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Quantz

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[54] **ELECTRIC LOCK RELEASE**

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Related U.S. Application Data

[63] Continuation of Ser. No. 256,990, May 25, 1972, abandoned.

[52] **U.S. Cl.** **292/216;** 292/201

[51] **Int. Cl.²** **E05C 3/26**

[58] **Field of Search** 292/216, 210, 201, 229, 292/144

[56] **References Cited**

UNITED STATES PATENTS

3,236,551	2/1966	Nash	292/216 X
3,504,511	4/1970	Allen	292/216 X
3,606,426	9/1971	Zaydel	292/216
3,664,698	5/1972	Stropkoy	292/216

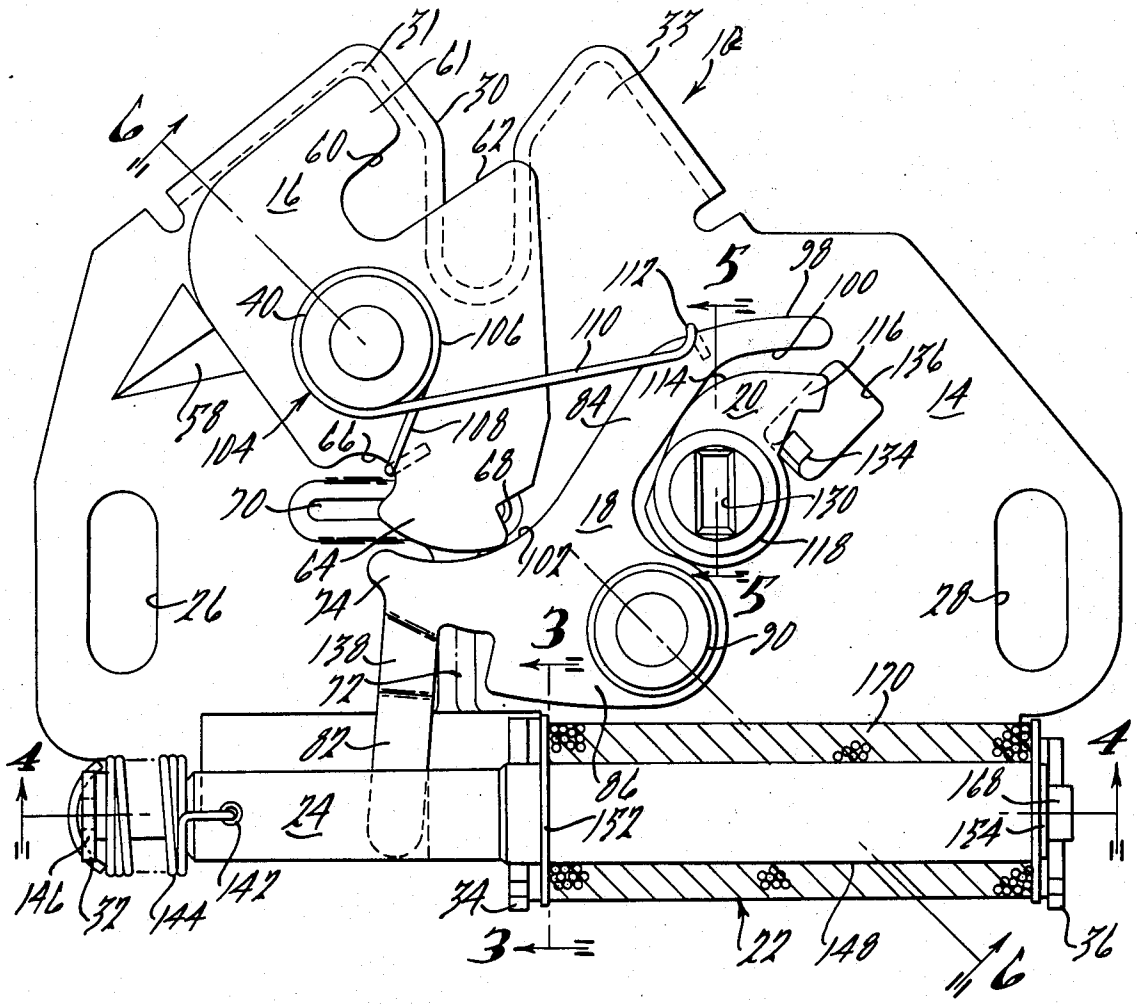
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[57] **ABSTRACT**

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



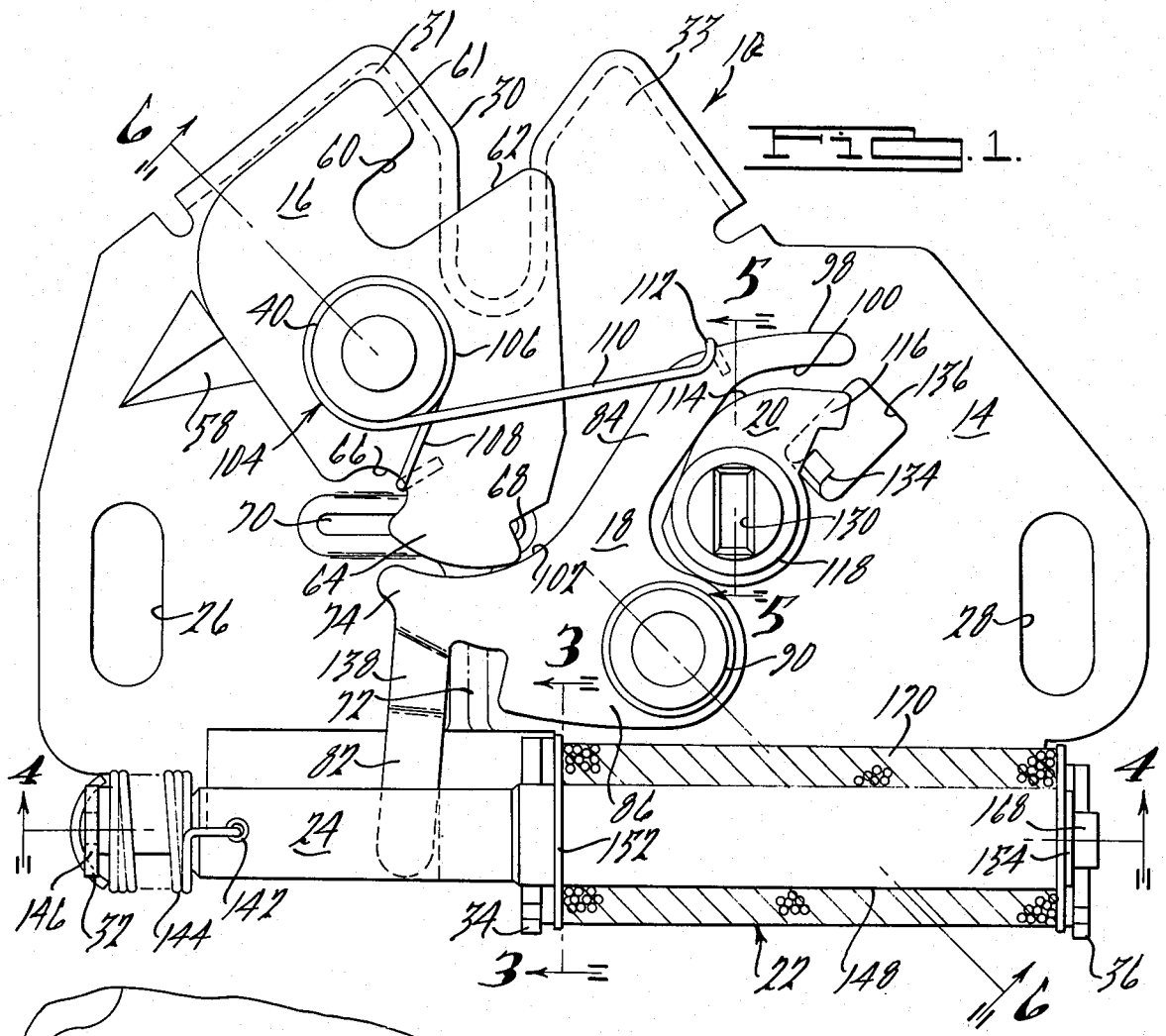


Fig. 1.

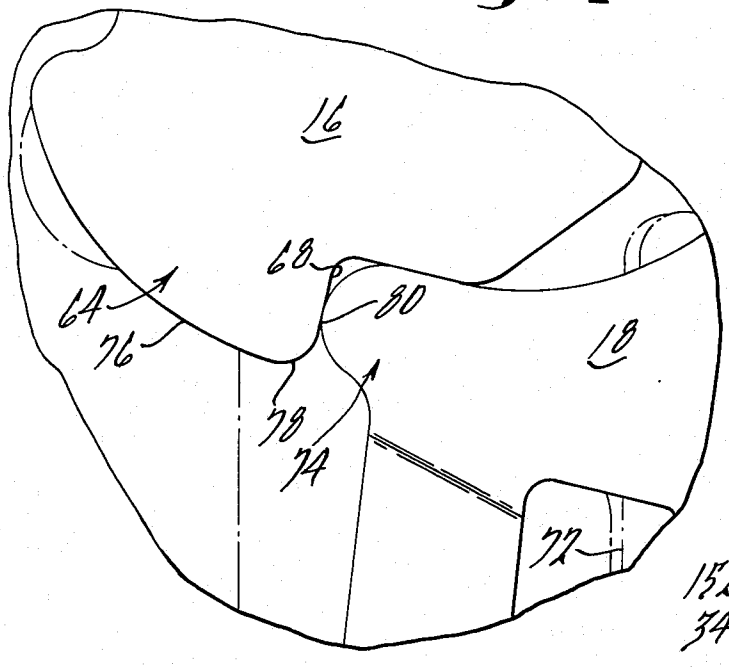


Fig. 2.

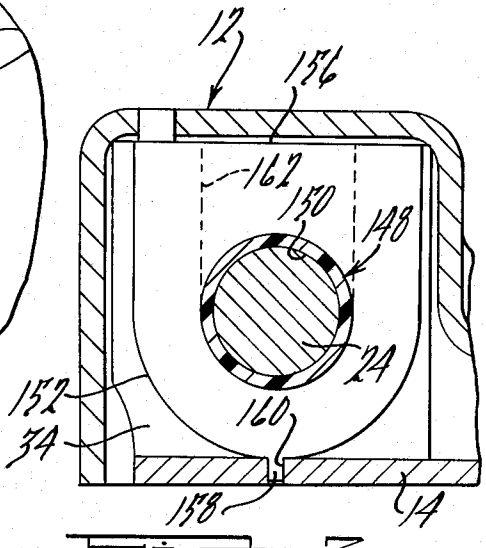
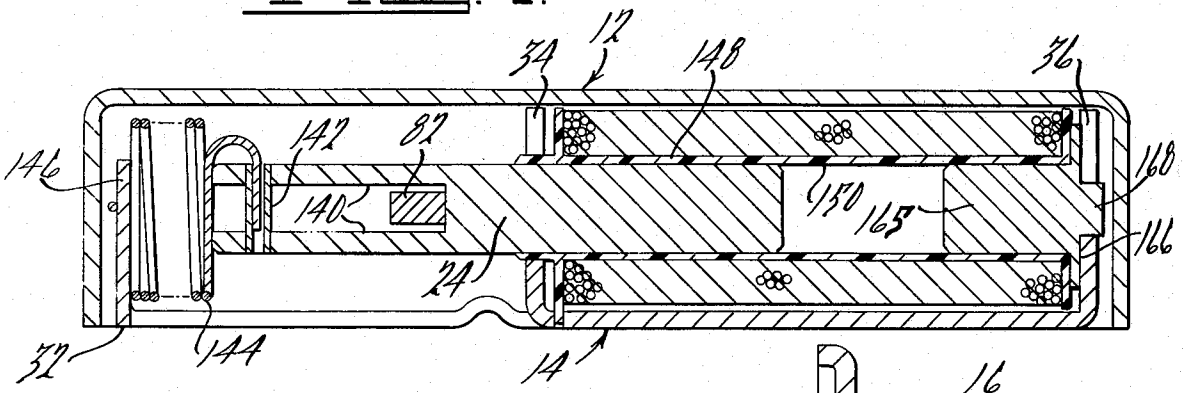
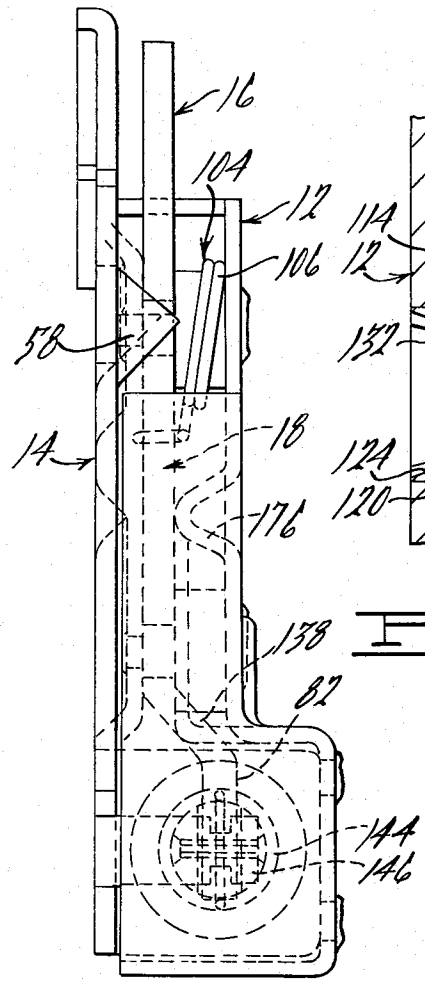


Fig. 3.

FIG. 4.





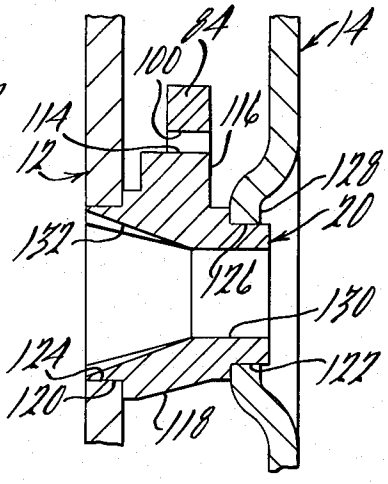


FIG. 5.

FIG. 7.

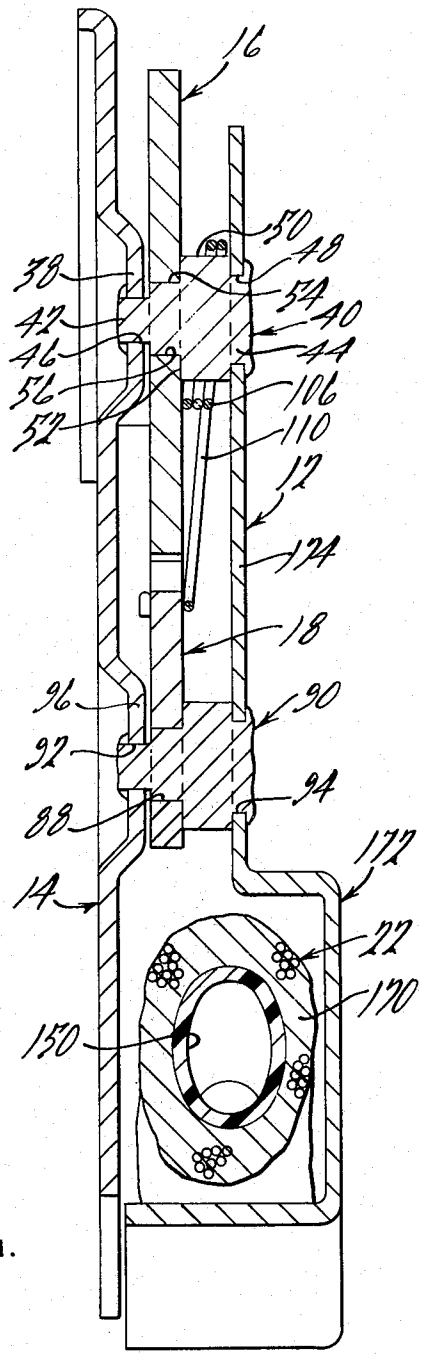


FIG. 6.

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 deck 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 cooperable 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 cooperable elements, lost motion is substantially reduced relative to a conventional locking arrangement and the mechansim 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 arcuately 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 eincreases 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 latch 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 arcuately 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 slidably 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 intercepting a relatively small radius portion defining a camming toe **78.** The arc of the toe **78** tangentially intercepts 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 betwen 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 loation 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 drivingly 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 slidably 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 adjustably affixed to either the deck lid or frame. A striker bolt (not shown) is suitably 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 can **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 drivingly 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 light coil spring **144** must be overcome. As the plunger **24** descends into the coil and the magnetic force increases, the arm **82** is drivingly 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 eon 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** 6f 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 automoative 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 one position thereof 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;

wedging means coactive with said finger means for urging said latch element toward said first position,

said wedging means comprising a relatively small convex and reversely curved portion formed on a radius of curvature tangentially connected to the radius of curvature of said seat at one end thereof and defining a crown therewith;

stop means on said latch element at the end of said concave seat opposite said crown engageable with said detent element to precisely locate said finger means on said seat proximate said crown when said latch is in said second position; and

actuator means including a plunger coactive with said detent element and operable to move the latter to release said latch element.

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 slidably 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 cooperable 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 wedging 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;

a 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;

a 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 rectractable 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

said pivots and mounting supports are staked to at least one of said base and cover portions to hold the latter securely together.

15. 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 holes formed in 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 same securely together.

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