ELECTRIC LOCK RELEASE

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References Cited
UNITED STATES PATENTS
3,906,426 9/1971 Zaydel .................. 292/216
3,664,698 5/1972 Stropkoy .............. 292/216

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ABSTRACT
A locking mechanism for releasably securing a deck lid of an automotive vehicle including an electric lock release for operating the mechanism from a remote location, the mechanism comprising a housing formed by a pair of stampings, latch and detent members operatively and cooperatively supported by the housing, and an electric actuator for releasing the latch in response to energization of a solenoid. A key cam member operatively connected to the detent member is also provided for manually releasing the latch in a conventional manner through operation of a key cylinder mechanism.

15 Claims, 7 Drawing Figures
ELECTRIC LOCK RELEASE

This is a continuation, of application Ser. No. 256,990, filed May 25, 1972, now abandoned.

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates generally to locking devices, and more particularly to an automotive door lid locking mechanism including a remotely operable, electric release therefor.

The locking mechanism of the subject invention is comprised of a striker cam having a latch formed at one end, and a cooperating actuating lever or detent member having a first position for retaining the latch in a closed position relative to a striker bolt and a second position for releasing the latch. Since the mechanism is characterized by essentially two movable cooperating elements, lost motion is substantially reduced relative to a conventional locking arrangement and the mechanism itself is more easily adapted for operation by an electric actuator. It is therefore a primary object of the subject invention to provide a locking mechanism characterized by minimal lost motion characteristics and inherently adapted for operation from an electric actuator.

In another aspect of the subject invention, the latch is maintained in the closed position relative to the striker bolt by engagement of a finger portion of the detent in an accurately shaped shoulder formed in the striker cam. The engaging tip of the finger is formed of a relatively small radius relative to the radius of curvature of the arcuate shoulder which minimizes friction and facilitates easy operation of the mechanism. The shoulder, however, is formed by a concave arc having a radius of curvature equal to the radius of rotation of the finger which is adapted to fully retain the finger in the closed position of the latch and thereby secure the deck lid against such opposing forces as the effect of spring loading the deck lid hinges, environmental loading, etc. It is therefore another object of the subject invention to provide a locking mechanism having a latch securely retained in its closed position while at the same time providing a mechanism which is easily operable.

In the subject invention an electric actuator is provided for releasing the deck lid in response to energizing a solenoid, the solenoid including a plunger having a first end drivingly connected to the actuating lever and a second end slidably located and supported in the solenoid. By energizing the solenoid a magnetic field is produced to displace the plunger inwardly within a bore of a bobbin carrying the windings. As is well known, the magnetic force acting on the plunger increases as the plunger is withdrawn therein and reaches a maximum at the end of the plunger stroke. In the subject invention the plunger is adapted to coact with the actuating lever at the inward end of the plunger stroke thereby utilizing the maximum attraction of the solenoid as well as the maximum momentum of the plunger. It is therefore still another object of the subject invention to actuate the locking mechanism at a position when the magnetic field of the solenoid will provide the greatest force on the plunger.

It is a further object of the subject invention to provide a lock and a lock release mechanism which may be contained in the same confined space utilized by conventional locking arrangements thereby making the subject device adaptable for use as original equipment on new automobiles, or conversely, as a replacement item on old vehicles.

It is still a further object of the subject invention to provide a trunk lock and release mechanism which may be manually operated by a key, or by remote control under all extremes of pressure exerted on the trunk lid, such extremes including variations in production tolerances and variations in temperature.

It is a yet a further object of the subject invention to provide a novel lock and remote control lock release mechanism therefor which is simple in construction, economical to manufacture, and efficient in operation.

Other advantages of the present invention will become apparent from a consideration of the following detailed description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an enlarged plan view of the locking mechanism of the subject invention having a front cover removed for viewing the interior thereof and depicting the components in the open or unlocked position;

FIG. 2 is an enlarged fragmentary view of a portion of the locking mechanism illustrated in FIG. 1 depicting the components in the closed or locked position;

FIG. 3 is a transverse cross sectional elevation of the locking mechanism illustrated in FIG. 1 taken along the lines 3—3 thereof;

FIG. 4 is a cross sectional elevation of the locking mechanism illustrated in FIG. 1 taken along the lines 4—4 thereof;

FIG. 5 is a cross sectional elevation of the locking mechanism illustrated in FIG. 1 taken along the lines 5—5 thereof;

FIG. 6 is a cross sectional elevation of the locking mechanism illustrated in FIG. 1 taken along the lines 6—6 thereof; and

FIG. 7 is an end view of the left end of the locking mechanism illustrated in FIG. 1 taken in the direction of the arrow 7.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to FIG. 1 of the drawings, a preferred locking mechanism in accordance with the subject invention, is indicated generally at 10 having an upper cover or enclosure member 12 removed from an associated mounting plate or base portion 14 to facilitate viewing of interiorly located components. Generally speaking, the locking mechanism 10 is comprised of a striker cam or latch member 16, a catch cam or detent member 18, and a key cam member 20, all of the members being rotatably supported between the plate 14 and cover 12 as shall hereinafter be described in detail. The locking mechanism 10 is manually operable to release a deck or trunk lid of an automotive vehicle in a conventional manner by means of a key engageable with a suitable locking cylinder (not shown), the locking cylinder being operatively associated with the key cam 20. Additionally, however, the mechanism 10 may be operated from a remote location such as a dashboard of the vehicle to effect automatic opening of the lid from the cab. In the subject invention, the automatic release is accomplished by an electric actuator assembly or solenoid 22 drivingly connected to the detent
member 18 and supported by the lower end of the housing as viewed in FIG. 1. The mechanism 10 is adapted to be adjustably mounted to either the deck lid or the lid frame by suitable bolts, screws or the like (not shown) disposed in a pair of elongated apertures 26 and 28 spaced on opposite sides of the base plate 14. The elongated apertures 26 and 28 permit adjustable alignment of the mechanism 10 relative to a striker bolt, the latter being affixed to the other of the lid or frame. In the closed position of the lid and frame, the striker bolt is received in a generally U-shaped recess 30 formed between a pair of generally triangularly shaped edge portions 31 and 33, the recess 30 and portions 31 and 33 having a generally thickened, folded over exterior edge, as best seen in FIG. 6. The opposite side of the plate 14 includes three upwardly extending wall portions indicated generally at 32, 34 and 36, the wall portions projecting at substantially right angles relative to the plane of the base plate 14 as viewed in FIG. 1 by folding the portions relative to the plane thereof. The wall portions 32, 34 and 36 are suitably adapted to operatively support the electric actuator assembly 22 as shall be hereinafter described.

The striker cam 16 is rotatably supported on an annular surface formed by an embossment 38 and connected therewith by a fastener 40. The fastener 40 includes oppositely projecting end portions 42 and 44 which are best seen in FIG. 6 and extend through suitably aligned apertures 46 and 48 disposed in the embossment 38 and cover 12, respectively. Preferably, the outer radially extending face of each of the end portions 42 and 44 is suitably staked to immovably affix the fastener 40 to the plate 14 and cover 12. In addition to the projecting end portions 42 and 44, the fastener 40 includes an enlarged radially extending flange portion 50 which defines a radially extending shoulder 52 with a diametrically reduced cam support portion 54. As best seen in FIG. 6, the striker cam 16 is rotatably supported on the portion 54 and axially retained between the inner annular surface of the embossment 38 and the annular shoulder 52.

As best observed in FIG. 1, the striker cam 16 is rotatable between a stop formed in the base plate 14 by a suitable inwardly projecting protuberance or indentation 58 and a second position to be hereinafter described. The cam 16 includes a generally U-shaped recess 60 having a latching portion 61 adjacent a first upper edge and a lower edge 62 on an opposite side of the recess 60 which angularly projects upwardly and outwardly across the recess portion 30 of the base 14 in the open position. The edge 62 is adapted to rotate the cam 16 in a clockwise direction through engagement with the striker bolt when the deck lid is slammed. The opposite end of the cam 16 has an arcuate shaped end portion 64 which includes a generally L-shaped recess defining a shoulder portion 68. The under surface of the end portion 64 is slidable supported and guided by a first portion of an elongated L-shaped indentation 70 formed in the plate 14, the indentation 70 further including a downwardly projecting indentation portion 72 which supports and guides an abutting lower surface of the catch cam or detent 18.

The catch cam or detent 18 is rotatably supported on an embossment 96 formed on the plate 14 by a fastener 90, the latter engaging an aperture 88 and having end portions extending through and staked in appropriate aligned bores 92 and 94 located in the cover 12 and base plate 14, respectively. The fastener 90 can be identical to the fastener 40 and the embossment 96 can be of an identical configuration as the embossment 38. The detent 18 is comprised of finger or nose portion 74 formed of a relatively small radius and a pair of outwardly extending arm portions 82 and 84. The arm portion 84 projects generally upwardly and to the right as viewed in FIG. 1 and defines an arcuately formed convex edge 98 preferably crowned on a first side, and an arcuately formed concave edge 100 on an opposite side, both edges 98 and 100 being formed of a relatively large radius of curvature as compared to the small radius of the finger 74.

As illustrated in FIG. 1, the locking mechanism 10 is in its generally opened position with the recess 60 being located to the left of the striker bolt receiving recess 30 and the lower edge 62 extending angularly across the recess 30. As the deck lid, however, is slammed towards its closed position, the striker bolt will engage the striker edge 62, and thereby rotate the striker cam about the fastener 40 to a position whereby the striker bolt is disposed in recess 60. At the same time, the shoulder 68 will be rotated clockwise to the position illustrated in FIG. 2 wherein it is engaged by the finger portion 74 of the detent 18. The cooperation between the shoulder 68 of the striker cam 16 and the finger 74 of the detent 18 forms an important feature of the subject locking mechanism 10. As best seen in FIG. 2, the end portion 64 is comprised of an arcuately formed convex surface 76 tangentially intersecting a relatively small radius portion defining a camming toe 78. The arc of the toe 78 tangentially intersects a generally concave edge 80 which projects at substantially a right angle to the surface 76 and forms the shoulder 68. The radius of curvature of the concave edge 80 is equal to the radius of rotation of the finger 74; viz., the concave seat 80 is struck about the center of the pivot 90 to provide the quality of easy operation combined with a securely retained locking mechanism. With respect to the former, it will be seen that the finger 74 is formed of a relatively small radius of curvature which minimizes friction between the tip of the finger 74 and the abutting surface of the shoulder 68 and, when the detent 18 is engaged with the latch 16 as shown in FIG. 2, the center of the radius is on the radius of the concave seat 80 so that the compression load is directly on the pivot 90 whereby to reduce the possibility of breakage in use or inadvertent disengagement of the latch and the detent. Moreover, the frictional force which resists sliding movement therebetween also contributes to easy operation because the force is substantially constant due to the radius of curvature of the shoulder 68 being equal to the radius of rotation of the tip of the finger 74. Moreover, when the tip of the finger 74 is displaced outwardly from the shoulder 68 it then abuts the toe portion 78, the portion 78 also being formed of a relatively small radius of curvature to facilitate disengagement. Thus, the striker cam 16 snaps open to release the deck lid as soon as the crown formed between the toe 78 and shoulder 68 and the finger 74 pass each other. If, for example, the radius of curvature of the edge 18 were increased, a larger radius would open the angle between the finger 74 and would make the latch mechanism 10 less secure. If the radius of curvature were smaller, the angle would close and the mechanism would be increasingly difficult to operate. Thus, the
construction of the shoulder 68, toe 78 and finger 74 provide a balance between secure retention of the mechanism and easy operation of the cooperating parts.

In the subject invention when the finger 74 of the catch cam or detent 18 is pivoted counterclockwise out of engagement with the shoulder 68 of the striker cam 16 a bias force is provided to rotate the striker cam 16 in a counterclockwise direction to unlatch the deck lid. Correspondingly, and as best seen in FIG. 1, when the small radius toe 78 of the striker cam 16 rides on the corresponding concave surface 102 of the detent 18 it will be apparent that as the finger 74 reaches the shoulder 68 of the striker cam 16, a clockwise bias force is required for properly seating the finger 74 into the shoulder 68. In the subject invention, the counterclockwise moment required for release of the trunk lid, and the clockwise moment applied to the detent 18 for assuring finger engagement into the shoulder is provided by a common torsion spring 104. The torsion spring 104 is comprised of a coil portion 106 located about the outer periphery of the flange portion 50 of the fastener 40 and including a first arm portion 108 having a folded over end portion connected to a suitable notch 66 formed in the outer periphery of the striker cam 16. A second arm portion 110 includes a generally traversely extending U-shaped portion 112 which rides on the convex surface edge 98 of the arm portion 84.

Thus, a counterclockwise moment is applied on the striker cam 16 and a clockwise moment is applied to the detent 18 by virtue of the common torsion spring 104. Manifestly, the spring 104 tends to move the detent member 18 into engagement with the latch member 16 as shown in FIG. 2 when the latch is closed on the deck lid bolt in the manner hereinabove described and the pressure exerted by the spring plus the geometry of the parts tends to hold the parts engaged with each other. However, the parts will remain engaged independently of the spring 104 because of the concave shape of the seat 80 and the fact that the radius of the seat 80 in the engaged position passes directly through the radius center of the finger 74 and the center of the pivot 90.

With reference now to FIGS. 1 and 5, the key cam member 20 has an outwardly extending convex camming edge 114 disposed on a first side of a camming finger 116. The camming finger 116 extends outwardly from a generally cylindrically shaped hub portion 118. The hub 118 includes diametrically reduced end portions 120 and 122, respectively, the portions 120 and 122 being supported in aligned apertures 124 and 126 disposed respectively in the base plate 14 and cover 12. The aperture 126 is located in an inwardly projecting embossment 128 defined in the cover 12. The hub 118 further includes a rectangular shaped axially extending opening 130 which includes a tapered portion 132 which extends outwardly and to the left as viewed in FIG. 5 and is adapted to cooperate with the locking cylinder (not shown). The camming finger 116 is restrained by a stop 134 formed by folding a tab located in a rectangular shaped opening 136 at a right angle relative to the plane of the base plate 14. As will now be appreciated, as the finger 20 is rotated clockwise the tab will be engaged and correspondingly when rotated in a counterclockwise direction, the camming finger 116 will engage the concave edge 100 of the detent 18, thereby pivoting the detent to displace the finger 74 from the shoulder 68 and releasing the trunk lid.

The trunk lid may also be released automatically from a remote location such as the dashboard. With respect to remote release, the detent 18 is also operable for pivotal rotation through engagement of the arm portion 82 being drivenly engaged to the plunger 24. In this regard the end of the arm portion 82 is located in an axially extending slot 140 formed in the left end of the plunger 24 as viewed in FIGS. 1 and 4. A generally tubular plunger 142 extends traversely across the outer end of the slot 140 and receives one end of a relatively light coil spring 144, the opposite end of the coil spring 144 being connected to a generally T-shaped tab 146 formed integrally with the wall portion 32 of the base plate 14. The light spring 144 serves to retain the plunger 24 in an axially outward position at such times as the solenoid actuator assembly 22 is deenergized or inoperative.

As best seen in FIGS. 1 and 3, the right end of the plunger 24 is slidable located in an axially extending bore of a bobbin 148. The bobbin 148 includes a pair of spaced radially extending flange portions 152 and 154, respectively, each portion having a generally circular shaped lower end (FIG. 3) and a relatively flat upper edge 156. The flange portion 152 includes a radially extending tab 158 which is adapted to be received in a suitable slot 160 disposed in the mounting plate 14. The engagement of the tab 158 into the slot 160 serves to locate and resist rotational movement of the bobbin 148, the flat upper edges of the flanges 152 and 154 further contributing to resist rotational movement by bearing on the inner flat upper surface of the cover 12.

The two upwardly extending wall portions 34 and 36 form mounting supports for the solenoid 22 and for this purpose are provided with downwardly extending U-shaped openings 162 and 164 (see FIG. 3) which form a cradle for receiving the bobbin 148. The bobbin 148 has an axially extending bore 150 having a cylindrically shaped cap or plug member 165 slidably fitted in the right end thereof. The cap 165 includes a radially extending flange 166 interposed between the bobbin flange 154 and the wall portion 36 of the base plate 14 and the right end of which has a head portion 168 slidably supported in the opening 164. The outer periphery of the bobbin 148 between the flange portions 152 and 154 is suitably wrapped with conventional electrical windings 170 with the outer end of the windings being disposed in a flexible insulating sleeve (not shown) and connected to a suitable terminal, the latter being connected to the vehicle electrical system through the aforementioned switch.

The cover or enclosure member 12 is comprised of a generally rectangular shaped solenoid housing portion 172 and an outwardly extending rectangularly shaped mechanism housing portion 174, the portion 172 extending outwardly to the right from the portion 174 as viewed in FIG. 7. The cover 12 includes an L-shaped indentation 176 which is similar to and aligned with the indentations 170 and 172 of the base plate 14. Together, the indentations 176 and 170 form a guide for cam 16 and detent 18. As best seen in FIGS. 3 and 7, the cover 12 is connected to the plate 14 by tabs located on upwardly extending wall portions 34 and 36 of the plate 14 extending through appropriately spaced openings in the cover 12 and are affixed therewith by suitably staking the end portions thereof. The cover 12
is also affixed to the base plate 14 by virtue of the staked outer radial surfaces of the fasteners 40 and 90. In operation, the locking mechanism 10 is adjsutably affixed to either the deck lid or frame. A striker bolt (not shown) is also located and aligned with the recess portion 30 of the base plate and affixed to the other of the deck lid or frame. As the trunk lid is closed or slammed, and with reference to FIG. 1, the striker bolt will engage the surface 62 of the striker cam 16 thereby rotating the striker cam 16 in a clockwise direction against the bias of the torsion spring 104. As the striker cam rotates in a clockwise direction, it will be seen that the small radius toe 78 will slide along the concave surface 102 of the detent 18 until the shoulder portion 68 is positioned beyond the finger portion 74 of the detent 18. When this position has been assumed, the striker cam 16 and catch cam 18 are cocked as illustrated in FIG. 2 and the lid will be locked in the closed position. Presuming that the deck lid is to be released from a remote location such as the dashboard, closing of a switch thereon energizes the windings 170 of the solenoid actuator assembly 22 to form a magnetic force to withdraw the plunger against the bias of the spring 144. When the plunger pin 142 engages the arm portion 82 of the detent 18, the striker cam 16 is released and the deck lid will open under the influence of spring loaded hinges at an opposite end. Note, however, that the detent 18 is drivenly contacted by the plunger 24 in an inward position wherein the greatest magnetic force of the coil reacts on the plunger 24. The arrangement is such that at the beginning of the stroke only the bias of the relatively lighter coil spring 144 must be overcome. As the plunger 24 descends into the coil and the magnetic force increases, the arm 82 is drivenly contacted with the entire inertia of the plunger at the end of the stroke. Thus, the arrangement provided is adapted to fully utilize the maximum magnetic force of the solenoid and the maximum inertia of the plunger to release the trunk lid.

Moreover, due to the configuration of the shoulder 68 of the striker cam 16 and the finger 74 of the detent 18, the frictional resistance to release the finger 74 will be substantially constant along the concave radius of curvature of the shoulder 68 with the result that the striker cam 16 will snap open after the finger 74 has traversed the crown defined between the toe 78 and the shoulder 68.

In the latched position of the deck lid, the striker bolt exerts approximately 100 pounds of pressure on the locking mechanism 10. In the subject invention this force is sustained by the fasteners 40 and 90 but the force tending to open the latch is sustained by the engagement of the finger 74 and the shoulder 68, and pivoting movement is resisted or blocked by the radius of curvature of the shoulder 68 as engaged by the relatively small radius of the finger member 74 of the detent 20. Also, it will be noted that the plunger 24 is provided with a long free travel before the plunger pin 142 strikes the operating arm 82 of the detent 20. Thus, the inertia force of the plunger 24 is utilized to supplement the magnetic force of the solenoid at the end of the plunger stroke which provides an increased striking force. Moreover, due to the relative slight travel of the finger portion 74 relative to the shoulder 68 to trip the latch, the force of the plunger is substantially concentrated over a small displacement. Also, note that the bobbin is positioned to resist rotation due to the flats located on each of the flange portions and due to the tab 158 on the flange 152 are received in the suitable aperture 160 of the base plate 14.

While it will be apparent that the preferred embodiment of the subject invention disclosed herein is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation, and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. A locking mechanism for an automotive deck lid comprising:
   - a housing;
   - a latch element pivotably supported by said housing and having first and second positions for respectively releasing and securing the deck lid;
   - bias means for urging said latch element toward said first position;
   - a detent element pivotably supported by said housing and operable in said second position to retain said latch element in said second position;
   - cooperable shoulder and finger means associated with said latch and detent elements respectively for retaining and releasing said latch element relative to said second position, said shoulder means provided with a concave seat having a radius of curvature substantially equal to the radius of rotation of said finger means;
   - said shoulder means releasable from said concave seat;
   - said shoulder means providing cradle means for receptively receiving said actuator means, wherein said actuator means includes a solenoid supported by said cradle defining means, and wherein said plunger is slidable movable into and out of said solenoid.

2. The mechanism as recited in claim 1 wherein
   - said housing means includes cradle defining means for locatably receiving said actuator means, wherein said actuator means includes a solenoid supported by said cradle defining means, and wherein said plunger is sliddably movable into and out of said solenoid.

3. The mechanism as recited in claim 2 wherein
   - said actuator means includes spring means having one end connected to said housing and an opposite end connected to said plunger for normally urging said plunger out of said solenoid.

4. The mechanism as recited in claim 1 wherein
   - said actuating means includes a manually operable cam rotatably supported by said housing and operatively cooperable with said detent element for releasing said latch from said second position.

5. The mechanism as recited in claim 1 wherein
   - said detent element is comprised of first and second arm portions disposed on opposite sides thereof, and wherein
said finger means comprises a convexly and arcuately shaped portion formed on one edge of one of said arm portions.

6. A locking mechanism for an automotive deck lid or the like comprising:
   a housing;
latch and detent members;
pivots supporting said latch and detent members in said housing,
said latch member being movable on its pivot between bolt engaging and bolt releasing positions, said latch and detent members having cooperative shoulder and finger portions adapted to interengage to hold said latch member in the bolt engaging position;
said shoulder having a concavely shaped inner seating portion of relatively large diameter and an outer wedging portion defined by a reversely formed curve of relatively small diameter, the intersection of one end of said seating portion being tangentially connected to said wedging portion and defining a crown in said shoulder, said shoulder also having a finger locating portion disposed adjacent to said seating portion, said finger portion having an end of relatively small radius, the end of said finger portion normally seating on the concave inner portion of said shoulder adjacent to said crown when said latch is in the bolt engaging position, and
   a portion of said detent member adjacent to said finger portion normally seating on said locating portion of said shoulder to maintain said normal seating relationship between said end of said finger and said crown;
first means for moving said detent member to release said latch member comprising
   a solenoid actuator having a retractable plunger and lost motion connection means between said plunger and said detent member permitting said plunger to have a relatively long free travel from an extended position to a retracted position during which said plunger gains speed and inertia,
said lost motion connection means being operative to engage the plunger with said detent member as the plunger approaches a fully retracted position,
final movement of said plunger to the fully retracted position after engagement with said detent member being operative to rock the latter on its pivot to move the end of said finger outwardly on the seating portion of said shoulder past said crown to engage the end radius of said finger portion with said seating portion of said shoulder; and
   bias means coactive with said latch and detent members for applying pressure between said wedging portion of said shoulder and said end radius of said finger portion tending to move said latch to a bolt releasing position.

7. The locking mechanism as set forth in claim 6 wherein
   the radius of the concave shoulder of said latch member, when the latter is in the bolt engaging position and engaged by said detent member, extends substantially through the radius center of said finger portion and the pivot center of said detent member.

8. The locking mechanism as set forth in claim 6 wherein
   the concave seating portion of said shoulder faces substantially squarely on the pivot mounting of said detent member when said latch member is in the bolt engaging position and engaged by said detent member.

9. The locking mechanism as set forth in claim 6 wherein
   said housing has mounting supports formed in one piece therewith for holding and accurately positioning said solenoid actuator and holes therein for accepting the pivots for said latch and detent members and for accurately positioning the same relative to each other and to said mounting supports, whereby to accurately determine the point at which said plunger engages said detent member to disengage the latter from said latch member.

10. The locking mechanism as set forth in claim 9 wherein
   said housing has separate base and cover portions, and including
   means on and cooperative with said pivots and said mounting supports for holding said base and cover portions securely together.

11. The locking mechanism as set forth in claim 9 wherein
   said housing has separate base and cover portions and wherein
   portions of said mounting supports and the ends of said pivots are staked to said base and cover portions to hold the latter securely together.

12. The locking mechanism as set forth in claim 9 including
   means at least a part of which is formed in one piece with and is a part of said housing for holding and positioning said pivots and said solenoid actuator accurately with respect to each other, whereby to determine and control the point at which said plunger terminates its free travel and actuates said detent member to release said latch member.

13. A locking mechanism for an automotive deck lid or the like comprising
   a housing;
a pair of spaced pivots in said housing;
a latch member mounted on one of said pivots for movement between engaging and releasing positions; said detent member mounted on the other of said pivots and coactive with said latch member to selectively engage and release the latter;
yieldable means urging said detent member normally to the latch engaging position;
solenoid actuator coactive with said detent member to operate the same against the action of said yieldable means to the latch releasing position,
said solenoid actuator having a retractable plunger and lost motion connection means between said plunger and said detent member permitting said plunger to have a relatively long free travel from an extended position to a retracted position during which said plunger gains speed and inertia,
said lost motion connection means being operative to engage the plunger with said detent member as the plunger approaches a fully retracted position,
final movement of said plunger to the fully retracted position after engagement with said detent member.
being operative to rock the latter on its pivot to move the same out of engagement with said latch member, and
mounting and locating means at least part of which is formed in one piece with and is a part of said housing for holding and positioning said pivots and said solenoid actuator accurately with respect to each other,
whereby to determine and control the point at which said plunger terminates its free travel and actuates said detent member to release said latch member.

14. The locking mechanism as set forth in claim 13 wherein said housing has separate base and cover portions, and wherein said mounting and locating means includes mounting supports for said solenoid actuator on and formed in one piece with one of said base and cover portions, and wherein

15. The locking mechanism as set forth in claim 13 wherein said pivots and mounting supports are staked to at least one of said base and cover portions to hold the latter securely together.

16. The locking mechanism as set forth in claim 13 wherein said housing has separate base and cover portions, and wherein said mounting and locating means includes mounting supports for said solenoid actuator on and formed in one piece with one of said base and cover portions accepting and closely fitting terminal portions of said pivots, said mounting supports and the terminal portions of said pivots being staked to at least one of said base and cover portions to hold the latter securely together.