

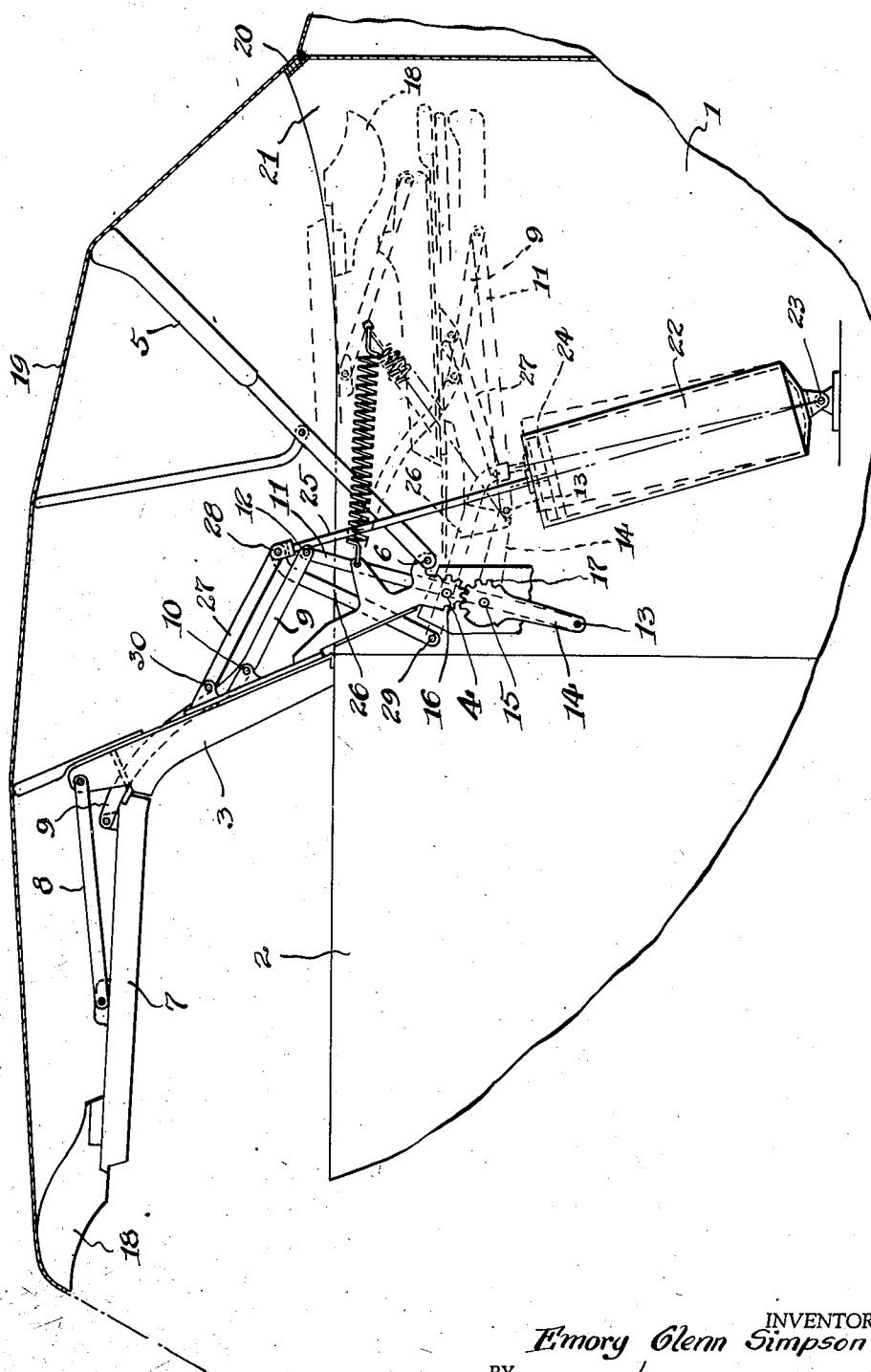
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E. G. SIMPSON

2,362,939

COLLAPSIBLE TOP

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INVENTOR.
Emory Glenn Simpson
BY *Barnes, Kiselle, Laughlin & Reisel*
Attorney.

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COLLAPSIBLE TOP

Emory Glenn Simpson, Detroit, Mich., assignor
to General Motors Corporation, Detroit, Mich.,
a corporation of Delaware

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4 Claims. (Cl. 296—117)

This invention relates to a collapsible vehicle top and more particularly to a power operated collapsible vehicle top.

One of the difficulties heretofore present in power operated collapsible tops is that they do not open or close smoothly or with a uniform speed, but rather operate with a jerky, non-uniform motion or speed.

It is the object of this invention to produce a collapsible top for an automotive vehicle body that will open more quickly, smoothly and with a more uniform motion than collapsible vehicle tops heretofore known.

The drawing is a fragmentary side elevation of a vehicle body with the outer panel and top cover cut away in vertical longitudinal section to show the collapsible bow construction.

This top is an improvement on that shown in my prior Patent No. 2,221,460.

Referring more particularly to the drawing there is shown a vehicle body 1 of the convertible coupe type having a door 2 hinged at its forward edge (not shown). The top comprises a main bow 3 of U shape which extends completely across the body and is pivoted at each end to the body as at 4. An auxiliary bow 5 is pivoted to the main bow as at 6. Cant rails 7 are supported on the main bow by links 8 and levers 9 pivoted to the main bow as at 10.

Lever 9 is pivotally connected to one end of the control link 11 as at 12. The other end of link 11 is pivotally connected as at 13 to lever 14. Lever 14 is pivotally supported on the body as at 15. The lower end of bow 3 takes the form of a gear segment 16. The pivotally supported end of lever 14 also takes the form of a gear segment 17 which is continuously in mesh with gear segment 16. Cant rails 7 support the front top rail 18. Top fabric 19 is secured to the bows and top rail and to the body as at 20. As the top is lowered, the control link 11 and the lever 9 control the collapsing of the top so that it will fold into the rear compartment 21, as shown in the dotted lines.

The raising and lowering of the top is accomplished by any suitable power means. For purposes of description there is shown a pair of air motors each in the form of a cylinder 22 pivoted to the floor of the rear compartment 21 as at 23. The air cylinder 22 is connected with the intake manifold vacuum in a conventional manner (not shown). A piston 24 within the air cylinder is provided with a connecting rod 25 which is pivotally connected to a lever 26 and thrust link 27 as at 28. The lower end of the lever 26 has a

fixed pivotal connection 29 on the body. The thrust link 27 is pivotally connected to the bow 3 as at 30.

The above top is identical with that shown in my prior Patent No. 2,221,460 except that in my prior patent the lower end of control link 11 was pivoted by means of a fixed pivot to the body and lever 14 with intermeshing gears 16 and 17 were absent. Thus, it will be seen that as the top is raised from its lowered position (dotted line showing) to its raised position (full line showing) levers 14 on each side of the body rotate clockwise (as viewed in the drawing) about pivots 15 so that pivots 13 swing or travel in an arcuate path downwardly and forwardly of the body. As the levers 14 swing clockwise they act through control links 11 and levers 9 to open the top while at the same time the entire top is being swung upwardly about pivots 4. This shifting of the pivots 13 downwardly and forwardly about this arcuate path acts through the control links 11 and levers 9 to cause the top to open more rapidly, more smoothly and with more uniform motion than heretofore possible.

In raising this type of top the action is such that the top will move smoothly and the rail 18 will settle gently but rapidly on to the front top rail (not shown). In lowering the top the lever 14 will swing counterclockwise (as viewed in the drawing) from the full line position to the dotted line position, thereby causing pivot 13 at the lower end of control link 11 to move rearwardly and upwardly, all of which acts through lever 9 to effect a quick and smooth collapsing of the top into the dotted line position in well 21.

It is, of course, appreciated that the control links, levers, air motor and other such parts are duplicated on each side of the top bow construction. The power of the air motor 22 is applied through connecting rod 25, thrust link 27 and lever 26 to the bow 3 to raise and lower the same. As the bow 3 swings upwardly, gear segment 16 rotates counterclockwise thereby rotating gear segment 17 and lever 14 clockwise. In lowering the top the bow 3 and gear segment 16 swings clockwise thus swinging gear segment 17 and lever 14 counterclockwise which produces the result above described.

I claim:

1. In a collapsible top for an automotive vehicle, the combination of a main bow pivotally supported on the vehicle, a cant rail, a link pivotally connected at one end to the cant rail and the other end to the bow, a lever pivoted intermediate its ends to the main bow, a pivotal con-

nection between one end of the lever and the cant rail whereby the cant rail is supported on the main bow by said lever and link, a control link pivotally connected to the other end of said lever for controlling the action of the lever and cant rail as the top raises or lowers, a second lever pivotally supported by means of a fixed pivot on the vehicle body adjacent the pivoted end of the main bow, a pivotal connection between said second lever and control link, and means for swinging the said second lever downwardly and forwardly of the body as the top rises whereby the pivotal connection between the control link and second lever travels in an arcuate path.

2. In a collapsible top for an automotive vehicle, the combination of a main bow pivotally supported on the vehicle, a cant rail, a link pivotally connected at one end to the cant rail and the other end to the bow, a lever pivoted intermediate its ends to the main bow, a pivotal connection between one end of the lever and the cant rail whereby the cant rail is supported on the main bow by said lever and link, a control link pivotally connected to the other end of said lever for controlling the action of the lever and cant rail as the top rises or lowers, a toothed member supported adjacent the pivoted end of the main bow and rotated in the raising and lowering of the main bow, a lever pivotally mounted to the body, a toothed member connected to said lever and in mesh with the aforementioned toothed member, a pivotal connection between the control link and the said lever whereby in the raising of the top the upward pivoting of the main bow acts through the meshed elements and lever to swing the pivotal support for the control link downwardly and forwardly in an arcuate path.

3. In a collapsible top for an automotive vehicle body, the combination of a main bow, pivotal connections between the main bow and the vehicle body, a cant rail, a lever pivotally supported on the main bow, a pivotal connection

between the cant rail and one end of the lever, a control link pivotally connected to the other end of the lever for controlling the action of the lever as the top rises and lowers, a gear member rotatable about the pivot for the main bow and connected to the main bow, a second lever pivotally supported on the body, a gear connected to the second lever in mesh with the gear connected to the bow, a pivotal connection between the second lever and the control link positioned so that in the raising of the top the meshed gears swing the second lever and move the pivotal connection between the second lever and control link downwardly and forwardly of the body.

4. In a collapsible top for an automotive vehicle, the combination of a main bow pivotally supported on the vehicle, a cant rail, a link pivotally connected at one end to the cant rail and the other end to the bow, a lever pivoted intermediate its ends to the main bow and below the connection between the above said link and bow when the top is raised, a pivotal connection between one end of the lever and the cant rail whereby the cant rail is supported on the main bow by said lever and link, a control link pivotally connected to the other end of said lever for controlling the action of the lever and cant rail as the top rises or lowers, a toothed member supported adjacent the pivoted end of the main bow and rotated in the raising and lowering of the main bow, a second lever pivotally mounted to the body with a fixed pivot, a toothed member connected to said second lever and in mesh with the aforementioned toothed member, a pivotal connection between the control link and the said second lever whereby in the raising of the top the upward pivoting of the main bow acts through the meshed elements and second lever to swing the pivotal support for the control link downwardly and forwardly of the body in an arcuate path.

EMORY GLENN SIMPSON.