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FOLDING TOP STRUCTURE

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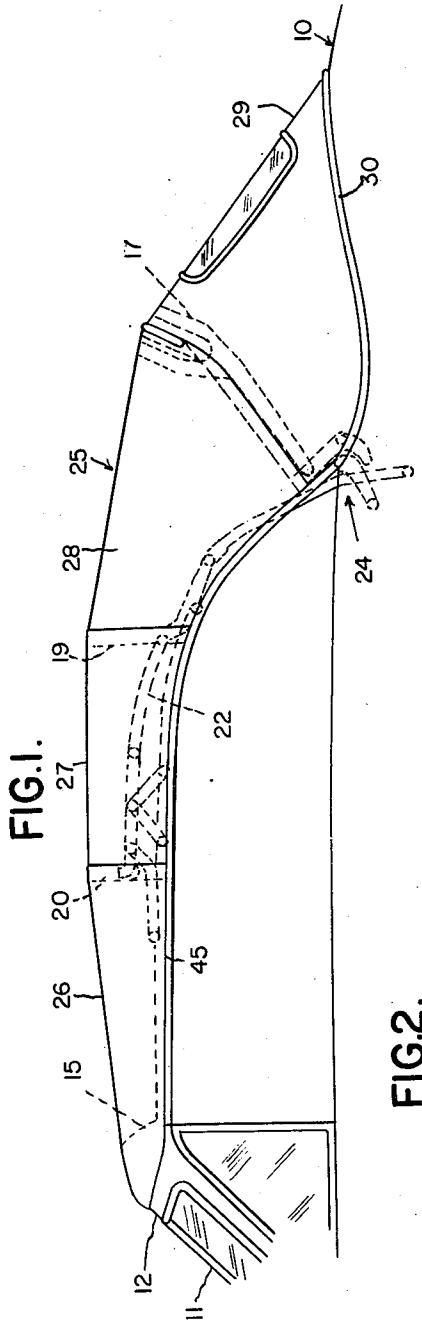


FIG.1.

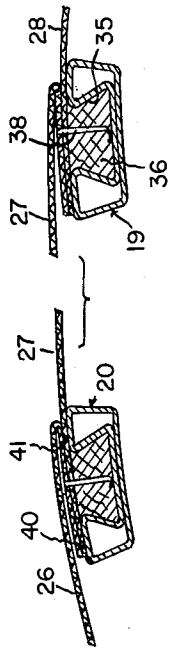


FIG.3.

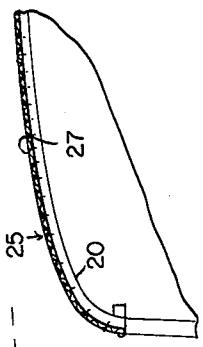


FIG.4.

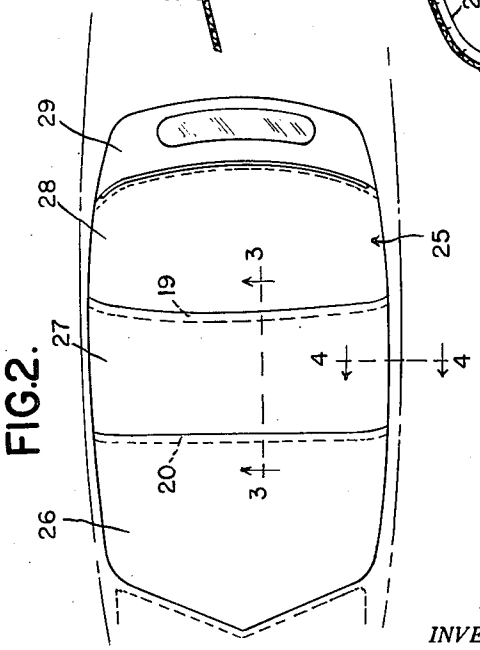


FIG.2.

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FOLDING TOP STRUCTURE

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2 Claims. (Cl. 296—107)

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The present invention relates to folding top structure and more particularly to a folding top structure for motor vehicles characterized by the use of relatively smaller sections of cover fabric or material than has heretofore been employed.

It is the object of the present invention to provide a folding top structure for motor vehicles characterized by its attractive appearance, the economy with which it may be constructed initially, the economy with which damaged sections of the cover material may be replaced, and the ability of the top material to resist both vertical and lateral ballooning.

It is a feature of the present invention to provide a folding top structure for motor vehicles comprising a longitudinal foldable frame provided with a front header bar for attachment to a windshield header bar, a rear cross-bow, one or more auxiliary cross-bows intermediate the rear cross-bow and the front header bar, foldable linkage inter-connecting said front header bars and said cross-bows, and a flexible cover composed of a plurality of separate cover sections, the intermediate adjacent edges of which are sewed together and tacked to tacking material provided along the upper surface of the cross-bows, the cover sections being reversely folded at the cross-bows so as to cause one of the edges of the cover sections thereat to overlie and conceal the tacks.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings in which:

Figure 1 is a fragmentary side elevation of a folding top structure shown in extended position.

Figure 2 is a planned view of the folding top construction.

Figure 3 is a fragmentary enlarged section of the line 3—3, Figure 2.

Figure 4 is a fragmentary enlarged section on the line 4—4, Figure 2.

In the past it has been the practice in providing flexible cover material for foldable vehicle tops to employ a single piece of fabric or other material which extends for the entire length of the top from front to rear. This single cover element has been supplemented with side portions also extending for the complete length of the top from front to rear and resulting in the use of longitudinal extending seams between the main top portion and the side portions. When damage occurred to the top material of the prior

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construction, it was necessary to replace the entire top which involved a very considerable expense. Moreover, tops of this construction resulted in fabric edges at the side of the top which were unsupported and tended to balloon laterally. In some cases, this tendency was so great that it was necessary to provide snap fasteners to retain the edges of the top in desired position. Moreover, according to this prior practice, the top material was secured to the foldable frame construction only at its front edge, where it was secured to the front header bar, at its rear edge where it was secured to the body of the vehicle, and at one intermediate point where it was secured to the rear cross-bow structure. It has been the practice to provide the folding top with one or more, and usually two, auxiliary cross-bows intermediate the front header bar and the rear cross-bow. However, the flexible cover material was not secured directly to the auxiliary cross-bows. This produced an additional tendency for the top construction to balloon upwardly when air was forced into the vehicle by motion thereof.

Referring now to the figures there is illustrated a folding top structure for a motor vehicle indicated generally at 10, the vehicle being provided with the usual front windshield 11, having a windshield header bar 12 extending transversely of the vehicle.

The folding top structure comprises a front header bar 15, a rear cross-bow structure 17, and intermediate cross-bows 19 and 20. The cross-bows and the front header bars are interconnected by folding linkage indicated generally at 22. The linkage as a whole includes elements which are pivoted to the body of the vehicle as indicated generally at 24.

The folding frame structure is provided with a flexible cover 25 which is composed of a plurality of cover sections 26, 27, 28, and 29. The cover sections 26, 27, 28, and 29 may be formed of any suitable flexible material such for example as a water-proof woven fabric.

The front cover section 26 is secured at its forward transverse edge to the front header bar 15. The rear cover section 29 is connected at its rear transverse edge to the body of the vehicle 10, as indicated at 30. The adjacent edges of the cover sections 26, 27, 28, and 29 are interconnected together and are firmly secured to the cross-bows.

The manner in which the adjacent edges of

the cover sections are secured together and are secured to the cross-bows, is best illustrated in Figure 3. Referring now to this figure the cross-bows 19 and 20 are of identical construction and are formed of sheet metal bent into the configuration shown so as to provide an upwardly and outwardly facing channel 35 which receives suitable tacking material 36. The tacking material 36 may be any suitable material adapted to receive and retain fastening elements such as the tacks indicated at 38.

Prior to assembling the cover material to the foldable frame, the adjacent edges of the several cover sections are sewed together along two parallel lines of sewing on seams indicated at 40 and 41. This provides a double thickness of material through which the tacks 38 are driven to secure the cover material to the folding frame in the manner illustrated. After the tacks 38 have been driven the appropriate one of the cover sections is reversely folded forwardly of the vehicle so as to overlie the heads of the tacks, thus concealing the tacks or other fastening elements and also providing an attractive appearing fold of material which extends generally transversely of the vehicle body.

Cover sections 28 and 29 are sewed together in a similar manner and the seam is secured to the rear cross-bow 17 in a manner equivalent to that illustrated in Figure 3. The detailed construction of the rear cross-bow 17 forms no part of the present invention, but it is provided with a tacking strip whose function is identical to tacking strips 36 provided in the cross-bows 19 and 20.

From an inspection of Figure 3 it will be observed that the cover sections are folded reversely and forwardly from each of the cross-bows so as to provide a construction best adapted to prevent the entry of water into the interior of the vehicle. Thus the overlap of the cover material at the cross-bows faces rearwardly of the vehicle so that wind due to motion of the vehicle does not tend to force rain into the space between adjacent sections of cover material.

From an inspection of Figure 2 it will be observed that the sections 26, 27, 28, and 29 have curved transverse edges to conform to the shape of the cross-bows. Inasmuch as the adjoining edges of these cover sections are sewed together to provide multiple thickness overlapping joints, these joints provide stiffening ribs which are effective to prevent lateral ballooning of the side edges of the cover, even though the tacking of the cover to the cross bows is discontinued at a point spaced somewhat above the longitudinal edges of the cover material. Moreover, the longitudinal edges of the cover material are folded over and sewed together to provide a multiple thickness stiffening rib indicated at 45 in Figure 1.

The present construction is more economical to produce than the prior known construction, is more efficient in operation since it effectively prevents both vertical and lateral ballooning, and affords important economies in the event that local injury is suffered by the cover, in which case only a single section of the cover has to be replaced.

The drawings and the foregoing specification constitute a description of the improved folding top structure in such full, clear, concise and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. A folding top for convertible motor vehicles, comprising a longitudinally foldable frame having a series of longitudinally spaced transversely extending members, one of said members being a front header bar and the other of said members being cross-bows, each of said cross-bows having a central generally horizontal portion and downwardly extending end portions, said central portions having tacking material carried thereby, a flexible cover for said frame extending from one end thereof to the other and comprising separate cover sections extending transversely of the frame, each of said cover sections being of a width to span the space between a pair of transversely extending members when the frame is extended, the end portions of adjacent cover sections being disposed in overlapping relation, said end portions being sewed together in surface to surface relation along two spaced transversely extending substantially parallel lines, and fastening elements located between said parallel lines, and extending through said overlapping end portions into said tacking material, the uppermost of said cover sections being return bent along a transversely extending line in rear of the rearmost of said parallel lines and extending forwardly of the vehicle to overlie and conceal the fastening elements for said end portions so that the joint between the return bend of the uppermost section and the upper surface of the adjacent section will face rearwardly of the vehicle, the longitudinal edge portions of said sections being free of the downwardly extending end portions of said bows for movement relative thereto during folding movement of said top.

2. A folding top for convertible motor vehicles, comprising a longiutdinally foldable frame having a series of longitudinally spaced transversely extending members, one of said members being a front header bar and the other of said members being cross-bows, each of said cross-bows having a central generally horizontal portion and downwardly extending end portions, said central portions having tacking material carried thereby, a flexible cover for said frame extending from one end thereof to the other and comprising separate cover sections extending transversely of the frame, each of said cover sections being of a width to span the space between a pair of transversely extending members when the frame is extended, the end portions of adjacent cover sections being disposed in overlapping relation, said end portions being sewed together in surface to surface relation along two spaced transversely extending substantially parallel lines, and fastening elements located between said parallel lines and extending through said overlapping end portions into said tacking material, the uppermost of said cover sections being return bent along a transversely extending line in rear of the rearmost of said parallel lines and extending forwardly of the vehicle to overlie and conceal the fastening elements for said end portions so that the joint between the return bend of the uppermost section and the upper surface of the adjacent section will face rearwardly of the vehicle, the longitudinal edge portions of said sections being free of the downwardly extending end portions of said bows for movement relative thereto during folding movement of said top, the material of said longitudinal edge portions of said sections being foldable and sewed together to provide multiple thickness longitudinally extend-

ing stiffening ribs for said top, the portions of said end portions between the parallel lines aforesaid providing transversely extending stiffening ribs operable to prevent ballooning of the longitudinal side edges of said cover sections when said frame is extended.

JOHN WILFRED VOTYPKA.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
948,116	Pendery	Feb. 1, 1910
988,204	Mitchell	Mar. 28, 1911
1,210,439	Edwards	Jan. 2, 1917
1,291,100	Overmyer	Jan. 14, 1919
1,311,717	Schluer	July 29, 1919
1,952,252	Heuser	Mar. 27, 1934
2,308,766	Martinus	Jan. 19, 1943
2,418,918	Yankus	Apr. 15, 1947
2,479,280	Tuerk	Aug. 16, 1949