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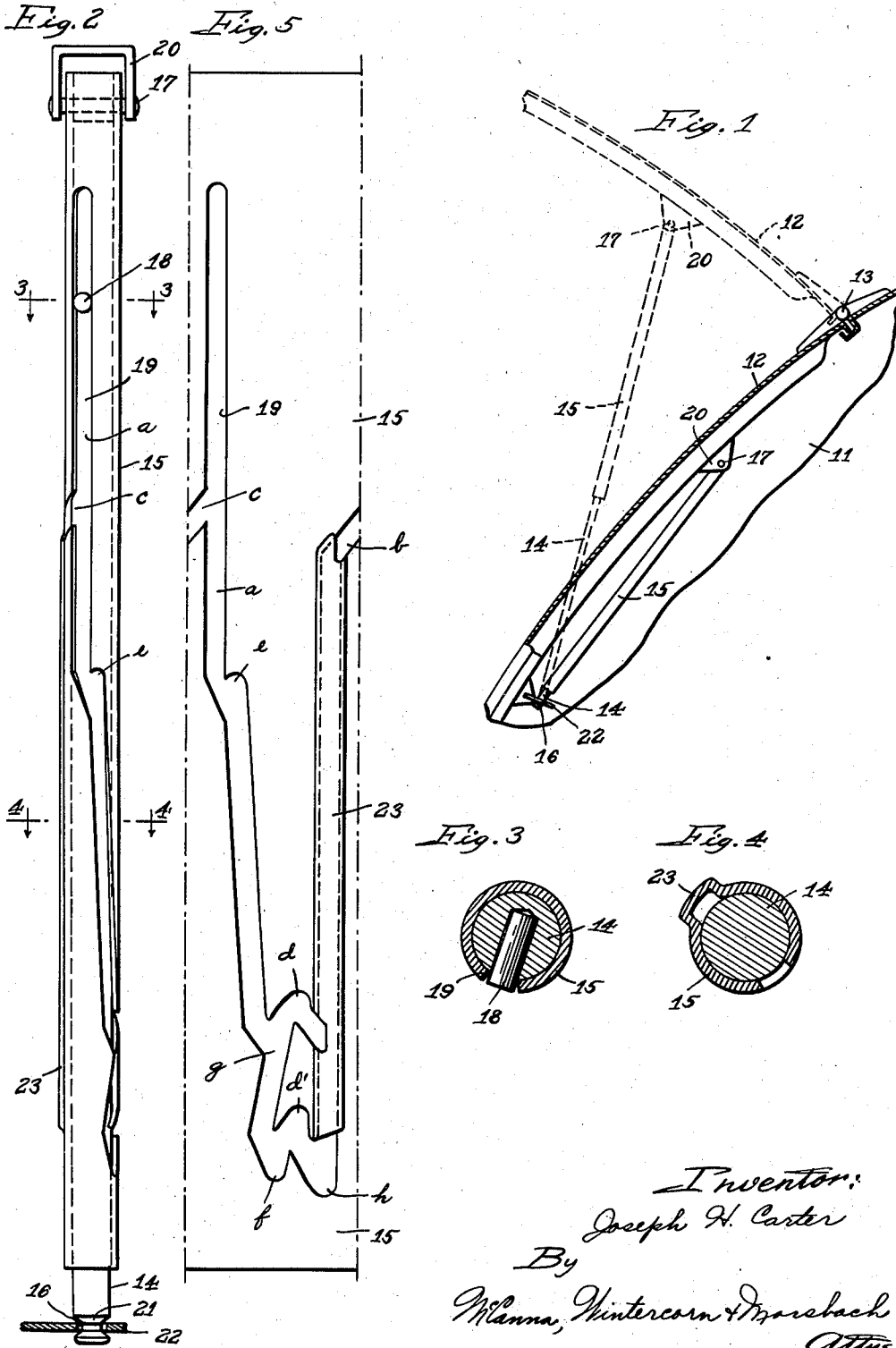
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AUTOMOBILE HOOD AND LID SUPPORT

Filed Oct. 25, 1937

2 Sheets-Sheet 1



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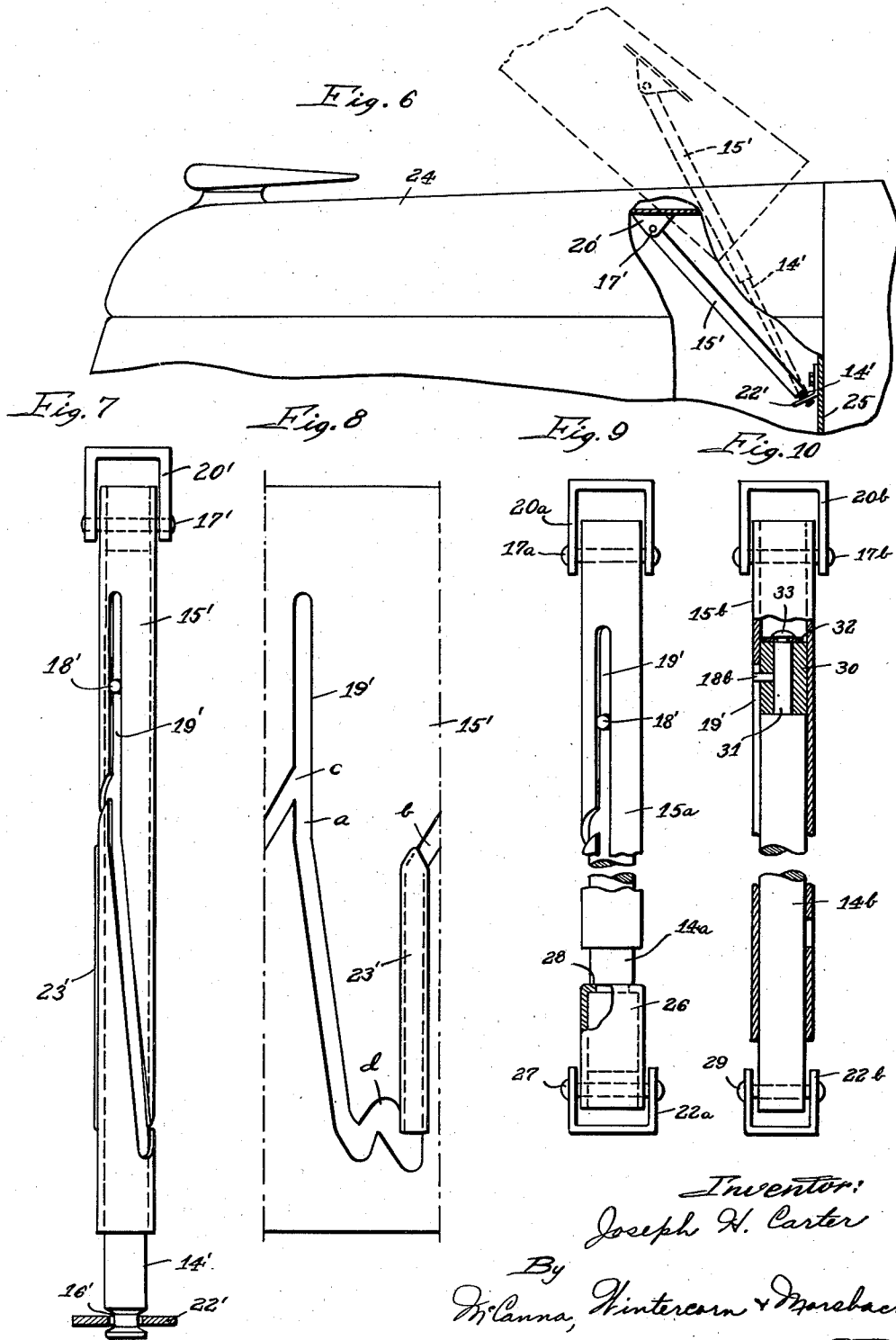
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UNITED STATES PATENT OFFICE

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AUTOMOBILE HOOD AND LID SUPPORT

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12 Claims. (Cl. 217—60)

This invention relates to hood and lid supports for automobiles, or, more generally stated, supports for liftable hinged closures.

Many lid supports now commonly used have two pivotally connected arms or links which fold in the closing of the lid. The objection to such supports is that there is danger of getting something pinched between the folding arms, and the arms are apt to poke into something as they fold. It is therefore the principal object of my invention to provide a telescoping type support whereby to avoid the dangers of damage or injury arising from the scissors-like action of these other supports and the objections due to the need for extra elbow room for said supports in folding.

Another important object consists in providing a telescoping type support employing a rotary action between the pin and slot means for releasably locking the telescoping members in extended operative position, an endless slot or channel being provided directly in or on one of the telescoping members and the cooperating pin on the other and provision being made for relative rotation either directly between the telescoping members themselves or parts carried thereon as required in the locking and unlocking of the members in operation.

Still another object consists in the provision of a telescoping type support of the character described having provision for releasably locking the telescoping members either in an extreme extended relation or at one or more intermediate points to suit the convenience of the operator.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical sectional detail through a portion of the luggage compartment on the rear of an automobile, showing a telescoping support made in accordance with my invention, applied to the lid or door thereof, the lid being also indicated in dotted lines to show how the support functions;

Fig. 2 is a rear view of the support removed and showing the lower bracket in section;

Figs. 3 and 4 are sectional details on the correspondingly numbered lines of Fig. 2 on an enlarged scale;

Fig. 5 is a devoted view of the slotted tubular member;

Fig. 6 is a side view of a portion of the front end of an automobile, showing another support made in accordance with my invention, applied to the hood thereof;

Fig. 7 is a view similar to Fig. 2, showing the support of Fig. 6;

Fig. 8 is a developed view of the slotted tubular member, and

Figs. 9 and 10 are views similar to Figs. 2 and 7, showing modified or alternative constructions.

Similar reference numerals are applied to corresponding parts throughout the views.

Referring first to Figs. 1 to 5, the numeral 11 designates the rear trunk or luggage compartment on an automobile, and 12 its lid or door hinged at 13 to permit raising and lowering the same, as indicated in the full and dotted line positions. 14 and 15 are two supporting arms or links pivotally attached at 16 and 17, respectively, to the side wall of the trunk 11 and edge portion of the lid 12, as shown. The arms 14 and 15 in accordance with my invention, are in slidable telescoping relation, and in the closed position of the lid are telescoped substantially their full length, as shown in full lines in Fig. 1, thus taking up a minimum amount of space inside the trunk, a small fraction of that required with folding supports. The arm 15 is tubular and fits over the rod forming the arm 14, and these parts are arranged to be locked releasably in extended relationship by means of a pin 18 on the rod 14 working in the slot 19 in the tube 15. The tube 15 is held against turning by the pivot pin 17 relative to the bracket 20, but the rod 14 is annularly grooved at its lower end, as shown at 21, for universal, swivel, and pivotal movement with respect to the bracket 22, so that the pin 18 can follow the bends and turns of the slot 19. The rod 14 makes one complete turn in each cycle of movement of the pin 18 from its starting point in the slot 19 where it is shown in Fig. 2. The slot 19 is of W formation, generally speaking, one branch *a* of the W extending longitudinally and connecting with the other branch *b* of the W at *c*. *d* and *d'* are two crotches in longitudinally spaced relation formed by the inverted V's interconnecting the lower ends of the branches *a* and *b* of the W. *e* is a shoulder or ledge provided at an intermediate point of the length of the branch *a* preferably at about the middle to serve as an intermediate point of support on the way to the points *d* and *d'* where the pin 18 can engage to releasably lock the telescoping parts in partly extended relation. Most of the branch *b* is formed by an extruded channel-shaped portion 23 formed in the wall of the tube 15, it being obvious that this connecting web portion not only adds strength, but also permits of the double W slot formation, with two points *d* and *d'* either of which may be engaged by the pin 18. A treble or quadruple W formation is, of course, permissible with this construction, but the provision of one or more intermediate supporting shoulders *e* make it unnecessary to provide any additional supports at *d* and *d'*. In the actual manufacture of the present support, the tubular member 15 may be formed either from a piece of tubing or from a flat piece of sheet metal that is first struck and pierced to

substantially the form shown in Fig. 5 and then formed around an arbor to the tubular form.

In operation, when the lid is closed, the pin 18 is in the position shown in Fig. 2 near the extreme upper end of the branch *a* of the W slot 19. When the lid is raised part way, the pin 18 moving the branch *a* makes a slight jog at the point *e* so that the pin is in line with the supporting shoulder and the operator may, if he so desires, release the lid and it will be supported in the intermediate position. This makes it convenient for him to change his grip on the lid in such a way as to make it easier for him to lift the lid the rest of the way to the extreme raised position when the pin 18 engages in the crotch *f*. When the lid has been raised as far as it will go and the operator then releases it, the pin 18 rides into the crotch *d'*, thus releasably locking the telescoping parts in extended lid-supporting relation. If the operator happens to be of small stature or happens to be standing on a low level so that it is inconvenient or awkward for him to raise the lid as far as it will go, he can nevertheless lock the lid in an intermediate raised position so long as the pin 18 reaches the point *g* where there is a slight jog in the slot 19 just below the crotch *d*, the pin 18 under those circumstances being sure to engage in the crotch *d*. When the lid is to be lowered again, the operator merely raises it enough to cause the pin 18 to ride into the crotch *h*, assuming that the pin was engaged in the crotch *d'*, whereupon the pin 18 will follow the branch *b* back to the upper end of branch *a*, through the channeled portion 23 of the tube 15. If the pin 18 happens to be engaged in the crotch *d*, it is obvious that the lid need be raised only enough to bring the pin into the lower end of the channeled portion 23 of the branch *b*, whereupon the lid may be lowered to closed position. In the operation described, the rod 14 turns with so little frictional resistance that it is not noticeable, and, of course, in the assembling of the support, graphite or hard grease can be applied to the rod 14 to insure easy operation and ample lubrication of all parts of the W slot 19 for easy riding of the pin 18 therein.

The support illustrated in Figs. 6 to 8 comprises a similar rod 14' and tube 15', the tube being pivotally connected to a bracket 20', as at 17', and the rod being universally swivelled in a bracket 22', as at 16'. A pin 18' on the rod 14' works in a slot 19' in the tube 15'. The slot 19' is of simplified W formation having simply the two branches *a* and *b* interconnected, as at *c*, at their upper ends and extending from opposite sides of the single inverted V formation defining the crotch *d*. 23' is an extruded channel formation integral with the wall of the tube 15', as in the other support. A support constructed along these lines is entirely satisfactory for support of a hood like that shown at 24 in Fig. 6, where the bracket 20' is fastened to the inside of the hood and the bracket 22' is fastened to the dash 25. For this purpose, the rod and tube parts can be much shorter than in the case of a lid support, and usually also of smaller cross-section, since the hoods are ordinarily much lighter than the lids. Of course, supports of both types herein illustrated may be provided for either purpose; that is to say, the support shown in Figs. 1 to 5 is not necessarily limited to use as a lid support, nor is the support shown in Figs. 6 to 8 limited to use as a hood support.

A further modification is shown in Fig. 9 where the rod 14*a* cooperates with the tube 15*a*

similarly as in either of the forms previously described, and the bracket 20*a* has the tube 15*a* pivoted thereto, as at 17*a*. However, the bracket 22*a* in this form has a tube 26 pivoted thereto, as at 27, and the lower end of the rod 14*a* is swivelled, as indicated at 28. With this construction there is less play between the rod and its supporting bracket and accordingly less likelihood of the support rattling when the car is in motion.

A still further modification shown in Fig. 10 comprises a rod 14*b* and tube 15*b* in which the rod is pivoted at its lower end in a bracket 22*b*, as at 29, while the tube 15*b* is pivoted in a bracket 20*b*, as at 17*b*. The pin 18*b* in this case is carried on a sleeve 30 which turns freely on a reduced upper end portion 31 of the rod 14*b*. The sleeve is suitably retained by a washer 32 fitting on the upper end of the reduced portion 31 which is suitably turned down slightly to provide a shoulder for support of the washer and has its protruding end upset, as at 33, to retain the washer permanently. This construction, like the construction of Fig. 9, avoids any need for much play between the parts and accordingly eliminates likelihood of the support rattling when the car is in motion.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn with a view to covering all legitimate modifications and adaptations.

I claim:

1. A device of the class described comprising two telescoping members adapted to be interposed between and pivotally connected to a raisable lid or hood and the supporting body respectively, said members being rotatable relative to one another, and a projection on one of said members slidable in an endless passage provided in the other member, which passage includes at least a longitudinal extension portion connected at one end to one end of a transverse detent portion, and a longitudinal return portion connecting the opposite end of the detent portion with the remote end of the extension portion.

2. A device of the class described comprising two telescoping members adapted to be interposed between and pivotally connected to a raisable lid or hood and the supporting body respectively, the outer tubular member being pivotally supported and the inner rod member being rotatably and pivotally supported so as to be rotatable relative to the tubular member, and a projection on the rod member slidable in an endless passage provided in the tubular member, which passage includes at least a longitudinal extension portion connected at one end to one end of a transverse detent portion, and a longitudinal return portion connecting the opposite end of the detent portion with the remote end of the extension portion.

3. A device of the class described comprising two supporting brackets adapted to be mounted on a raisable lid or hood and the supporting body respectively, and two telescoping members each pivotally supported on one of said brackets, and a pin substantially radially disposed relative to the inner member and movable with said inner member endwise relative to the outer member and revoluble in a plane normal to the longitudinal axis of said members, said pin being slidable in an endless passage provided in the outer member, which passage includes at least

a longitudinal extension portion connected at one end to one end of a transverse detent portion, and a longitudinal return portion connecting the opposite end of the detent portion with the remote end of the extension portion.

4. A device of the class described comprising two telescoping members adapted to be interposed between and pivotally connected to a raisable lid or hood and the supporting body respectively, one of said members carrying a radial projection revoluble about the axis of said members relative to the other member and slidable in an endless passage provided in said other member, which passage includes at least a longitudinal extension portion connected at one end to one end of a transverse detent portion, and a longitudinal return portion connecting the opposite end of the detent portion with the remote end of the extension portion.

5. A device of the class described comprising two supporting brackets adapted to be mounted on a raisable lid or hood and the supporting body respectively, and two telescoping members each pivotally supported on one of said brackets, a sleeve on one end of one of said members permitting relative rotation between said parts, and a radial projection carried on one of the two last-mentioned parts so as to be revoluble about their common axis, said projection being slidable in an endless passage provided in the other of the two telescoping members, which passage includes at least a longitudinal extension portion connected at one end to a transverse detent portion, and a longitudinal return portion connecting the opposite end of the detent portion with the remote end of the extension portion.

6. A device of the class described comprising two supporting brackets adapted to be mounted on a raisable lid or hood and the supporting body respectively, and two telescoping members each pivotally supported on one of said brackets, a sleeve on the free end of the inner rod member and rotatable relative thereto while slidable inside the outer tubular member, and a radial projection on said sleeve revoluble about the axis of the rod member and slidable in an endless passage provided in the tubular member, which passage includes at least a longitudinal extension portion connected at one end to one end of a transverse detent portion, and a longitudinal return portion connecting the opposite end of the detent portion with the remote end of the extension portion.

7. A device of the class described comprising two telescoping members adapted to be interposed between and pivotally connected to a raisable lid or hood and the supporting body respectively, the outer member being tubular and having a substantially W-shaped slot provided in the wall thereof, the opposed branches of which extend longitudinally relative to the tube with the one branch terminating at its upper end in a transverse portion intersecting the upper end portion of the other branch, the inner member being slidable in the outer tubular member and said members being rotatable relative to one another, and a radial projection on the inner member slidable in said W slot, the middle or connecting crotch portion of the W slot providing a detent portion for engagement therein of said projection to releasably support said members in extended relation.

8. A device as set forth in claim 7, including a connecting channel formation on the wall of said tubular member along and spanning at least one branch of the W slot, said channel projecting radially outwardly from the tubular member so as to permit sliding movement of the radial projection on the other member lengthwise there-through.

9. A device as set forth in claim 7, wherein one of the branches of the W slot has at least one offset formed therein to provide a detent portion intermediate the ends of said branch for engagement by the radial projection to support said telescoping members in an intermediate position of extension thereof.

10. A device of the class described comprising two telescoping members adapted to be interposed between and pivotally connected to a raisable lid or hood and the supporting body respectively, the outer member being tubular and having a substantially W-shaped slot provided in the wall thereof, the opposed branches of which extend longitudinally relative to the tube with the one branch terminating at its upper end in a transverse portion intersecting the upper end portion of the other branch, the inner member being slidable in the outer tubular member and said members being rotatable relative to one another, a radial projection on the inner member slidable in said W slot, the W slot being of double W-formation so as to provide two substantially parallel crotch portions in longitudinally spaced relation relative to said tubular member, and a connecting wall on the outside of said tubular member along at least one of the branches of the W slot and extending alongside both of the crotch portions of the slot, the aforesaid radial projection being engageable in either of said crotch portions to releasably support the telescoping members in extended relation.

11. A device as set forth in claim 10, wherein the other branch of the W slot has at least one offset formed therein intermediate the ends thereof to provide a detent portion for engagement by the radial projection in an intermediate position of extension of said telescoping members.

12. A hood or lid prop comprising two telescoping members adapted to be pivotally attached one to the hood or lid and the other to the receptacle closed thereby, the one member having a continuous generally W-shaped guide slot provided thereon the up and down portions of which extend longitudinally of said member and have their ends in circumferentially spaced relation to one another around the periphery of said member, there being a connecting slot provided in said member extending in transverse relation to the exit end of the W-shaped slot outwardly relative to the W and intersecting the entrance end portion of said W-shaped slot, whereby to provide a closed circuit for the travel of a pin from the exit end of the W slot back to the entrance end for repeated travels through the W slot, a pin supported on the other member and radially disposed with respect thereto for engagement at one end in the guide slot, and means providing for relative rotation between said pin and slotted member in reciprocatory movement of said telescoping members relative to one another.

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