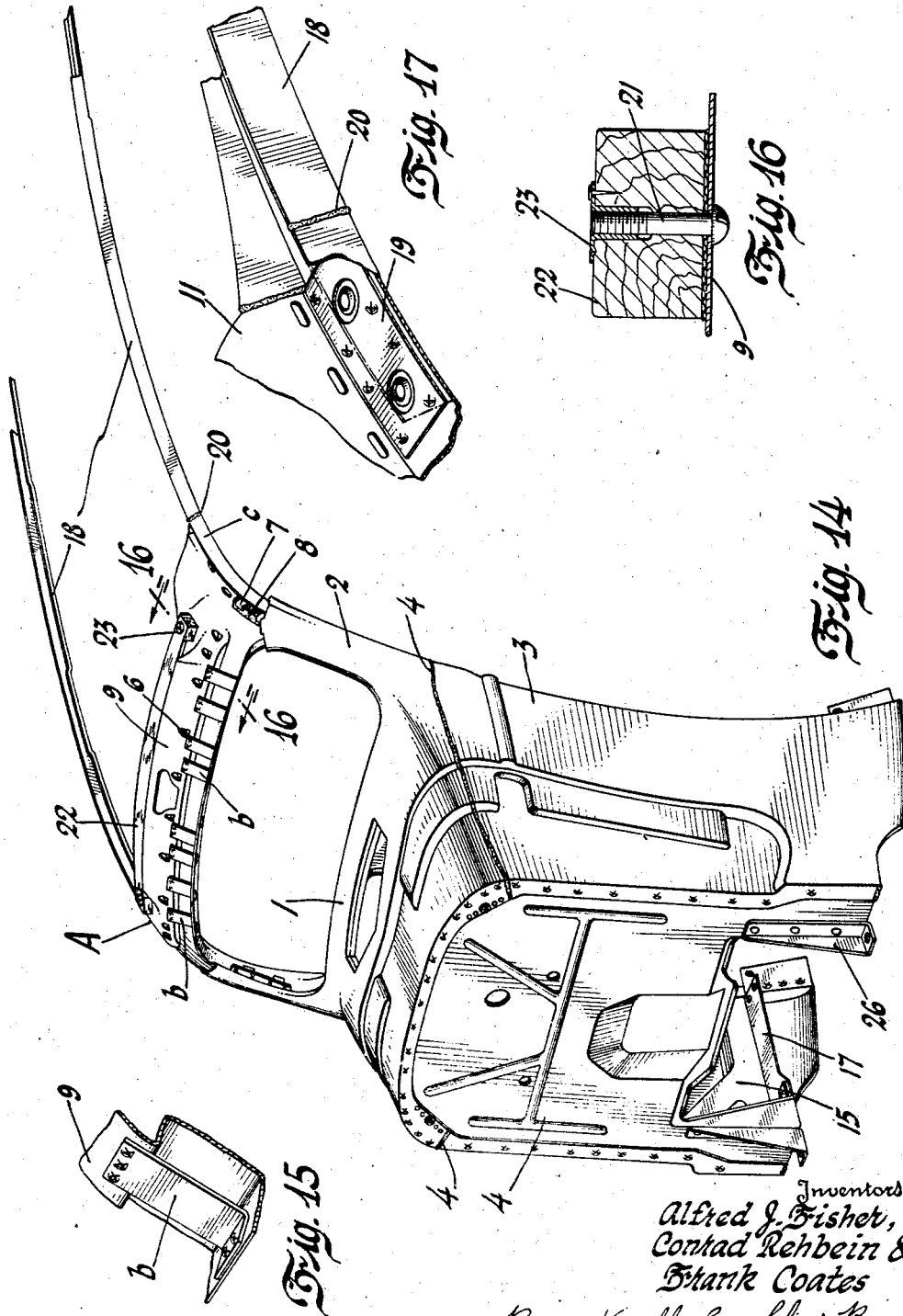
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METAL BODY

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METAL BODY

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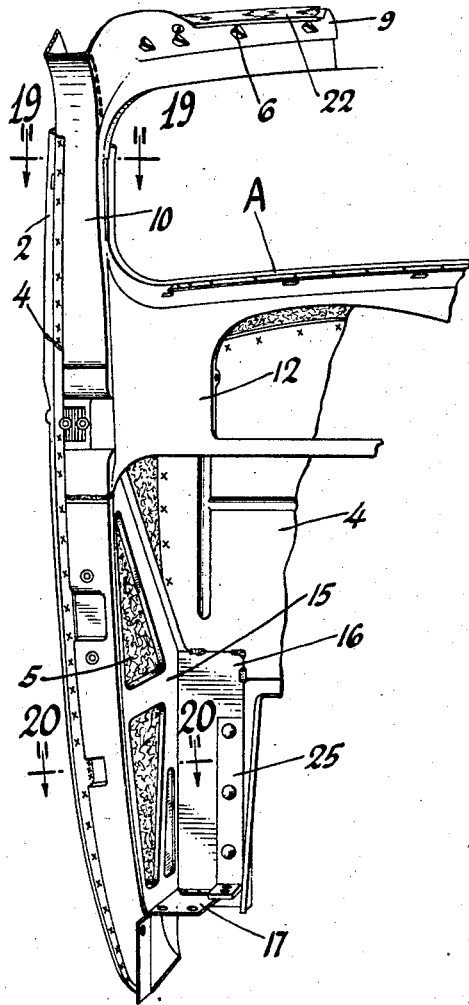


Fig. 18

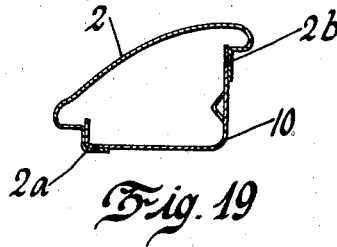


Fig. 19

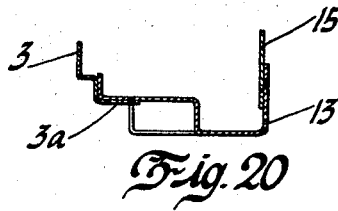


Fig. 20

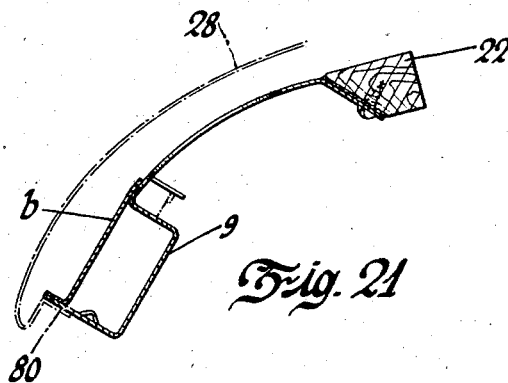


Fig. 21

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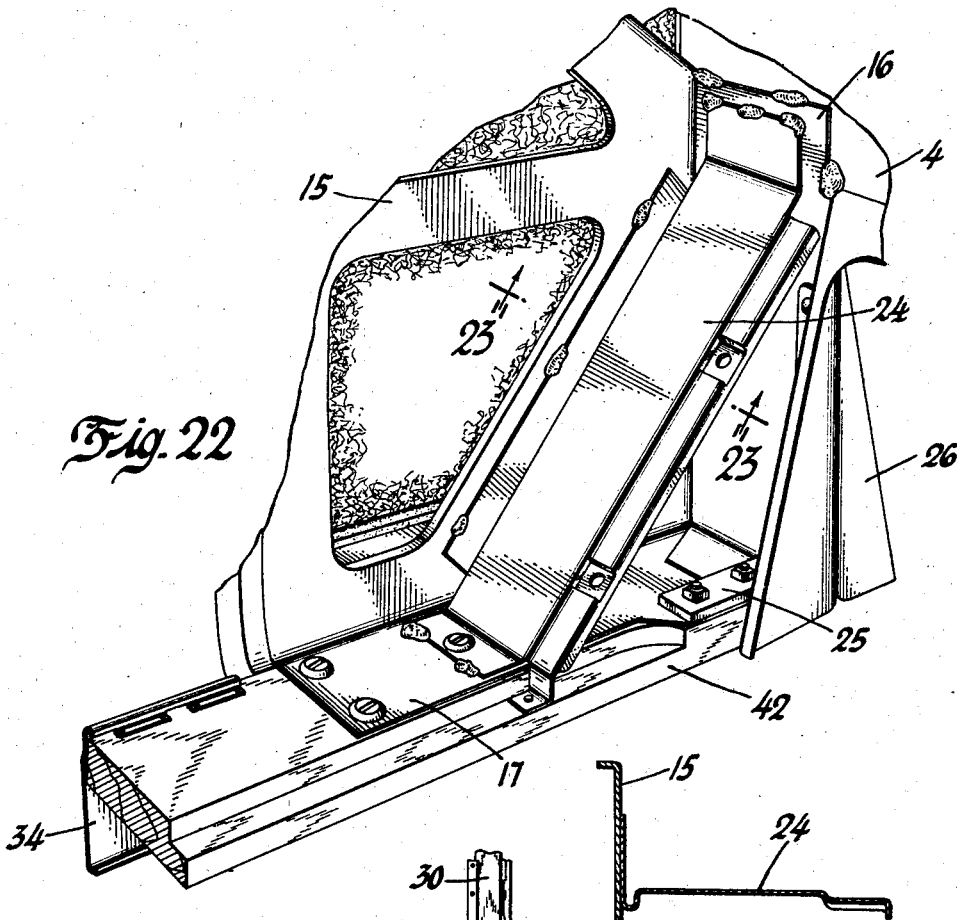


Fig. 22

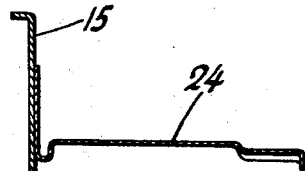


Fig. 23

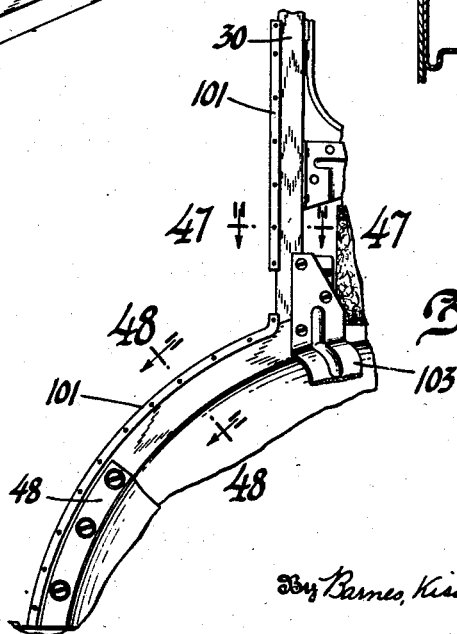


Fig. 24

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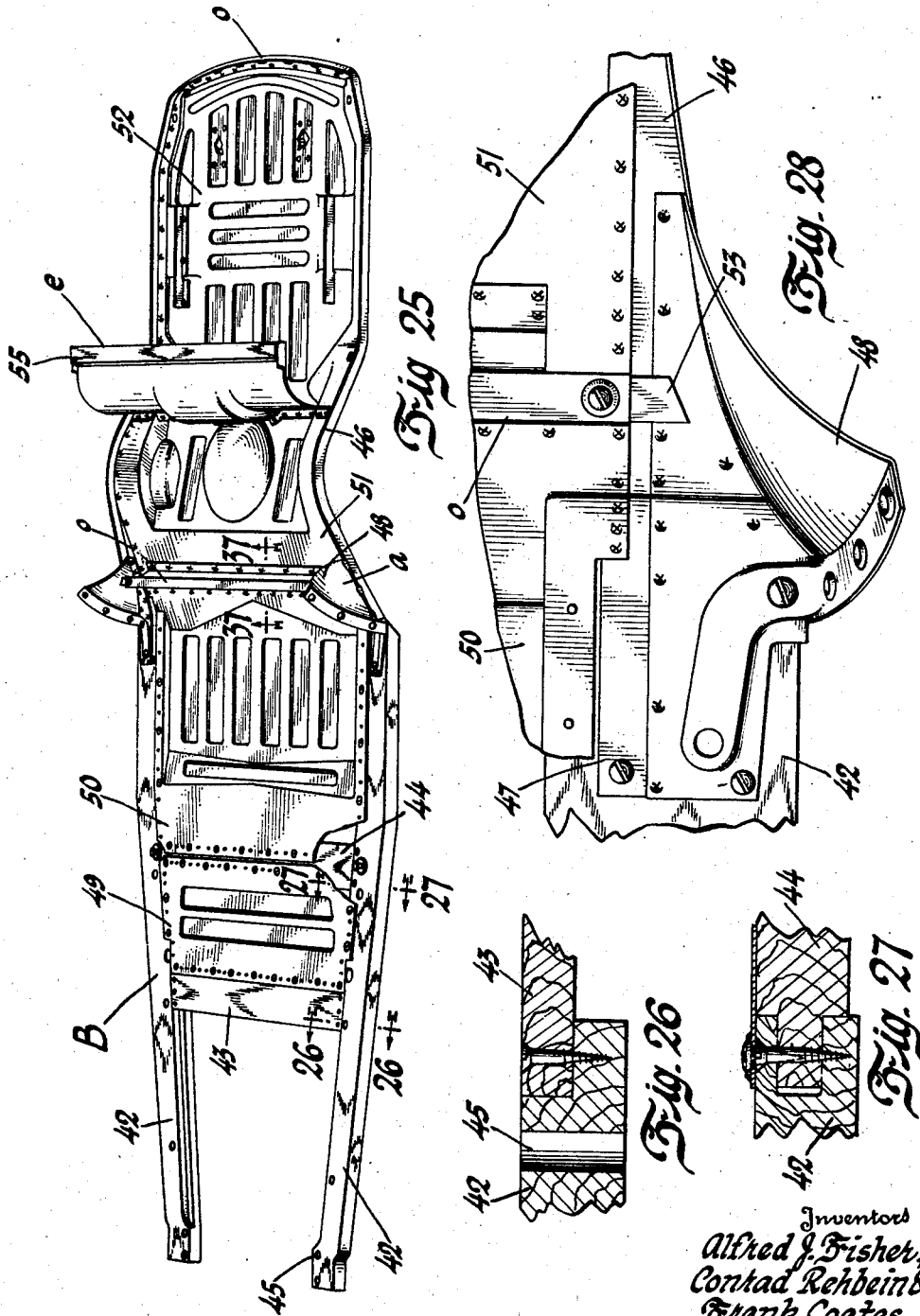
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METAL BODY

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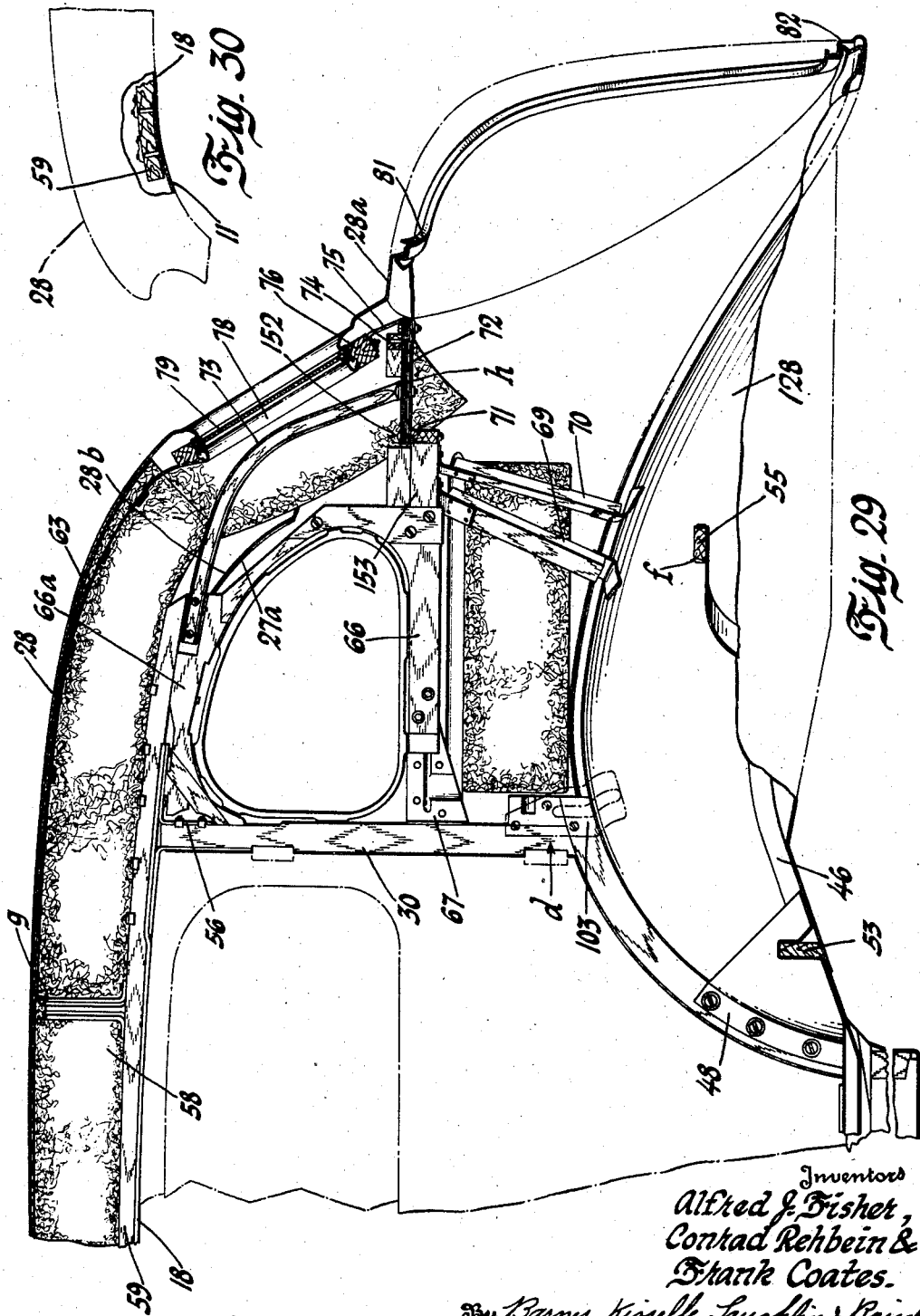
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METAL BODY

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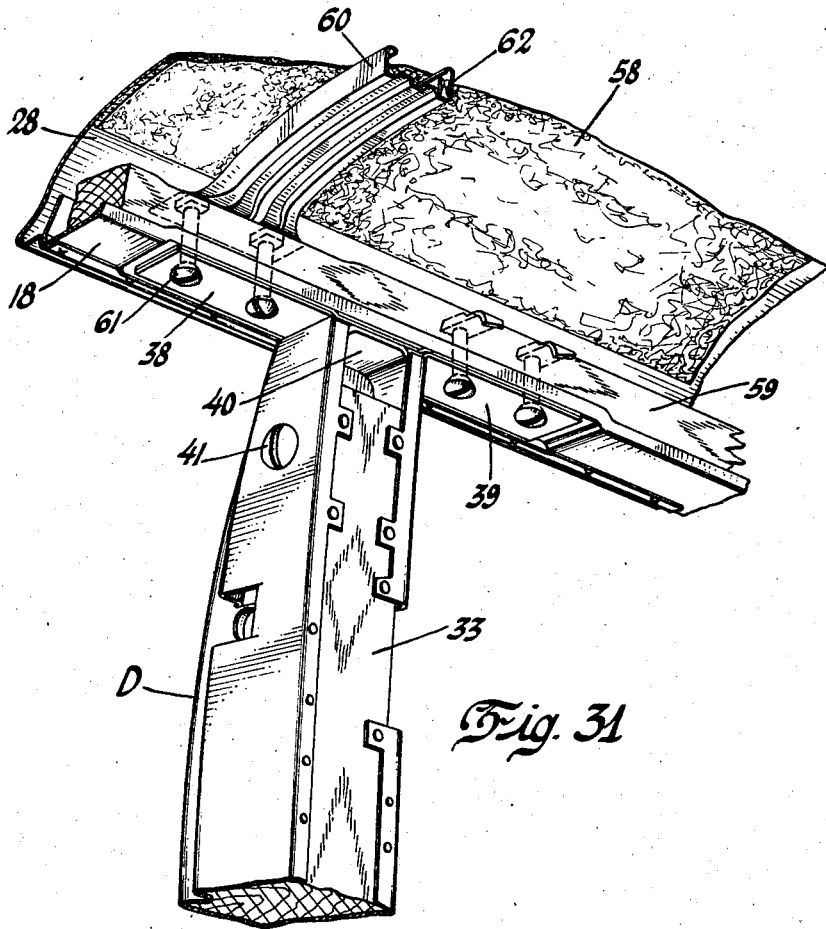


Fig. 31

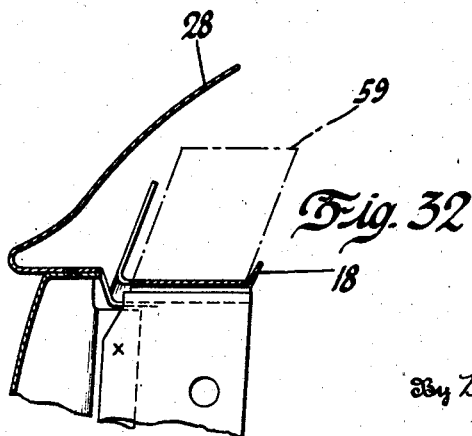


Fig. 32

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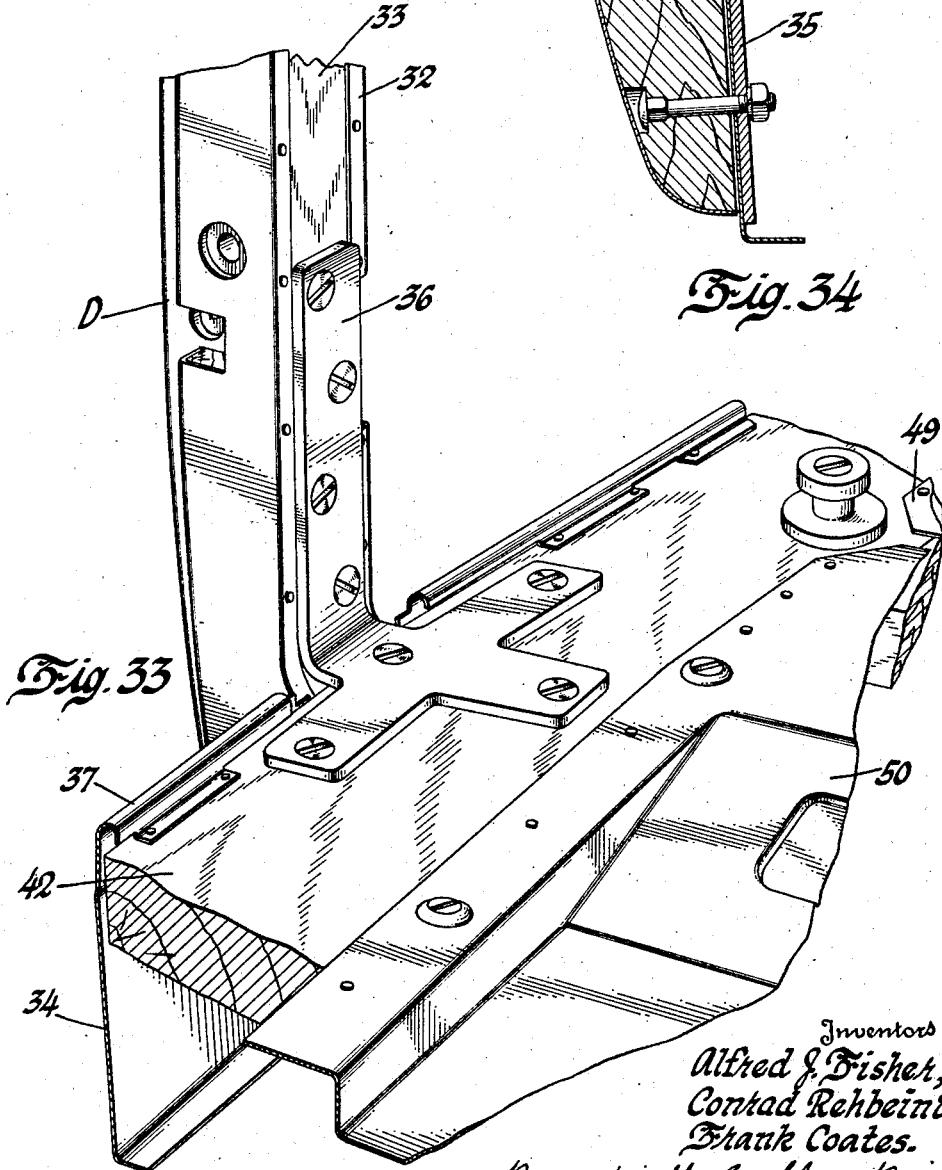
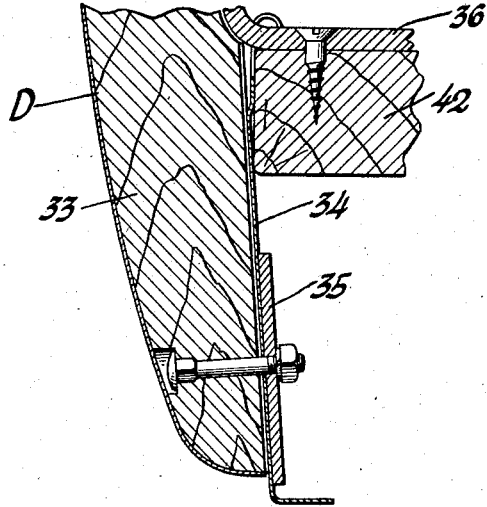
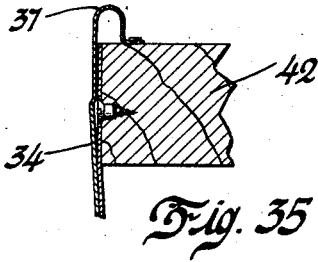
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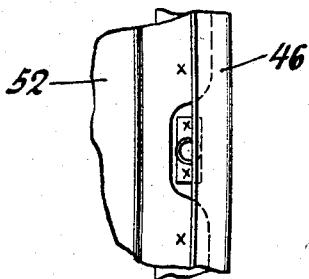
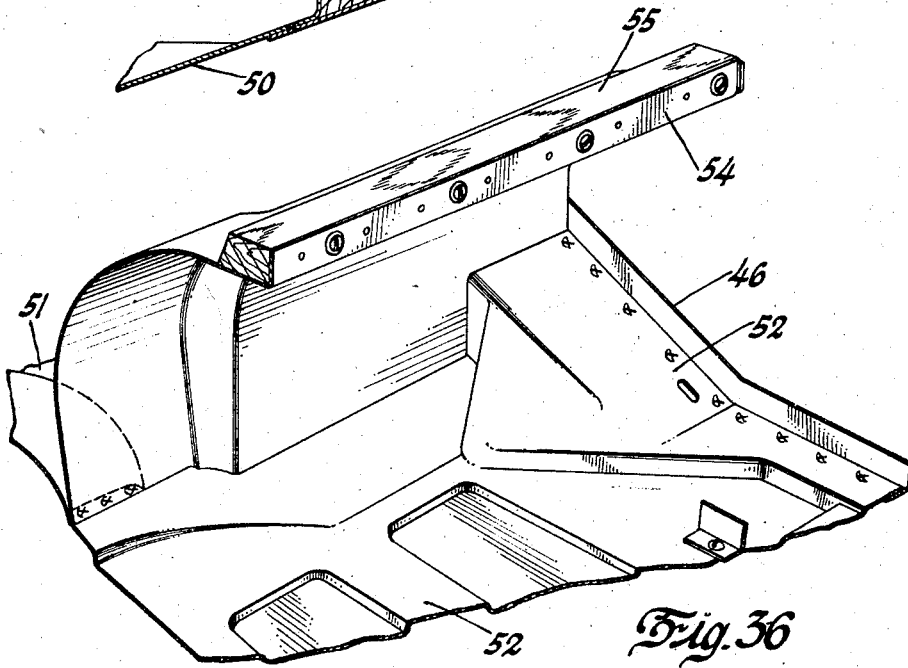
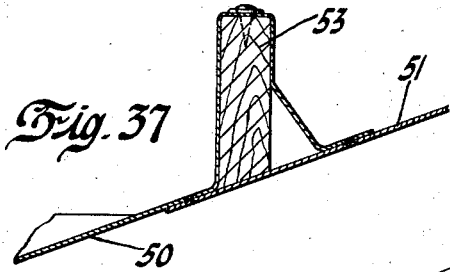


Fig. 38

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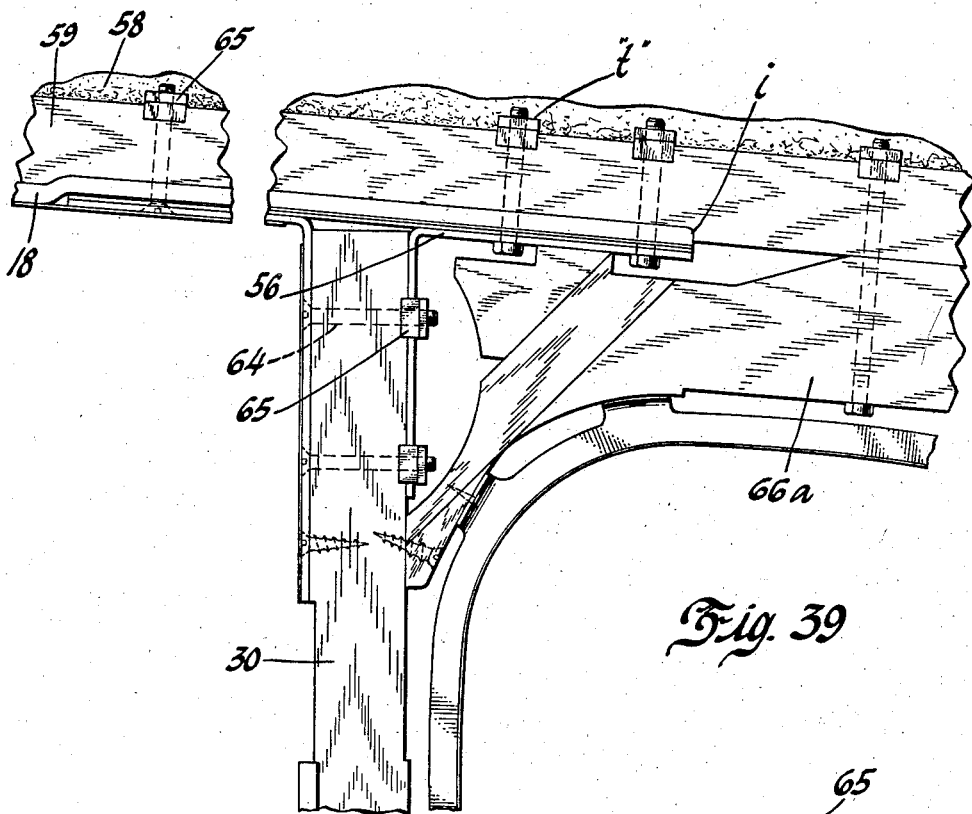


Fig. 39

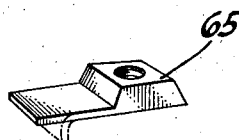


Fig. 40

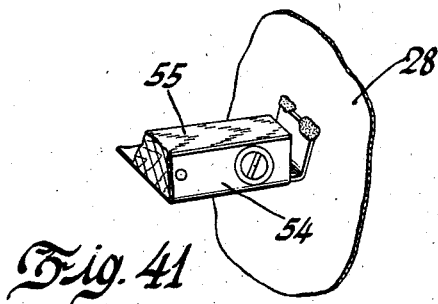


Fig. 41

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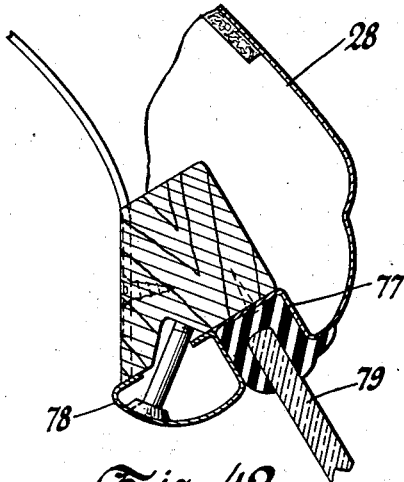


Fig. 42

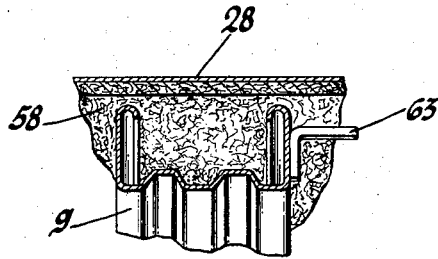


Fig. 44

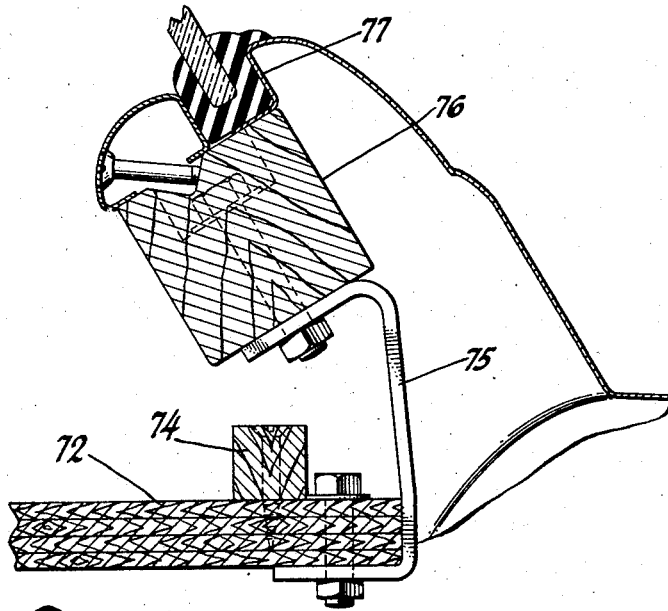


Fig. 43

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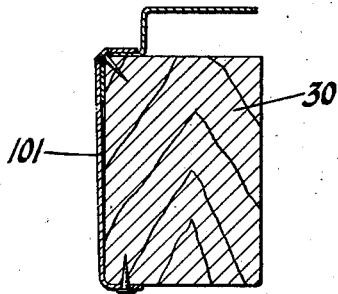


Fig. 47

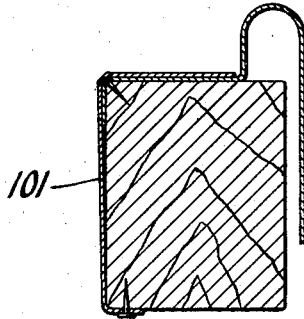


Fig. 48

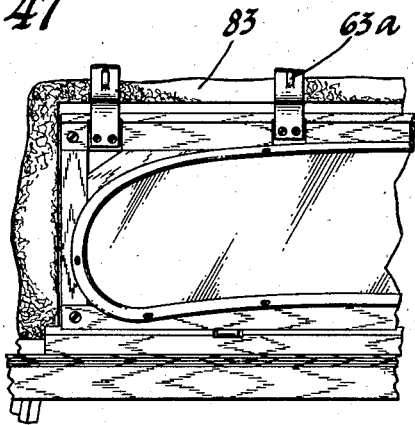


Fig. 45

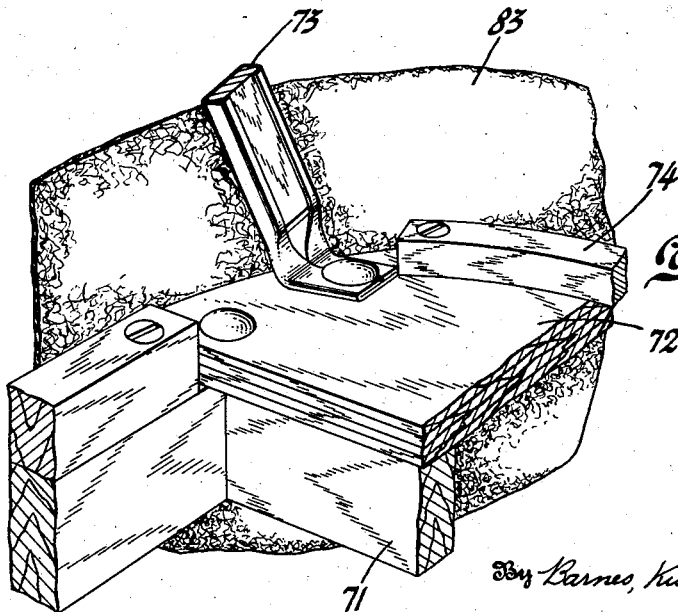


Fig. 46

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METAL BODY

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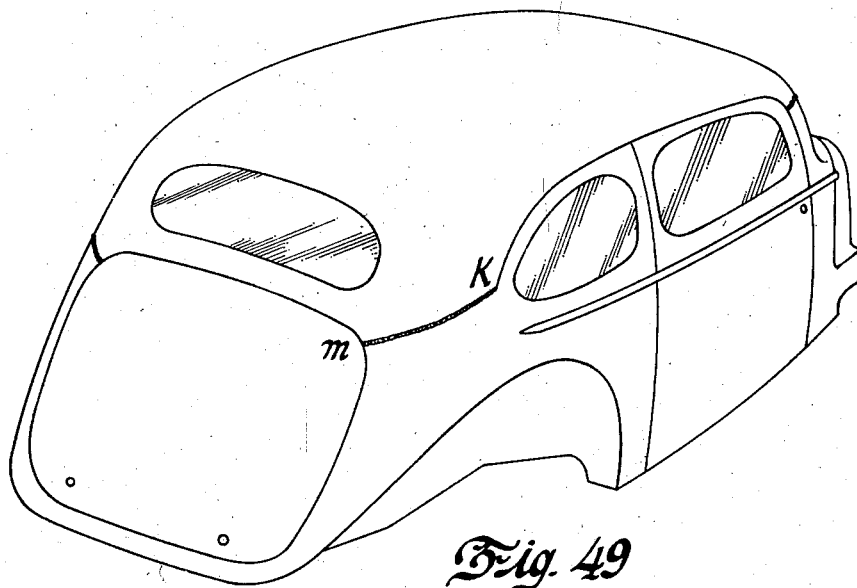


Fig. 49

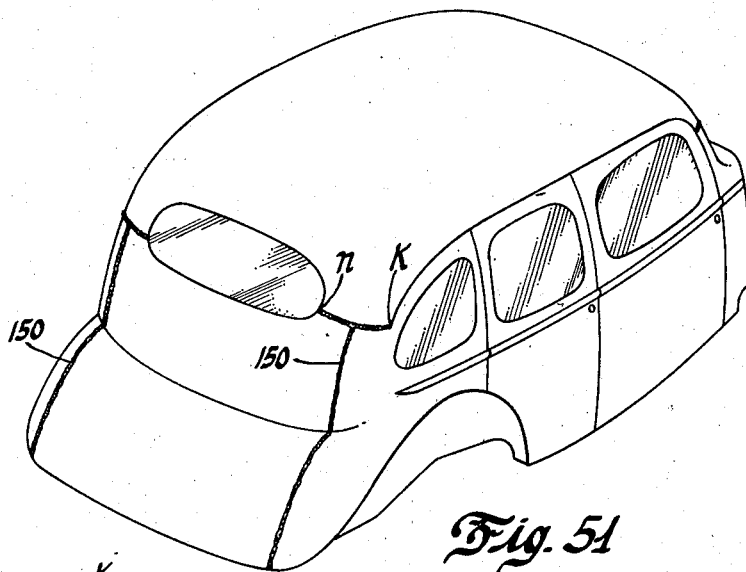


Fig. 51

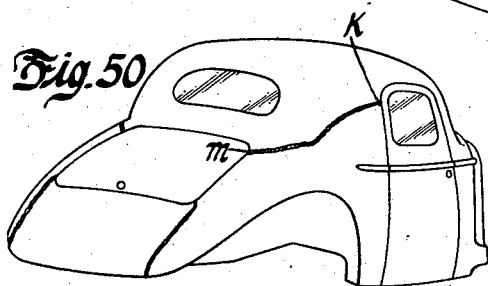


Fig. 50

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UNITED STATES PATENT OFFICE

2,210,533

METAL BODY

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Application June 21, 1935, Serial No. 27,626
Renewed November 17, 1937

17 Claims. (Cl. 296—28)

This invention relates to metal bodies and particularly the so-called "turret-top" body. It is the object of the invention to lay out a design in which the sides, top, front and cowl are all integrated together in a homogeneous whole with flush invisible joints. This produces a body that, we believe, has not yet been equalled in simplicity, strength and esthetic appeal. The outer shell stampings are laid out to permit the use of suitable tools in pressing and stamping of the panels and then joining of the panels in subassemblies in welding jigs. The sub-assemblies and panels are joined in final assemblies in a set-up buck with welds of minimum length. This makes welding by gas feasible and economical in large production. To this end, one very large top panel extends partway down the windshield post where it joins the front subassembly by very short weld lines. This top panel extends down the rear of the body to the trunk rear deck opening or rear window opening, where it joins the side panels by relatively short weld lines which may be gas welds. In many of the body models no separate rear panels are required outside of a narrow strip or skirt below the rear compartment opening.

It is recognized that metal tops are not broadly new. Numerous forms of metal tops have been proposed in the anterior art, but so far as we are aware, most if not all of these, have merely been set over the windshield posts and side posts with a conspicuous joint with the side panels and the rear panel. Or, they have been in the form of metal inset or patch panels. These inset panels have ordinarily been designed with depending flanges or depressed edge portions to be spot welded to turned down flanges or depressed edge portions on the roof. This makes a very long weld and the seam must be either covered by an unsightly rubber molding or other form of fill molding or else the joint must be filled with solder and then trimmed and rubbed down to a flush relation with the surrounding panels. This is an expensive operation both in labor and material. This long seam may very easily produce fractures in the solder by reason of twisting and weaving of the body.

It is the object of the present invention to provide a sheet metal panel lay-out with a solid non-jointed roof and a considerable portion of the back. The several panels can be integrated together by suitable and economical welding operations to produce a unit outer shell that adds strength and beauty to the body and which re-

sults in an actual saving over the body shells and roofs heretofore in common use.

In the drawings:

Fig. 1 is an exploded perspective view of the body showing the major subassemblies.

Fig. 2 is a side elevation of the completed body.

Fig. 3 is a cross section through the windshield header.

Figs. 4 and 5 are sections on the respective lines of Fig. 2.

Fig. 6 is a perspective of the frame assembly of the front subassembly.

Fig. 7 is a section on the line 7—7 of Fig. 6.

Fig. 8 is an enlarged detail in perspective of the weld of the windshield frame to the legs or lower pillar sections of the windshield pillar.

Fig. 9 is an enlarged detail in perspective of the lower corner of the dash and sill flanges of the truss between dash and windshield pillars.

Fig. 10 is a perspective of the shell of the front subassembly.

Fig. 11 is the detail in perspective of the lower corner of the dash and cowl looking from the inside.

Fig. 12 is a section on the line 12—12 of Fig. 10.

Fig. 13 is a section showing the side and top cowl panel stampings flash welded together.

Fig. 14 is a perspective of one major subassembly, to wit: the front subassembly.

Fig. 15 is a detail in perspective of the reinforcing ties in the windshield header channel designated *b* in Fig. 14.

Fig. 16 is a section on the line 16—16 of Fig. 14.

Fig. 17 is a fragmentary perspective of the joint between the roof rail and the windshield header shown at *c* in Fig. 14.

Fig. 18 is a fragmentary perspective of the left hand windshield pillar looking from the inside.

Figs. 19 and 20 are sections on the corresponding section lines of Fig. 18.

Fig. 21 is a cross section through the center of the windshield header showing in dotted lines the top panel.

Fig. 22 is an enlarged detail perspective view of the parts at the cowl and dash corner showing the toe board support.

Fig. 23 is a section on the line 23—23 of Fig. 22 showing the toe board support.

Fig. 24 is an elevational detail at the rear post at the wheel housing designated *d* in Fig. 29.

Fig. 25 is a perspective view of the under subassembly.

Figs. 26 and 27 are sections on the corresponding section lines of Fig. 25.

Fig. 28 is a fragmentary elevational view look-

ing down upon the top of the rear post anchoring bracket shown at *a* in Fig. 25.

Fig. 29 is an inside elevational view of the body adjacent the rear seat.

5 Fig. 30 is a detail, partly in section, showing how the roof channel rail and its wooden core are connected with the windshield frame.

Fig. 31 is an enlarged detail perspective of the center pillar (from the inside) and its anchorage to the roof.

Fig. 32 is a cross section through the roof rail and the side of the roof.

Fig. 33 is an inside detail perspective of the center pillar and joining parts.

15 Fig. 34 is a vertical cross section taken through the lower end of the center pillar.

Fig. 35 is a sectional view taken on line 35—35 of Fig. 2.

Fig. 36 is a detail perspective of the rear compartment partition looking from the right at the part marked *e* in Fig. 25.

Fig. 37 is a section taken on the corresponding line of Fig. 25.

Fig. 38 is a fragment of the rear cross bar and the floor of the rear compartment as at *o* in Fig. 25.

Fig. 39 is an inside elevational view of the top of the rear post anchored to the roof rail.

Fig. 40 is a detail of one of the clamping nuts, such as *t* in Fig. 39.

Fig. 41 is a detail perspective of the anchorage of the rear compartment partition to the wheel housing as at the point *f* in Fig. 29.

Figs. 42 and 43 are sectional details through the completed body on a vertical section line through the rear window.

Fig. 44 is a section through the cross bow as at the location *g* Fig. 29, for instance.

Fig. 45 is an inside fragmentary elevation of the rear window.

Fig. 46 is an enlarged perspective view of a corner in the shelf above the rear seat—at the point *h* in Fig. 29.

Figs. 47 and 48 are sections on the corresponding section lines of Fig. 24.

Fig. 49 is a perspective showing the invention applied to a sedan body with a rear compartment as distinguished from a built-in trunk. The view is taken before the weld scar has been ground off and finished.

Fig. 50 is a similar view showing the invention applied to a coupe.

Fig. 51 is a similar view showing the invention applied to a sedan with neither trunk nor rear compartment.

Referring to the exploded view, Fig. 1, it will be seen that the metal body is made up of a plurality of subassemblies and panels, the front subassembly A, the under subassembly B, the side panels C, the center post D and threshold strip G and the top panel E.

Cowl and pillar cover subassembly (minor subassembly)

65 Referring to Figure 10, the front shell subassembly (minor subassembly) will be seen. This comprises the following stampings: the top cowl panel 1, including about three quarters of the pillar cover 2, the side cowl panels 3 and the dash panel 4. First the stampings 1—2 and the panels 3 are put in one or more jigs and flash welded together on the seams 4. This weld is ground down and smoothed off in the customary way on the portions that will be exposed. The

dash and cowl panels are spot welded together in a well-known way. The underside of the cowl panels are covered with sound-deadening board or felted material 5, (Figures 12 and 13).

Windshield frame subassembly (minor subassembly)

Referring to Figure 6, the windshield frame is down to the point *a'*, a single stamping with prongs 6 struck in (Figure 18) to support a twisted paper tacking strip not shown. Lugs 7, (Figures 6 and 7) are afforded by a strip 7a spot welded in the windshield pillar to support a tacking strip 8. This windshield frame (Figure 6) forms the windshield header 9, the upper windshield pillars 10, the instrument board 12. The header has two rearward extensions 11 for supporting the roof channel rail and roof rail core. The upper windshield pillars 10 have stub-like extensions 12', (Figure 8) and to these are gas welded at *a*, the lower windshield pillars 13.

To the inside flanges 14 of these lower pillars 13 are welded two trusses 15 that connect between the pillars and the dash. These trusses are stampings that are punched out at the center and each have the dash flange 16 and the sill flange 17. The dash flange is turned under at its lower end and spot welded to its sill flange, (Figure 9).

Front unit subassembly (major subassembly)

The cowl shell can now be fitted into the front frame in a suitable jig and the shell spot welded to the upper and lower windshield pillar and the instrument panel as shown in Figures 18, 19 and 20. It will be noted that the pillar cover 2, (Figure 19) together with the upper pillar 10, forms a complete enclosure. Two special welding tools with long arms are separately inserted in the top of the enclosed pillar and spot weld the pillar cover flange 2a and pillar cover flange 2b to the web and the inner channel wall of the pillar 10. The lower pillar 13, (Figure 20) is not enclosed. A special form of welding tool with a loop-like arm that can reach around into the channel is used to spot weld the cowl flange 3a. The truss 15 has already been spot welded. A special form of pinch spot welder welds the turned in flange of the top cowl panel to the top of the instrument panel at the windshield opening.

Turning to Figure 14, the two channel metal roof rails 18 are fastened to the header extensions 11. By means of the extension strap 19 of the roof rail being lapped into the channel portion (Figure 17) of the header extension and being welded as shown in Figure 17, the channel side walls of the roof rail abut the end of the header extension 11 and are gas welded as at thereto. This may be done at the same time that the lower pillar section is gas welded to the upper pillar section.

A reinforcing wooden rail 22, (Figure 16) is secured to the header by bolts 21. This bolt screws into a stamped nut 23 which is secured to the rail by tacks. This completes the front subassembly except for the floor board support 24 shown in Figure 22, which is brazed to the truss 15 and a heavy L bracket 25, (Figures 18 and 22) which is riveted to the dash and later can be bolted to the sill. There is also a companion angle bracket 26 located on the front of the dash (Figure 14) and which can be later bolted to the sill.

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Side rear quarter panels

These side panels are designated 27 (Figs. 1 and 2) and are stamped out to provide the usual rear window opening, wheel housing 128 and rear pillar facing. They also form the sides of the trunk in Figures 1 and 2. In some of the sedan bodies, (Fig. 51) the side panels are first flash-welded at seams 150, to the rear panel to form a rear subassembly unit. The rear post cores 30 (Fig. 29) are fitted into the side panels before the panels are assembled into the body.

The top panel

The top panel is a single stamping 28, designated subassembly E, in Figure 1. It will be seen from Figure 1 that this panel is provided with an extension at the rear which goes down nearly one-half the distance in the rear of the body until it meets the top of the rear compartment or trunk opening, an integral wing 28a forming the top of the trunk. This top panel 28 has along the side at the rear, a flange 28b (Figures 1 and 29) which matches the flange 27a of the side panel and these two flanges are subsequently spot welded together. Referring to Figure 4, it will be seen that the top panel has a protruding bead 28c that forms the eaves and the substitute for the drip molding. The top panel 28 then turns in, then down, forming the door stop 28d, then again in forming the flange 28e which fits under the roof channel rail 18 and is spot welded thereto as hereinafter described.

Referring to Figures 1 and 2, it will be seen that at the front the large top stamping 28 is provided with pillar cover stubs 28f that extend down about one-quarter of the length of the upper pillar along the windshield opening. In Figure 2, the beak-point 31 is not to be mistaken as a protuberance here but this is simply the sloping of the windshield frame toward the center to give the double tapered windshield.

The center pillar units D, Figure 1, comprise each the center pillar cover 32 that fits over a wooden center pillar core 33 (Figures 33-34). A threshold strip 34 (Figure 35) is tacked to the wooden sill. A reinforcing plate 35 is secured by screws to the inside face of the wooden pillar which in turn is secured to the sill by anchoring bracket 36 which spreads out over the sill when in place having three integral feet that extend in as many directions. 37 is a bead on the top of the threshold plate. The top of the center pillar D (Figure 31) is provided with an anchoring bracket in the form of a pair of anchor strips 38 and 39 that are welded to the pillar cover and a reinforcing U bracket 40 inside of the pillar cover. This bracket is reinforced in anchoring to the core 33 by screws 41 that pass to the top of the core.

Under subassembly B (major subassembly)

This is shown particularly in Figures 25-28. Side front sills 42, preferably of wood, are here shown. Cross bars of wood 43 and 44 are rabbetted to the sills or tongued into the sill as shown in Figures 26 and 27, respectively. Large bolt openings 45 are provided to receive the heavy bolts that bolt the body to the chassis frame of the car (not shown). The kick-up sill is designated 46 (Fig. 25). This is a strip angular in cross section which flattens out as at the forward ends 47 (Fig. 28). A rear pillar bracket 48 is spot welded to this flattened portion (Fig. 28). The front floor pan 49 and rear floor pan 50 are separate stampings. These two pans are secured

by screws to the wooden side sills and wooden cross bars. The rear seat pan 51 and the rear compartment pan 52 are all one stamping and are spot welded to the bottom flange of the kick-up. The kick-up is made up of two separate angle bars with the cross angle bar at the rear (Fig. 25) gas welded to form a U kick-up sill of angle cross section.

Fig. 37 shows how the rear floor pan 50 folds up to form a rear seat riser with short wooden cores 53 at the ends. The riser is then flanged down and meets the seat pan 51 to which it is spot welded. The forward edge portion of the seat pan extends under the floor pan 50 ahead of the riser 53 and is spot welded to this pan. The rear compartment partition (Fig. 36) is a separate stamping that has a turned out flange at the front (Fig. 25) which enables it to be spot welded to the rear compartment pan 52 and the seat pan 51. The ends are secured to the wheel housing by brazing as in Fig. 41. The upper portion of this partition turns rearwardly and then upwardly forming a flange 54 which is secured by screws to the trim rail 55. This completes the sill, seat and floor unit or what we may desire to call in some of the claims, the under subassembly unit.

Set up assembly

These several units are very rapidly assembled and welded together. A very large jig or buck (not shown) is provided for clamping and holding the parts in their proper relation. The two rear quarter panels 27 (or in the case of the body of Fig. 51, the previously welded together side and rear panels) are clamped in the rear portion of the jig as is also the narrow rear skirt panel F. The under unit is then wheeled into the jig on a small truck. Then the front unit A is brought into the front of the jig. These units are all clamped together by suitable clamps. At the same time, men inside of the jig and the body, grasp the top rear panel stamping 28 as it is handed in at the rear of the jig. It is then carried forward over their heads, hand over hand, until the windshield stub pillars 28f are approximately in registry with the windshield pillar covers of the front A. The top is then clamped in place. The sound deadening material 58 covered with a suitable cement is spread out the interior of the metal top preferably before it is put into the set up buck. The threshold strip and center pillar are then placed.

The thing to which we wish to call attention is that all the exposed welding that is required to be done to join the panels together is the short seam across each pillar cover—only a few inches, and the short seam between the turned over flange of the side panel at the point *k* (Fig. 2) and the rear compartment opening at the point *m* (Fig. 2). In the form of body shown in Fig. 51, the gas welds extend from *k* to *n* in the rear window opening. From the point *k* forward is only a spot welding operation. The seam is concealed or masked under the drip molding substitute—the bead 28c. This welding is easily performed by an air operated and controlled pinch spot welder held by a man inside of the body. In rapid and large production, one man is located at each side with one of these pinch welders. When the pinch welder reaches the point *i* (Fig. 39) he meets with the end of the roof rail channel and also the rear post bracket 56. After the rear post location is passed, the welding is performed on the turned under flange

23e (Fig. 4) of the top panel and the roof rail channel. It must be remembered so far none of the wooden parts are in except some of the trim strips, and the wooden cores in the center post and the rear post.

The jig or buck (not shown) is provided with suitable swinging slotted clamps that fit in over the seams at the pillar cover and in under and over the seams at the rear between *k* and *m* (Fig. 2) or *k* and *n* (Fig. 51). These form gas welding clamps and three acetylene welders, one for the two front seams and one each for the rear seams *k-m* or *k-n* turn an oxy-acetylene flame onto the joint. Each welder is provided with a welding wire that he feeds into the joint as the flame melts the material and heats the work. The rear welders also weld the short seams at *j* (Fig. 2) between the rear deck opening and the bottom of the body. Other operators with pneumatically driven drills bore openings through the wheel housing shell (see Figs. 2 and 5) and the angle kick-up bar. Self-tapping screws 151 are then driven in which act as tacks to hold the parts together until the seam may be spot welded in a finishing jig or buck hereinafter described under the last heading.

The woodwork

After the body is rolled out of the final assembly buck and before it goes into the finishing jig just referred to, it is picked up by a conveyor chain and then starts slowly down a line where the woodwork is put in. First, the wooden roof rail cores 59 are set into the channel roof rails (Fig. 31). The bows 60 are then secured in place by the bolts 61. These bows have struck out prongs 62 onto which the listing strips with wires carried on the head lining (not shown) can be impaled and hung. From the rear bow shown in Fig. 29 to the wooden window frame extend several (check Fig. 45) metal strips 63 with the struck out hooks 63a over which the listing strip and wire of the head lining (not shown) is hung. These strips are spot welded to the rear metal bow as shown in Fig. 44.

The rear wooden pillar core 30 (Fig. 39) has been placed in the side panel before the body was set up. It is fastened in at the top by screw bolts 64 which screw into the special form of nut shown in Fig. 40 and designated 65. This nut is made of a soft metal so that it may be pounded down over a corner. The same form of nut is used for bolting the wooden roof rail core to the roof rail as shown in Fig. 39. The top bar of wooden rear quarter window frame (Fig. 39) is then placed and bolted to the wooden roof rail by a similar arrangement and secured to the rear part by screws. The lower window frame bar and vertical rear bar (Fig. 39) are then inserted and secured by screws to the upper frame bar and the metal bracket 67 on the end of the lower bar is secured by screws to the rear post.

The way the wooden parts are installed in the rear of the body may be varied. One way that we like to use is to insert the shelf 72 and the wooden rear window frame (Figs. 29, 45 and 46) as a subassembly. See particularly Figs. 42 and 43. The shelf is connected with the wooden rear window frame 76 by means of the braces 75. The shelf (Fig. 46) has a cross bar 71 which extends across the body under the shelf. The cross bar, the shelf, the bracing strap 75, and the wooden rear window frame are all assembled by workmen at benches along the line of travel of the body. This subassembly is then inserted in the body

and the turned in window stop flanges 77 (Figs. 42 and 43) are tacked to the wooden rear window frame.

The upper rear side window frame bar 66a carries the trim strip 73 (Fig. 29) which is bolted into the shelf. The shelf is bolted to the lower frame bar 153 (Fig. 29) of the lower part of the side window frame 66 by means of the bolt 152. The struts 69 and 70 are secured also to the lower frame bar 153 and may go into the body with the lower part of the side window frame 66. They hang down over the wheel housing and are gas welded to the wheel housing after the body is taken out of the final welding jig and goes up the line on the conveyor for grinding the welding burrs off, filling the depressions in the seams with solder, and then grinding and smoothing the solder down flush with the surrounding panels. At this same time also, the bracket 103 which is secured to the rear post is spot welded to the wheel housing.

Finish welding

After the wooden parts have been put in, the body goes into a finishing weld jig. This jig is built to support bus bars. A positive and negative bus bar is provided on a portable hanging welding fixture along the top of the windshield opening and where the fixture has been clamped in the windshield opening a two point bar type welding tool is used to weld the turned in window stop flange 80 (Fig. 21) to the header bar 9 of the windshield frame. Bus bars are provided along the roof rail adjacent the windshield post and may also be used adjacent the center pillar for putting some finishing spots on the parts to insure the sound and rigid union. Along the bottom of the wheel housing, a two point spot welder is used to weld the housing sheet to the metal kick-up sill. The channel deck opening frame 81 (Fig. 29) is spot welded to the flanges of the surrounding shell. This completes the job. Sound deadening felt 83 is cemented to the back along the window opening as shown in Figs. 45 and 46 and at any other place where it seems desirable.

We believe that novelty inheres in the laying out and the assembling of the panels to produce a flush invisible jointed outer shell, which when finished is a single integrated unit without any sign of a joint when viewed from the outside of the shell after the body has been painted and with the exposed weld lines of minimum length is new.

Flash welding, which is commonly practiced in welding thin sheet metal strips together, is only permissible when the parts are brought together in dies or fixtures of extreme accuracy. Given the tools, flash welding is very cheap, but obviously, it cannot be practiced in a setup buck where all the different parts are gathered together for the reason that it is not permissible to get the necessary accuracy of fit and it would be rather hard to get the necessary movement and burning away of the panels which is a necessary concomitant of flash welding. It might perhaps be possible to lap weld some of the joints but spot welding is difficult on thin sheets unless one can get an electrode in behind the work. This is not possible in welding the pillar cover stubs to the pillar covers. Arc welding is expensive and also rather impractical on a final assembly jig where many men are working due to the blinding light of the arc. We, therefore, prefer to use oxy-acetylene welding. Any of

these three last mentioned types of welding are much more expensive than flash welding because they require more labor and they require a large amount of solder to fill the rough seam. Solder is expensive both as a material and a large amount of work is required to apply it and rub it down.

We mention these things to emphasize the real value of such a panel division as we have here laid out. This produces a body that can be rapidly and economically put together with a minimum of length in the final setup welds which are exposed on the outside of the shell. Of course, there is a long weld along the eaves of the body which is a spot weld of the lapped flanges or between the flange and the channel roof rail. This weld, however, is either concealed by the doors or under the eaves of the top panel so as not to be in the reckoning. The two exposed welds are the very short ones on the pillar covers and the short welds at the rear between the end of the spot weld at the rear window opening and the opening in the rear of the body. This opening may be either the rear window opening (Fig. 51) or in bodies that have a rear compartment, it is preferably the rear compartment opening or trunk opening (Fig. 2). In this latter class of bodies, there are also two very short gas welds *j* between the side panels and the rear skirt (designated rear panel in claims), though it would of course be possible to flash weld this as is done in the case with the long welds *150* shown in Fig. 51. The skirt weld, however, is so short that it would hardly pay to build the tools and also go to the further expense of handling the bulky unit after it leaves the flash welder.

What we claim is:

1. In an automobile body metal shell having one or more openings in the sides and one or more openings in the rear, a front shell comprising a cowl and pillar covers, side panels, and a top panel, the last in the form of a stamping which covers the entire top of the body and having pillar cover stubs that are welded to the said pillar covers, said top panel extending partway down the back of the body and having external flush welds with the side panels extending from one of the openings in the rear of the body to points adjacent the border of the rear openings in the side of the body.

2. In an automobile body metal shell having one or more openings in the sides and one or more openings in the rear, a front shell comprising a cowl and pillar covers, side panels, and a top panel, the last in the form of a stamping which covers the entire top of the body and having pillar cover stubs that are gas welded to the front cowl and pillar cover shell, said top panel extending partway down the back of the body and having, when completed, an externally invisible gas weld extending from one of the openings in the rear of the body to a point adjacent the side of the rear opening in the side of the body and uniting the top panel to the said side panels.

3. In an automobile body metal shell having one or more openings in the sides and one or more openings in the rear, a cowl and pillar cover shell, side panels with flanges along their tops, and a top panel with side flanges, said top panel being in the form of a stamping which covers the entire top of the body and having pillar cover stubs that are welded to the upper ends of said pillar covers by a flush weld, said top panel extending partway down the back of the body and having flush welds with the side panels, which

welds extend from one of the openings in the rear of the body to points adjacent the rear openings in the sides of the body and having concealed welds of said top and side panels overlapping flanges from this point forward along the top of the side panels.

4. In an automobile body metal shell having one or more openings in the sides and one or more openings in the rear, a metal panel structure comprising a cowl and pillar cover shell, side panels with flanges along their tops, and a top panel with side flanges and in the form of a stamping arranged to cover the entire top of the body and having pillar cover stubs that are welded to the front cowl and pillar cover shell, said top panel extending partway down the back of the body and welded to the said side panels by welds extending from one of the openings in the rear of the body to points adjacent the rear openings in the sides of the body and having the said side flanges welded to the said side panel flanges, the said top panel stamping provided with integral moulding beads that lie above the weld line and conceal the welds of the said flanges.

5. In a metal body, the combination of a front unit including a cowl and pillar cover shell structure and a windshield frame welded together, the windshield frame having secured to the top thereof a pair of angle section roof rails, side panels and a top panel, said top panel being welded to the pillar covers by welds concealed when the body is finished and provided with turned under flanges which are welded to the angle section roof rails, the said side panels provided with window openings, and the side panels also provided over the window openings with flanges overlapping the top panel flanges, which overlapping flanges are welded together in continuation of the weld between the flange of the top panel and the roof rail.

6. In a metal body, the combination of a front unit including a cowl and pillar covers and a windshield frame welded thereto, the windshield frame having secured thereto a pair of angle section roof rails, side panels, and a top panel welded together, said top panel being welded to the pillar covers by welds invisible from the outside when the body is finished and said top panel provided with turned under flanges which are welded to the two angle section roof rails, the side panels provided with window openings and overlapping flanges which overlap the top panel flanges and are welded together in continuation of the weld between the flanges of the top panel and the roof rails, and said top panel extending partway down the rear of the body and having finished welds which are invisible from the outside extending from the ends of the welds of the lapping flanges to one of the openings in the rear of the shell.

7. In a metal body, the combination of a front unit including a cowl and pillar covers and a windshield frame welded together, the windshield frame having secured to the top thereof a pair of angle section roof rails, side panels and a top panel both of which panels are independent of the roof rail, said side panels having window openings, said top panel provided with turned under flanges which are welded to the two angle section roof rails, the said top panel and the side panels provided over the side panel window openings with overlapped flanges that are welded together in continuation of the welds between the flanges of the top panel and the roof rail, the said top panel having pillar stubs that meet and

are welded to the pillar covers of the front unit with a weld invisible from the exterior after finishing.

8. In a metal body, the combination of a front unit including a cowl and pillar cover shell and a windshield frame welded together, the windshield frame having secured to the top thereof a pair of angle section roof rails, side panels and a top panel both of which panels are independent of the roof rail, said side panels provided with window openings, said top panel provided with turned under flanges which are welded to the two angle section roof rails, the said top panel and the side panels provided over the side panel window openings with overlapping flanges that are welded together in continuation of the weld between the flanges of the top panel and the roof rail, and the top panel extending part way down the rear of the body and having finished welds to the side panels, which welds are flush on the outside and extend from the ends of the welds of the overlapping flanges to one of the openings in the rear of the shell, the said top panel having pillar stubs that meet and are welded to the pillar covers of the front unit with welds flush on the exterior.

9. In a vehicle body construction, a windshield pillar, an arched side rail secured thereto in extension thereof, an arched windshield header secured to said pillar also in extension thereof, said pillar, side rail and windshield header being flanged, a sheet metal stamping preformed to provide a roof panel flanged at its marginal edges, said flanges mating with the flanges on said pillar, side rail and windshield header, said mating flanges providing reinforced arches longitudinally and transversely of said body.

10. In a vehicle body construction, a rearwardly sloping flanged windshield pillar, a curved flanged side rail secured thereto in extension thereof, a side panel having a flanged marginal edge substantially in continuation of said curved side rail, a sheet metal stamping preformed to provide a roof and rear quarter panel having a flanged marginal edge adapted to mate with the flanges on said windshield pillar, side rail and side panel, to form a reinforced longitudinally curved arch at the side of the vehicle body.

11. In a vehicle body construction, a single integral sheet metal stamping including a roof and rear quarter panel, said panel being formed to provide a substantially continuous flange along the side thereof extending from the belt line of the body at the rear to the windshield frame at the front and lying in a smoothly curved longitudinally extending arch, a pillar at the side of the vehicle adjacent the windshield opening therein, a side panel adjacent the rear quarter panel of said roof panel, a longitudinally arched side rail secured to and interconnecting said windshield pillar and side panel, said windshield pillar, side rail, and side panel each having flanges adapted to mate with the flange on said top panel to provide a longitudinally extending reinforced arch at the side of the vehicle body.

12. In a steel shell automobile body having door openings in the sides, the combination with a metal frame including an upwardly and rearwardly inclined windshield header and pillar members and a metal roof rail forming an extension of each pillar member and an arch therewith, of a pair of rear side panel stampings one at each side with a turned in flange at the top, the said flange extending from the front of the side stamping and closely adjacent the rear

of the roof rail rearwardly in a downwardly directed arch and a single large stamping arched longitudinally and crosswise, extending from the top of a door opening on one side to the top of a door opening on the other side, forming a solid continuous metal roof and also an integral downwardly inclined rear panel in arched extension of the roof, said stamping extending over and down the windshield pillar members and header, pillar covers and a cowl shell forming a continuation of said stamping and completing the body shell at the front, said roof stamping at the rear having its sides fitting the arched tops of the side panels and having turned in side flanges welded to the pillar members, the roof rails and said stamping turned in flanges of the side stampings, affording a reinforced solid arched top arranged to provide a solid brace from front to back and side to side of the body.

13. In a steel shell automobile body having door openings in the sides, the combination with a metal frame including an upwardly and rearwardly inclined windshield header and pillar members and a metal roof rail forming an extension of each pillar member and an arch therewith, of a pair of rear side panel stampings one at each side with turned in flanges at the tops, each flange extending from the front of the side stamping closely adjacent the roof rails rearwardly in a downwardly directed arch and a single large stamping arched longitudinally and crosswise, extending from the top of a door opening on one side to the top of a door opening on the other side, forming a solid continuous metal roof and an integral downwardly inclined rear panel in arched extension of the roof, said roof stamping at the rear having its sides fitting the arched tops of the side panels and having turned in side flanges welded to the roof rails and said stamping turned in flanges of the side stampings thereby affording a reinforced solid arched top arranged to provide a solid brace from front to back and side to side of the body.

14. In a vehicle body construction a rearwardly sloping windshield pillar having an integrally formed flange at the side thereof, a generally arcuately shaped side rail secured to said pillar in extension thereof and having a flange throughout its length forming a substantial continuation of the flange on said windshield pillar, a side panel at the rear of said body having an arcuate edge flanged to provide a smoothly curved arcuate continuation of the flange on said side rail and connected thereto a sheet metal stamping preformed to provide a roof and rear quarter panel for said body, said stamping having its lateral edge flanged and adapted to mate with and to be secured to the flanges on said pillar side rail and side panel, thus providing a reinforced longitudinal arch extending from the belt line of the body at the base of the windshield pillar rearwardly to the belt line of the body at the base of the rear quarter panel.

15. In a steel shell automobile body having door openings in the sides, the combination with a metal frame including an upwardly and rearwardly inclined windshield header and on each side a pillar member and metal roof rails forming extensions of the pillar members and arches therewith, of a pair of rear side panel stampings one at each side and a single large panel arched both longitudinally and crosswise, extending from the top of a door opening on one side to the top of a door opening on the other side, forming a solid continuous metal roof and also an integral

downwardly inclined rear panel in arched extension of the roof, said roof panel at the rear having its side margins fitting the upper margins of the side panels and having turned in side flanges
 5 welded to the roof rails and its side marginal portions welded to the side stampings thereby affording a reinforced solid arched top arranged to provide a solid brace from front to back and side to side of the body.

10 16. In a steel shell automobile body having door openings in the sides, the combination with a metal frame including an upwardly and rearwardly inclined windshield header and windshield pillar members and metal roof rails forming
 15 extensions of the pillar members and arches therewith, of a pair of rear side panel stampings one at each side and each with an upper marginal portion, the said marginal portion extending from the front of the side stamping closely
 20 adjacent the roof rail rearwardly in a downwardly directed arch to a point near the belt line and a single large roof panel arched longitudinally and crosswise, extending from the top of a door opening on one side to the top of a
 25 door opening on the other side, forming a solid continuous metal roof and an integral downwardly inclined rear panel in arched extension of the roof, said panel extending over and down the windshield pillar members and header, pillar

covers and a cowl shell forming a continuation of said roof panel and completing the body shell at the front, said roof panel at the rear having its sides fitting the arched upper marginal portions of the side panels and welded to the windshield pillar members, the roof, roof rail and
 5 said marginal portion of the side panel stampings thereby affording a reinforced solid arched top arranged to provide a solid brace from front to back and side to side of the body. 10

17. In a vehicle body construction, a sloping sheet metal windshield pillar, an arched sheet metal side rail member having its forward end secured to said pillar in extension thereof and a sheet metal side panel provided with an upper
 15 margin and located at the rear end of said side rail, the said side rail, pillar and the upper margin of the side panel lying in a curved longitudinally disposed arch, a roof panel having a downwardly extended rear panel formed integrally therewith,
 20 the side marginal portions on said roof panel adapted to mate with portions of the said pillar, side rail, and upper margin of the side panel and welded thereto to provide a reinforced longitudinal arch structure at the side of the body. 25

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