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AUTOMOBILE HOOD SELF-ALIGNING HINGE MOUNTING

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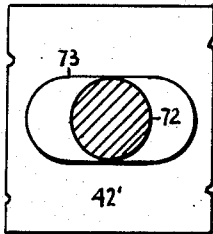


Fig. 10.

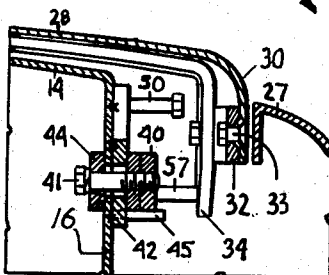


Fig. 3.

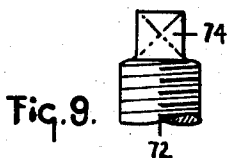


Fig. 9.

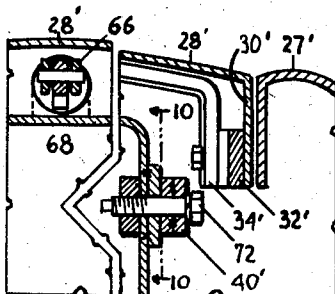


Fig. 8.

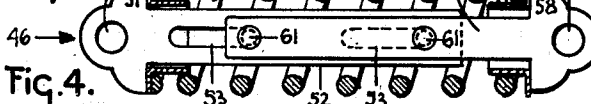


Fig. 4.

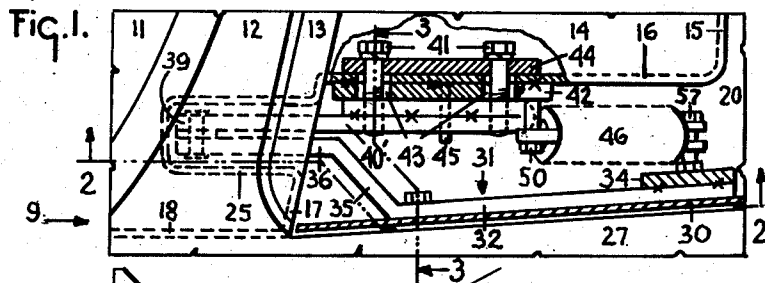


Fig. 1.

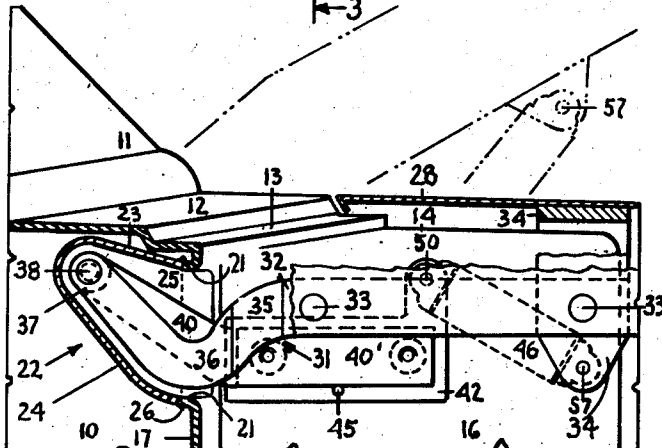


Fig. 2.

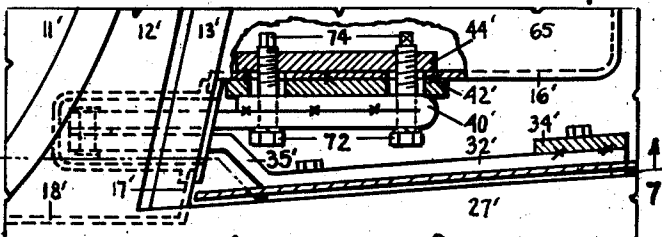


Fig. 6.

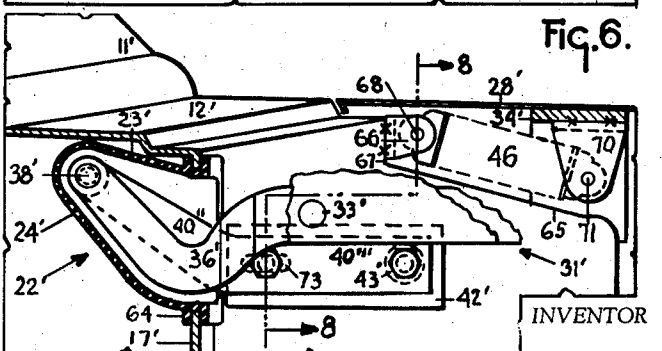


Fig. 7.

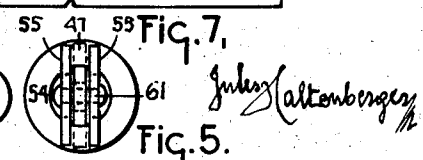


Fig. 5.

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AUTOMOBILE HOOD SELF-ALIGNING HINGE MOUNTING

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3 Claims. (Cl. 180—69)

Automobile manufacturers generally adopted the well known differential linkage for operative mounting of a rear hinged alligator hood. The hinges bind at hood opening demanding heavy hood walls, they are heavy and very expensive to mount, and have 8 to 12 operating hinge joints. Fixed-center hinge mountings have two joints, the herein proposed hinge self-aligned mounting is inexpensive to produce or mount.

It is the object of my invention, to provide for a usual alligator hood a self-aligning hinge mechanism, whereby the hood when disposed in its closed position can facilitate be secured to the cowl structure of the automobile, by bolting means accessible from the body cowl interior.

A further object is to provide on the upstanding walls disposed adjacent to the cowl side walls, rearwardly extending preferably welded or inserted flexible material, hermetically sealing hinge housings, accessible from the engine chamber, for encasing fixed-center hinge elements.

A further object is to provide for a fixed-center supported alligator hood, in preferred form a single, or when desired a pair of self-contained compression coil spring units for holding the hood in open position and depressing the hood when in closed position.

Further objects will appear as the description proceeds.

Referring to the drawings: Fig. 1, is a fragmental plan of a right rear corner alligator hood mounting; Fig. 2, is a section substantially on line 2—2 of Fig. 1; Fig. 3 is a section substantially on line 3—3 of Fig. 1; Fig. 4 is a fragmental side elevation of a self-contained compression spring unit; Fig. 5 is an end elevation of Fig. 4; Fig. 6 is a modification of Fig. 1; Fig. 7 a section substantially on line 7—7 of Fig. 6; Fig. 8 is a section substantially on line 8—8 of Fig. 7; Fig. 9 is a part of the securing bolts shown in Figs. 6, 7 and 8 shown in a larger scale; Fig. 10 is a section substantially on line 10—10 of Fig. 8; here shown in a larger scale.

Referring to Figs. 1 to 5 inclusive, it will be seen that a usual automobile body forward part and right corner thereof generally at 9 has a body interior space 10, a usual windshield 11, forward thereto a cowl having an exposed shelf 12, where a usual ventilator might be provided in the usual well known manner (not shown). Forward of the shelf the cowl (only one side is shown) is formed into a hood-ledge 13, cowl top 14, cowl front wall 15, cowl side wall 16, cowl side outward wall 17, and a normally hood hidden wall 18, that connects the outer edge of wall 17, to the usual door pillar (not shown). The cowl interior is a part of the body inner space, the space exteriorly thereof is a part of a usual and well known engine chamber 20 and is accessible after the opening of a hood (to be described). The body with cowl interior and the engine chamber are in usual hermetically sealed relation.

Applicant here proposes to provide the cowl side outward wall 17 with a substantially right angular opening formed by a rearwardly turned continuous flange 21 forming an access opening to a fixed-center hinge (to be described) encompassing sealed hinge housing generally at 22. This housing is formed of an upper wall 23, lower

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wall 24, and side walls 25. The forward ends of these walls are end-welded to flange 21 at 26.

The automobile is also provided with usual fenders 27 (only the right fender inner edge is shown).

To cover the cowl and engine chamber, a usual alligator hood 28, having side portion 30 is provided. This hood is normally disposed in between the usual fenders, the rear end thereof over the hood ledge and the forward end of the hood is seated on a usual cross-ledge (not shown) in the usual well known manner.

For hood opening, here a fixed-center hinge mechanism is provided (only the right side one is shown). This is composed of an arcuately movable element generally at 31, having a hood side contacting portion 32, arranged to be secured to the hood side 30 as by sunk-head bolts 33. The front ends of these elements (only one is shown) are interconnected by a usual reinforcing bridge 34 in the usual well known manner. Element 31 has an offset portion 35 and a rearwardly extended arm 36, terminating longitudinally rearwardly beyond the rear end of the hood in an eyelet 37. It is important to note that this eyelet is provided with a circular hole for the adoption of a hinge rivet 38 whereby it is operatively connected to a normally stationary eyelet 39 having a circular hole for the adoption of the aforementioned rivet, thereby forming a hood fixed-center hinge. Eyelet 39 is a part of a normally stationary bracket 40 having a forwardly extending securable self-aligning bracket portion 40'. This portion at the front end is folded over, the folded parts are held by welds, to assure a doubled amount of threads for the hood self-aligning bracket securing bolts 41, passing through the wall 16. The bracket securable portion inner face rests on a reinforcing plate 42 weld secured on the outer surface of cowl side wall 16. Around the securing bolts in the reinforcing plate and side wall bolt clearance holes 43 are provided. The securing bolts are operatively inserted in a movable securing plate 44 disposed on the inner side of wall 16.

Figs. 1, 2 and 3 also show a bracket downward position limiting pin 45, secured in reinforcing plate 42 and protruding therefrom.

In hood mounting operation, the complete hood rearwardly extending fixed-center hinge elements are laced into their respective housings 22 and the hood itself is released to find its final position as determined by the desired clearances to the adjacent fenders and front edge of the exposed body shelf, and alignment with the shelf top surface. The final closed hood position locates the securing position of the self-aligning normally stationary brackets (the forward end thereof is limited in its downward position by pin 45). The insertion of securing bolts from the cowl interior through movable securing plate 44 and the tightening of them operatively secures the hood, as the clearances around the securing bolts accommodate any expected hinge center variations.

For the operatively secured hood—when so desired—applicant provides a hood position controlling loaded self-contained coil spring assembly unit, shown in detail in Figs. 4 and 5. Here, the spring unit generally at 46 is composed of a central sliding stamping 47, having a mounting operative opening 48 for hinge center cap-screw 50, shoulders 51, elongated body 52, and therein two elongated openings 53. The shoulders support a necked flange 54. With the central stamping a pair of outside stampings 55 are associated, they have mounting operative openings 56 for a hinge center cap-screw 57, shoulders 58, elongated bodies 60, and their shoulders support a duplicate necked flange 54. These sliding stampings are operatively interconnected by rivets 61 held in the outer stampings with their mid-portions arranged to slide in the central stamping elongated openings. Figs. 4 and 5 illustrate the extreme expanded position of the powerful spring

62. This same expanded position is also indicated by chain lines above Fig. 2, while holding the hood in open position. In hood closed position the spring 62 is somewhat compressed. It is important to note, and as shown in Fig. 2, the geometry of spring unit centers are so located that the spring presses the hood down to its seat when in closed position and holds the hood open at a predetermined distance when in open position.

This self-contained coil spring assembly unit has many advantages; it is light, inexpensive to build and eliminates spring mounting accidents.

Figs. 6, 7, 8, 9 and 10 illustrate a modification of the invention, for simplicity of presentation, the corresponding parts have the identical identifying numerals with an added prime. Here housing 22' is made of a yielding, deformable, material like plastic or rubber and the housing forwardly terminates in a U flange 64 arranged to hermetically seal the opening in wall 17'.

The top of cowl 65 is dented downwardly to provide for the use of but one hood position controlling spring unit 46, preferably positioned in the center of the automobile as indicated in Fig. 8. The unit is operatively supported by a rear U bracket having side walls 66 and arranged to be weld secured on a vertically offset portion 67 of cowl top 65 and the unit operates around pin 68. The unit front support is served by a U bracket having side walls 70 and is secured to bridge 34'. The unit operates on pin 71. It is notable that the unit 46 presses the hood downwardly, when in closed position.

In this modification applicant proposes the preliminary insertion of the hood hinge securing bolts 72 from the engine chamber; it will be noted that for the rear bolt applicant provides a longitudinal bolt clearance slot 73 of but slightly larger width than the bolt, the slot hole is longer than the bolt diameter, and for the front bolt a materially larger clearance opening 43' is provided. The front clearance hole and rear slot permit the longitudinal self-alignment of the bracket. At vertical self-alignment the rear slot acts as fulcrum and the front bolt clearance permits the vertical self-alignment. After the securing bolts are inserted near completely but not tightened and the hood is rested in its final position the hinge rivet automatically adjusts the bracket self-aligning portion 40'' to the desired final self-aligned position, then the bolts are tightened from the inside of the cowl by the square ends 74 on bolts 72. Thereafter the hood opened and the bolts might be further tightened.

Hinge brackets when provided with a terminal bolt clearance hole and an intermediately disposed bolt slot hole are able to support the heaviest hoods now used.

Applicant here presents an alligator hood self-aligned hinge mounting that has material benefits over and above the presently used differential linkage hood hinges. It will be noted that the elements that form the active hood hinge have a fixed-center around which the hood operates,

an important hinge arrangement to prevent hood wobbling at hood opening, such wobbling destroys the protective paint on the fenders top edges.

While I have herein shown and described only certain specific embodiments of my invention and have suggested only certain modifications, it will be appreciated that many changes and variations can be made to suit particular conditions and embodiments of use, without departing from the spirit and scope of my invention.

What applicant claims as his invention:

1. In an automobile a body forwardly terminating in a cowl having an interior space, a side wall, and a cowl side outward wall adjacent thereto, a rear hinged alligator hood disposed in closed position over said cowl, hood hinging means comprising, a sealed hinge housing extending rearwardly from said cowl side outward wall, an arcuately operable element secured to said hood and extending longitudinally rearwardly beyond said hood and into said housing, and terminating in a fixed-center hinge, a normally stationary hinge bracket; the rear end thereof operatively secured to said hinge element and having a forwardly extending self-alignable and securable portion, means to secure said portion after self-alignment, to said cowl side wall, including, said portion engaging securing means passing through a clearance opening in said side wall, and securable from the interior space of said cowl.

2. The invention defined in claim 1, wherein, the securing means comprises of two bolting means, one of said bolting means passing through a longitudinal clearance slot disposed in said cowl side wall, and the other one through a materially larger clearance opening disposed in said side wall.

3. The invention defined in claim 1, wherein, a self-contained compressed coil spring unit having hinge centers is operatively disposed between the hood and cowl, said hinge centers so positioned whereby the unit holds the hood open at a predetermined distance when the hood is in open position, and the unit presses the hood down when in closed position, and hinge center bolting means for operatively positioning said unit, after the self-aligning hood hinge means are secured.

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