March 29, 1960 E. D. DALL 2,930,645

DECK LOCK

Filed Jan. 7, 1955 3 Sheets-Sheet 1

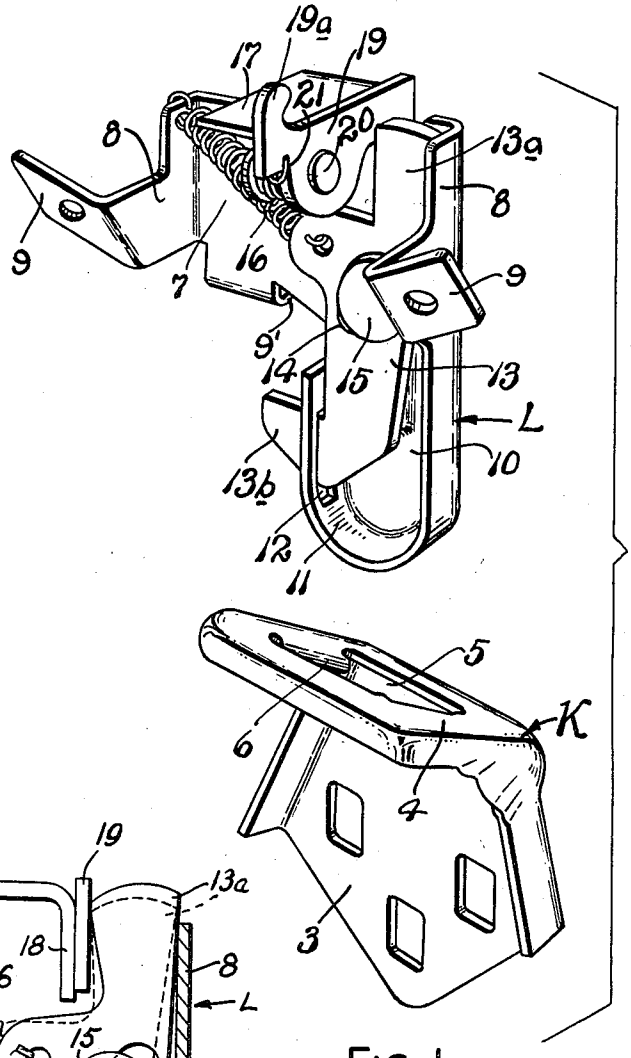
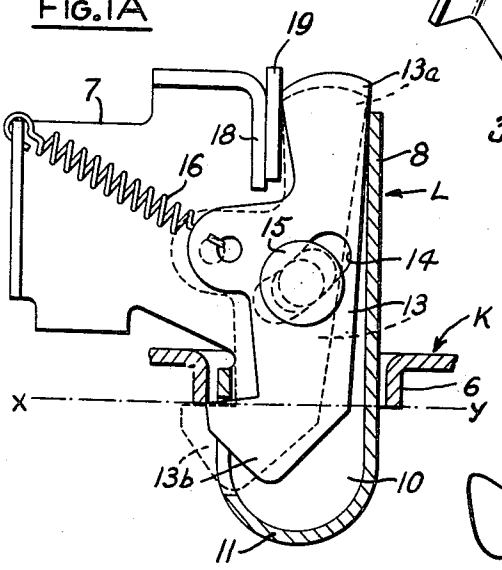


FIG. 1

FIG. 1A



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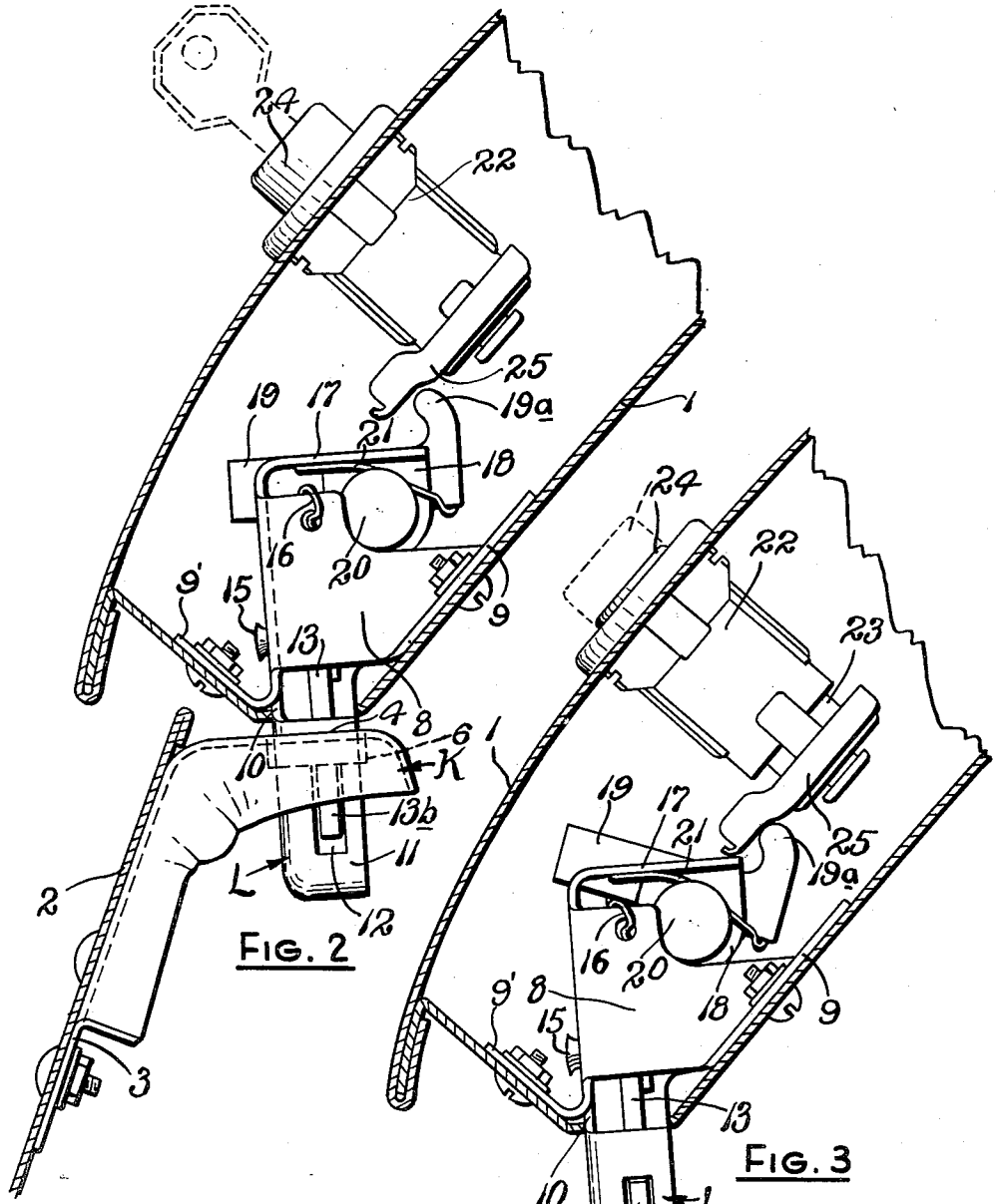


FIG. 2

FIG. 3

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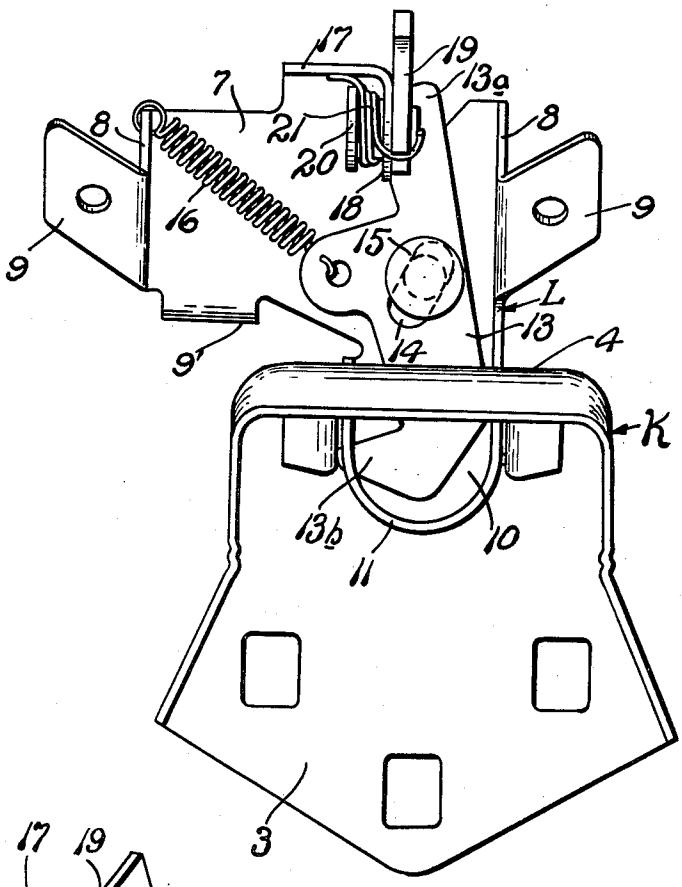


FIG. 5

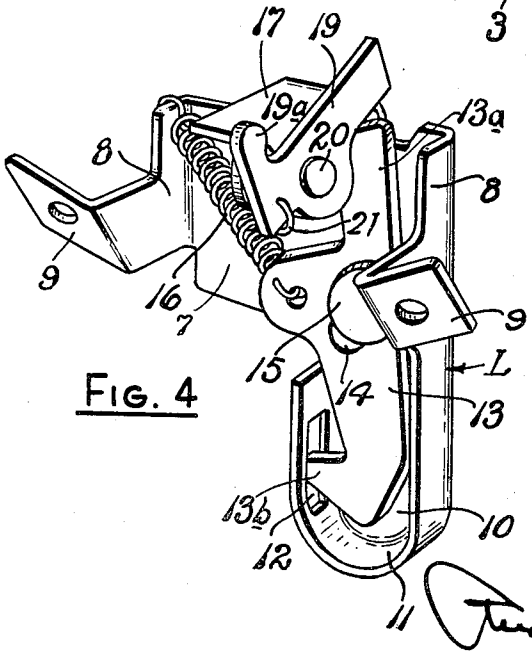


FIG. 4

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2,930,645

DECK LOCK

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Application January 7, 1955, Serial No. 480,358

7 Claims. (Cl. 292—109)

This invention relates to a lock structure which, while especially designed and adapted for use as a deck lock for application to rear trunk lids for motor vehicles, is not limited to that one use.

The principal object of my invention is to provide a simple and practical as well as economical structure of the kind mentioned and one which is thoroughly dependable in its operation and permits the lid to be closed just as easily when the lock is locked as when it is unlocked.

A salient feature of the present lock is the provision of an inclined slot in the latch lever intermediate the ends thereof for its sliding pivotal support, the angularity of this slot being such that the hooked end of the latch, when actuated by contact with the keeper in the closing and opening of the door, allows the latch to swing out of the way so as not to interfere with the freedom of operation of the door, despite the fact that the latching lever has a spring associated therewith tending normally to urge the same always toward its fully extended locking position, a positive locking action being provided by a holding dog disposed at right angles to the upper tail end of the latch lever and normally spring pressed toward a position postively blocking movement of said tail end but arranged to be moved to a retracted position by the depression of the plunger barrel of a push-button type key-operated lock.

The invention is illustrated in the accompanying drawings, in which—

Fig. 1 is a perspective view of the latch mechanism and cooperating keeper made in accordance with my invention, the two being shown in spaced but aligned relation;

Fig. 1A is a view related to Figs. 1 and 5, illustrating by full line and dotted line positions of the latch lever how the hooked end of the latch lever moves in a substantially straight horizontal line by virtue of its fulcruming at its upper end while guided intermediate its ends for slidable pivotal movement;

Fig. 2 is a vertical section through a portion of the trunk and lid of a motor vehicle showing in side elevation the latch mechanism and keeper installed therein, together with a push-button type lock on the lid in operative relationship to the latch mechanism;

Fig. 3 is a view similar to a portion of Fig. 2 illustrating how the push-button type lock is manipulated to permit raising the lid, and

Figs. 4 and 5 show how the latch lever is freely movable when the holding dog is held in the retracted position of Fig. 3 by depression of the push-button.

The same reference numerals are applied to corresponding parts throughout the views.

Referring to the drawings, the reference numeral 1 designates the lid of the trunk or luggage compartment of a motor vehicle and 2 a portion of the lower rear wall of said trunk, the lid 1 being suitably hingedly mounted at its upper end in the usual way to swing up and down to and from the open position in which access is permitted to the interior of the trunk. The keeper indicated at K is a substantially L-shaped sheet metal

stamping providing a nearly vertical leg 3 and a substantially horizontal leg 4 reinforced by internal flanges formed on the edges thereof as shown. Leg 4 has a rectangular opening 5 provided therein, at the ends of which portions of the metal are bent downwardly, as indicated at 6. The keeper K is bolted or otherwise adjustably secured to the lower rear wall 2 of the trunk, as indicated in Fig. 2, the slots in the vertical leg 3 being elongated sufficiently to allow a certain amount of vertical adjustment to have the keeper cooperate properly with the latch mechanism L carried on the lid 1.

As shown in Fig. 1, the latch mechanism L comprises a generally channel shaped bracket providing a vertical web portion 7, from the opposite sides of which project flanges 8 terminating in outwardly bent ears 9 that have abutment with the inner wall of the lid 1 and are fastened thereto by bolts, as shown in Figs. 2 and 3. An additional ear 9', is preferably provided bent outwardly from the lower end of the web portion 7 for abutment with and bolted to the bottom wall of the lid 1, as also appears in Figs. 2 and 3. The web portion 7 has one side portion thereof extended downwardly to provide a pilot extension 10 of generally rectangular form rounded at its lower end 11, the lower end and the vertical sides being defined by reinforcing inwardly bent flanges, as shown, and one of these flanges being a continuation of the adjacent side flange 8. A slot 12 is provided in the other side flange of the extension 10 for projection therethrough of the hooked lower end portion 13*b* of the latch lever 13. This lever 13 is a sheet metal stamping and has an inclined slot 14 provided therein intermediate the ends thereof for slidable pivotal engagement therein of the shank of a headed guide and pivot pin 15 carried on the web 7 at the upper end of the pilot extension 10. A coiled tension spring 16 has one end attached to the lever 13 and the other end attached to the bracket and tends normally to turn the lever 13 about pivot 15 in a clockwise direction, as seen in Figs. 1, 4 and 5, holding the hooked lower end 13*b* extended, as it is shown in Fig. 1, and its upper tail end 13*a* in abutment with the adjacent side flange 8.

The web portion 7 has an upper edge portion 17 flanged inwardly substantially at right angles and a side portion 18 thereof bent downwardly substantially at right angles, as best appears in Fig. 5. A holding or locking dog 19 is pivoted intermediate its ends, as at 20, on the portion 18 and is normally held in a substantially horizontal operative position by a torsion spring 21 which surrounds a portion of the pivot pin 20 and has one end abutting the bottom of the flange 17 and the other end hooked onto one end of the dog 19. An upwardly extending finger projection 19*a* is provided on the spring pressed end of the dog 19 for depression of this end of the dog against the action of the spring when the dog is to be moved by push-button operation to a retracted position with respect to the upper tail end 13*a* of the latch lever 13, as shown in Figs. 3, 4 and 5. For this purpose a push-button lock 22 is provided, the plunger barrel 23 of which is slidable axially upon depression of the push-button outer end 24 thereof when the rotary tumbler barrel therein is turned by the appropriate key to the unlocked position, a key for this purpose being indicated in dotted lines in Fig. 2, and the push button end 24 of the barrel 23 being shown in full lines in its depressed position in Fig. 3 and in its normally extended position in dotted lines. Spring means is provided in these push-button locks normally holding the push-button end 24 of the barrel 23 extended, as shown in Fig. 2 and in dotted lines in Fig. 3. A plate 25 fixed on the inner end of the plunger barrel 23 provides a bumper extension arranged for operative engagement with the finger 19*a*, as clearly appears in Figs. 2 and 3.

In operation, so long as the lock 22 remains unlocked

the push-button end 24 of the barrel 23 may, of course, be depressed at any time to move the dog 19 to a retracted position so that the lid 1 can be raised to open position to permit access to the interior of the trunk. The upper tail end 13*a* of the latch lever is then freely movable under the adjacent end of the dog 19 under these conditions, as shown in Figs. 4 and 5, and consequently, the hooked end 13*b* of the latch lever 13 will easily ride out from under the flange 6 on the keeper K as the lid 1 is raised. The lid can also be closed whether the push-button end 24 of the barrel 23 is depressed or not, the hooked end 13*b* of the latch lever 13 under these conditions riding over the top of the keeper K and in under the flange 6. The inclined bottom edge on the hooked end 13*b* of the latch lever 13 helps in this kind of operation by camming the lever 13 in the right direction. The inclination of the slot 14 allows the counterclockwise movement of the latch lever 13 about its tail end 13*a* as a fulcrum in the closing of the lid with the holding dog 19 in its operative position but does not allow the closed and locked lid to be opened until the holding dog 19 is moved to retracted position by depression of push-button 24. Furthermore, the angle of inclination of the slot 14 is such that as a result of the guiding action of the pin 15 in the slot 14 the hooked end 13*b* of the latch lever 13 is caused, as shown in Fig. 1A, to move not in an arc with the tail end 13*a* as a center but in a substantially straight horizontal line *x*—*y*, the latch lever adjusting its position bodily in a vertical plane to do this while still fulcruming at 13*a*. This horizontal straight line movement of the hooked end 13*b* of the latch is important because in the event the lid does not happen to be closed tight enough in the first instance and the hooked end 13*b* of the latch is only partially engaged under flange 6, there is no danger of the lid being forced open or opening accidentally; the hooked end 13*b* of the latch will drift into its fully engaged position under action of the spring 16 ultimately when the car is in motion. The latch mechanism is of simple and economical construction, operates easily, and is always thoroughly dependable, and there are no parts liable to be worn prematurely or damaged and get out of order.

I claim:

1. Mechanism as described comprising a generally vertical support, a spring-actuated lever disposed substantially vertically and having a transversely extending inclined slot provided therein between its ends receiving a guide-pin on the support, whereby said lever is pivotally and slidably mounted between its ends on said support, said lever having a laterally extending keeper engaging projection at its lower end, a spring-actuated locking dog pivotally mounted on said support adjacent the upper end of the lever normally in the path of movement of said upper end of the lever to block pivotal movement of said lever from locked position, said keeper engaging projection at its outer edge having an acute angle inclination with respect to the length of said lever inclined oppositely with respect to said slot, whereby forced applied to said edge in the direction of the length of the lever causes said lever to fulcrum about the upper end engaged by said locking dog so that the lower end carrying the laterally extending keeper-engaging-projection moves laterally in a substantially straight horizontal line.

2. Structure having the elements in combination defined in claim 1, and a manually operable means mounted adjacent said locking dog, normally out of engagement therewith, and movable to engage said locking dog and move it out of the path of movement of the adjacent end of the lever.

3. Mechanism as described comprising a channel support having vertically disposed flanges and a substantially vertical web portion therebetween, a spring-actuated lever disposed substantially vertically and having a transversely extending inclined slot provided therein between its ends receiving a guide-pin on the web portion of said support, whereby said lever is pivotally and slidably mounted between its ends on said support, said lever at its lower end having a laterally extending keeper engaging projection, a spring actuated holding dog disposed in substantially parallel spaced relation to one of the aforesaid flanges and pivotally mounted between its ends on said support adjacent the upper end portion of said lever, said dog having one end portion normally disposed adjacent an edge of said upper end portion of the lever and confining said upper end between the dog and one of the aforesaid flanges for fulcruming of the lever at said upper end while blocking the lever from disengagement at its lower end with a keeper, said lever being spring actuated normally toward engagement at its lower end with the keeper, and manually operable means mounted in fixed relation to said support in proximity to said holding dog, normally out of engagement therewith, and manually movable against the other end portion of said holding dog to move said dog at its lever engaging end portion to a position to free the lever for pivotal movement about said pivot pin, said keeper engaging projection having an outer edge inclined at an acute angle to the length of said lever and with respect to the aforesaid slot.

4. Mechanism as described comprising a substantially vertical support, a spring actuated lever disposed substantially vertically and having a transversely extending inclined slot provided therein between its ends receiving a guide-pin on said support, whereby said lever is pivotally and slidably mounted between its ends on said support, said lever at its lower end having a laterally extending keeper engaging projection, said support adjacent and to one side of the upper end of said lever having a portion at right angles to the plane of said lever, a spring actuated holding dog pivotally mounted on said portion normally lying between said portion and the adjacent edge of said lever, and manually operable means adapted to be moved to engage the holding dog and move it outwardly from between said portion and lever to free the lever for pivotal movement, said lever being spring actuated normally toward engagement at its lower end with a keeper, and said laterally extending keeper-engaging-projection having an outer edge inclined oppositely with respect to the inclination of the aforesaid slot.

5. In a latch structure, a support, an upright latching lever slidably pivoted intermediate its ends on said support allowing compound movement, namely, laterally and upwardly and return, the lower end of said lever having a keeper engaging projection extending laterally therefrom in one direction relative to said pivot, the upper end portion of said lever being adapted to serve as a fulcrum, a locking dog which in its operative position has the fulcrum end of the lever slidably pivotally engaging the same, said dog being movable manually into and out of the operative position in blocking relation to the fulcrum end of said lever maintaining the lever in locked position, and spring means urging said lever to move in a keeper-engaging direction relative to said pivot and fulcrum.

6. Structure having the elements in combination defined in claim 5, said pivotal mounting of the lever comprising a pivot pin fixed to said support, and said lever having a slot provided therein closed at both ends through which said pin passes, said slot being located generally transverse to the length of the lever and inclined at an acute angle relative to a horizontal plane.

7. A structure as set forth in claim 6, wherein the lateral projection has the bottom edge inclined upwardly toward the end of the projection in the opposite direction to the inclination of the slot.

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