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DETACHABLE AND REATTACHABLE PIVOTED ENGINE HOOD PANEL

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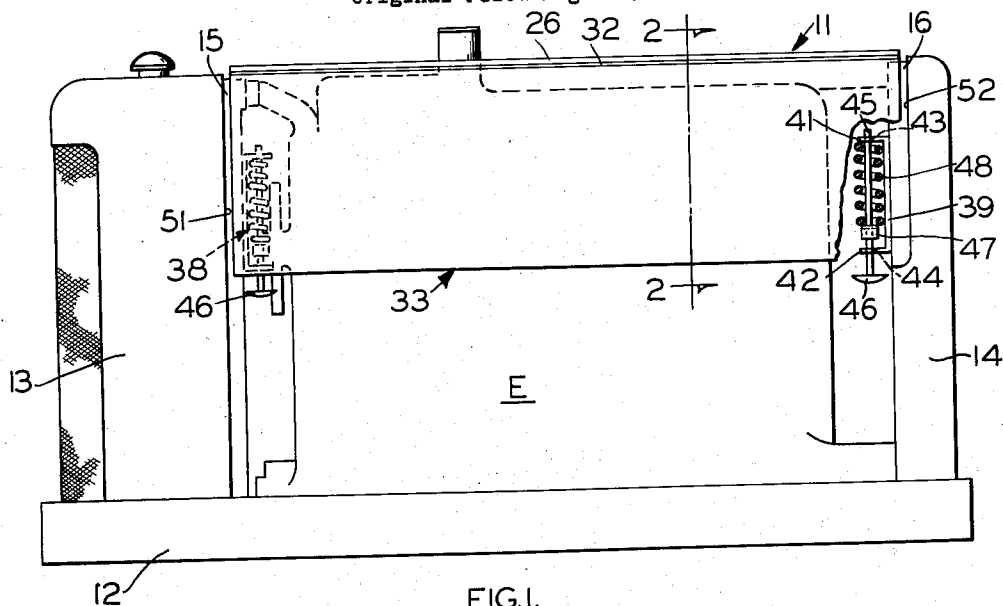


FIG. 1.

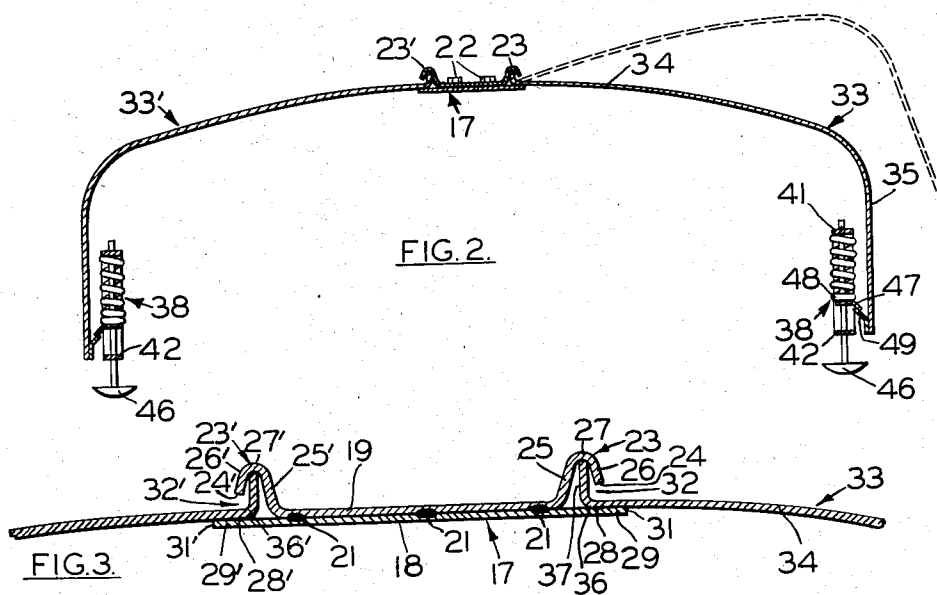


FIG. 2.

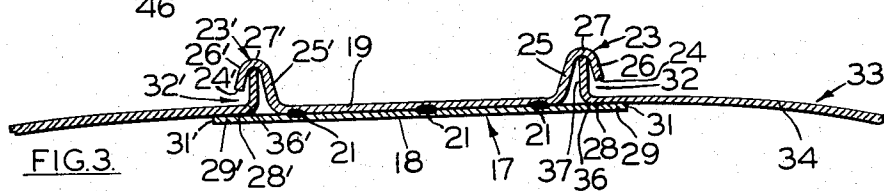


FIG. 3.

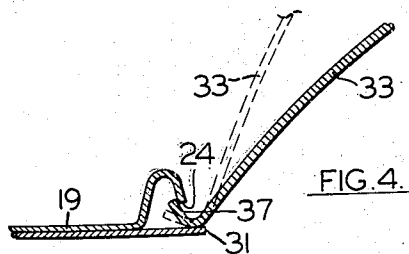


FIG. 4.

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DETACHABLE AND REATTACHABLE PIVOTED ENGINE HOOD PANEL

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Continuation of application Ser. No. 304,930, Aug. 18, 1952. This application Feb. 14, 1958, Ser. No. 715,468

5 Claims. (Cl. 180—69)

This invention relates to engine enclosures and more particularly concerns a pivotally mounted quickly attachable and detachable hood portion of such an enclosure. This application is a continuation of my application Serial No. 304,930, filed August 18, 1952, now abandoned.

The principal object of this invention is the provision of a simplified economically produced and assembled hood and attaching means therefor particularly adapted for use upon internal combustion engine power units.

A further object is the provision of a novel engine hood-supporting structure bridging the space between the radiator and cowl of an engine enclosure and having hook-forming inverted channel means cooperable with a ledge therebelow for detachable connection with an upstanding flange along an edge of a hood panel.

A still further object is the provision of an improved engine hood panel having an upstanding flange along an edge thereof as a component of a quick-attachable pivot connection for mounting the panel over an engine.

The above and other desirable objects inherent in and encompassed by the invention are elucidated in the ensuing specification, the appended claims, and the annexed drawings, wherein:

Figure 1 is a side elevational view of an internal combustion engine power unit having an engine enclosure embodying a hood and hood support constructed according to this invention;

Figure 2 is a transverse sectional view taken through the hood-supporting bridge structure and the hood at a plane indicated by the line 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary view taken similar to Figure 2, illustrating details of the bridge structure and hood panels pivotally mounted thereon in their lowered engine-enclosing position; and

Figure 4 is a view corresponding to Figure 3 but showing only one of the hood panels in an elevated position, and illustrating by dotted lines a fully elevated position wherein the panel is unhooked from the bridge structure and detachable therefrom.

With continued reference to the drawings the power unit 11 illustrated in Figure 1 comprises an engine E mounted upon a base 12. An engine radiator shell 13 is mounted upon the left or front end of the base, whereas a cowl is mounted on the opposite end thereof. The radiator shell 13 and the cowl 14 are part of the enclosure for the engine E and constitute spaced-apart hood supporting structures, having upper portions 15 and 16 at higher elevation than the engine. A supporting bridge structure 17 comprises an elongated lower plate 18 resting upon and extending between the upper portion 15 and 16 of the support structures 13 and 14. Upper plate 19 is mounted upon the plate 18 to which it is secured by a plurality of spot welds 21 of which three are illustrated in Figure 3. Cap screws 22, Figure 2, are used for attaching the rear end of the bridge structure 17 to the cowl 14 and similar cap screws (not shown) are used to attach the front end of the bridge structure to the radiator shell 13.

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Hook means in the form of inverted channels 23 and 23' are formed adjacent opposite longitudinal edges 24 and 24' of the upper plate 19. The inverted channel 23 has a riser portion 25, a declining portion 26 and a crest portion 27 between the portions 25 and 26. Corresponding portions are respectively designated 25', 26' and 27' for the inverted channel 23'. The plate edges 24 and 24' are above and in spaced contiguity with upper faces 28 and 28' of panel supporting ledges 29 and 29' adjacent longitudinal edges 31 and 31' of the lower plate 18. Thus the edges 24 and 24' cooperate with the faces 28 and 28' in forming narrow openings 32 and 32' to provide access to the inverted channels 23 and 23'.

A hood panel 33 of sheet metal has a substantially horizontal portion 34 and a downwardly extending side panel portion 35. An inner edge portion 36 of the panel 33 has an upturned flange 37 extending the full length of such edge of the panel and coextensive with the declining portion 26 of the inverted channel 23. When the panel portion 34 is in the substantially horizontal position illustrated in Figures 2 and 3 the flange 37 extends vertically and is of a width vertically to press against the under side of the crest portion 27 while the edge portion 36 bears against the ledge face 28.

Releasable means in the form of hold-down latch devices 38 are employed for holding the portion 34 of the panel 33 in the horizontal position. The declining portion 26 of the inverted channel 23 is abutable by the hood panel flange 37 to prevent the hold-down device 38 detaching the panel from the bridge structure 17.

Referring to the rear hold-down latching device 38 associated with the panel 33, that is, the device illustrated at the right in Figures 1 and 2, this device can be seen to comprise a bracket 39 secured to the cowl 14 and provided with an upper flange 41 and a lower flange 42. These flanges are apertured at 43 and 44 to slidably receive a latch rod 45 having a head 46 on its lower end. A latch member 47 fixed upon the rod 45 serves as an abutment for a helical compression spring 48 surrounding the rod and expansively reacting between member 47 and the bracket flange 41 to yieldably urge such member and the rod 45 downwardly. A complementary latch member 49 is secured to the inner side of the hood portion 35 in position to register vertically with the member 47 when the hood is lowered whereby the spring 48 is effective for pressing the member 47 downwardly against the member 49 to hold the hood in a downwardly closed position illustrated in Figures 2 and 3.

The details of the hold-down latch device 38 at the front end of the panel 33 are identical with those of the device 38 just described. The front device is attached to the radiator shell 13 in the position illustrated by the dotted lines of Figure 1. A rearward device 38 shown at the left of Figure 2 is associated with a hood panel 33' similar to the panel 33. This device is also attached to the cowl 14. A fourth hold-down latch device (not shown) is associated with the forward end of the panel 33' and attached to the radiator shell similar to the forward device 38 associated with panel 33.

Assuming that it is desired to raise the hood panel 33, manual pressure is applied upwardly to the latch heads 46, Figure 1, thereby forcing the latch members 47 upwardly to release the members 49 whereupon the hood panel can be swung upwardly to a raised position as illustrated by the dotted line of Figure 2 and the solid line of Figure 4. In this position the flange 37 serves as a prop against the inverted channel 23 to maintain the panel 33 in the upwardly pivoted position. Thus the flange 37 constitutes a pivoted anchorage and prop means. Should it be desired to completely detach the panel 33 it will be further elevated or pivoted upwardly about the line of contact at the edge portion

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36 with the associated ledge face 28 to attain the position illustrated by dotted lines of Figure 4 to place the flange 37 in a substantially horizontal position wherein it is withdrawable horizontally from the channel opening 32. It is thus convenient for a serviceman to completely remove the hood panel for obtaining access to the engine.

When it is desired to replace (or initially install) the panel 33 it is held in the position illustrated by the dotted line of Figure 4 incident to inserting the flange 37 through the opening 32 into the inverted channel 23 whereupon the panel is pivoted downwardly as it slides and rocks against the ledge face 28. When the panel is fully lowered the latches 38 associated therewith can be reconnected for firmly holding the panel in place.

Manipulations as those described in connection with raising, removing and replacing the panel 33 are performable with respect to the panel 33'.

Although the hood panels herein illustrated are detachably associated with the supporting bridge structure 17 therefor the springs 48 of the hold-down latch devices 38 are effective to prevent rattling of these panels during operation of the engine. The profiles of the panels 33 and 33' as illustrated in Figure 2 conform to engaged profiles 51 and 52, Figure 1, upon the radiator shell 13 and the cowl 14. When the panels are held against the profiles 51 and 52 the upper edges of the flanges 37 and 37' press against the underside of the inverted channel crests 27 and 27' while the edge portions 36 and 36' press firmly against the ledge faces 28 and 28'. The panels are thus locked by these firmly engaged surfaces and by the hold-down latch devices 38 against vibration relative to the radiator shell and cowl during vibration of the engine attendant to its operation.

Having thus described a single preferred form of the invention with the view of clearly and concisely illustrating the same, I claim:

1. In an engine enclosure having spaced-apart hood-supporting structures for accommodating the engine therebetween and having upper portions disposed higher than the engine, an elongated bridge structure supported by and extending between said upper structure portions, said bridge structure having a ledge with an upper surface extending lengthwise thereof and an inverted hook-forming channel disposed above the ledge surface, said channel having a crest section and a section declining from said crest section, the declining section having a lower edge spaced upwardly from said ledge surface and cooperating therewith to form an elongated opening providing access to the channel, and a hood panel having opposite inner and outer edge portions extending lengthwise of the bridge structure, the panel having a flange extending upwardly along its inner edge portion and disposed within said channel, the flange being of a width vertically to reach substantially between the crest section of the channel and said ledge surface while the panel is in a substantially horizontal position, the panel having a line of contact with said ledge surface, means for releasably anchoring the panel in such horizontal position, and said panel when released being swingable upwardly about such line of contact while the latter pivots upon said ledge surface to dispose the flange in a substantially horizontal position wherein it is withdrawable through the elongated access opening for detaching the panel from the bridge structure.

2. In an engine enclosure having spaced-apart hood-supporting structures for accommodating the engine therebetween and having upper portions disposed higher than the engine; a bridge structure comprising an elongated lower plate supported by and extending between said upper structure portions, said plate having opposite edges extending lengthwise thereof and upwardly facing ledge surfaces respectively adjacent said edges, and an upper elongated plate mounted on the lower plate, the upper plate having opposite edges extending lengthwise thereof and spaced apart less distantly than the edges

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of the lower plate, the upper plate having inverted hook-forming channels formed therein respectively adjacent its edges, each channel comprising a riser section projecting upwardly from the lower plate, a declining section bordered by one of the edges of the upper plate, and a crest section between the riser and declining sections thereof, the plate edge on each declining section being spaced contiguously above a respective one of said ledge surfaces to form therewith a narrow access opening for the channel associated therewith; and hood panels having inner edge portions with upturned flanges disposed respectively in said channels and resting on respective ones of the ledge surfaces, said panels projecting substantially horizontally oppositely from said ledges to form a hood portion of the enclosure, means for releasably holding the panels in the horizontal position, and said panels when released being swingable upwardly about their inner edge portions while the latter pivot upon said ledge surfaces to dispose their flanges in substantially horizontal positions wherein they are withdrawable through the narrow openings for detaching the panels from the bridge structure.

3. In an engine enclosure having spaced-apart hood-supporting structures for accommodating the engine therebetween and having upper portions disposed higher than the engine, an elongated bridge structure supported by and extending between said upper structure portions, said bridge structure having ledge means with an upwardly facing surface adjacent an elongated edge thereof and inverted hook-forming channel means disposed above the ledge surface, said channel means including a crest portion and a portion declining from said crest portion, the declining portion having a lower edge spaced upwardly from the ledge surface and cooperating therewith to form a narrow opening providing access to the channel, and a hood panel having an inner edge portion resting upon the upwardly facing ledge surface and a flange projecting upwardly from such edge portion into the channel, said panel projecting substantially horizontally from the ledge, and panel hold-down means releasably connected with the panel to pull the flange against the declining portion of the inverted channel means and prevent upward movement of the panel, said panel when released being swingable upwardly while pivoting upon the ledge surface to dispose the flange in substantially a horizontal position wherein it is withdrawable through the narrow opening for detaching the panel from the bridge structure.

4. In a hood support for an engine enclosure including spaced-apart hood supporting structures for accommodating the engine therebetween and having respective upper portions disposed higher than the engine, an elongated lower plate supported by and extending between said upper portions of the supporting structures, said plate having opposite edges extending lengthwise thereof and upwardly facing ledge surfaces respectively adjacent said edges, and an elongated upper plate mounted on the lower plate, the upper plate having opposite edges extending lengthwise thereof and spaced apart less distantly than the edges of the lower plate, the upper plate having inverted hook-forming channels formed therein respectively adjacent its edges, each channel comprising a riser section projecting upwardly from the lower plate, a declining section and a crest section between the riser and declining sections and the plate edge on each declining section being spaced contiguously above a respective one of the ledge surfaces to form therewith a narrow access opening for the inverted channel associated therewith.

5. In an engine enclosure, a bridge structure including an engine hood panel supporting ledge and hook means in the form of an inverted channel having an edge spaced from and contiguously above said ledge to form an opening communicating with space embraced by said channel and ledge, an engine hood panel having a substantially horizontal portion with an inner edge and a por-

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tion curving downwardly to an opposite edge, pivotal anchorage component and prop means constituted solely by a substantially flat flange formed integrally with the panel portion at the inner edge thereof and projecting upwardly from such inner edge at an angle of substantially 90°, the flange being disposed within said embraced space while the panel is horizontal, and the spacing of the channel edge above said ledge exceeding the thickness of said panel an amount that the panel is inclinable about said inner edge attendant to withdrawing said inner edge outwardly of said opening while inclining the flange within said opening to press reactively against the channel edge to prop the panel in the inclined position against

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the force of gravity thereon while the panel inner edge presses downwardly on the ledge.

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