



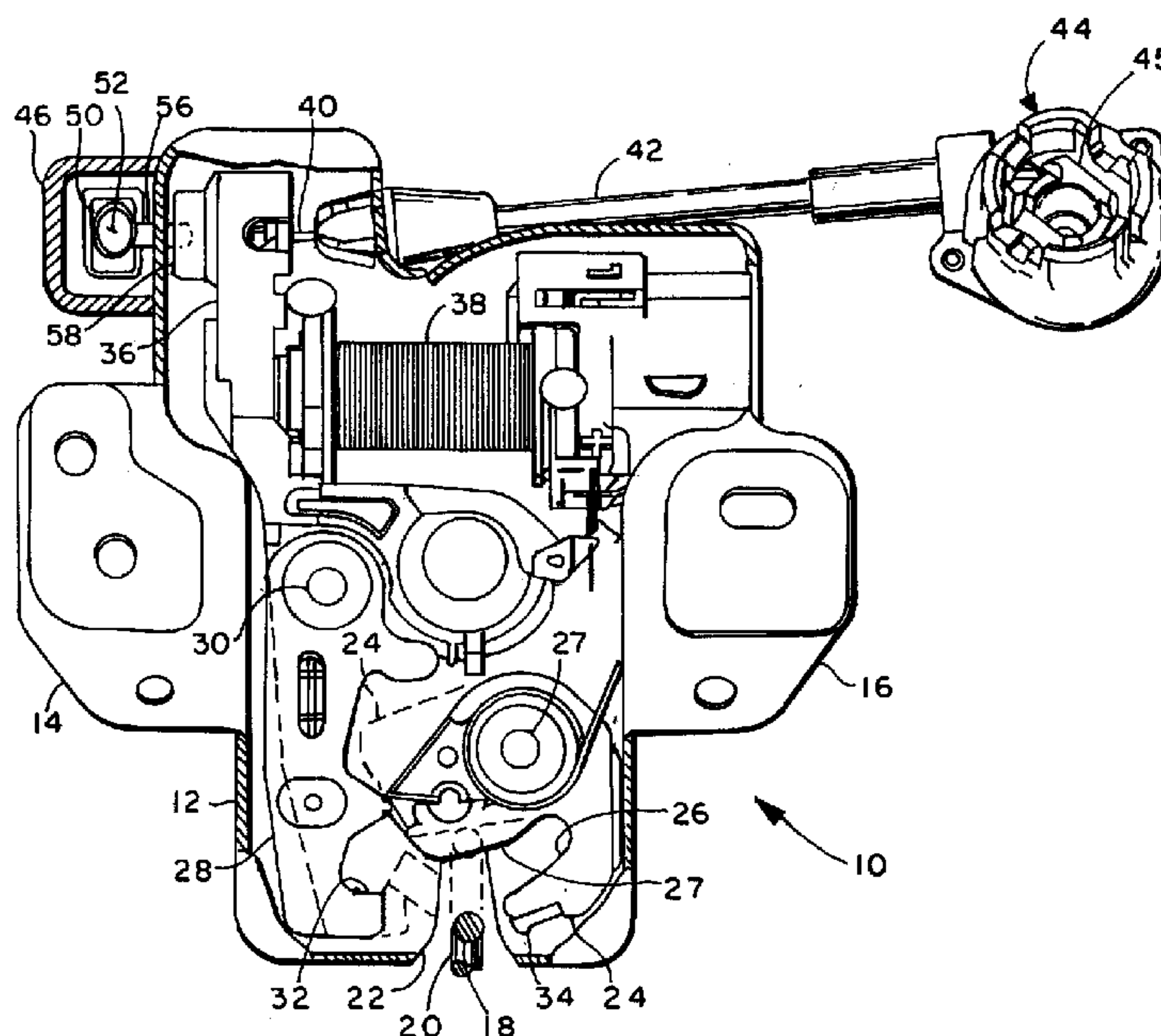
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(54) **MECANISME DE DEVERROUILLAGE PAR L'INTERIEUR DU  
COUVERCLE D'UN COFFRE DE VEHICULE**

(54) **RELEASING VEHICLE TRUNK LID LATCH FROM THE  
INTERIOR**



(57) An existing trunk lid latching mechanism is easily modified without substantial re-tooling in one embodiment by adding a pushbutton exteriorly of the latching mechanism housing which extends through the housing for actuating the lock release pawl from within the trunk compartment. In another embodiment, the release pawl is modified to have a portion thereof extend through the housing of the mechanism for ready access from within the trunk compartment. In another embodiment, a rotary knob is accessible exteriorly of the latching mechanism housing, and from within the trunk compartment, and has a cam which actuates the release pawl.

## ABSTRACT OF THE DISCLOSURE

5 An existing trunk lid latching mechanism is easily modified without substantial re-tooling in one embodiment by adding a pushbutton exteriorly of the latching mechanism housing which extends through the housing for actuating the lock release pawl from within the trunk compartment. In another embodiment, the release pawl is modified to have a portion thereof extend through the housing of the mechanism for ready access from within the trunk compartment. In another embodiment, a rotary knob is  
10 accessible exteriorly of the latching mechanism housing, and from within the trunk compartment, and has a cam which actuates the release pawl.

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## TITLE OF INVENTION

Releasing Vehicle Trunk Lid Latch From The Interior.

## BACKGROUND OF THE INVENTION

5           The present invention relates to latching devices employed for securing closure of  
a vehicle trunk lid and providing manual or automatic release thereof. In recent times,  
passenger vehicles have been produced which have the back of the rear seat split and  
releasable for downfolding to accommodate lengthy items through the trunk compartment  
which would otherwise not be transportable enclosed within the vehicle. Such foldable  
10 rear seat backs have provided an attractive nuisance for children playing in an unattended  
vehicle; and, unfortunately it has occurred that children have entered the trunk  
compartment with the rear seat back downfolded and then pulled the rear seat back  
upward into a locked position trapping the children within the trunk. In order to prevent a  
reoccurrence of such a situation, it has been found necessary to provide an interiorly  
15 accessible release for the trunk lid locking latch mechanism to enable opening the trunk  
lid from the interior of the trunk compartment.

          The more commonly used vehicle trunk lid latching mechanisms employ an  
electric solenoid to move a toggle mechanism for releasing the latchbolt member or a  
20 remote pull cable accessible from the driver's compartment in addition to the conventional  
exterior key actuated trunk lock release provided at the rear of the vehicle. An example of  
a known trunk lid latching mechanism is that shown and described in U.S. Patent No.  
5,382,763. Trunk lid latching mechanism designs have become quite cost effective for  
vehicle mass production. It has thus been desired to provide an interior release function  
25 to such a trunk lid latching mechanism without requiring a substantial redesign and  
retooling of the latching mechanism.

## BRIEF SUMMARY OF THE INVENTION

The present invention provides a release for a solenoid operated vehicle trunk lid latching mechanism which is accessible from the interior of the trunk and which is readily added to an existing trunk lid latching mechanism without requiring substantial retooling or modification of the existing latching mechanism structure.

The present invention provides, in one embodiment, a spring biased pushbutton which has portions thereof operable to contact a cam surface provided on the release member of the latching mechanism utilized for the release by the solenoid or external trunk key lock.

In another embodiment, an extension is provided on the release member of the existing latching mechanism which extends outwardly of the housing or casing for the latching mechanism and is accessible interiorly of the trunk.

In a further embodiment, a rotary or pivoted knob is provided on the exterior of the housing for the latching mechanism which, upon rotation, moves a cam which actuates the existing latching release pawl.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of the present invention with portions of the cover broken away to show the operating mechanism;

FIG. 2 is a portion of a top view of the embodiment of FIG. 1 with the housing broken away;

FIG. 3 is a view similar to FIG. 1, another embodiment of the invention;

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FIG. 4 is a view similar to FIG. 2 of the embodiment of FIG. 3;

FIG. 5 is a view similar to FIG. 1 of a further embodiment of the present invention;

FIG. 6 is a view similar to FIG. 2 taken of the embodiment of FIG. 5;

5 FIG. 7 is a view similar to FIG. 1 of a still further embodiment of the invention; and,

FIG. 8 is a portion of a side elevation view of the embodiment of FIG. 7.

## DETAILED DESCRIPTION OF THE INVENTION

10 Referring to FIGS. 1 and 2, a first embodiment of the invention is indicated generally at 10 and includes a housing 12 having mounting flanges 14, 16 provided thereon for attachment of the housing to either one of the vehicle trunk lid (not shown) or the vehicle trunk compartment structure (not shown) whichever is the more desirable for a particular vehicle configuration in a manner widely used in current production passenger cars.

15 The mechanism 10 of the present invention is intended to engage a latching surface 18 provided on a latching member disposed on the other of the vehicle lid or trunk compartment structure. In the more commonly employed passenger vehicle designs, the latching surface 18 is formed on a closed portion of a looped wire member 20 extending  
20 into a notch 22, formed in the housing 12, when the vehicle trunk lid is closed. The lid-open position of the latching surface 18 on member 20 is shown in solid outline in FIG. 1; and, the closed position is shown in dashed outline wherein the latching member 20 has contacted striking surface 27 on a pivotally mounting latchbolt member 24 and caused the latchbolt member 24 to rotate to the position shown in dashed outline of FIG. 1  
25 whereupon the lower jaw portion 26 of the latchbolt member 24 contacts the surface 18 of

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member 20 in its dashed line position. The latchbolt member 24 is pivoted about a shaft or bearing surface 26 provided in the housing.

5 A pawl member 28 is pivoted about a shaft or bearing surface 30 provided on housing 12 to the position shown in dashed outline in FIG. 1 whereupon a jaw portion 32 of member 28 engages the locking surface 34 provided on the exterior of the end of jaw 26 when member 24 is moved to the position shown in dashed outline. Thus, pawl member 28 has its jaw 32 retaining the latchbolt jaw 26 in the dashed outline position. Pawl 28 is biased to the dashed line or locking position by a suitable spring (not shown) 10 which may comprise an armature return spring (not shown) in coil 38.

Pawl 28 has an extension 36 extending in an opposite direction from the pivot shaft 30 as portion 28; and, the extension 36 is positioned to be contacted and moved by the armature (not shown) of a solenoid coil 38. The pawl extension 36 also has a cable 40 15 connected thereto which extends outwardly through the housing 12 and through a sheath 42 to a rotary keylock mechanism indicated generally at 44 which is adapted to have a lock cylinder (not shown) received therein accessible externally of the trunk compartment structure or the trunk lid, as the case may be, dependent on which structural member housing 12 is mounted. It will be understood as is known in the art that insertion of a key 20 into the unshown cylinder lock mechanism and rotation of same causes a rotor 45 in assembly 44 to pull on cable 40 to move the pawl extension 36 and pawl 28.

Referring to FIGS. 1 and 2, casing 12 has an auxiliary housing section 46 attached thereto which is disposed over an aperture 48 formed in the sidewall of casing 12; and, 25 auxiliary section 46 has an aperture or cutout 50 provide in the upper sidewall thereof. A plunger member 52 is slidably received in auxiliary housing section 46 with a button portion thereof extending upwardly and outwardly through aperture 50 as denoted by

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reference numeral 54 in FIG. 2. Plunger member 52 also has a projection 56 which extends inwardly of housing 12 through the aperture 48 in a direction generally at right angles to button 54 as shown in FIGS. 1 and 2.

5           In the embodiment of FIG. 1, the pawl extension 36 has provided thereon a cam surface 58 which may be formed integrally therewith as for example, by molding, or as a separate piece attached to an existing pawl extension structure 36. The plunger is moveable by the user pressing button 54 such that the plunger slides in auxiliary casing 46, overcoming the bias of a return spring 60 provided therein, causing projection 56 to  
10           move in aperture 48 against cam 58 thereby moving the pawl to the position shown in dashed outline in FIG. 2. It will be understood that when the pawl extension 36 is moved to the position shown in dashed outline in FIG. 2, the lower portion of the pawl 28 is moved the position shown in solid outline in FIG. 1, thereby moving the latchbolt jaw 26 to the position shown in solid outline in FIG. 1 thereby releasing the locking mechanism  
15           from the latching surface 18 and permitting opening of the unshown trunk lid.

          Referring to FIGS. 3 and 4, another embodiment of the invention is indicated generally at 70 and has a housing or casing 72 and a latchbolt 74 is pivotally mounted about a shaft 76 or bearing provided on housing 72. Latchbolt 74 has a cutout or notch  
20           formed therein which forms a jaw 78 and a catch surface 80 provided on the outer edge of the latchbolt jaw. The jaw of the latchbolt is positioned for engaging a latching surface 82 provided on a latching member 84 which may be provided on either of the trunk lid (not shown) or the trunk compartment structure (not shown), as desired for the particular vehicle design, it being understood that the housing 72 is mounted on the other of the lid  
25           or compartment structure. A pawl member 86 is pivotally mounted on the housing about a shaft 88 or bearing provided on housing 72; and, pawl 86 has an extension portion 90

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extending upwardly in an opposite direction from portion 86 on the opposite side of the shaft 88.

5 In the embodiment of FIG. 3, the pawl is situated to be moved by the armature (not shown) of a solenoid coil 92 mounted on housing 72. A cable 94 is also attached to the pawl extension portion 90 and the cable 94 extends externally of the housing 72 through a sheath 96 for actuation by a mechanism indicated generally at 98 which includes a rotor 100 connected to cable 94 adapted for actuation externally of the trunk lid or compartment structure by a suitable keylock cylinder (not shown) engaging the rotor in  
10 a manner conventionally provided for in current production vehicles. Pawl 86 is biased to the locking position shown in dashed outline by an unshown torsion spring or by the armature return spring (not shown) in coil 92. Latchbolt member 74 is biased to the unlocked position shown in solid outline by torsion spring 79.

15 Pawl extension 90 includes a pushbutton or lug 102 extending outwardly of the housing 72 through an aperture 104 formed therein. The button 102 is accessible internally within the trunk compartment for manual actuation of the pawl 86 to release the latchbolt jaw 78. It will be understood that movement of the button 102 to the position shown in dashed outline moves the lower portions of pawl 86 to the position shown in  
20 solid outline for unlocking the mechanism.

Referring to FIGS. 5 and 6, another embodiment of the trunk latching mechanism is indicated generally at 110 and includes a housing 112 having outwardly extending tabs 114, 116 provided thereon and which are adapted for attachment to one of either the trunk  
25 lid (not shown) or the trunk compartment structure (not shown) of the vehicle.

A latchbolt member 118 is pivotally mounted on the housing 112 about a shaft or bearing 120 provided thereon and includes a recess or notch which forms a jaw 122 which

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has formed on the outer edge thereof a catch surface 124. The latchbolt 118 is shown in FIG. 5 in solid outline in the unlatched or unlocked position and in dashed line in the latched position wherein the jaw 122 engages a latching surface 126 provided on a latching member 128 which is mounted on the other of the trunk lid or trunk compartment structure.

A torsion spring 130 biases the latchbolt 118 to the unlocked position. It will be understood that relative movement of the latching member 128 toward the latchbolt 118 (e.g., closing of the trunk lid) causes the latching member 128 to engage striking surface 132 of the latchbolt and move the latchbolt jaw 122 to the position shown in dashed outline thereby engaging surface 126.

A pawl 134 is pivotally mounted about a shaft or bearing 136 provided on the housing 112; and, pawl 134 is moveable upon release of the mechanism between a locking position shown in dashed outline in which a jaw portion 138 thereof engages catch surface 124 of latchbolt 118 and an unlocked position shown in solid outline in FIG. 5.

Pawl 134 has an extension portion 140 extending upwardly in an opposite direction from portion 134 and on the opposite side of pivot shaft 136. Extension 140 has a lever portion 142 formed thereon which extends upwardly through an aperture 144 provided in an upper portion of housing 112. The extension 140 of the pawl 134 is contacted by an unshown armature of solenoid coil 146 which is operative for moving the pawl extension to thereby effect movement of the lower portion of the pawl 134 from the locked position shown in dashed outline to the unlocked position shown in solid outline. The pawl extension 140 also has a cable 148 attached thereto which extends externally of housing 112 through a sheath 150 to a manual unlocking mechanism indicated generally

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at 152 which includes a rotor 154 adapted for actuation by a unshown keylock cylinder accessible externally of the trunk in a manner well known in the art.

Lever portion 142 is therefore accessible from the interior of the trunk and may be moved manually from the position shown in solid outline to the position shown in dashed outline which effects movement of the lower portion of pawl 134 to the unlocked position shown in solid outline; and, thus unlatching of the trunk lid is facilitated from the interior of the trunk compartment.

Referring to FIGS. 7 and 8, another embodiment of the latching mechanism of the present invention is indicated generally at 160 and has a housing 162 provided with oppositely extending mounting flanges or tabs 164, 166 which are adapted for attachment to one of either the trunk lid (not shown) or the trunk compartment structure (not shown) of the vehicle. Housing 162 has a notch or recess 168 provided therein into which is received, upon closing of the unshown lid, a latching member 170 attached to the other of the trunk lid or trunk compartment structure as the case may be. Latching member 170 has a latching surface 172 provided thereon which is engaged, upon movement of member 170 relative to the housing 162 (e.g., by closing the unshown lid) to the closed position shown in dashed outline in FIG. 7. During closing of the lid, member 170 engages a striking surface 180 on the latchbolt and pivots the latchbolt to the position shown in dashed outline therefore in FIG. 7 whereupon jaw 174 engages latching surface 172 of member 170.

With the latchbolt 176 moved to the latched or locked position shown in dashed outline in FIG. 7, a pawl member 182 is pivoted about a shaft or bearing 184 on the housing to have a jaw portion 186 of the pawl member 182 engage a catch surface 188 provided on the outer edge of latchbolt 176. It will be understood that latchbolt 176 is

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biased to the unlocked position by a torsion spring 190; and, pawl 182 is biased to the locked position by an unshown spring which may comprise the armature return spring (not shown) of coil 196.

5 Pawl 182 has an upwardly extending extension portion 192 which has provided thereon an actuating surface or raised portion 194; and, extension 192 has connected thereto the unshown armature of a solenoid coil 196 which, upon energization, is operative to move the extension 192 and pivot the pawl about shaft 184 for effecting movement of the lower portion of pawl 182 from the locked position shown in dashed  
10 outline to the unlocked position shown in solid outline.

The extension 192 of pawl 182 also has attached thereto a cable 198 which extends outwardly of the housing 162 through a cable sheath 200; and, cable 198 is attached to a rotor 202 provided in a locking mechanism indicated generally at 204. The  
15 locking mechanism is adapted to have a keylock cylinder (not shown) inserted into rotor 202 for accessibility externally of the trunk as is well known in the art.

Housing 162 has, in the upper portion thereof, an aperture 206 formed therein which has received therethrough for rotational movement therein a shaft portion 208 of a  
20 rotary knob or lever 210. The shaft portion 208 of knob 210 has formed thereon a rotary cam 212 disposed within housing 162 which, upon rotation of knob 210 slides on the contact surface 194 in a camming action and effects movement of the lower portion 182 of the pawl from the locked to the unlocked position. It will be understood that the lever or knob 210 is accessible from the interior of the trunk externally of the latching  
25 mechanism housing 162.

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If desired, the user operable actuating members 54, 102, 142, 210 may be made of or coated with a luminescent or light collecting material so as to be visible in subdued light conditions.

5           The present invention thus provides a technique for easily modifying an existing vehicle trunk lid latch mechanism to provide release accessible from the interior of the trunk compartment.

10           Although the invention has hereinabove been described with respect to the illustrated embodiments, it will be understood that the invention is capable of modification and variation and is limited only by the following claims.

## CLAIMS

1. A latching mechanism for a vehicle trunk compartment and lid releasable from inside the trunk compartment comprising:
- 5 (a) structure defining a latching surface disposed on the inside of one of said lid and the vehicle trunk compartment;
- (b) a housing including a latchbolt disposed on the other of said lid and compartment, said latchbolt moveable for engaging said latching surface when said lid is closed on said trunk compartment;
- 10 (c) a pawl associated with said housing and operative upon movement to effect disengagement of said latch bolt from said latching surface;
- (d) a solenoid disposed on said housing and having an armature operatively moveable upon energization of said solenoid for effecting said movement of said pawl; and,
- 15 (e) a release member disposed to be accessible externally of said housing and internally from within said trunk compartment when said lid is closed for manual movement and operative thereupon for moving said armature and pawl and for effecting disengagement of said latchbolt from said latching surface.
- 20
2. The mechanism defined in claim 1, wherein said release member includes a luminescent surface.
3. The mechanism defined in claim 1, wherein said pawl has an extension and said release member contacts said extension for effecting movement of said armature.

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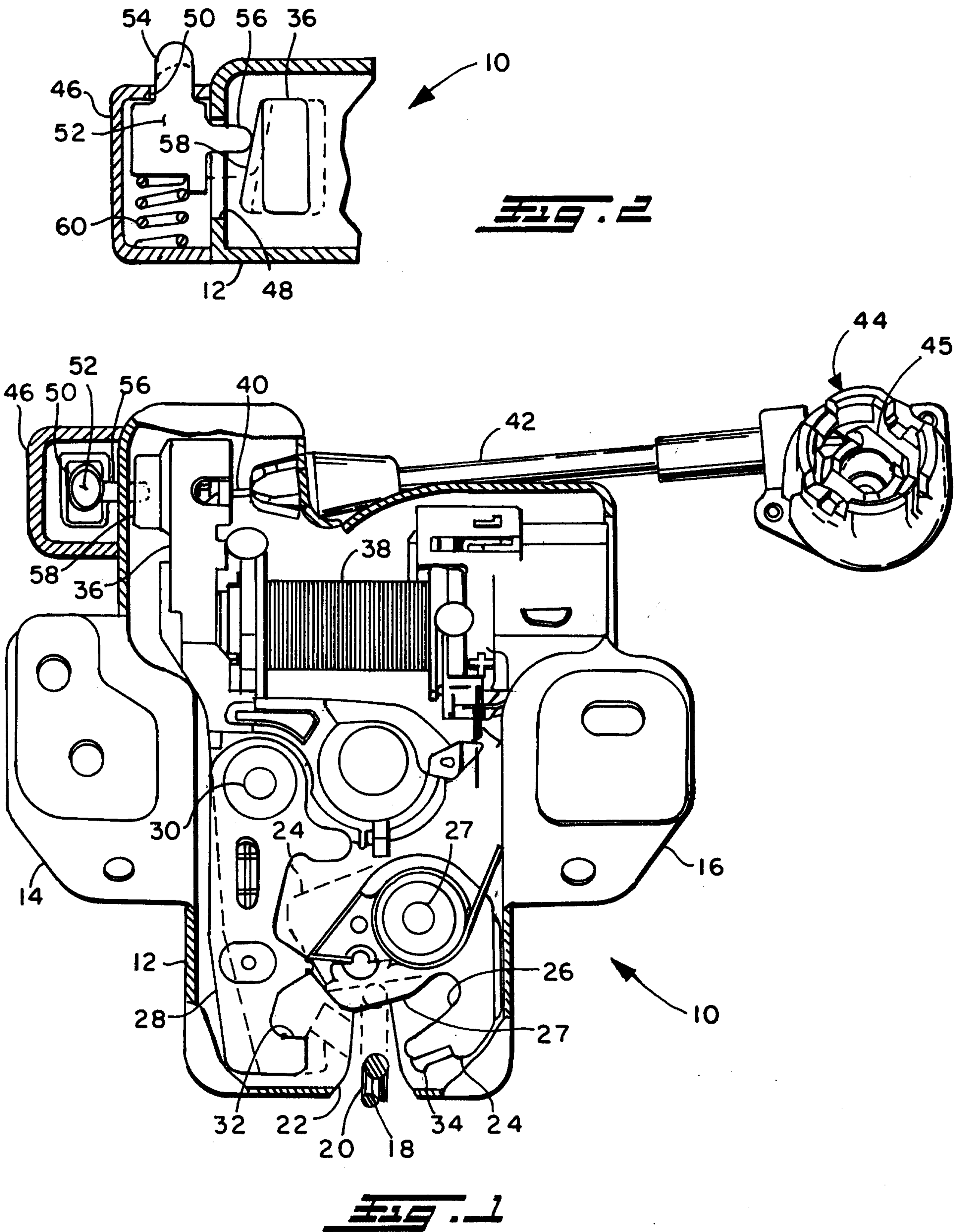
4. The mechanism defined in claim 1, wherein said release member comprises a plunger.
5. The mechanism defined in claim 1, wherein said release member comprises a member rotatable with respect to said housing.
6. The mechanism defined in claim 1, wherein said release member comprises a pull cable.
7. The mechanism defined in claim 1, wherein said release member comprises a spring biased plunger.
8. The mechanism defined in claim 1, wherein said release member comprises a pull cable having an end free with a tag attached to the free end.
9. The mechanism defined in claim 8, wherein said tag is crimped to said cable.
10. The mechanism defined in claim 1, wherein said pawl includes a camming surface contacted by said release member.

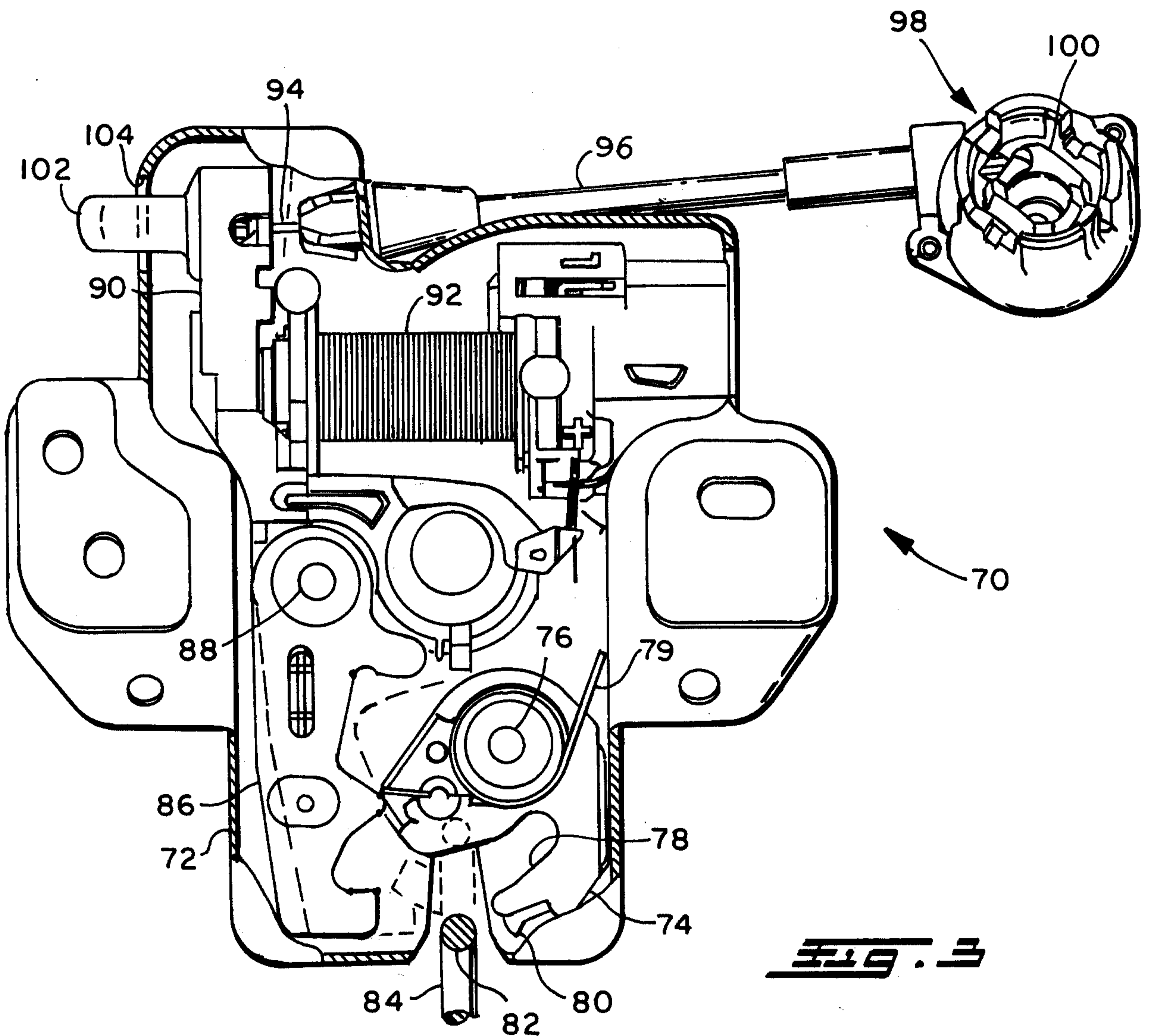
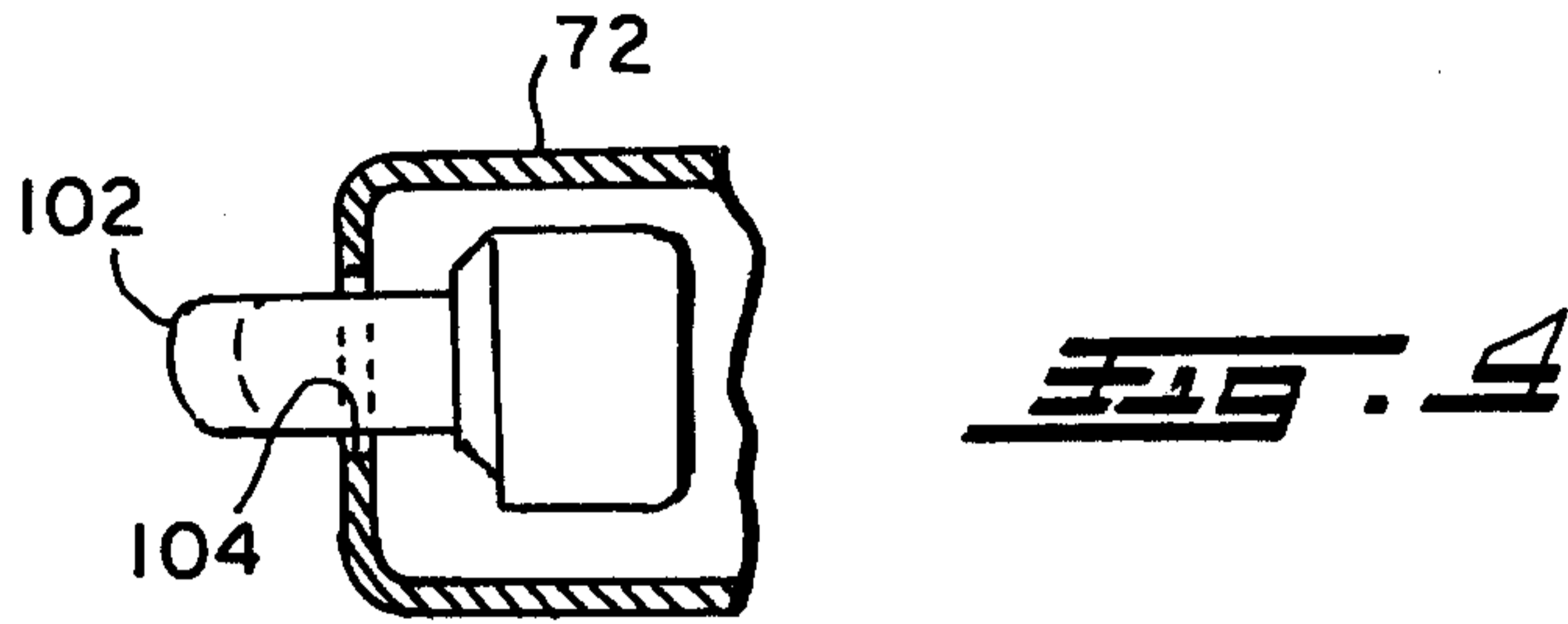
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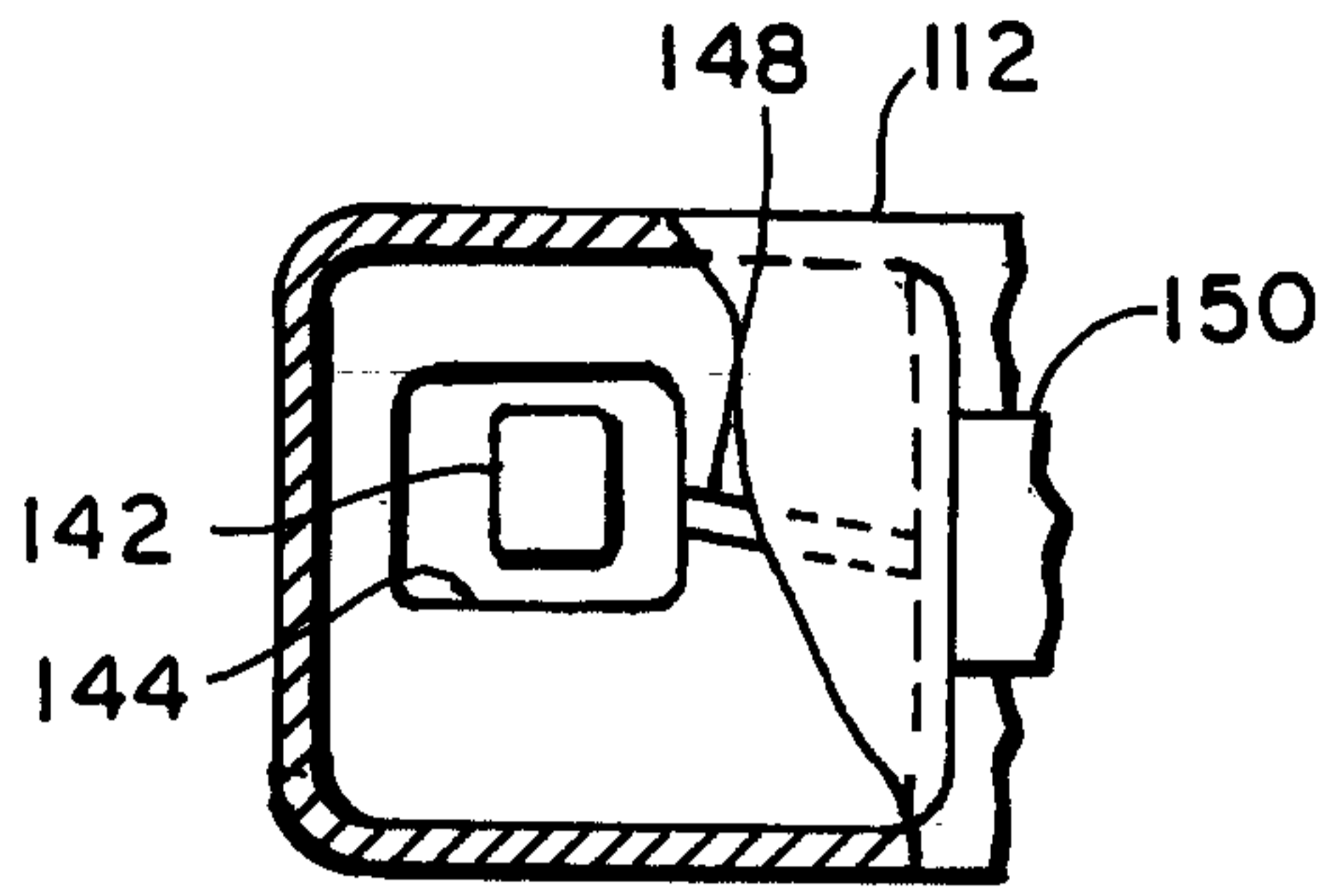
11. A method of enabling release of a vehicle trunk compartment lid from inside the trunk comprising:
- (a) providing a latching surface on the inside of one of said trunk compartment and said lid;
  - 5 (b) disposing a latchbolt for movement on a housing and attaching said housing to one of said lid and said trunk;
  - (c) disposing a pawl on said housing and moving said pawl with a mechanism selected from the group consisting of (i) a key lock and (ii) an electric motor remotely energized;
  - 10 (d) disposing a release member on said housing with at least a portion thereof accessible exteriorly of said housing and interiorly from within the trunk;
  - (e) moving said release member and effecting movement of said pawl and disengaging said latchbolt from said latching surface.
12. The method defined in claim 11, wherein said step of disposing a release member includes disposing a plunger for sliding movement on said housing.
13. The method defined in claim 11, wherein said step of disposing a release member includes attaching a pull cable to said pawl.
14. The method defined in claim 11, wherein said step of disposing said release member includes extending a portion of said pawl exteriorly of said housing.
15. The method defined in claim 11, wherein said step of disposing a release member includes mounting a member for pivotal movement on said housing.

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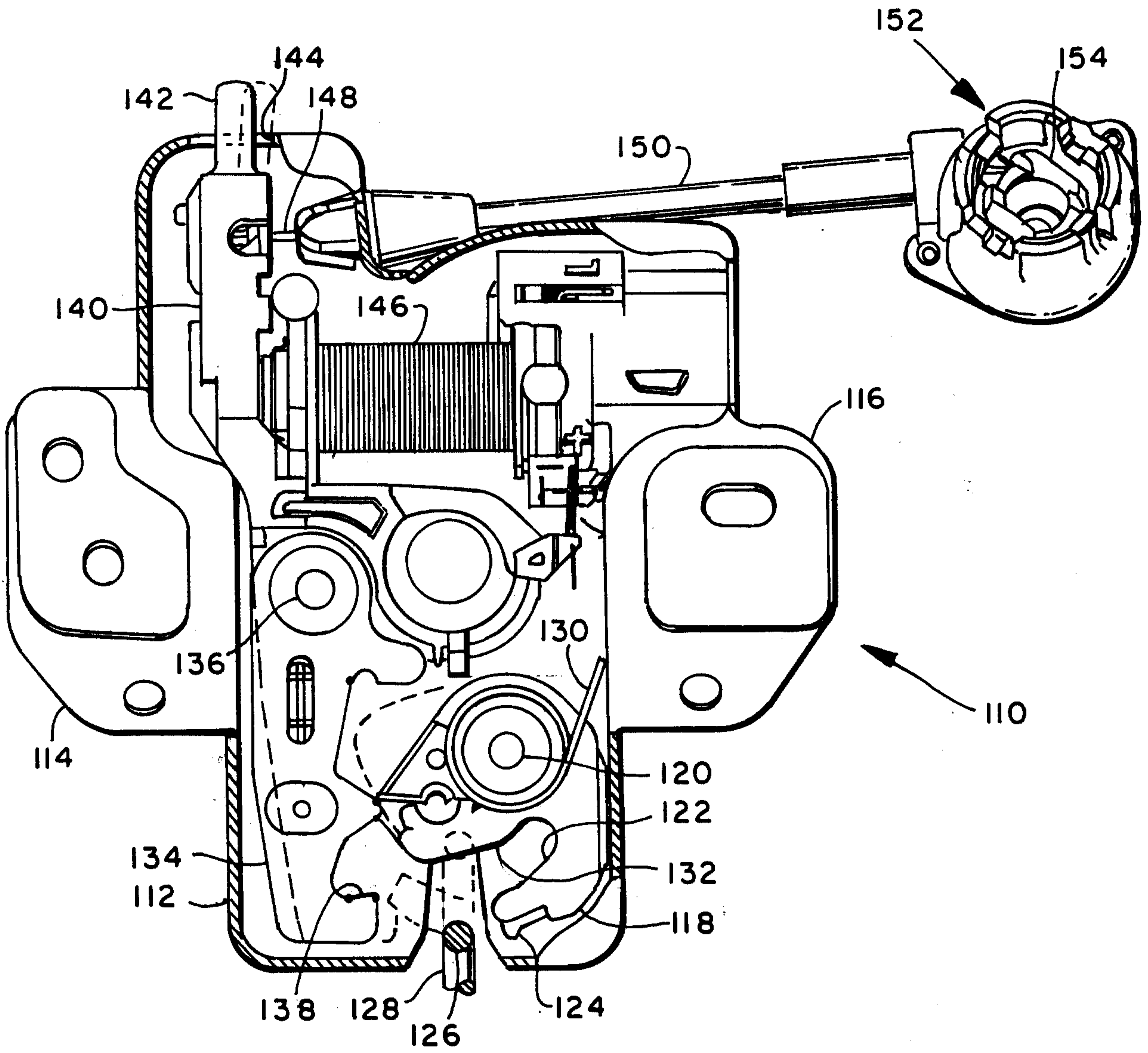
16. The method defined in claim 11, wherein said step of effecting movement of said pawl includes camming.



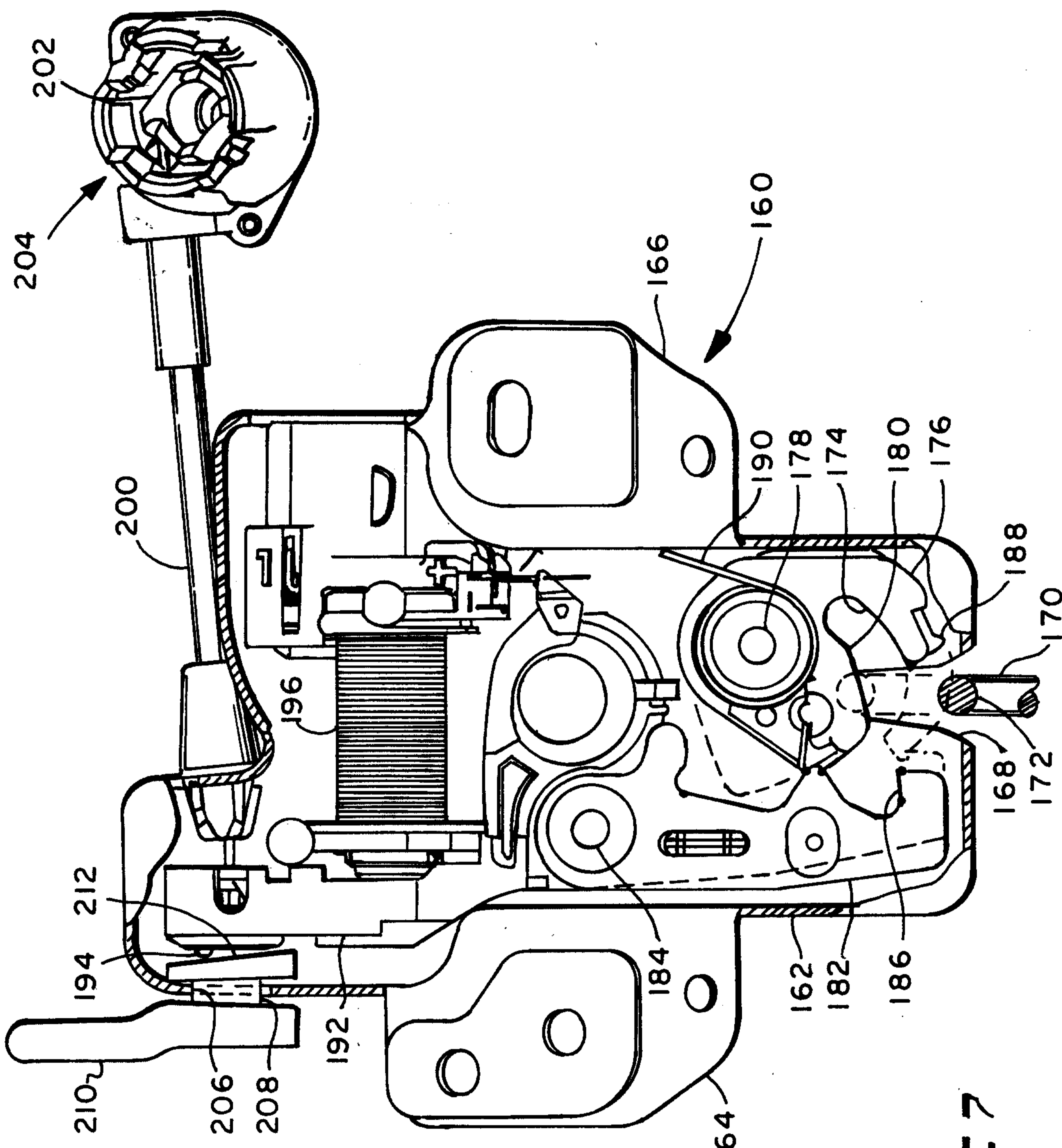




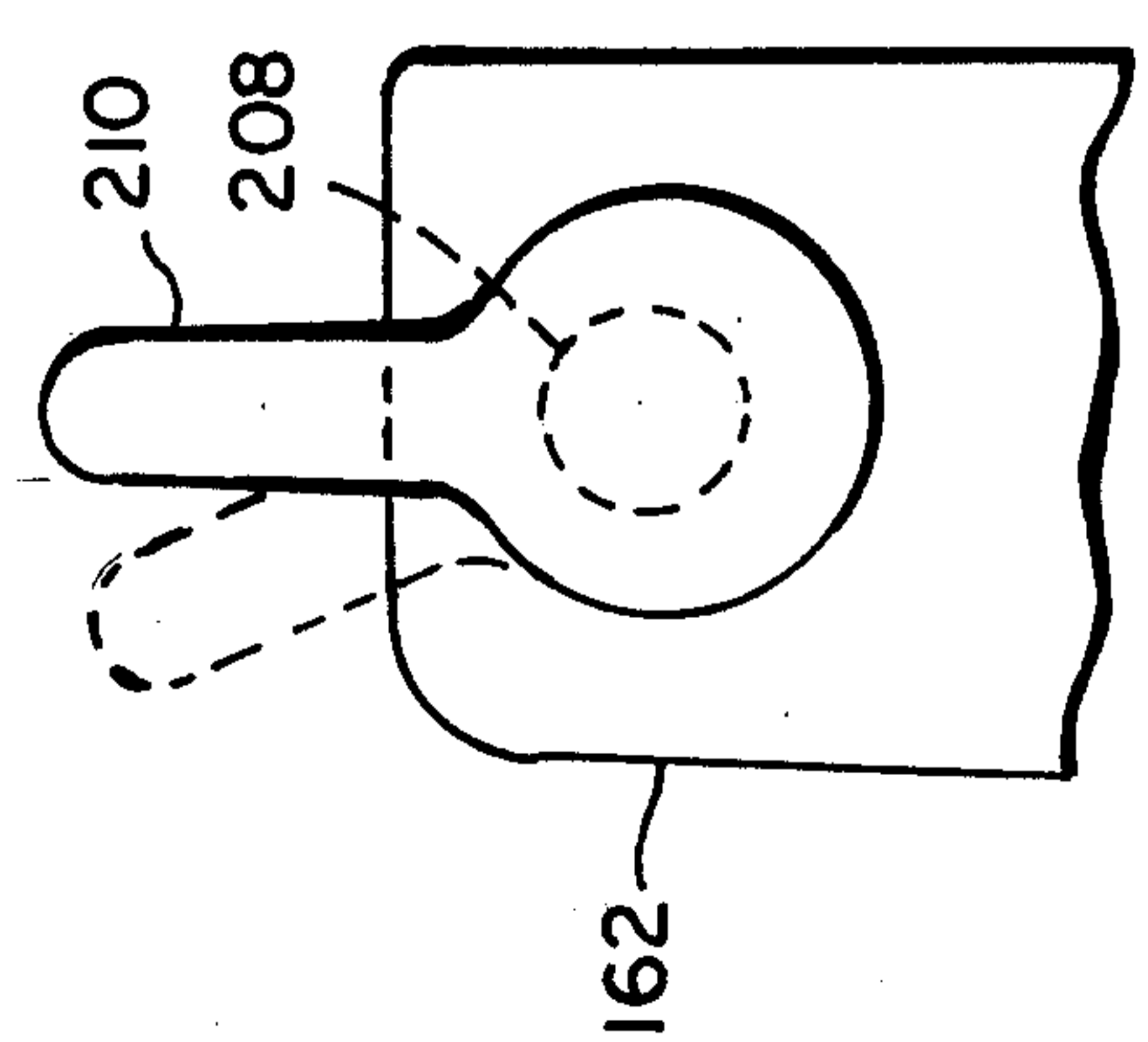
**FIG. 6**



**FIG. 5**



**Fig. 7**



**Fig. 8**

