

Oct. 16, 1923.

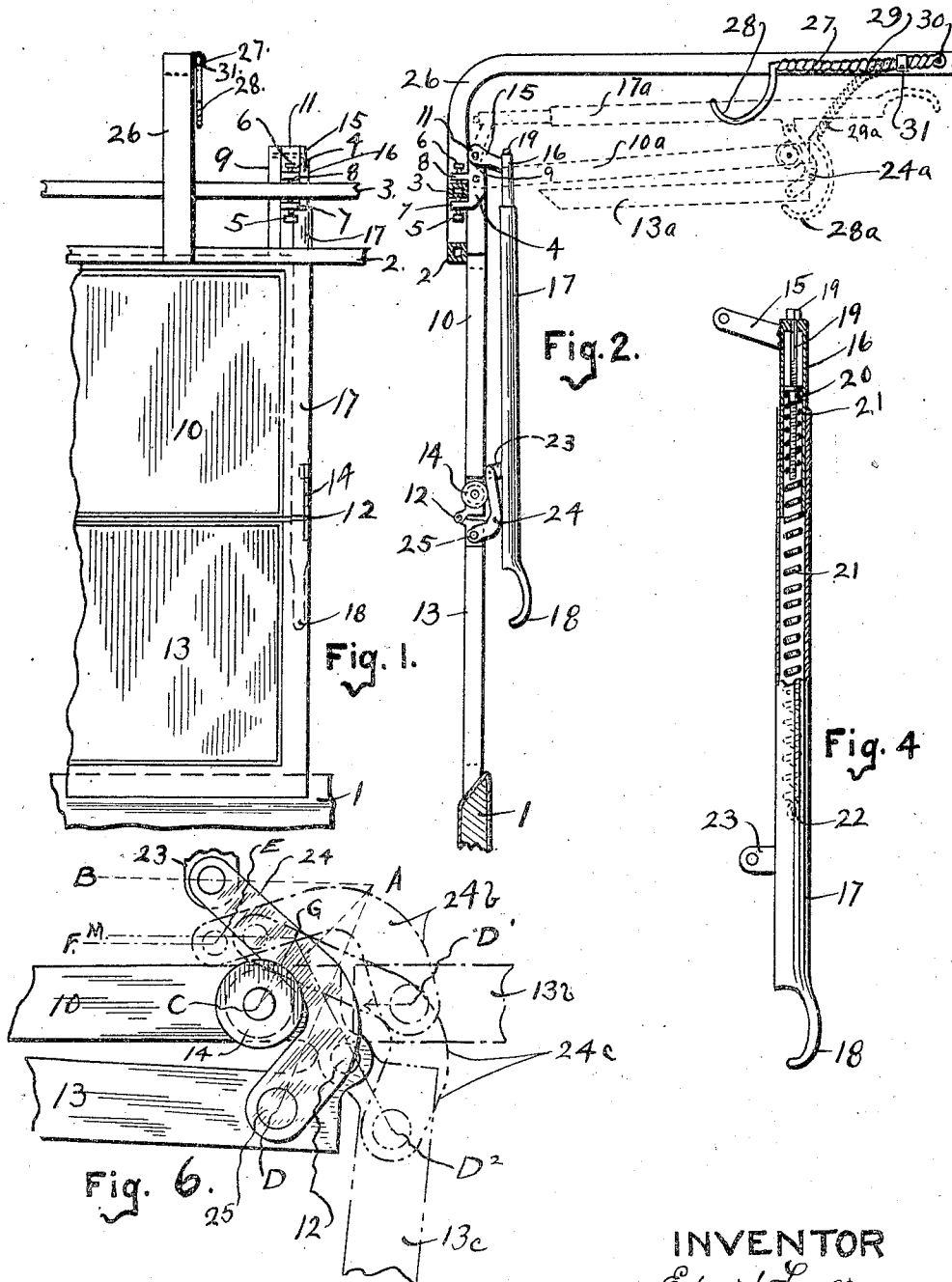
1,470,690

E. LOVER

CONVERTIBLE INCLOSURE FOR VEHICLES

Filed Nov. 12, 1919

2 Sheets-Sheet 1



INVENTOR
Edward Lover
by his attorney
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2 Sheets-Sheet 2

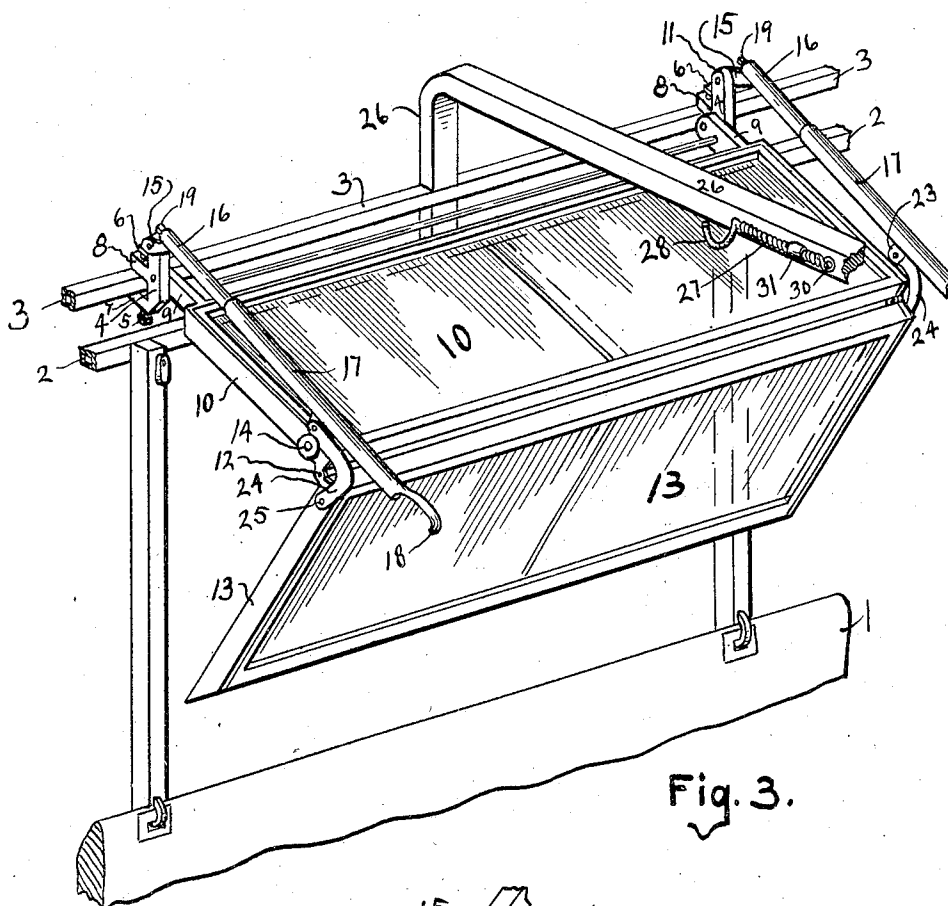


Fig. 3.

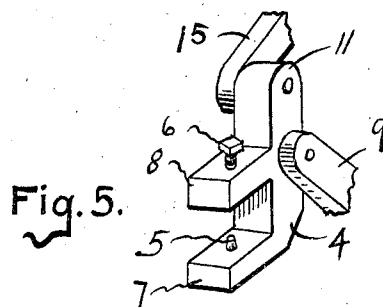


Fig. 5.

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Patented Oct. 16, 1923.

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UNITED STATES PATENT OFFICE.

EDWARD LOVER, OF BUFFALO, NEW YORK, ASSIGNOR TO LOVER TOP AND CONVERTER CO. INC., OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

CONVERTIBLE INCLOSURE FOR VEHICLES.

Application filed November 12, 1919. Serial No. 337,543.

To all whom it may concern:

Be it known that I, EDWARD LOVER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Convertible Inclosures for Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form part of this specification.

Like figures of reference refer to like parts.

This invention relates to convertible inclosures for vehicles, particularly to operating devices therefor.

One of the objects of this invention is to provide an operating device for positioning the swinging sash of a convertible inclosure of a vehicle, whereby the sash is held forcibly closed by said device, which is also adapted to hold said device forcibly open and up out of the way when it is desired to travel with an open top.

A further object is to provide an operating device for positioning the said sash, having an adjustable spring that can be adjusted in its action in accordance with the weight of the sash.

Another object is to provide an inexpensive durable and neatly constructed operating device for a convertible inclosure for the manual operation of the same.

A further object is to provide an adjustably positioned bracket in connection with the sash of a convertible inclosure, which is detachably fixed to the top frame, whereby the bracket may be adjusted to position the window sash in proper fitting relation to the top frame and the vehicle body.

With these and other objects, my invention resides in certain construction, which differs materially from the operating device illustrated and described in my co-pending application filed April 23, 1919, of Serial Number 292,158, in that the operating spring shown in the said application is used under torsion, while the spring in this case is used under compression or tension.

Figure 1 is a front elevation illustrating one end of a pair of automobile sashes

hinged in the center, having connection with the top frame and body of an automobile, and showing the position of my operating device thereon.

Figure 2 is an end elevation, partly in section, showing the sash and operating device illustrated in Figure 1.

Figure 3 is a perspective view of the sash and framework illustrated in Figures 1 and 2, but here shown in perspective, to illustrate the position of the parts and the sashes partly open.

Figure 4 is an elevation of the tubular arm forming the principal part of the operating device, here shown partly broken away to illustrate the internal construction.

Figure 5 is a perspective view of the adjusting bracket for detachably securing the sash and parts in an adjustable position upon the frame and body of the automobile.

Figure 6 is a diagrammatic view of a joint between the sash, showing parts of the operating device connected therewith, in different positions, having marked thereon, forced diagrams, illustrating the manner in which the parts function, to hold the sash forcibly closed or forcibly opened, against rattling.

In the figures, there is shown a fragment 1 of the body of an automobile, having a beveled upper edge, and two rails 2 and 3 of the top frame, a clamp 4 is provided for adjustable attachment to the rail 3. This clamp 4 has set screws 5 and 6, in threaded engagement with the respective jaws 7 and 8 and the clamp 4, which set screws 5 and 6 engage the rail 3, for vertical adjustment. To the body of the clamp 4, is pivoted an extension 9 of the sash 10. The body of the clamp 4 has an upward extension 11. Hinged at 12 to the sash 10, is the lower sash 13. Journaled near the hinge 12, is a flanged roller 14, having the flange on the outside. Pivoted to the extension 11 of the clamp 4, is the finger 15, which is integral with the tubular member 16 of the operating device. The member 16 is in sliding engagement with the barrel 17, which terminates in a handle 18. The member 16 is closed at its top, through which passes the long bolt 19, which is engaged by the nut 20. Fixed to the nut 20, is a spiral spring 21, which is anchored at 22 to the barrel 17. Integral with the barrel 17 is the ear 23,

to which is pivotally connected an L-link 24, the lower end of which is pivoted at 25 to the sash 13.

Fixed to the rails 2 and 3 of the top frame, is the cross-bar 26, near the center of which is firmly attached an elastic hook device 27, having a rigid hook portion 28, preferably covered with leather. The hook device has a shank portion 29, composed of a closely wound metal spring, the end of which is fixed at 30 to the cross-bar 26. Spaced from the point 30, is a band 31, also fixing the shank 29 to the cross bar 26.

The action of the parts of the operating device is as follows: assuming that the sashes are in closed position, as shown in Figures 1 and 2, wherein the beveled part of the sash 13 are in contact with the body 1, and the upper part of the sash 10 is in contact with the rail 2. It will be noticed that in this position, the hinge 12 is positioned outside the sashes 10 and 13 and has its axis beyond the center of the said sashes. In this position the tension of the spring 21 has an action to draw the member 16 within the barrel 17, and through the connection of the L-link 24 with the ear 23, and the point 25 of the sash 13, together with the connection of the finger 15 with the clamp extension 11, a force is exerted to draw the sashes nearer together at the hinge 12, thus producing an outward pressure of the sashes 10 and 13, against the uprights of the framework of the automobile, surrounding these sashes, whereby any tendency to rattle is silenced.

To open the sashes, the handle 18 is pulled inward. During the turning of the sash 10, the bottom part of the sash 13 is pushed outward, and upward for the manual movement of the sash 10, into the dotted position marked 10^a, of Figure 2, while at the same time, the sash 13 is pushed into the dotted position 13^a. The barrel 17 takes the position of 17^a and the L-link 24 takes the position of 24^a, in which position of these parts there is a tendency due to the action of the spring 21 to, not only hold the sash 13 folded up against the sash 10, but there is a lifting action between the barrel 17 and the sashes, which if of sufficient strength, will hold the parts in the dotted position shown in Figure 2. But as a matter of safety, I provide the elastic hook device 27, which has been previously drawn down to allow the hinged connection 12, between the sashes 10 and 13, to pass. After which the hook 28 is permitted to throw itself upward against the sash 13 into the position 28^a, which position is made possible on account of the elasticity of the shank 29.

Referring now to Figure 6 for some explanation as to the resultant actions of the spring 21 upon the sashes 10 and 13, and their connected parts, the fragmental ends

of the sashes 10 and 13 with their hinged joint 12, and the L-link 24 is shown in full lines, which position is similar to that shown by the dotted lines of Figure 2, above described. The action of the forces of action and reaction for this position are diagrammatically illustrated by the lines BA, CA and DA; wherein A is the point of intersection of the line of action of the force, having direction AB, at one end of the L-link 24, as coming directly from the ear 23, which tends to move toward the pivotal connection between the frame of the sash 10, and bracket extension 11, in response to the spring 21. The line CA represents the direction of the force of reaction coming from the forced contact between the roller 14, and the L-link 24, intersecting the line BA at the point A. Now drawing a line between the pivotal connection D of the L-link 24, with sash 13, we get the direction of the resultant forces coming from the roller 14 and the ear 23, which resultant is in a direction to raise the point D, to turn about the hinge 12. It will be observed that the distance between the center of the hinge 12 and the line AD gives this resultant force a lever arm in throwing the sashes 10 and 13 together, which explains the action of the parts operating with the spring 21, to keep the sash 13 folded against the sash 10, when the same are in the dotted position shown in Figure 2.

Referring now to the action of the parts in keeping the sash closed, I have shown a fragment of the sash 13^b, extending in line with the sash 10 of Figure 6, as in the dot and dash position, wherein the point D' represents the position of the pivot point D, after the sashes have been moved relative to one another to be practically in the same plane.

In this position, the force exerted by the ear 23, upon the L-link 24, has the direction EF, in connection with the dot and dash position 24^b. The L-link 24, in this position, pulls in the direction of the plane of the sashes on the point D', at a lever arm distance from the center of the hinge 12, tending to throw the sashes 10 and 13 out in the direction of the hinge 12. In the dash and two-dot position 24^c and 13^c, of the link 24 and the sash 13, respectively, the reaction due to the pressure of the link 24 upon the roller 14, has the direction CG. The point G being on the line of force passing through the connection between the L-link 24 and the ear 23. Drawing a line from the point D'', we find that the line passes close to the center of the hinge 12, showing that the result of the forces has its line of action too close to the center of the hinge 12, to have any effect in swinging the sash 13 in either direction; which might be called a neutral position, relative to the sash 10, which is

about the position shown in the perspective view in Figure 5.

The spring 21, as explained above, serves to draw the parts 16 and 17 together, due to its tension. The member 16 could be spaced within the member 17, and each having a flange to engage a spring between the members, so that the compressive action of such a spring would serve to draw the member 16 within the member 17, to effect the same result, as that obtained by the tension of the spring 21. Other changes from the one embodiment of the invention herein shown and described might be made without departing from the spirit and scope of the said invention. I therefore do not wish to be confined to this one embodiment.

I claim,

1. In a side enclosing device for vehicles, to be positioned between the body of the vehicle and its top frame side rail, a clamping bracket detachably fixed to said rail, a double sash frame pivoted to said bracket, said double sash frame comprising two parts hinged together and means for holding said double sash frame in angular position on said frame, said means comprising a first member pivoted to said bracket above the pivot point of said sash frame with said bracket, a second member in sliding engagement with said first member, means for drawing said members together, and a link pivotally attaching said second member with the lower member of the double sash frame.

2. In a side enclosing device for vehicles, to be positioned between the body of the vehicle and its top frame, sash frame of two members, having a horizontal hinge between the upper and lower of its sash members, means pivotally connecting the upper sash member to said top frame, a supporting device, means pivotally attaching said supporting device to said top frame at a point vertically spaced from the pivotal connection of the upper sash frame with said top frame, said supporting device comprising a first member having pivotal connection with said top frame, a second member in sliding engagement with said first member, elastic means for drawing said members toward one another, a guiding element on said upper sash near the hinge between the upper and lower sash and a link pivotally connecting said second member with the lower sash near said hinge and adapted to contact said guiding element.

3. In a side enclosing device for a vehicle, having a double sash frame of upper and lower parts hinged together and pivotally connected with a top frame of said vehicle, a holding device connecting the lower sash part with said top frame, said holding device comprising a round hollow member pivotally connected with said top frame above the pivotal connection of said upper sash part with said top frame, a cylindrical member in concentric sliding engagement with said hollow member, a long threaded bolt passing down through the top of said hollow member, having the head of said bolt outside said hollow member, a nut engaging said bolt, a spring within said cylindrical member fixed to said nut and anchored at its opposite end to said cylindrical member, a roller journaled upon said upper sash part near the hinge between said sash parts, an L-link pivotally connecting said cylindrical member with said lower sash part to contact said roller, whereby a force is exerted to keep said sash parts spring pressed closed, as well as spring pressed open and folded.

4. In a convertible inclosure for vehicles, the combination of a double sash frame comprising an upper sash pivoted to the top frame of said vehicle, a lower sash pivoted to the upper sash, and means including a tension element pivoted to said top frame and said lower sash, for holding said lower sash either in alignment with or parallel to said upper sash.

5. In a convertible inclosure for vehicles having a top frame the combination of a double sash frame comprising an upper sash pivoted to the top frame of said vehicle, a lower sash pivoted to the upper sash, a two part member having one part pivoted to said top frame and the other part pivoted to said lower sash, tension means normally separating said parts and a handle on said member.

6. In a convertible inclosure for vehicles having a top frame the combination of a double sash frame comprising an upper sash pivoted to the top frame of said vehicle, a lower sash pivoted to the upper sash, a two part member having one part pivoted to said top frame and the other part pivoted to the upper part of said lower sash, tension means normally separating said parts, and a handle on said member for pulling inwardly the upper part of said lower sash and the lower part of said upper sash.

EDWARD LOVER.