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3,377,099

COMPARTMENT CLOSURE FOR VEHICLE BODY

Filed Sept. 19, 1966

3 Sheets-Sheet 1

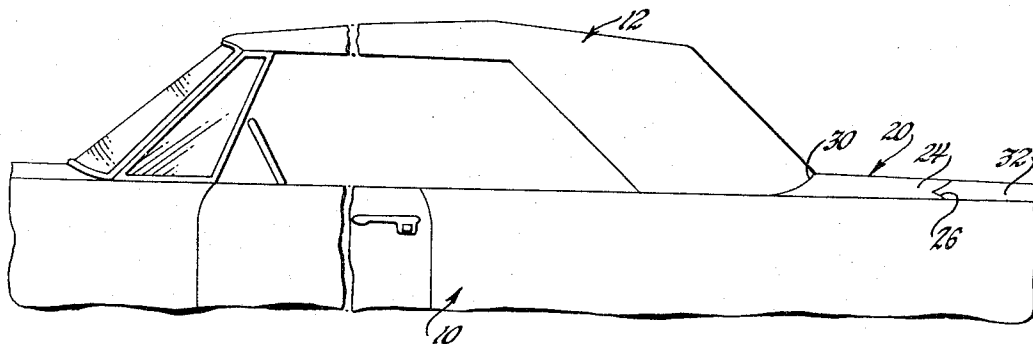


Fig. 1

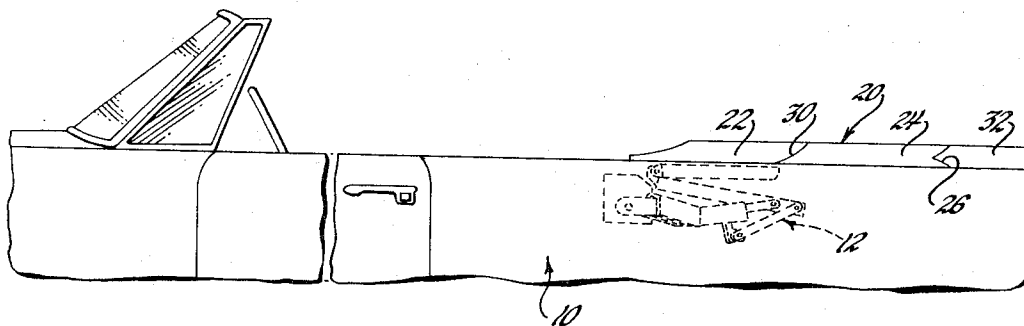


Fig. 2

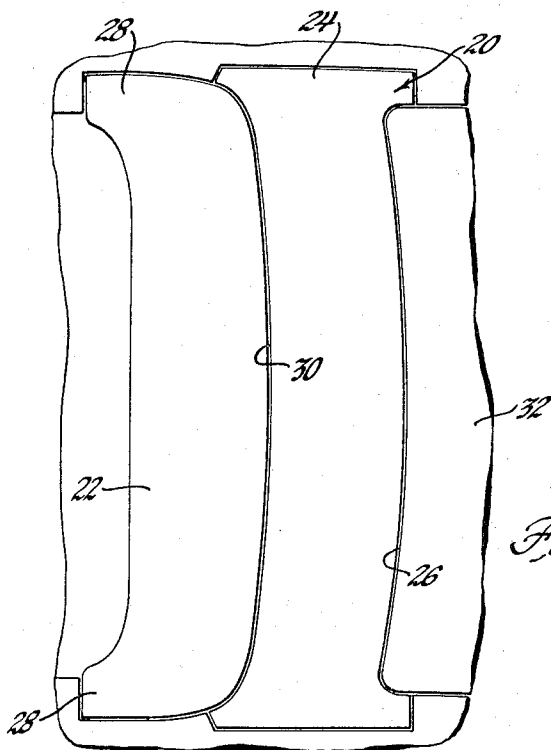


Fig. 3

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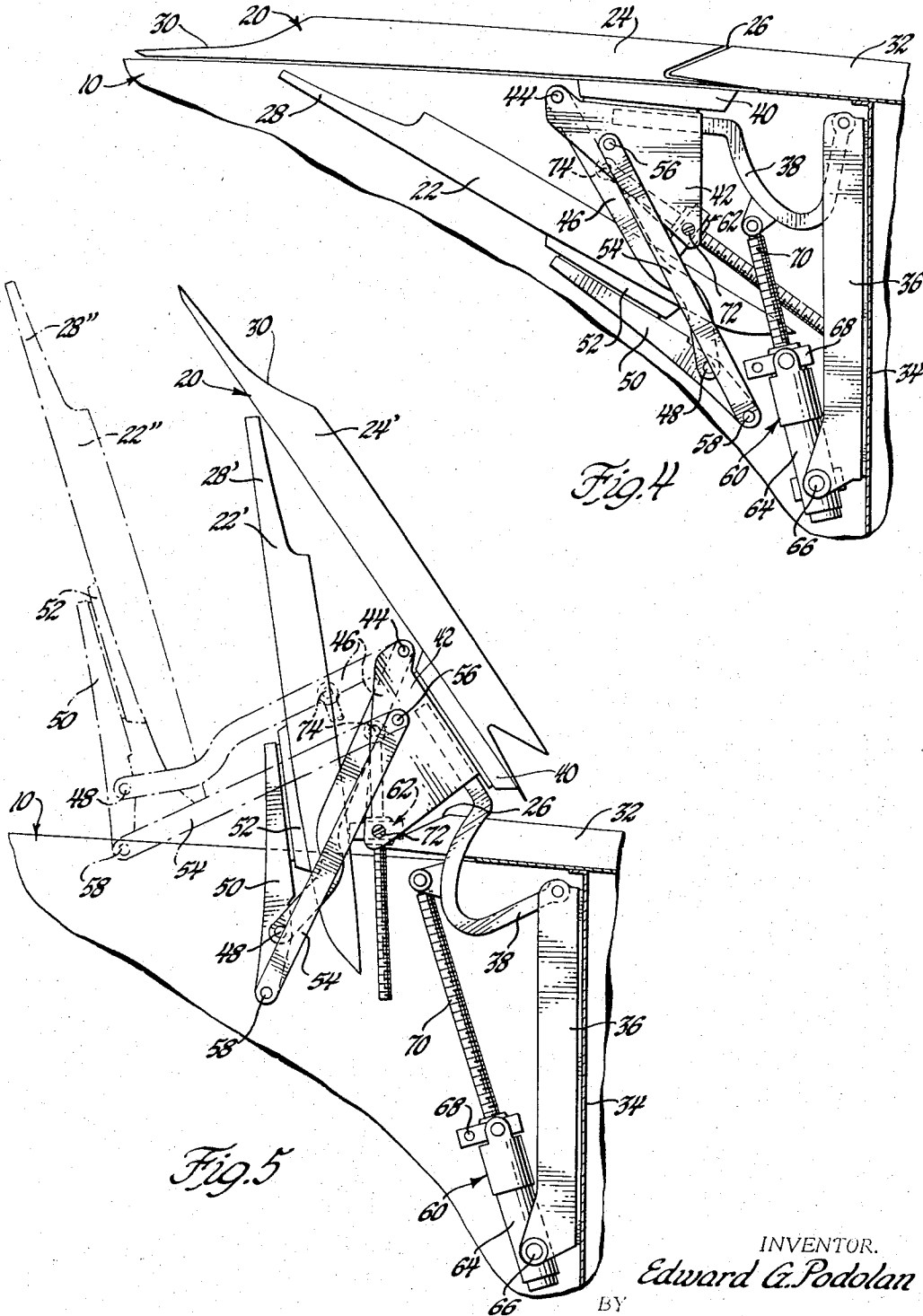
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

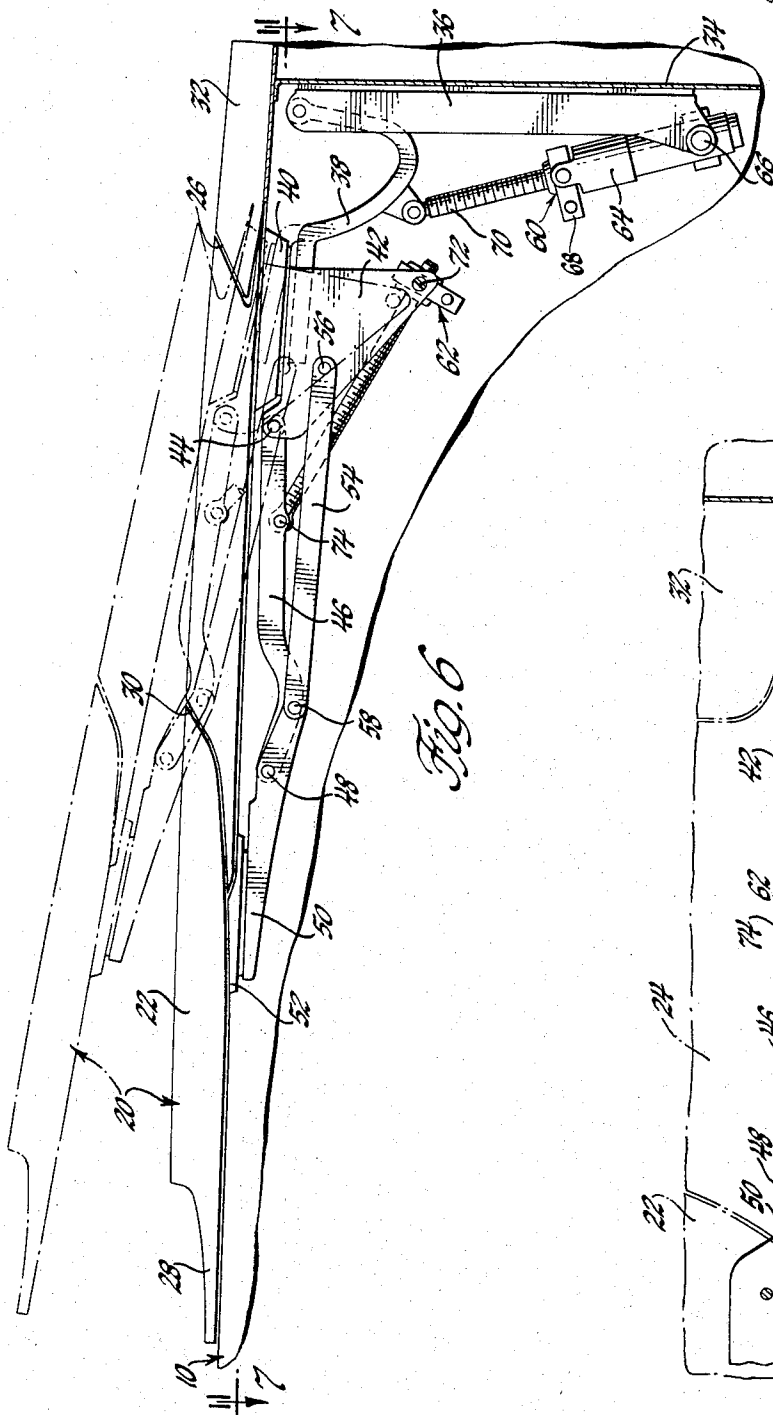


Fig. 6

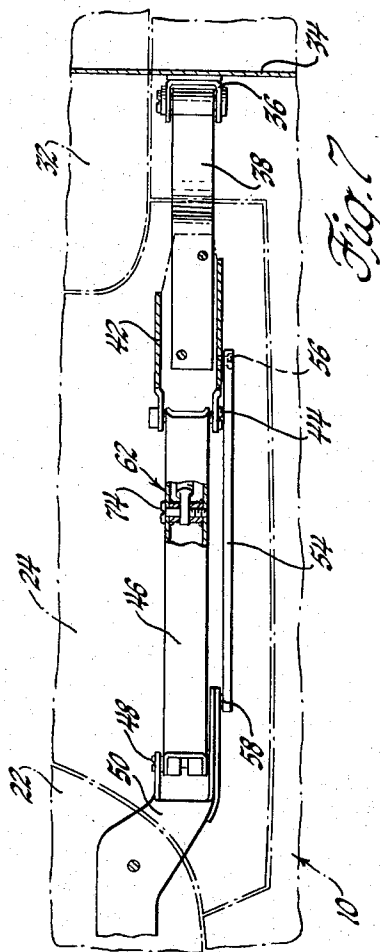


Fig. 7

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COMPARTMENT CLOSURE FOR VEHICLE BODY
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4 Claims. (Cl. 296—136)

This invention relates to compartment closures for vehicle bodies and more particularly to folding top storage well covers for convertible vehicle bodies.

One feature of this invention is that it provides an improved cover arrangement for the folding top storage well or other rear compartment of a convertible vehicle body. Another feature of this invention is that it provides an improved folding top storage well cover arrangement including a pair of well cover members mounted on the vehicle body and hingedly interconnected for coordinated movement relative to the folding top storage well opening between a first condition when the folding top is within the well wherein the two cover members have their exterior finish surfaces lying flush with the adjacent body surfaces and entirely close the opening, and a second condition when the folding top is in raised position wherein one of the cover members closes a portion of the well opening not enclosed by the folding top and wherein the other cover member is retracted under the one cover member within the well and has its exterior finish surface facing the one cover member to avoid scratching, marring, etc., of this surface when so stored within the well. Other features of the invention reside in the use of parallelogram hinge means interconnecting the two cover members and imparting the desired movement path of the second cover member relative to the first cover member, and the use of power-operated regulator means for moving the two cover members between their positions as aforementioned and in sequence with the raising and lowering of the folding top in a path permitting movement of the folding top into and out of the folding top well.

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

FIGURE 1 is a fragmentary elevational view of a convertible vehicle body having a folding top storage well cover arrangement according to the invention and showing the folding top in raised position;

FIGURE 2 is a view similar to FIGURE 1 showing the folding top in lowered position;

FIGURE 3 is a fragmentary top plan view of the well cover arrangement with the folding top being in lowered position;

FIGURE 4 is an enlarged sectional view showing the cover members in retracted condition;

FIGURE 5 is a view similar to FIGURE 4 showing the cover members in various positions in their path between covering and retracted conditions;

FIGURE 6 is a view similar to FIGURE 4 showing further positions of the covers, the covering condition thereof being shown in solid lines; and

FIGURE 7 is a partially broken away horizontal sectional view.

Referring now particularly to FIGURES 1 and 2 of the drawings, a convertible vehicle body 10 includes a generally conventional folding top structure 12 mounted on the body for movement through a top storage well opening in the body between a raised position shown in FIGURE 1, and a lowered position within the top storage well, shown in FIGURE 2.

A well cover arrangement according to the invention, designated generally as 20, is provided to close the top storage well opening and generally includes a first rigid

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well cover member 22 of metal or other suitable material and a similar second well cover member 24, both having their exterior surfaces finished to blend with the adjacent body areas. When located in the flushly related covering condition of FIGURES 2 and 3, the covers 22 and 24 completely span the opening longitudinally of the body as between a rearward transverse parting line 26 and the seat back of the rear passenger seat, not shown. The forward cover member 22 has wing portions 28 extending slightly forwardly of the rear seat back area to cover those portions of the top storage well which accommodate the rear side rail portions of the folding top structure 12 when in raised position. As indicated in a comparison of FIGURES 1 and 2, the forward cover 22 corresponds areawise to that portion of the well opening which is enclosed by folding top 12 when in raised position. As further indicated in FIGURE 1, with folding top 12 in raised position the rear portion 14 thereof is engaged snugly against the forward edge 30 of rearward cover 24, and forward cover 22 is retracted underneath cover 24 with its exterior finish surface facing upwardly or toward cover 24. Accordingly, with the folding top 12 in either raised or lowered position, the covers 22 and 24 provide for an extremely clean appearance of the vehicle body in the rear deck area, there being no unsightly bulges or discontinuities as arise with prior fabric dust boots or the like.

As presently disclosed, the well cover arrangement is arranged to operate separately of the vehicle body deck lid 32. Deck lid 32 is preferably hinged to the body to swing upwardly and forwardly of the body about its forward edge portion adjacent parting line 26 from a closed position, as shown, to an open position, not shown, providing access to a rear luggage compartment separate from the top storage well. It will be appreciated that if desired, deck lid 32 and rearward cover 24 may be integrated into a single member which is hinged rearwardly of the body such that the entire deck area would be opened or closed in the manner hereinafter described with respect to the top storage well only.

Referring to FIGURE 4, a bulkhead 34 separates the rearward luggage compartment from the folding top storage well and also serves as mounting structure for transversely spaced hinge and control linkage sets at each side edge portion of the covers 22 and 24, only one such hinge and linkage set being shown for convenience. Each set includes an elongated generally U-shaped hinge box 36 having its base portion suitably secured to bulkhead 34 and having pivotally mounted within its upper end a gooseneck hinge arm 38. The leg of gooseneck 38 is bolted or otherwise secured to an inner panel reinforcement portion 40 of cover 24 at the rearward side edge portion thereof, and a generally U-shaped hinge box 42 has its base portion interposed between the leg of the gooseneck 38 and reinforcement 40 so as also to be secured to the reinforcement. The forward end of hinge box 42 has pivotally mounted between the legs thereof at 44 one end of a power link 46 which has its other end pivotally connected at 48 between the legs of a U-shaped mounting bracket 50 bolted or otherwise secured to an inner panel reinforcement portion 52 of forward cover 22. A control link 54 has one end thereof pivoted at 56 to hinge box 42 and its other end pivoted at 58 to one leg of bracket 50. The two links 46 and 54 provide a parallelogram linkage for moving forward cover 22 relative to rearward cover 24 from a retracted position, shown in solid lines in FIGURE 4, to a covering position, shown in solid lines in FIGURE 5.

For regulating movement of the two covers 22 and 24, a generally conventional screw and nut actuator assembly 60 is operatively connected between the bulkhead 34 and

gooseneck 38 and includes a support tube 64 pivotally mounted at 66 between the legs of hinge box and carrying its upper end a worm and worm gear reduction unit 68 for driving the nut and in turn the screw 70, the latter being pivotally connected at its upper end to an ear of gooseneck 38. A further similar actuator assembly 62 has the reduction gear portion thereof pivotally mounted at 72 between the legs of the hinge box 42, the upper end of the screw thereof being pivotally connected at 74 to power link 46.

The reduction gearing of the two actuator assemblies 60 and 62 may be suitably connected by flexible drive cables to respective reversible electric motors which, when provided with the proper circuitry including limit switches, etc., operate the covers 22 and 24 in sequence with raising and lowering of folding top 12 and generally in the following manner.

Assuming the folding top 12 to be in raised position and the covers 22 and 24 to be in the positions shown in solid lines in FIGURE 4, the actuator assembly 60 is operated to extend screw 70 and move the covers upwardly and rearwardly relative to the body. When the covers reach the broken line position indicated as 22', 24', actuator assembly 60 is shut down simultaneously with starting of actuator assembly 62 to extend the screw thereof and move forward cover 22 upwardly and forwardly relative to the rearward cover 24, an intermediate position of cover 22 in this path being indicated as 22". The operation of actuator assembly 62 and the unfolding movement of the parallelogram links 46 and 54 obtaining in this step continues until cover 22 is in a fully extended and raised position aligned flush with cover 24 in position 24' of the latter. The fully unfolded position of links 46 and 54 relative to hinge box 42 which provides this flush relation is indicated in FIGURE 6. The folding top 12 is then retracted from the raised position of FIGURE 1 to the lowered position of FIGURE 2 within the top storage well. Actuator assembly 60 is then operated in reverse direction to retract screw 70 and lower the flushly related covers 22 and 24 to the covering position thereof over the storage well opening, as shown in FIGURE 2 and in solid lines in FIGURE 6.

In the top raising operation, the reverse sequence obtains; namely, the flushly related covers 22 and 24 are moved as a unit upwardly from the solid through the broken line position of FIGURE 6 to their fully raised and extended position, folding top 12 is then erected out of the top storage well to the raised position thereof, the forward cover 22 is then retracted relative to rearward cover 24 to the solid line position of FIGURE 5, and finally the covers are lowered into the position shown in FIGURES 1 and 4.

It is apparent that the folding top storage well cover arrangement of this invention provides the desired ap-

pearance for the rear deck area of the vehicle body, whether the folding top be in lowered or raised position, yet with relatively simple and compact structural components. Of particular importance in this arrangement is the fact that when forward cover 22 is in retracted position underneath rearward cover 24, the exterior finish surface of the former is faced toward cover 24 and away from the storage well proper whereby to avoid the scratching, marring, etc., of this finish surface that has occurred with prior known arrangements from engagement with interior body structure, operating components, or other articles stored within the well.

Having thus described the invention, what is claimed is:

1. In a vehicle body having an opening to a storage compartment therein and a folding top movable between a lowered position within the compartment and a raised position, the combination comprising, a first compartment cover, means mounting said first cover on said body for movement between a covering position closing a portion of said opening and a raised position permitting movement of said folding top into and out of the compartment, a second compartment cover having an exterior finish surface, and means mounting said second cover on said body for movement relative to said first cover between a covering position having said exterior surface exteriorly facing and being generally contiguous with said first cover to close the remaining portion of said opening when said folding top is in lowered position and a retracted position disposed underneath said first cover and having said finish surface thereof facing said first cover.

2. The combination recited in claim 1 wherein said second cover mounting means comprises hinge means interconnecting said first and second covers.

3. The combination as recited in claim 2 wherein said hinge means includes parallelogram linkage sets at opposite side portions of said first and second covers.

4. The combination recited in claim 1 further including first power-operated means regulating movement of said first cover relative to the body and second power-operated means for regulating movement of said second cover relative to said first cover in timed relation with movement of the latter.

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