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E. S. TOMKINS ET AL

FOLDING TOP FRAME FOR AUTOMOBILES

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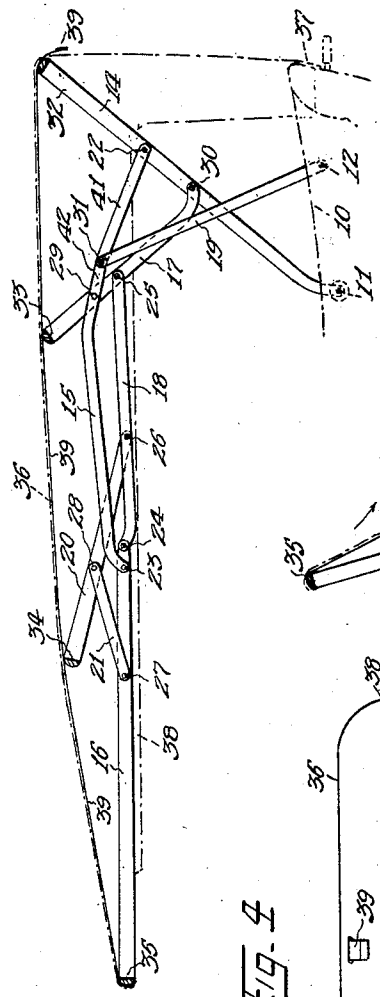


Fig. 1

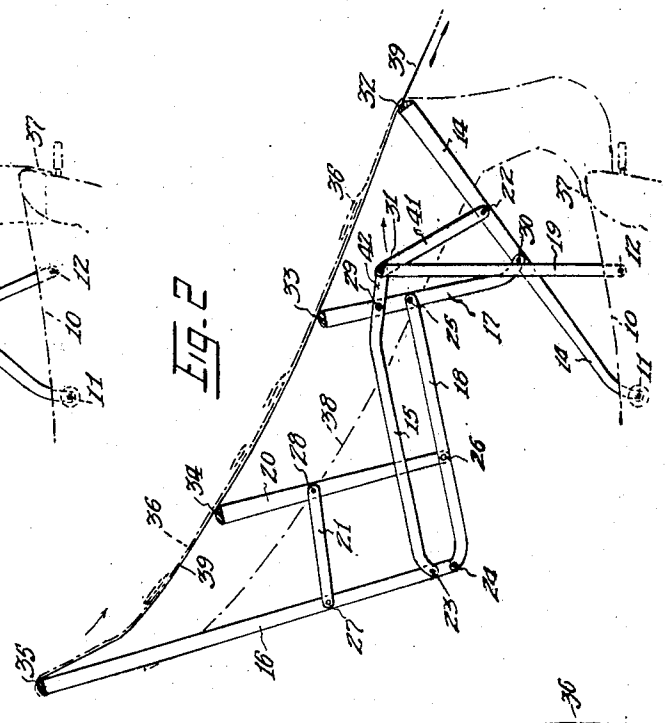


Fig. 2

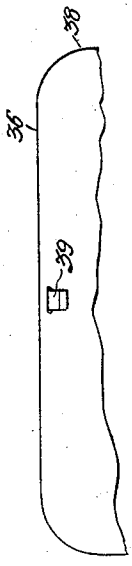


Fig. 4

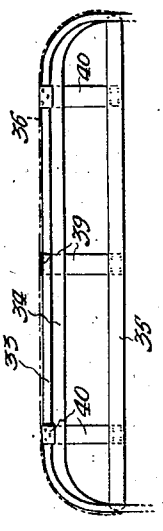


Fig. 5

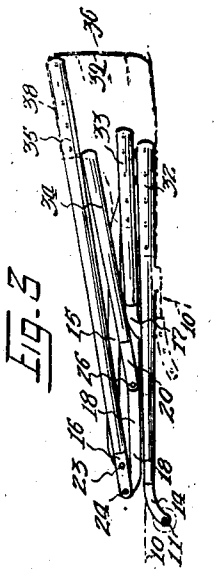


Fig. 3

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UNITED STATES PATENT OFFICE.

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FOLDING TOP FRAME FOR AUTOMOBILES.

Application filed August 2, 1924. Serial No. 729,856.

To all whom it may concern:

Be it known that we, EDWIN SHEPPARD TOMKINS and ALEXANDER MAIR, subjects of the King of Great Britain and Ireland, residing at "Desborough" Macauley Street, Hay, New South Wales, Australia, and Victoria Street, Melbourne, Victoria, Australia, respectively, have invented new and useful Improvements in Folding Top Frames for Automobiles, of which the following is a specification.

This invention comprises an improved folding top frame for an automobile, and it has been devised with the object of providing a folding truss frame structure, the members of which may be extended or collapsed with very moderate effort by one person, and whilst intermediate the extended and collapsed positions will be in stable equilibrium. The usual attachments to the windshield stanchions are utilized for steadying the structure, which is supported on two pairs of pivot studs on the car body, one of which carries the feet of the main stanchions and the other the bottom ends of cantilever anchor links.

The frame is of the three bow type, that is to say it carries three top bows or hoops and a front stretcher bow, and the cover cloth is stretched from the back edge of the car body over the rearmost hoop which is carried on the main stanchions, thence over a lift bow which is carried on hanger stanchions, said stanchions being pivotally footed on the main stanchions, and thence over the third hoop which is carried on an auxiliary frame which is pivotally footed on a strut stretcher which connects the hanger stanchions and the rear ends of the side stretchers of the frame, at the fore ends of which the front stretcher bow is carried. The auxiliary frame is also pivotally footed to the front stretchers, and those stretchers are also articulated through cantilevers to the hanger stanchions. The back ends of the cantilevers are anchored by links to pivot bolts on the body, these pivot bolts being located rearwardly of the body pivot bolts on which the main stanchions are footed. The rear ends of the cantilevers are also connected by stay links to the main stanchions.

In the accompanying drawings:—

Fig. 1 is a longitudinal section through a top frame according to the present invention, the positional relation of the frame to the car body being indicated by dotted lines in the lower part of the figure. It is to be understood that the truss frame shown in this view is fitted on either side of the car body the top bows spanning the intermediate space.

Fig. 2 is a view corresponding with Fig. 1 but showing the frame and top in intermediate position between collapse and extension; in this position the frame is self sustained, exhibiting no tendency to fall either forwardly or backwardly but being readily movable in either direction.

Fig. 3 is a side elevational view showing the top collapsed.

Fig. 4 is a fragmentary back elevational view exhibiting the end of the pull tape by which the lifting operation is performed.

Fig. 5 is a transverse sectional view.

10 indicates the rear portion of a motor body, 11 pivot lugs fixed on the side of the body 10, on which lugs the main stanchions 14 are pivotally footed in the usual way. 12 are rear pivot lugs disposed at some distance behind the main pivot lugs 11. The bottom ends of the cantilever anchor links 19 are pivotally carried on the lugs 12. At their top ends these links 19 are articulated at 31 to the rear ends 42 of the cantilevers 15; these cantilevers are bent to offer clearance and they are fulcrumed at 29 on the hanger stanchions 17, which are pivotally footed at 30 on the main stanchions 14 about midway of their length. The articulation 31 is connected also by stay links 41 to the main stanchions 14 above the pivot points 30 on which the hanger stanchions 17 are footed. The stretcher struts 18, which with the stretchers 16 compose the longitudinals or stretcher members of the frame, are pivotally mounted at 25 on the hanger stanchions 17. The members 16 and 18 are jointed to fold at 24, and the fore ends of the cantilevers 15 are pivotally connected at 23 to the stretchers 16 forward of the joints 24. The stretchers 16 are pivotally connected forwardly of the pivots 23 to the auxiliary frame which comprises members 20, pivotally footed at 26 on the strut stretchers 18, and link members 21 pivotally connected at opposite ends to the members 20 (as at 28) and to the stretchers 16

(as at 27). The main bow 32 is carried on the top ends of the main stanchions 14. The lift bow 33 is carried on the top ends of the hanger stanchions 17. The third bow 34 is carried by the auxiliary frame at the ends of members 20, and the horizontal stretcher bow 35 is carried on the fore ends of the stretchers 16, any usual fitting being provided at this point for securing the forward end of the top to the wind shield stanchions or equivalent steadying means above the car dash. The cloth covering 36 is fixed at 37 to the top edge of the body 10, and it is thence carried over the bows 32, 33, and 34, and fixed at the forward end of the bow 35, and it is carried downward over the sides 38 of the structure to secrete the truss work as indicated in dotted lines. 39 is a draw tape which is fixed to the bow 35 and runs freely over the bows 34, 33, and 32, emerging through an aperture in the back drop of the top as shown in Fig. 4, the toggle end of this tape is accessible to a person standing behind the car to enable him to draw the top backward through the position shown in Fig. 2 towards the position shown in Fig. 3 thus to bring it from extension to collapse.

The functioning of the truss linkage is governed by the cantilevers 15, their anchor links 19 and their stay links 41. The angular relation of these parts changes as the position of the top is moved from extension to collapse. In the extended position the stay links 41 are in alignment with the cantilever fulcra 29 and functions to sustain the hanger links 17 at the appropriate angle forwardly from the main stanchions 14. At the same time the cantilever anchor links 19 hold down the back ends 42 of the cantilevers, thereby sustaining the stretchers 16 at the point 23 and through the joints 24 sustaining the forward ends of the strut stretchers 18. When the top is uplifted (see Fig. 2) the articulation at 31 is upbent, the pin at 31, moving backward through an arc about the pivot centre 12, until ultimately in the collapsed position the hanger stanchions 17 are folded back in close contact with the main stanchions 14 (see Fig. 3). The relative positional arrangements of the centres is such that in this movement the mid portion of the longitudinals (24) is swung downward out of the horizontal line, whilst the stretchers 16 are tipped upwardly and backwardly approximately in parallelism with similar tipping movements applied to the auxiliary frame members 20 and to the hanger stanchions 17. When the top is in the fully collapsed position the auxiliary frame members 20 set down on top of the hanger stanchions 17 and the stretchers 16 set down on top of the members 20, so that the whole assembly comes to a closely nested position with the joint position 24 disposed slightly rearward of the main body pivots 11 so as not to interfere with door clearance. The collapsing movement is effected by pulling on the tape 39 after first releasing the steadying attachments at the bow 35. In lifting the top, the structure is pushed upwardly from behind, pressure being applied under the main stanchions 14, whereby all the parts are caused to extend and move forwardly through the position shown in Fig. 2 to the position shown in Fig. 1.

A full vision frame is procured by this arrangement, the cantilever anchor links 19 being so disposed that they do not substantially obtrude in the clear space forward of the lower portion of the main stanchions 14.

What we claim as our invention and desire to secure by Letters Patent is;—

1. In a folding car top frame of the character described, the combination with main stanchions pivotally anchored to the body of the car, hanger stanchions pivotally carried by the main stanchions, and stretcher members pivotally carried by the hanger stanchions, of cantilevers fulcrumed on the hanger stanchions, their forward arms pivotally supporting the stretcher members, and their rearward arms link connected to the body of the car.

2. In a folding car top frame of the character described, the combination with the elements as claimed in claim 1, of stay links pivotally anchoring the rearward arms of the cantilevers to the main stanchions.

3. A folding car top frame of the character described, as claimed in claim 1, in which said link connection comprises anchor links pivotally connecting the ends of said rearward arms, to anchor points on the body of the car disposed rearwardly of the anchor points of the main stanchions.

4. In a folding car top frame of the character described, the combination of main stanchions pivotally anchored to the body of the car, hanger stanchions pivotally carried by the main stanchions at substantially the mid-points of the latter, stretcher members pivotally carried by the hanger stanchions, cantilevers fulcrumed on the hanger stanchions, their forward arms pivotally supporting the stretcher members, cantilever anchor links pivotally connecting the ends of the rearward arms of said cantilevers to anchor points on the body of the car disposed rearwardly of the anchor points of the main stanchions, and stay links pivotally connecting said rearward arm ends to pivot points on the main stanchions.

5. A folding car top frame of the character described, as claimed in claim 4, in

which said pivot points are disposed further from the anchor points of the main stanchions than said mid-points.

6. A folding car top frame of the character described, as claimed in claim 4, said stretcher members including stretchers and stretcher struts, the latter pivotally connecting the ends of the stretchers to the hanger stanchions and substantially aligned with the stretchers when the frame is open.

7. A folding car top frame of the character described, as claimed in claim 4, said stretcher members including stretchers and stretcher struts, the latter pivotally connecting the ends of the stretchers to the hanger stanchions and substantially aligned with the stretchers when the frame is open, said forward arms of the cantilevers pivotally supporting the stretcher members at points forwardly adjacent the connecting points of the stretchers and stretcher struts.

8. A folding car top frame of the character described, comprising main stanchions pivotally anchored to the body of the car, hanger stanchions pivotally carried by the main stanchions and adapted to swing forwardly of the latter, strut stretchers pivotally carried by said hanger stanchions, stretchers pivotally carried by said strut stretchers, cantilevers fulcrumed on the hanger stanchions, the forward ends of said cantilevers pivotally supporting said stretchers, and the rear ends of said cantilevers being link connected with both the main stanchions and the rear part of the body of the car, and a truss frame pivotally footed on both the strut stretchers and the stretchers.

In testimony whereof we affix our signatures.

EDWIN SHEPPARD TOMKINS.
ALEXANDER MAIR.