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CLOSURE FASTENING MEANS

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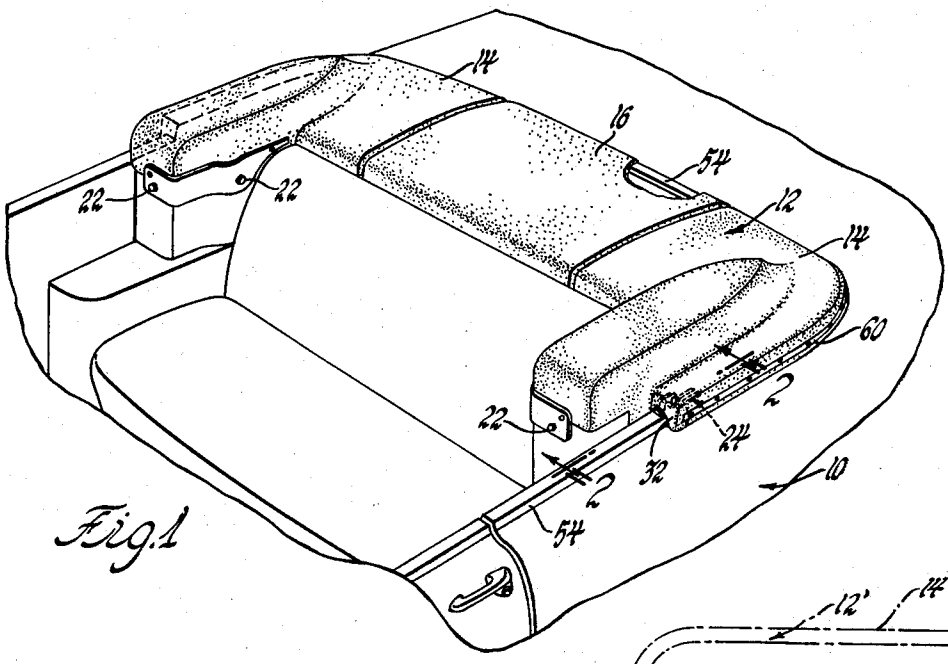


Fig. 1

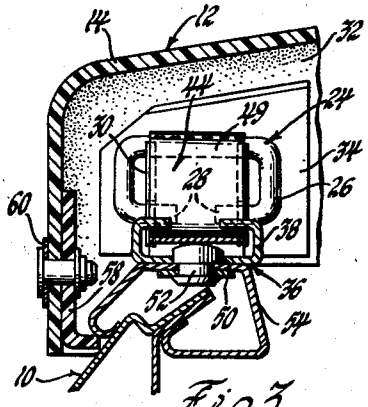


Fig. 3

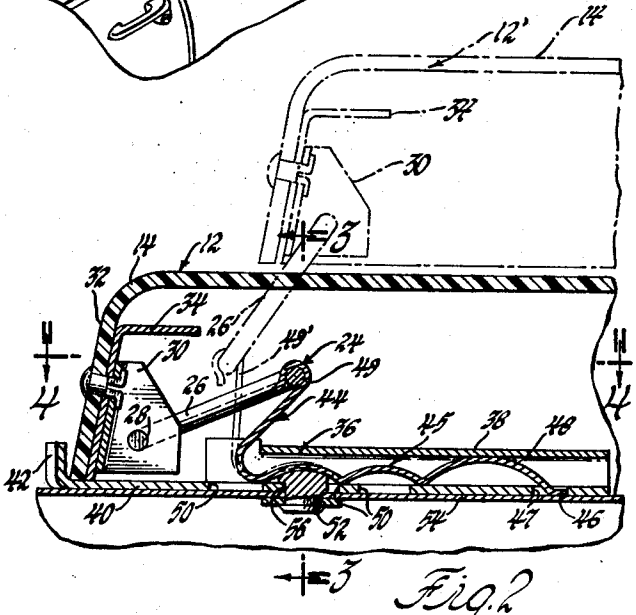


Fig. 2

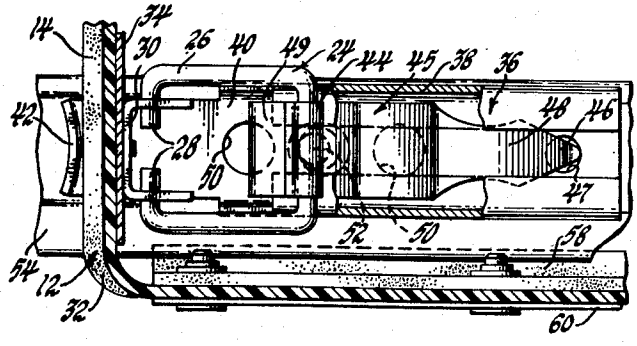


Fig. 4

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# CLOSURE FASTENING MEANS

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This invention relates to closure fastening means, and more particularly to fastening means for securing a vehicle body closure to a vehicle body.

The primary object of this invention is to provide improved vehicle body closure fastening means. Another object of the invention is to provide improved vehicle body closure fastening means which selectively and alternately maintains the closure in either an open position spaced from the body or in a closed position in engagement with the body adjacent an opening therein.

These and other objects of the invention will be readily apparent from the following specification and drawings wherein:

FIGURE 1 is a fragmentary perspective view of a convertible vehicle body having a top well closure mounted thereon by fastening means according to this invention, with the closure being shown in closed position;

FIGURE 2 is an enlarged sectional view taken generally along the plane indicated by line 2—2 of FIGURE 1;

FIGURE 3 is a sectional view taken generally along the plane indicated by line 3—3 of FIGURE 2; and

FIGURE 4 is a partially broken away view taken generally along the plane indicated by line 4—4 of FIGURE 2.

As shown in FIGURE 1, a convertible vehicle body 10 includes a top well cover or closure 12 which closes the convertible top well when the convertible top is in the retracted or lowered position thereof. Closure 12 is of molded plastic construction and comprises a pair of side sections 14 and a center section 16 assembled as a unit. The closure is adapted to be secured to the body in its closed position, as shown, by conventional snap-fasteners 22 and fastening means 24 according to this invention located on each of the side sections 14. Since the fastening means 24 are the same on each of the sections 14, only one will be particularly described.

As shown in FIGURES 3 and 4, the fastening means 24 includes a generally U-shaped link member 26 having lateral end portions 28 pivotally mounted on a U-shaped bracket 30 secured to a forward vertical wall 32 of the side section 14. A plate 34 reinforces the connection of wall 32 and bracket 30. An anchor member 36 includes a channel portion 38, with an extension 40 of the lower or base wall of the channel portion terminating at its forward end in a lateral arcuate flange 42 providing a stop or limit means as will be hereinafter described. An elongated resilient member 44 of spring steel or other suitable material includes an undulated portion 45 received within the channel portion 38 of the anchor member and located against movement rearwardly of the body by the engagement of a pointed offset tongue 46 thereof with the wall of an aperture 47 provided in the base wall of portion 38. Tongue 46 is biased into engagement with the wall of aperture 47 by the engagement of the rearmost arcuate portion 48 of portion 45 with the upper walls of the channel portion 38. A generally upwardly extending portion 49 of member 44 is pivotally connected to the base portion of the link member 26 and forms a toggle linkage therewith. Link member 26, resilient member 44, and anchor member 36 are thus connected as a unit to the closure 12 and will depend therefrom when the closure 12 is disassembled from the body.

Channel portion 38 is provided with a plurality of apertures 50 which are adapted to selectively receive the head



of a stud 52 secured to the body belt line molding 54. Stud 52 is formed with a notch 56 which receives the forward edge of an aperture 50 when the anchor member is placed in position over the stud and moved slightly rearwardly relative thereto.

As seen in FIGURES 3 and 4, the side edge portion of section 14 is provided with a longitudinally extending holding member 58 having a lower inwardly extending flange adapted to hook under the lower edge of molding 54 and aid in holding the closure against the body when in the closed position thereof. Holding member 58 is riveted to the side edge portion of section 14 and to an exterior decorative strip 60.

When it is desired to mount closure 12 on body 10, the closure is placed over the top well opening so that the rearward edge of the closure lies on the body rearwardly adjacent the rear transverse portion of molding 54, and anchor members 36 are placed over studs 52 so that the studs project through the selected apertures 50. Members 36 are then moved slightly rearwardly so that the forward edge of the selected apertures are seated within notches 56 and the arcuately shaped heads of the studs are located within complementary shaped undulations of portions 45. Members 36 are thus positively held against rearward movement, and are yieldably held against forward movement relative to the studs. Closure 12 will thus be resiliently held in its open position 12', FIGURE 2, due to the resistance of members 44 against movement of portions 49 from their generally vertically disposed positions 49'.

To move the closure to its closed position, it is pressed downwardly and forwardly against the action of member 44 to rotate links 26 in a counterclockwise direction relative to members 44 until the closure engages the body as shown in full lines in FIGURE 2. This movement causes portions 49 of resilient members 44 to move or deform from their positions 49' to their positions 49 so that members 44 bias links 26 and in turn closure 12 forwardly of the body into engagement with stop flanges 42 of members 36 to hold links 26 in position. With the links thus disposed, the resilient force of members 44 include substantial components directed forwardly and downwardly of the body to yieldably hold the closure against the body. Closure 12 is further held against upward movement by the engagement of the lower flanges of the holding members 58 with molding 54. Snap fasteners 22 are then engaged to additionally secure the inboard portions of sections 14 to the body.

The provision of a plurality of apertures 50 in channel 36 allow for longitudinal adjustment of closure 12 relative to the rear transverse portion of molding 54, so that when the closure is in closed position, the rearward edge of the closure will tightly engage the rear transverse portion of molding 54 and resist upward movement of the rearward edge of the closure relative to the body.

When it is desired to move the closure to open position, snap fasteners 22 are released, and a predetermined amount of upward pressure is applied to the forward portion of sections 14 to disengage holding members 58 from molding 54 so that the closure moves upwardly to rotate links 26 clockwise to a point where the resilient force of members 44 will bias the links generally upwardly rather than downwardly. At this point resilient members 44 urge closure 12 into position 12' and yieldably maintain it in this position, so that anchor members 36 may easily be disengaged from stud 52, and the closure removed.

Thus new and improved closure fastening means are provided.

I claim:

1. In a vehicle body having an opening therein and a

closure movable between open and closed positions with respect to said opening, closure fastening means comprising, a link member pivotally mounted adjacent one end thereof on said closure, connecting means movably mounted on said body and connected to the other end of said link member to mount said link member on said body for movement between a first position wherein said closure is in said open position thereof and a second position wherein said closure is in said closed position thereof, resilient means biasing said connecting means in one direction relative to said body at all times during movement of said closure between said positions thereof, said bias on said connecting means being operable upon said link member in said second position thereof to bias said link member toward said body and cause said link member to bias said closure toward said body, and means limiting movement of said closure under the action of said resilient means to locate said closure on said body in said closed position thereof.

2. In a vehicle body having an opening therein and a closure movable between open and closed positions with respect to said opening, closure fastening means comprising, a link member pivotally mounted adjacent one end thereof on said closure, connecting means movably mounted on said body and connected to the other end of said link member to mount said link member on said body for movement between a first position wherein said closure is in said open position thereof and a second position wherein said closure is in said closed position thereof, resilient means biasing said connecting means in one direction relative to said body at all times during movement of said closure between said positions thereof, said bias on said connecting means being selectively and alternately operable upon said link member in said first position thereof to bias said link member away from said body and said mounting means or upon said link member in said second position thereof to bias said link member toward said body to bias said closure toward said body to said closed position thereof, and means limiting movement of said closure under the action of said resilient means when said closure is in said closed position to locate said closure on said body in said closed position thereof.

3. In a vehicle body having an opening therein and a closure movable between open and closed positions with respect to said opening, closure fastening means comprising, a toggle linkage including a pair of pivotally interconnected members, first means pivotally mounting one of said members adjacent the free end thereof on said closure, second means pivotally mounting the other of said members adjacent the free end thereof on said body, and resilient means biasing said other member in one direction relative to said body at all times during movement of said closure between said positions thereof, said one member being pivotable overcenter relative to said direction of bias to selectively and alternately locate said toggle linkage in either a generally unfolded first position wherein said closure is in said open position or a generally folded second position wherein said toggle linkage biases said closure toward said body to said closed position thereof.



4. In a vehicle body having an opening therein and a closure movable between open and closed positions with respect to said opening, closure fastening means comprising, a toggle linkage including a pair of pivotally interconnected members, first means pivotally mounting one of said members adjacent the free end thereof on said closure, second means pivotally mounting the other of said members adjacent the free end thereof on said body, said toggle linkage being movable between a generally unfolded first position when said closure is in said open position thereof and a generally folded second position when said closure is in said closed position thereof, resilient means biasing said other member in one direction relative to said body at all times during movement of said closure between said positions thereof, said constant-unidirectional bias to said other member being operable according to pivotal overcenter movement of said one member relative to said direction of bias to selectively and alternately yieldably maintain said toggle linkage in said first position thereof when said closure is in said open position thereof or bias said toggle linkage out of said second position thereof in a direction causing said one of said members to bias said closure toward said body and away from said second mounting means, and means limiting movement of said closure relative to said mounting means when said closure is in said closed position thereof to thereby locate said closure on said body in said closed position thereof.

5. In a vehicle body having an opening therein and a closure movable between open and closed positions with respect to said opening, closure fastening means comprising, a link member pivotally mounted adjacent one end thereof on said closure, an elongated deformable resilient member pivotally connected to the other end of said link member, means mounting said resilient member on said body, said link member being movable between a first position wherein said closure is in said open position thereof and said resilient member is undeformed and a second position wherein said resilient member is deformed and urges said link member toward said body and away from said mounting means to urge said closure toward said body and away from said mounting means to said closed position thereof, and means on said body engageable with said closure in said closed position thereof to limit movement of said closure relative to said mounting means and locate said closure on said body in said closed position thereof.

6. Closure fastening means as recited in claim 5 wherein said mounting means includes a retaining member connected to said resilient member and adapted to be releasably mounted on said body at any selected one of a plurality of predetermined positions, and means on said resilient member cooperable with means on said body to yieldably hold said retaining member against movement relative to said body from said selected position thereof.

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