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(54) **LOAD FLOOR LATCH**

LADEFLÄCHESPERRKLINKE

VERROU DE PLANCHER RESISTANT AUX CHARGES

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to the field of latches and more particularly to slam-action latches in which a handle is lifted to release the latch pawl from engagement with a keeper.

2. Brief Description of the Related Art

[0002] Slam-action latches are known in the art and are employed in a number of applications for securing one or more panels together. Generally, latches coming within this category operate by forcing a pawl into engagement with a keeper. For example, where a first panel member has a pawl mounted on it and a second panel member, such as, for example, a cabinet, has a keeper mounted thereon, slamming shut the first panel member against the second panel member can secure the panels with the latch.

[0003] In many instances, separately provided spring members are utilized to bias the pawl into engagement with a keeper member. Thus, when a panel to which the latch is installed is closed, the pawl engages a keeper. The utilization of a separately provided spring member often increases the cost of the latch and the time for assembly or construction of the latch. In some cases, complex mechanisms are required to maintain spring members and align them with a pawl saw the pawl can be regulated to operate and engage and disengage a keeper.

[0004] US patent 2,186,903 discloses a door latch, which comprises a pivotally movable handle 9,10 with two finger type extensions 14, which are adapted to slide along two oblique surfaces 32 on an extension of a pawl base 25. The pawl also comprises two bolts 26, by which the pawl is guided. The handle is pivotally mounted in a latch housing 1, whereas for the pawl a separate housing 17 is provided.

[0005] US patent 4,312,202 discloses a door lock, comprising a pivotally movable handle 138, acting on a bolt 90. A part 180 of the bolt 90, which is pivotally connected to the bolt 90 at a junction 224, and which comprises a contact surface 204 to an extension 142 of the handle 138, can be pivoted by a key control 150, in order to disengage the extension 142 of the handle 138 from the connection surface 204 of the bolt 90 when the handle 138 is pivoted in the opening position.

[0006] Subject matter of US patent 4,683,736 is a cabinet lock with a pivotally movable handle 400, which acts on an operating member 300, which in turn acts on a bolt 200. The bolt 200 is retracted into the housing of the lock by sliding along an oblique surface 356 of the operating member 300. By this mechanism, high wedging forces are executed on the small surface 356 of the operating member 300 as wall as on the corresponding countersurface of the bolt 200. Also, on the guiding of the bolt 200 in the housing of the lock high forces are exerted. Therefore, in this construction materials of high strength are required in order to achieve a good durability of the mechanism.

[0007] The US patent 3,782,141 discloses a door latch comprising a pivotally movable handle 54 and a lock bolt 44. The lock bolt 44 is moved by an extension 66 of the handle 54. In this operation, the edge of the extension 66 scratches over an inner surface of the lock bolt 44, making the mechanism highly prone to wear.

[0008] In the US patent 2,987,908, a door lock comprising a pivotally movable handle 14 and a bolt 12 is described. The handle 14 has an extension 43, which contacts and moves the bolt 12 at a contact location 41 when pivoting the handle. At the contact location 41, a small edge of the extension 43 of the handle 14 scratches over a corresponding inner surface of the bolt 12, leading to high wear during operation.

[0009] A need exists for a latch which can provide an improvement over the prior art in that it will be less costly to produce and less time-consuming to assemble, as well as providing slam-action latching ability when the latch is detached from a keeper but in the closed position.

[0010] A further need exists for a latch which can be locked, and slammed shut to close and lock the latch, when its pawl is not engaged with a keeper.

[0011] In addition, load floor latches are commonly used in the automotive industry. Often, these latches are employed to secure the contents of a compartment in a cargo area. For examples, load floor latches find use for securing a floor panel, such as the panel which regulates access to vehicle items, such as spare tires, tools, jacks, batteries, and the like. In many cases, the floor panel is provided on the floor of the vehicle passenger or cargo compartment. The latch therefore must be durable, and it is desirable that the latch withstands substantial force loads, such as those of the type generally encountered by bumps, rough terrain, and especially vehicular accidents, such as crashes, or rollover situations. It is important that compartment contents remain secured in the event of a vehicle crash or rollover. This is especially more important where the cargo compartment is located in the same general area as the vehicle operator, or other passengers. For example, in station wagon type vehicles, the cargo space for passengers and items of cargo is the same. Thus, in this type of vehicle, there is great danger to be encountered should rollover of the vehicle and the latch become unsecured. If this were to happen, the The pawl member is preferably spring biased and is retracted inwardly, within the housing. The pawl member is slidably carried in the housing and extends therefrom. The handle is pivotally connected to the housing and pivots relative thereto.

[0012] Locking mechanism preferably can be provided for securing the actuator against movement to prevent unauthorised activation. The locking mechanism can be

applied to compartment contents would spill out Into the passenger compartment, thereby placing the vehicle operator in danger. A need exists for a load floor latch which has improved abilities to withstand a rollover, and facilitate latching of a panel, even under high stress conditions. It is also important that the latch, in addition to being durable, be easy to construct and install. Furthermore, a need exists for a mechanism that is durable, provides a rigid construction and allows for the use of low strengths materials.

SUMMARY OF THE INVENTION

[0013] The present invention provides a novel slam latch having a handle, a housing and a pawl member which is disposed to engage a keeper member to secure a first member, such as a door or floor panel, to a second member, such as a frame or floor. Preferably, the latch can be installed on a closure panel and a keeper member on another panel or frame. The latch, for example, may be installed on a vehicle floor panel and a keeper can be installed on a corresponding frame.

[0014] The latch handle, upon being actuated, by lifting, operates to reject the pawl from engagement with a keeper member. Preferably, an actuator is provided which extends through the housing and connects with the pawl. The handle, by contacting the actuator withdraws the pawl member out from engagement with the keeper to release the latch and permit the closure panel to be opened.

[0015] The objectives of the invention are achieved by a latch for securing a first member to a second member, said latch comprising: a housing which is adapted for mounting to the first member, a pawl member slidably supported by said housing said pawl member being movable between extended and retracted positions, and said pawl member being adapted to secure the first member relative to the second member when said pawl member is in said extended position and the first member is in a closed position relative to the second member, said pawl member having a plurality of slots; a handle pivotally supported by said housing and being moveable over a pivot range Including open and closed positions, and an actuator for engaging said pawl member and at least moving said pawl member from said extended position toward said retracted position in response to pivotal movement of said handle from said closed position toward said open position, said actuator being slidably supported by said housing such that said actuator moves rearwardly relative to said housing in response to said handle moving toward said open position, characterised in that said actuator includes a base and a plurality of legs which extend downward from said base and into said plurality of slots provided in said pawl member, and wherein said plurality of legs engage rearward ends of said plurality of slots provided in said pawl member as said handle is pivotally moved to retract said pawl member.

[0016] The pawl member is preferably spring biased and is retracted inwardly, within the housing. The pawl member is slidably carried in the housing and extends therefrom. The handle is pivotally connected to the housing and pivots relative thereto.

[0017] Locking mechanism preferably can be provided for securing the actuator against movement to prevent unauthorised activation. The locking mechanism can be applied to allow the latch to be locked to prevent the pawl from being released from a keeper member.

[0018] The latch further has an improved stabilizing mechanism which facilitates retention of the latch in a latching position during vehicle crashes and rollovers.

[0019] An object of the present invention is to provide a novel latch which can secure one or more members together, such as panels or the like, for selective release by actuating a handle of the latch.

[0020] Another object of the present invention is to accomplish the above objects by providing a spring-biased latch which can be closed by slam-action.

[0021] Another object of the present invention is to provide a novel latch which can be closed by slam-action, even when the latch handle is in the closed position, and when the latch is not connected to a keeper.

[0022] Another object of the present invention is to provide a latch which can be used in connection with panels of vehicles to regulate access to and from an area or compartment, such as, for example, a floor panel and a floor storage compartment.

[0023] Another object of the present invention is to provide a novel latch having a pawl member which is slidably guided for movement within a housing.

[0024] Another object of the present invention is to provide a locking mechanism which can secure the latch against unauthorized opening.

[0025] Another object of the present invention is to provide resistance when the pawl member is being opened or closed with the handle to bias the pawl to an engaging position.

[0026] Another object of the present invention is to provide a latch which has improved retention characteristics under stress forces, such as those experienced by vehicle rollovers and crashes.

[0027] These and other objects of the invention will become apparent upon a reading of the following detailed description of the invention with reference to the drawings, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0028]

Fig. 1 is an exploded perspective view of a first embodiment of a latch according to the present invention.

Fig. 2 is a perspective, separate view of the pawl, actuator, locking element, lock plug and retainer of the latch of Fig. 1, shown in the locked condition.

Fig. 3 is a perspective, separate view of the pawl,

actuator, locking element, lock plug and retainer of the latch of Fig. 1, shown with the lock plug and retainer in the locked condition, with the pawl in a partially returned position.

Fig. 4 is a perspective, separate view of a retaining member of the latch of Fig. 1.

Fig. 5, is a perspective, separate view of the handle of the latch of Fig. 1.

Fig. 6 is a left side, perspective view of the latch of Fig. 1, illustrated with the housing shown in sectional view.

Fig. 7 is a perspective, separate view of the pawl member of the latch of Fig. 1, as viewed from the bottom, front side thereof

Fig. 8 is a perspective, separate view of the housing of the latch of Fig.1, as viewed from the top, right front thereof.

Fig. 9 is a perspective, separate view of the actuator of the latch of Fig.1.

Fig. 10 is a top plan, separate view of the housing of the latch shown in Fig.1.

Fig. 11 is a top plan, separate view of the pawl member of the latch of Fig. 1.

Fig. 12 is a sectional view of the housing shown in Fig. 10, taken longitudinally therethrough.

Fig. 13 is a front parallel perspective view of a second alternate embodiment of a latch according to the present invention.

Fig. 14 is a rear parallel perspective view of the second alternate latch embodiment shown in Fig. 13, viewed from the back with the handle in the open position.

Fig. 15 is a front parallel perspective view of the second alternate latch embodiment shown in Fig. 14, viewed from the front right side with the handle in the open position.

Fig. 16 is a front parallel perspective view of a third alternate embodiment of a latch according to the present invention.

Fig. 17 is a sectional view of the third alternate embodiment of the latch shown in Fig. 16.

Fig. 18 is a rear parallel perspective view of the third alternate embodiment of the latch of Figs. 16 and 17, shown with the handle lifted and in the open condition.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0029] Reference being made to Fig. 1, where a first alternate embodiment of a latch 10 according to the present invention is shown comprising a latch body or housing 11, a handle 12, a pawl member 13, and an actuator 14. Biasing means for biasing the pawl member 13 toward a latching position is shown comprising a spring 15.

[0030] The housing 11 has an upper flange 25 which defines the perimeter of the latch 10. Mounting means is provided on the housing 11, and preferably, for example, can comprise posts, such as those 26, which, for example, can have a bore with threads for receiving a matingly threaded bolt (not shown) for attachment of the latch 10 to a panel member (not shown). It will be understood that any suitable mounting members, such as, rivets, screws, pins, barbs and the like can be used to secure the housing 11 to a panel. Preferably, the latch 10 can be installed on a floor panel of a vehicle to regulate access to and from a compartment.

[0031] Locking means is also provided to lock the latch 10 against unauthorized opening. The locking means is shown comprising a lock plug 20 which has a key slot 28 therein. Preferably, the housing 11 has a socket 19 in which the lock plug 20 is installed. The locking means further includes a locking element 21, and retaining means for retaining the lock plug 20 on the housing 11. The retaining means is shown comprising a retaining member 22 which is disposed on a connecting end 27 of the lockplug 20 located on the lockplug end opposite of the key slot 28 end. Preferably, the retaining member 22 comprises a spring member and is flexible.

[0032] The retaining element 22 secures the lock plug 20 and further is provided to selectively engage the locking element 21, as shown best in Figs. 2 and 3, to lock the actuator 14 from movement and thereby maintain the pawl member 13 in a latched position. Referring to Fig. 4, the retaining member 22 has an arm 24 which extends outwardly therefrom for engagement with the locking element 21 (Figs. 2 and 3). Figs. 2 and 3 show the retaining member 22 installed on the lock plug-connecting end 27. As shown in Fig. 4, the retaining member 22 has an assembly slot 30 for facilitating snap-fit installation onto the lock plug 20. Detents 31, 32 are provided on the retaining member 22 for indicating the stop positions of the retaining member 22 when the lock plug is rotated with a key (not shown). The retaining member 22 is configured to be rotated by the lock plug 20 with the operation of a key (not shown) inserted and rotated in the key slot 28.

[0033] Referring to Fig. 5, the handle 12 is shown in a separate view having a body 37 with a lifting portion 40, a pair of flanges 38, 39 on opposite sides of the handle 12, and mounting means for mounting the handle 12 to the housing 11, the mounting means comprising a pair of pivot bosses 41, 42 disposed on the flanges 38, 39, respectively. Contact means for contacting the actuator 14 is provided on the front of the handle 12 opposite the lifting portion 40. The contact means is shown comprising a tab 43 disposed on the handle body 37. The handle 12 further has a recess 49 provided for accommodating the lock plug 20, by permitting the top of the lock plug 20 to reside in the recess 49 when the handle 12 is closed.

[0034] Reference now being made to Fig. 6, the tab 43 is provided to engage with the front of the actuator 14, when the handle 12 is pivoted by lifting. This lifting of the handle 12 draws the actuator 14 rearwardly within the housing 11 and through its engagement with the pawl 13, the actuator 14 retracts the pawl member 13 inwardly

toward the housing 11. As shown in Fig. 1, a slot 50 is disposed in the front wall 49 of the housing 11 for receiving the pawl member 13 therein. The slot 50, preferably, is matingly configured to accommodate the pawl 13 and facilitate the movement of the pawl member 13 therein.

[0035] The housing slot 50 preferably can be provided with strengthening ribs 51, 52 disposed on opposite sides of the slot 50. The slot 50 is shown having a pair of tracks 54, 55, which are provided for mating association with the pawl 13. The pawl member 14, as shown in Fig. 7, has surfaces 57,58 which facilitate sliding of the pawl 13 along the tracks 54, 55 of the housing slot 50.

[0036] As shown in Fig. 1, the housing 11 has a pair of apertures 60,61 each being disposed on opposite sides thereof. The pivot bosses 41,42 of the handle 12 are carried in the pivot apertures 60,61, respectively to pivotally maintain the handle 12 on the housing 11. Referring to Figs. 1 and 5, the handle 12 has side flanges 38, 39 which facilitate alignment of the handle 12 relative to the housing 11. The housing 11 is provided with a first side ledge 64 and a second side ledge 65 disposed on each side thereof. The first side ledge 64 provides a seat for the handle side flange 38 when the handle 12 is in its closed (Fig. 1) position. Similarly, the second side ledge 65 provides a seat for the second flange 39 on the opposite handle side. Preferably, the first and second ledges 64,65 are positioned at a height sufficient to raise the handle 12 slightly off of the top of the lock plug 20. Alternately, the lock plug 20 can be utilized to further stabilize the latch handle 12 by providing an additional seat on which the handle 12 may rest. This is accomplished by arranging the flanges and heights of the first and second side ledges to correspond to the height of the lock plug 20.

[0037] Referring to Fig. 9, the actuator 14 is shown having handle engaging means for engaging with the handle 12. The handle engaging means is shown comprising a plurality of contact ribs 70 which are angled to maximize the contact with the handle tab portion 43 when the handle 12 is pivoted to engage the actuator 14. The contact ribs 70 are shown supported on a shelf or base 69 of the actuator. The actuator 14 further has connecting means for connecting with the pawl member 13 to retract and release the pawl 13. The connecting means is shown comprising snap legs 71, 72 which extend downwardly from the actuator shelf or base 69 and are provided with a tapered flange portions 73, 74, respectively, which are shown provided on three sides of each leg 71, 72. Stop means is provided for stopping the locking element 21. The stop means is shown comprising a stop leg member 75 extending downwardly from the shelf or base 69 of the actuator 14. Preferably, the stop leg 75 is provided on the outer end of the actuator 14 to facilitate interaction with the locking element 21. Referring to Fig. 1, the actuator stop leg 75 is provided with a widened portion, such as the head 76, disposed facing and in a position for engaging the locking element 21. The actuator 14 further comprises supporting means for supporting the actuator 14 in relation to the pawl 13 and housing 11. The supporting means are best shown in Fig. 9 comprising supporting legs 77, 78 extending downwardly from the shelf or base 69 of the actuator 14.

[0038] Fig. 10 shows the housing 11 with a floor 80 having a plurality of slots 81, 82, 83, 84, 85 disposed therein. The slots 81, 82,83, 84, 85 are provided to correspond, respectively, with the snap legs 71, 72, stop leg 75, and supporting legs 77, 78 to permit them to pass through the housing floor 80 and into the pawl 13.

[0039] The pawl 13 is shown having a plurality of slots 91,92,93,94, 95 disposed therein for accommodating the legs 71,72,75,77,78 of the actuation member 14 which extend into the slots 91,92, 93,94,95, respectively. Referring to Figs. 1 and 8, the housing 11 is shown having a pawl slot 50 which is matingly configured to slidably carry the pawl 13 therein. The mating configuration of the slot 50 facilitates alignment of the slots 91,92, 93,94,95 with the housing slots 81,82,83,84,85, respectively, to enable the legs of the actuator 14 to extend through the pawl slots. The outer slot 85 of the pawl member 13 is partially open on a side thereof. The stop leg 75 of the actuator extends through the outer slot 85. As shown best in Figs. 2 and 3, the locking element 21 is positioned in the outer slot 85 for selective engagement with the retaining member arm 24. The locking element 21 is maintained within the pawl slot 50 of the housing 11. As shown in Fig. 6, the pawl slot 50 is defined by the housing floor 80, which defines the top of the slot 50, a rear wall 101, and a bottom wall 102. The pawl 13, spring 15, and locking element 21 are held between the floor 80 and the bottom wall 102.

[0040] The pawl 13 is biased with the force of the spring 15 into a forward, engaging position, where the pawl 13 protrudes outwardly from the housing 11. After the pawl 13 has been retracted, the bias from the spring 15 further operates against the pawl 13 to return the pawl to its forward, latching position. The pawl 13 is withdrawn by lifting the handle 12, which forces the handle tab 43 into engagement with the contacting ribs 70 of the actuator 14. The actuator 14 is then forced rearwardly in the housing 11, with the legs 71, 72, 77 and 78 engaging against the rearward end of each respective pawl slot 91, 92, 94, 95, and the rearward end of the stop leg 75 engaging against the locking element 21. The configuration of the present latch 10 allows the pawl 13 to be forced inward into the slot 50 of the housing 11 when encountering a force, such as that from a keeper (not shown). This permits the latch 10 to be slam locked, even when the retaining member 22 is in the locked position. The pawl 13 can be depressed inwardly and the locking member 21 will be accommodated by the outer slot 85 of the pawl 13, when the pawl is forced inward. Of course, the pawl 13, after being forced inward, once it clears a keeper and encounters no further resistance, is biased by the spring 15 toward its outward position, to secure the latch 10.

[0041] As shown in Figs. 1 and 12, detent means for holding the handle 12 in the raised position is shown comprising a resilient engaging element 98, 99 disposed on

opposite sides of the housing 11. The detent means preferably can maintain the handle 12 in a raised position until the detent force is overcome by lowering the handle 12.

[0042] Referring to Fig. 13, a second alternate embodiment of a latch 210 according to the present invention is shown. The latch 210 is similar to the latch 10 of the first embodiment shown and described herein, but having an alternate locking mechanism and an alternate pawl 213, which is configured having a rectangular cross-section to slide within a space 250 provided in the housing 211. The alternate locking mechanism shows locking means comprising a lock plug 222 with a locking pawl arm 224. The locking pawl arm 224 is preferably a spring member to permit slam-action closing of the latch 210 in both conditions, when the locking pawl arm 224 is in the latching (Fig. 12) position, and when the locking pawl 224 is rotated to the side, as shown in Fig. 13, in the open position. The spring force furnished with the locking pawl arm 224 enables the locking pawl arm 224 to snap over a keeper (not shown), and into its locking position.

[0043] As shown in Fig. 14, the handle 212 is lifted and the handle tab 243 engages the actuator 214 to retract the pawl 213 inwardly within the housing slot 250 (Fig. 15).

[0044] Reference now being made to Figs. 16-18 where a third alternate embodiment of a latch 310 is shown according to the present invention. The latch 310 is provided to operate similar to the latch of the second embodiment 210 described above, but without a lock. The latch 310 is shown having a housing 311, a handle 312 pivotally connected thereto, a pawl 313 disposed to slide in a slot 350 of the housing 311, an actuator 314, and a spring 315 which biases the pawl 313 toward a latching position, to protrude outwardly from the housing 311. The actuator 314 can connect with the pawl 313 through a plurality of slots, such as that 370, shown in Fig. 17, which are provided on the housing floor 380. The handle tab 343 is provided to engage the actuator 314 when the handle 312 is lifted, as shown in Fig. 18. Other features, while not shown, such as the detent means described above in connection with the latch 10, can also be employed with the latch 310. The actuator 314 can comprise the same configuration with the same legs as those described above in connection with the actuator 14 of the first embodiment of the latch 10.

[0045] As shown in Fig. 16 mounting means is provided on the housing 311, comprising bores, such as that 326 (there being one or more additional bores, not shown).

[0046] One or more of the features described herein in connection with a latch embodiment disclosed herein, can be employed with another latch embodiment consistent with the principles of the applicant's present invention. Other modifications to the above description can be made consistent with the spirit and scope of the invention disclosed herein. For example, while the keeper is referred to as a separate member, it will be understood that the keeper can comprise a panel, enclosure frame or other surface which the pawl can engage, consistent with the disclosure provided herein. Also, while the present invention is described in connection with a lock-plug, it is also understood that a knob, handle or other member can be used to rotate a member into and out of the way of the actuator or secondary keeper such as with the second alternate embodiment) to regulate the opening and closing.

[0047] While the above description constitutes the preferred embodiment of the present invention, it will be appreciated, that the invention is subject to modification, variation and change, without departing from the proper scope or fair meaning of the present invention as defined by the appended claims. In this regard, while the various features of the present invention have been shown and described in relation to a vehicle floor panel, it will be understood that many of these features are suitable in connection with latching of other members.

Claims

1. A latch (10) for securing a first member to a second member, said latch (10) comprising:

a) a housing (11) which is adapted for mounting to the first member,

b) a pawl member (13) slidably supported by said housing (11), said pawl member (13) being movable between extended and retracted positions, and said pawl member (13) being adapted to secure the first member relative to the second member when said pawl member (13) is in said extended position and the first member is in a closed position relative to the second member,

c) biasing means comprising a spring (15) for biasing said pawl (13) toward said extended position,

d) a handle (12) pivotally supported by said housing (11) and being moveable over a pivot range including open and closed positions, and

e) an actuator (14) for engaging said pawl member (13) and at least moving said pawl member (13) from said extended position toward said retracted position in response to pivotal movement of said handle (12) from said closed position toward said open position, said actuator (14) being slidably supported by said housing (11),

characterised in that

f) said actuator (14) being slidably supported by said housing (11) such that said actuator (14) moves rearwardly relative to said housing (11) in response to said handle (12) moving toward said open position,

g) said pawl member (13) having a plurality of slots (91, 92, 93 ,94 ,95);

h) said actuator (14) includes a base (69) and a

plurality of legs (71, 72) which extend downward from said base (69) and into said plurality of slots (91, 92, 93 ,94 ,95) provided in said pawl member (13), and wherein said plurality of legs (71, 72) engage rearward ends of said plurality of slots (91, 92, 93 ,94 ,95) provided in said pawl member (13) as said handle (12) is pivotally moved to retract said pawl member (13).

2. The latch of claim 1, wherein said actuator (14) Includes a plurality of contact ribs (70) extending upward from said base (69), wherein said plurality of contact ribs (70) are engaged by said handle (12) during movement of said handle (12) toward said open position.

3. The latch of claim 2, wherein said plurality of contact ribs (70) are angled to maximize contact with said handle (12) during movement of said handle (12) toward said open position.

4. The latch of claim 1, wherein said housing (11) comprises a seat (64, 65) on each side thereof for supporting said handle (12) in said closed position.

5. The latch of claim 4, wherein said handle (12) has a top surface and a flange (38, 39) disposed on each side of said top surface extending downwardly therefrom, wherein each said flange (38, 39) engages said housing seat (64, 65) to position said handle (12) relative to said housing (11).

6. The latch of claim 1, wherein said housing (11) has detents for holding the handle (12) in a raised position.

7. The latch of claim 1, further comprising:

a lock plug (20) supported by said housing (11) for selective rotations between locked and unlocked positions, and
a retaining member (22) attached to said lock plug (20) so as to move rotationally with said lock plug (20) between locked and unlocked positions, said retaining member (22) having an arm (24) that interferes with rearward movement of said actuator (14) when said lock plug (20) is in said locked position such that movement of said pawl (13) to said retracted position by actuation of said handle (12) is prevented.

8. The latch of claim 7, wherein said pawl member (13) has a plurality of slots (91, 92, 93, 94, 95),
wherein said actuator (14) includes a base (69), a plurality of contact ribs (70) extending upward from said base (69) and
wherein said plurality of contact ribs (70) are engaged by said handle (12) during movement of said handle (12) toward said open position.

9. The latch of claim 8, wherein said plurality of contact ribs (70) are angled to maximize contact with said handle (12) during movement of said handle (12) toward said open position.

10. The latch of claim 7, wherein said housing (11) comprises a seat (64, 65) on each side thereof for supporting said handle (12) In said closed position.

11. The latch of claim 10, wherein said handle (12) has a top surface and a flange (38, 39) disposed on each side of said top surface extending downwardly therefrom, wherein each said flange (38, 39) engages said housing seat (64, 65) to position said handle (12) relative to said housing (11).

12. The latch of claim 7, wherein said housing (11) has detents for holding the handle (12) in a partially raised position.

13. The latch of claim 1, further comprising:

a lock plug (20) supported by said housing (11) for selective rotation between locked and unlocked positions, and
a locking pawl arm (24) attached to said lock plug (20) so as to move rotationally with said lock plug (20) between locked and unlocked positions, said locking pawl arm (24) engaging the second member or a keeper fixedly located relative to the second member when said lock plug (20) **is** in said locked position such that the first member remains secured in a closed position relative to the second member.

14. The latch of claim 13, wherein said locking pawl arm (24) is resilient such that the first member can be moved to the closed position relative to the second member even with said lock plug in said locked position.

15. The latch of claim 13, wherein said pawl member (13) has a plurality of slots (91, 92, 93, 94 ,95),
wherein said actuator (14) includes a base (69), a plurality of contact ribs (70) extending upward from said base (69) and
wherein said plurality of contact ribs (70) are engaged by said handle during movement of said handle (12) toward said open position.

16. The latch of claim 15, wherein said plurality of contact ribs (70) are angled to maximize contact with said handle (12) during movement of said handle (12) toward said open position.

17. The latch of claim 13, wherein said housing (11) com-

prises a seat (64, 65) on each side thereof or supporting said handle (12) in said closed position.

18. The latch of claim 17, wherein said handle (12) has a top surface and a flange (38, 39) disposed on each side of said top surface extending downwardly therefrom, wherein each said flange (38, 39) engages said housing seat (64, 65) to position said handle (12) relative to said housing (11).

19. The latch of claim 13, wherein said housing (11) has detents for holding the handle (12) In a partially raised position.

Patentansprüche

1. Verschluss (10) zum Sichern eines ersten Elements an einem zweiten Element, wobei der Verschluss (10) aufweist:

a) ein Gehäuse (11), welches für eine Montage an dem ersten Element ausgelegt ist,
b) ein Sperrelement (13), welches gleitbar durch das Gehäuse (11) gehalten wird, wobei das Sperrelement (13) zwischen ausgefahrenen und eingezogenen Positionen bewegt werden kann und das Sperrelement (13) dafür ausgelegt ist, das erste Element in einer geschlossenen Position relativ zu dem zweiten Element zu sichern, wenn das Sperrelement (13) in der ausgefahrenen Position ist und das erste Element in einer geschlossenen Position relativ zu dem zweiten Element ist,
c) eine Vorspanneinrichtung, welche eine Feder (15) zum Vorspannen des Sperrelements (13) in die ausgefahrene Position aufweist, und
d) einen Griff (12), welcher durch das Gehäuse (11) verschwenkbar gehalten wird und über einen Schwenkbereich, der die offenen und geschlossenen Positionen umfasst, bewegbar ist,
e) eine Betätigungseinrichtung (14) zum Ineingriffbringen des Sperrelements (13) und um in Reaktion auf die Schwenkbewegung des Griffes (12) von der geschlossenen Position in die offene Position zumindest das Sperrelement (13) von der ausgefahrenen Position in die eingezogene Position zu bewegen, wobei die Betätigungseinrichtung (14) durch das Gehäuse (11) gleitbar gehalten wird,
dadurch gekennzeichnet, dass
f) die Betätigungseinrichtung (14) derart durch das Gehäuse (11) gleitbar gehalten wird, dass die Betätigungseinrichtung (14) sich in Reaktion auf den Griff (12), der sich in die offene Position bewegt, rückwärts relativ zu dem Gehäuse (11) bewegt,
g) wobei das Sperrelement (13) eine Mehrzahl von Schlitzen aufweist (91, 92, 93, 94, 95),
h) die Betätigungseinrichtung (14) einen Sockel (69) und eine Mehrzahl von Schenkeln (71, 72) aufweist, die sich nach unten von dem Sockel (69) weg und in die Mehrzahl der Schlitze (91, 92, 93, 94, 95), die in dem Sperrelement (13) vorgesehen sind, hineinerstrecken und wobei die Mehrzahl der Schenkel (71, 72) mit rückwärtigen Enden mit der Mehrzahl von Schlitzen (91, 92, 93, 94, 95), die in dem Sperrelement (13) vorgesehen sind, in Eingriff treten, während der Griff (12) verschwenkt wird, um das Sperrelement (13) einzuziehen.

2. Verschluss nach Anspruch 1, wobei die Betätigungseinrichtung (14) eine Mehrzahl von Kontaktrippen (70) aufweist, die sich von dem Sockel (69) nach oben erstrecken, wobei durch Bewegung des Griffs (12) in die offene Position die Mehrzahl der Kontaktrippen (70) von dem Griff (12) erfasst werden.

3. Verschluss nach Anspruch 2, wobei die Mehrzahl der Kontaktrippen (70) abgewinkelt sind, um während der Bewegung des Griffs (12) in die offene Position den Kontakt mit dem Griff (12) zu maximieren.

4. Verschluss nach Anspruch 1, wobei das Gehäuse (11) auf jeder seiner Seiten einen Sitz (64, 65) aufweist, um den Griff (12) in der geschlossenen Position abzustützen.

5. Verschluss nach Anspruch 4, wobei der Griff (12) eine Oberfläche und einen Flansch (38, 39) aufweist, die an jeder Seite der Oberfläche angeordnet sind, und sich von dieser nach unten erstreckt, , wobei jeder der Flansche (38, 39) mit dem Gehäusesitz (64, 65) in Eingriff tritt, um den Griff (12) relativ zu dem Gehäuse (11) zu positionieren.

6. Verschluss nach Anspruch 1, wobei das Gehäuse (11) Arretierungen zum Halten des Griffes (12) in einer erhöhten Position aufweist.

7. Verschluss nach Anspruch 1, welcher weiterhin aufweist:

ein durch das Gehäuse (11) gehaltenes Steckschloss (20) für wahlweise Drehungen zwischen der verriegelten und der unverriegelten Position, und
ein Halteelement (22), welches an dem Steckschloss (20) befestigt ist, um sich mit dem Steckschloss (20) zwischen der verriegelten und der unverriegelten Position zu bewegen, wobei das Halteelement (22) einen Arm (24) aufweist, der eine rückwärtige Bewegung der Betätigungseinrichtung (14) verhindert, wenn das Steckschloss (20) in einer verriegelten Position ist,

sodass die Bewegung des Sperrelements (13) in die eingezogene Position durch Betätigen des Griffes (12) verhindert wird.

8. Verschluss nach Anspruch 7, wobei das Sperrelement (13) eine Mehrzahl von Schlitzen aufweist (91, 92, 93, 94, 95),
wobei die Betätigungseinrichtung (14) einen Sockel (69) und eine Mehrzahl von Kontaktrippen (70), die sich nach oben von dem Sockel (69) erstrecken, aufweist, und
wobei die Mehrzahl der Kontaktrippen (70) mit dem Griff (12) in Eingriff durch Bewegung des Griffes (12) in die offene Position kommt.

9. Verschluss nach Anspruch 8, wobei die Mehrzahl der Kontaktrippen (70) gewinkelt sind, um den Kontakt mit dem Griff (12) während der Bewegung des Griffs (12) in die offene Position zu maximieren.

10. Verschluss nach Anspruch 7, wobei das Gehäuse (11) auf jeder seiner Seiten einen Sitz (64, 65) zum Abstützen des Griffes (12) in der geschlossenen Position aufweist.

11. Verschluss nach Anspruch 10, wobei der Griff (12) eine Oberseite und einen Flansch (38, 39) aufweist, der an jeder Seite der Oberfläche angeordnet ist, und sich von dort nach unten erstreckt, wobei jeder der Flansche (38, 39) mit dem Gehäusesitz (64, 65) in Eingriff tritt, um den Griff (12) relativ zu dem Gehäuse (11) zu positionieren.

12. Verschluss nach Anspruch 7, wobei das Gehäuse (11) Arretierungen zum Halten des Griffes (12) in einer erhöhten Position aufweist.

13. Verschluss nach Anspruch 1, welcher weiterhin aufweist:

ein durch das Gehäuse (11) gehaltenes Steckschloss (20) für wahlweise Drehungen zwischen der verriegelten und der unverriegelten Position, und
einen an dem Steckschloss (20) befestigten Arretierungsarm (24), um sich drehend mit dem Steckschloss (20) zwischen der verriegelten und der unverriegelten Position zu bewegen, wobei der Arretierungsarm (24) mit dem zweiten Element oder mit einem relativ zu dem zweiten Element fest angeordneten Schließhaken in Eingriff tritt, wenn das Steckschloss (20) in einer verriegelten Position ist, sodass das erste Element relativ zu dem zweiten Element in einer geschlossenen Position bleibt.

14. Verschluss nach Anspruch 13, wobei der Arretierungsarm (24) nachgiebig ist, sodass das erste Element relativ zu dem zweiten Element in die geschlossene Position bewegt werden kann, selbst wenn das Steckschloss in der verriegelten Position ist.

15. Verschluss nach Anspruch 13, wobei das Sperrelement (13) eine Mehrzahl von Schlitzen (91, 92, 93, 94, 95) aufweist,
wobei der Betätigungseinrichtung (14) einen Sockel (69), eine Mehrzahl von Kontaktrippen (70) aufweist, die sich nach oben von dem Sockel (69) erstrecken, und
wobei die Mehrzahl der Kontaktrippen (70) mit dem Griff (12) in Eingriff durch Bewegung des Griffes (12) in die offene Position kommen.

16. Verschluss nach Anspruch 15, wobei die Mehrzahl der Kontaktrippen (70) abgewinkelt sind, um den Kontakt mit dem Griff (12) während der Bewegung des Griffs (12) in die offene Position zu maximieren.

17. Verschluss nach Anspruch 13, wobei das Gehäuse (11) auf jeder seiner Seiten einen Sitz (64, 65) aufweist zum Abstützen des Griffes (12) in der geschlossenen Position.

18. Verschluss nach Anspruch 17, wobei der Griff (12) eine Oberfläche und einen Flansch (38, 39) aufweist, der auf jeder Seite der Oberfläche angeordnet ist, und sich von dort nach unten erstreckt, wobei jeder der Flansche (38, 39) in Eingriff mit dem Gehäusesitz (64, 65) tritt, um den Griff (12) relativ zu dem Gehäuse (11) zu positionieren.

19. Verschluss nach Anspruch 13, wobei das Gehäuse (11) Arretierungen zum Halten des Griffes (12) in einer erhöhten Position aufweist.

Revendications

1. Loquet (10) destiné à fixer un premier élément à un deuxième élément, ledit loquet (10) comportant :

a) un boîtier (11) adapté pour être monté sur le premier élément,
b) un élément (13) de cliquet supporté de façon coulissante par ledit boîtier (11), ledit élément (13) de cliquet pouvant se déplacer entre des positions étendues et rétractées, et ledit élément (13) de cliquet étant adapté pour fixer le premier élément relativement au deuxième élément lorsque ledit élément (13) de cliquet est dans ladite position étendue et le premier élément est dans une position fermée par rapport au deuxième élément,
c) des moyens de sollicitation comprenant un ressort (15) pour solliciter ledit cliquet (13) vers ladite position étendue,

d) une poignée (12) supportée de manière pivotante par ledit boîtier (11) et pouvant être déplacée sur une plage de pivotement comprenant des positions ouverte et fermée, et
e) un actionneur (14) destiné à venir en prise avec ledit élément (13) de cliquet et au moins à déplacer ledit élément (13) de cliquet depuis ladite position étendue vers ladite position rétractée en réponse au mouvement pivotant de ladite poignée (12), depuis ladite position fermée vers ladite position ouverte, ledit actionneur (14) étant supporté de façon coulissante par ledit boîtier (11),
caractérisé en ce que
f) ledit actionneur (14) est supporté de façon coulissante par ledit boîtier (11), de sorte que ledit actionneur (14) se déplace vers l'arrière relativement audit boîtier (11) en réponse au mouvement de ladite poignée (12) vers ladite position ouverte,
g) ledit élément (13) de cliquet a une pluralité de fentes (91, 92, 93, 94, 95) ;
h) ledit actionneur (14) comprend une base (69) et une pluralité de pieds (71, 72) qui s'étendent vers le bas depuis ladite base (69) et dans une pluralité de fentes (91, 92, 93, 94, 95) fournies dans ledit élément (13) de cliquet, et dans lequel ladite pluralité de pieds (71, 72) viennent en prise avec les parties arrières de ladite pluralité de fentes (91, 92, 93, 94, 95) fournies dans ledit élément (13) de cliquet lorsque ladite poignée (12) est déplacée de façon pivotante pour rétracter ledit élément (13) de cliquet.

2. Loquet selon la revendication 1, dans lequel ledit actionneur (14) comprend une pluralité de nervures (70) de contact qui s'étendent vers le haut depuis ladite base (69), dans lequel ladite pluralité de nervures (70) de contact viennent en prise avec ladite poignée (12) lors du mouvement de ladite poignée (12) vers ladite position ouverte.

3. Loquet selon la revendication 2, dans lequel ladite pluralité de nervures (70) de contact sont inclinées afin d'optimiser le contact avec ladite poignée (12) lors du mouvement de ladite poignée (12) vers ladite position ouverte.

4. Loquet selon la revendication 1, dans lequel ledit boîtier (11) comprend un logement (64, 65) de chaque côté de celui-ci pour supporter ladite poignée (12) dans ladite position fermée.

5. Loquet selon la revendication 4, dans lequel ladite poignée (12) a une surface supérieure et une bride (38, 39) disposée de chaque côté de ladite surface supérieure s'étendant vers le bas depuis cette surface, dans lequel chacune de ladite bride (38, 39) vient en prise avec ledit logement (64, 65) de boîtier afin de positionner ladite poignée (12) par rapport audit boîtier (11).

6. Loquet selon la revendication 1, dans lequel ledit boîtier (11) a des encliquetages pour maintenir la poignée (12) dans une position remontée.

7. Loquet selon la revendication 1, comprenant en outre :

un bouchon (20) de serrure supporté par ledit boîtier (11) pour des rotations sélectives entre les positions verrouillée et déverrouillée, et
un élément (22) de retenue attaché audit bouchon (20) de serrure afin qu'il puisse se déplacer par rotation avec ledit bouchon (20) de serrure entre les positions verrouillée et déverrouillée, ledit élément (22) de retenue ayant un bras (24) qui empêche le mouvement vers l'arrière dudit actionneur (14) lorsque ledit bouchon (20) de serrure se trouve dans la position verrouillée de sorte que le mouvement dudit cliquet (13) vers ladite position rétractée par la sollicitation de ladite poignée (12) est empêché.

8. Loquet selon la revendication 7, dans lequel ledit élément (13) de cliquet a une pluralité de fentes (91, 92, 93, 94, 95),
dans lequel ledit actionneur (14) comprend une base (69), une pluralité de nervures (70) de contact qui s'étendent vers le haut depuis ladite base (69) et
dans lequel ladite pluralité de nervures (70) de contact viennent en prise avec ladite poignée (12) lors du mouvement de ladite poignée (12) vers ladite position ouverte.

9. Loquet selon la revendication 6, dans lequel ladite pluralité de nervures (70) de contact sont inclinées afin d'optimiser le contact avec ladite poignée (12) lors du mouvement de ladite poignée (12) vers ladite position ouverte.

10. Loquet selon la revendication 7, dans lequel ledit boîtier (11) comprend un logement (64, 65) de chaque côté de celui-ci pour supporter ladite poignée (12) dans ladite position fermée.

11. Loquet selon la revendication 10, dans lequel ladite poignée (12) a une surface supérieure et une bride (38, 39) disposée de chaque côté de ladite surface supérieure qui s'étend vers le bas depuis cette surface, dans lequel chacune de ladite bride (38, 39) vient en prise avec ledit logement (64, 65) de boîtier afin de positionner ladite poignée (12) par rapport audit boîtier (11).

12. Loquet selon la revendication 7, dans lequel ledit

boîtier (11) a des encliquetages pour maintenir la poignée (12) dans une position partiellement remontée.

13. Loquet selon la revendication 1, comprenant en outre :

un bouchon (20) de serrure supporté par ledit boîtier (11) pour des rotations sélectives entre les positions verrouillée et déverrouillée, et
un bras (24) de cliquet de verrouillage attaché audit bouchon (20) de serrure afin qu'il puisse se déplacer par rotation avec ledit bouchon (20) de serrure entre les positions verrouillée et déverrouillée, ledit bras (24) de cliquet de verrouillage venant en prise avec le deuxième élément ou avec une gâche située de façon fixe par rapport au deuxième élément lorsque ledit bouchon (20) de serrure se trouve dans ladite position verrouillée de sorte que le premier élément reste fixé dans une position fermée par rapport au deuxième élément.

14. Loquet selon la revendication 13, dans lequel ledit bras (24) de cliquet de verrouillage est résilient de sorte que le premier élément peut être déplacé dans la position fermée par rapport au deuxième élément, même si ledit bouchon de serrure se trouve dans ladite position verrouillée.

15. Loquet selon la revendication 13, dans lequel ledit élément (13) de cliquet a une pluralité de fentes (91, 92, 93, 94, 95),
dans lequel ledit actionneur (14) comprend une base (69), une pluralité de nervures (70) de contact qui s'étendent vers le haut depuis ladite base (69) et
dans lequel ladite pluralité de nervures (70) de contact viennent en prise avec ladite poignée lors du mouvement de ladite poignée (12) vers ladite position ouverte.

16. Loquet selon la revendication 15, dans lequel ladite pluralité de nervures (70) de contact sont inclinées afin d'optimiser le contact avec ladite poignée (12) lors du mouvement de ladite poignée (12) vers ladite position ouverte.

17. Loquet selon la revendication 13, dans lequel ledit boîtier (11) comprend un logement (64, 65) de chaque côté de celui-ci pour supporter ladite poignée (12) dans ladite position fermée.

18. Loquet selon la revendication 17, dans lequel ladite poignée (12) a une surface supérieure et une bride (38, 30) disposée de chaque côté de ladite surface supérieure, qui s'étend vers le bas depuis cette surface, dans lequel chacune de ladite bride (38, 39) vient en prise avec ledit logement (64, 65) de boîtier afin de positionner ladite poignée (12) par rapport audit boîtier (11).

19. Loquet selon la revendication 13, dans lequel ledit boîtier (11) a des encliquetages pour maintenir la poignée (12) dans une position partiellement remontée.

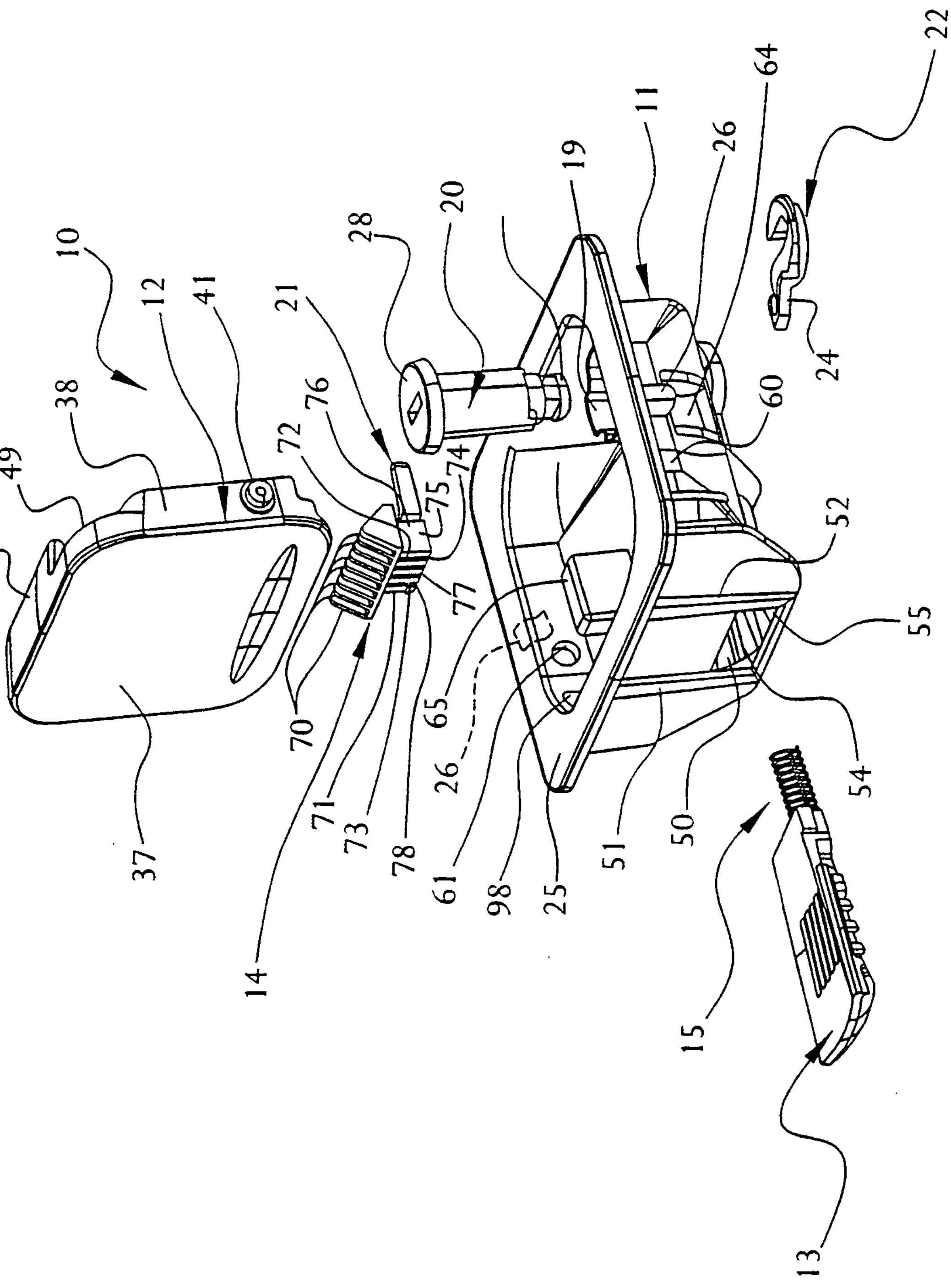
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FIG. 1

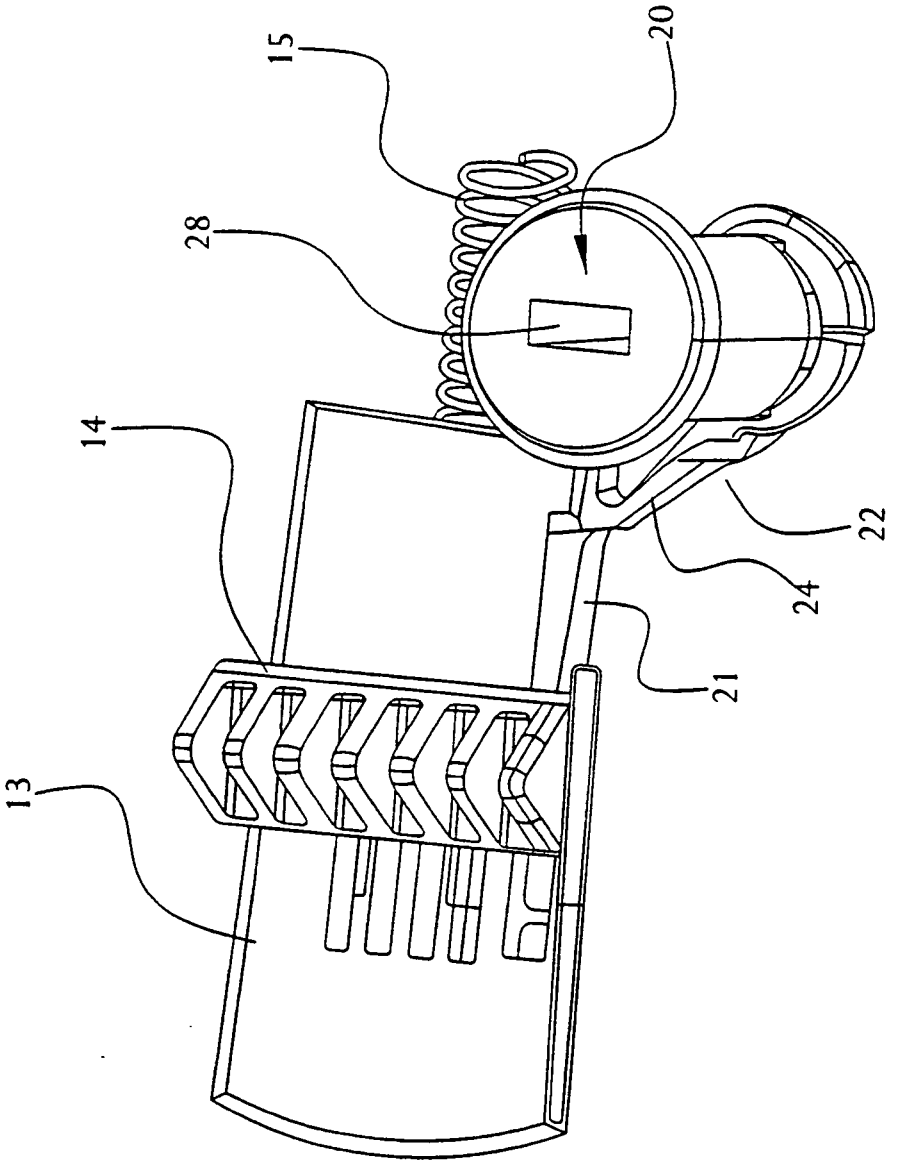

FIG. 2

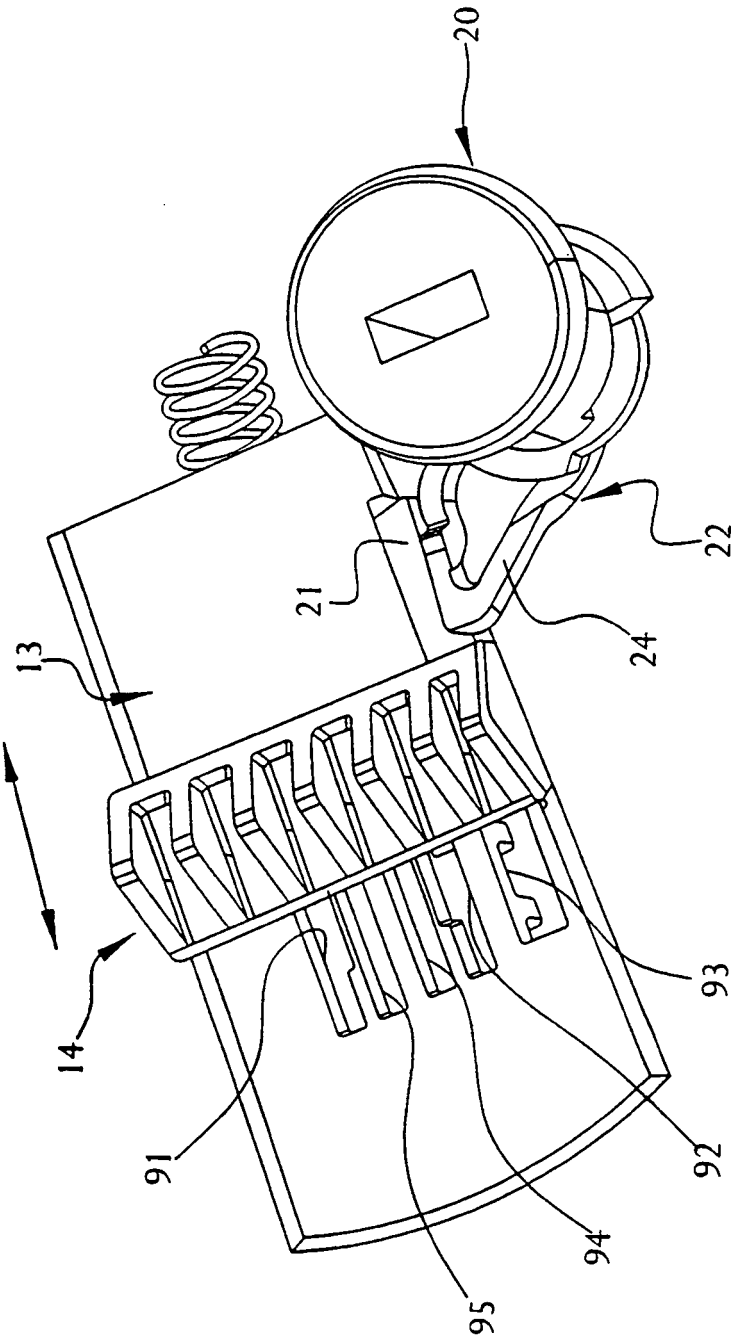

FIG. 3

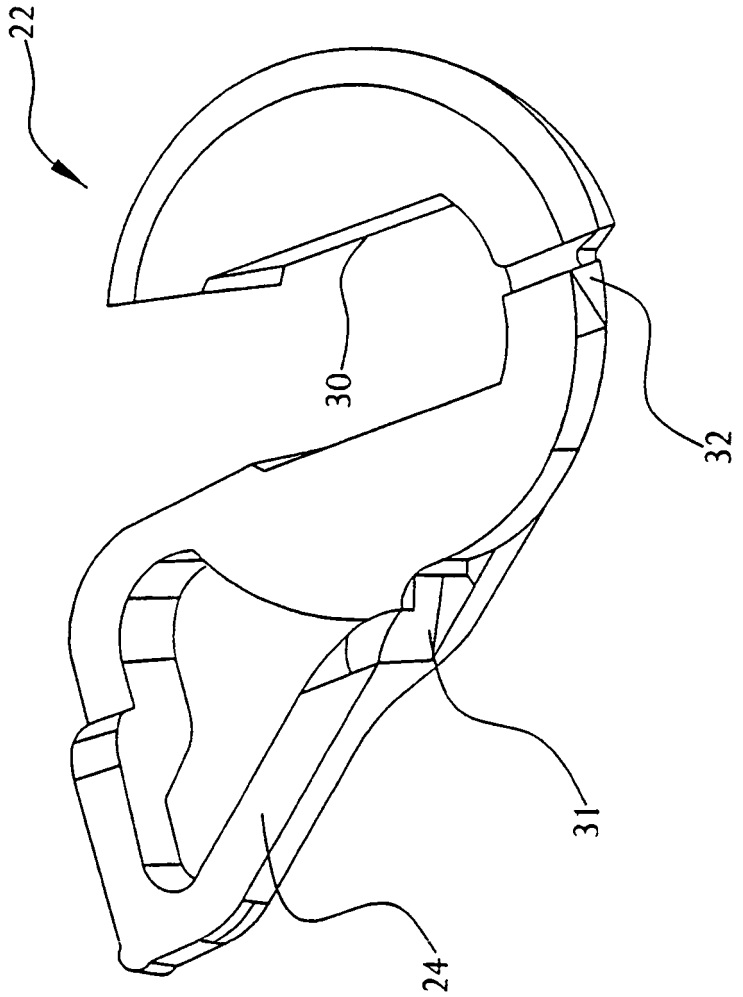

FIG. 4

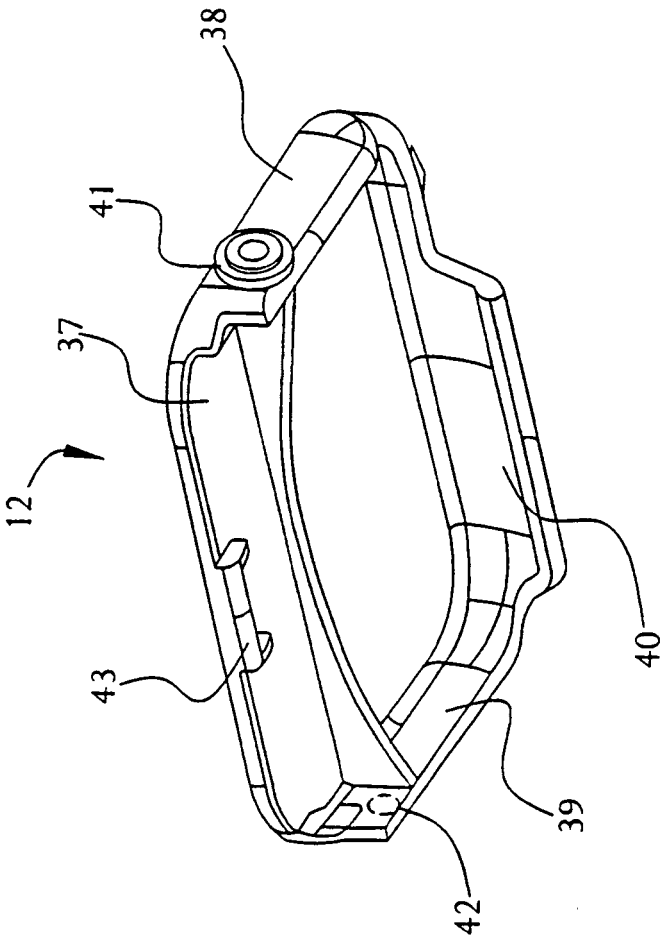

FIG. 5

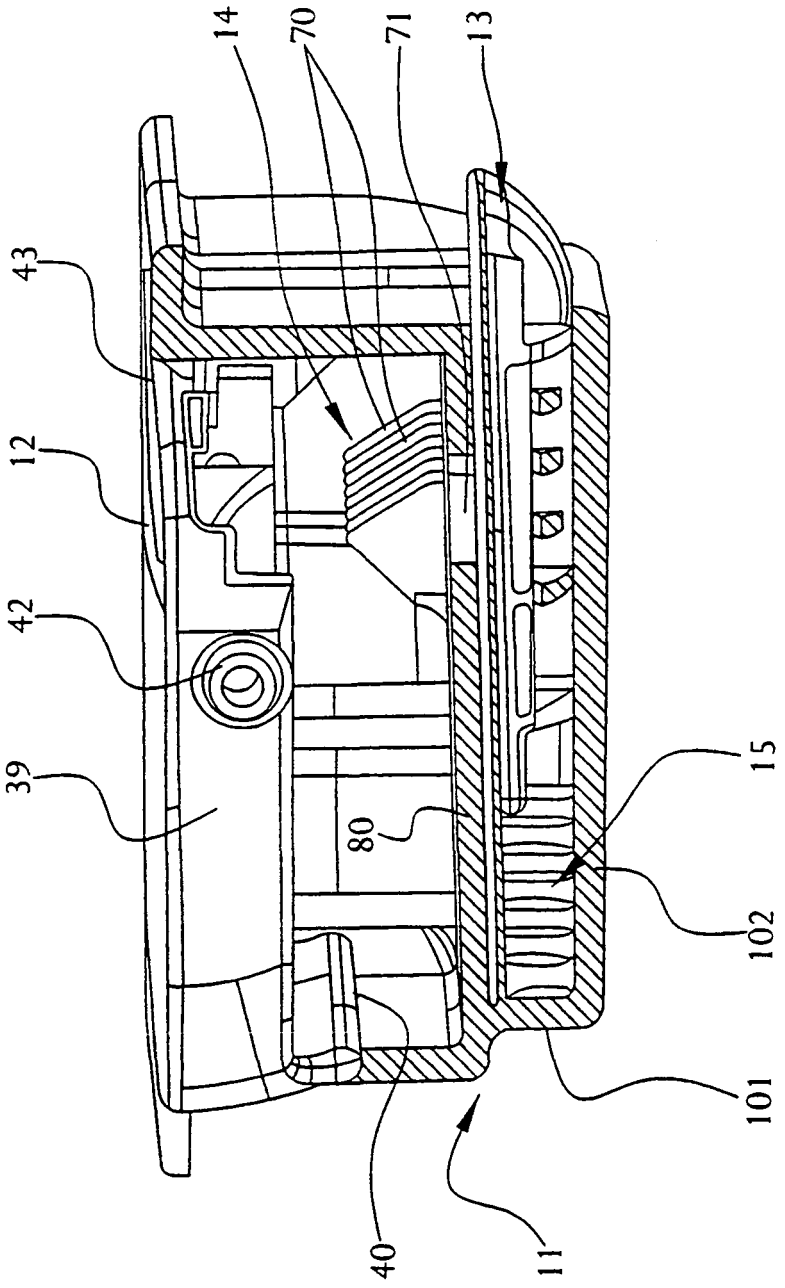

FIG. 6

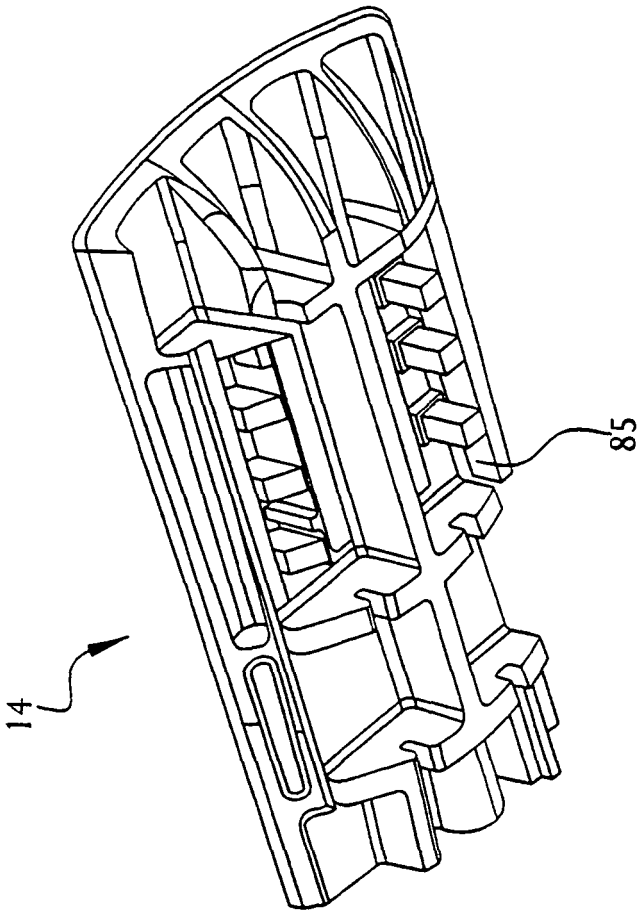

FIG. 7

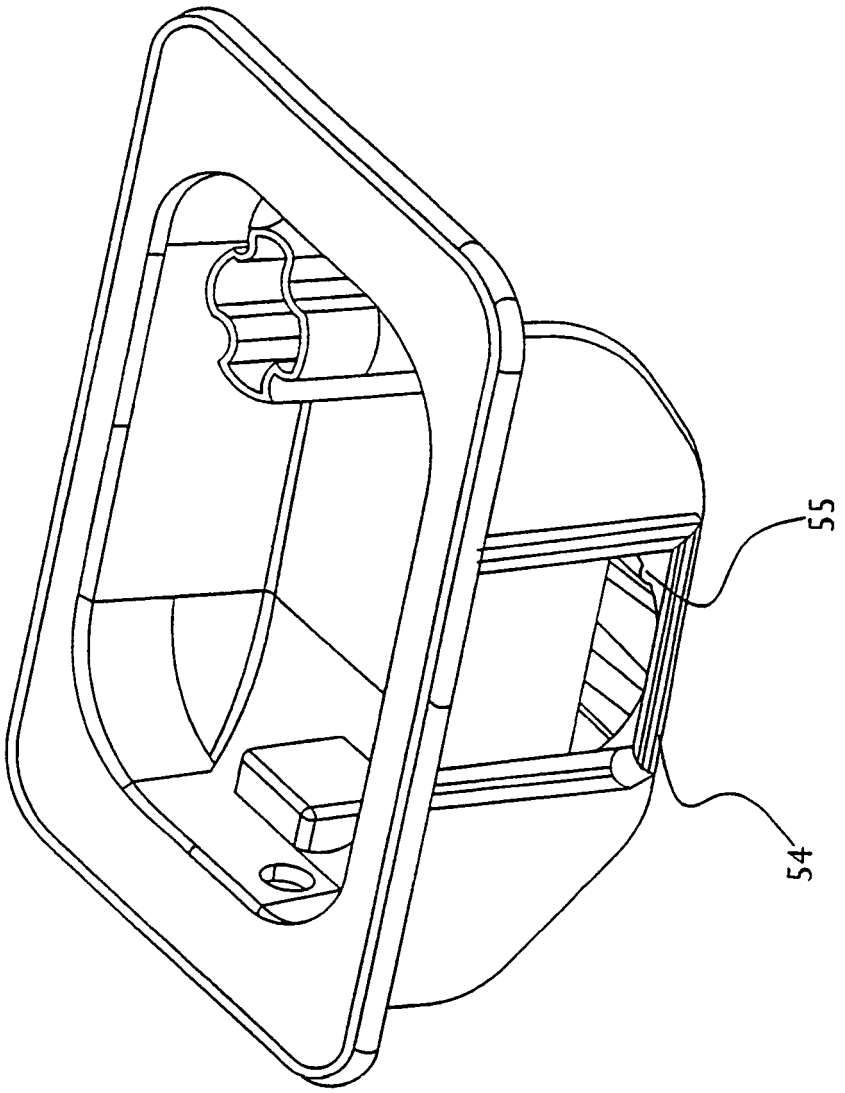

FIG. 8

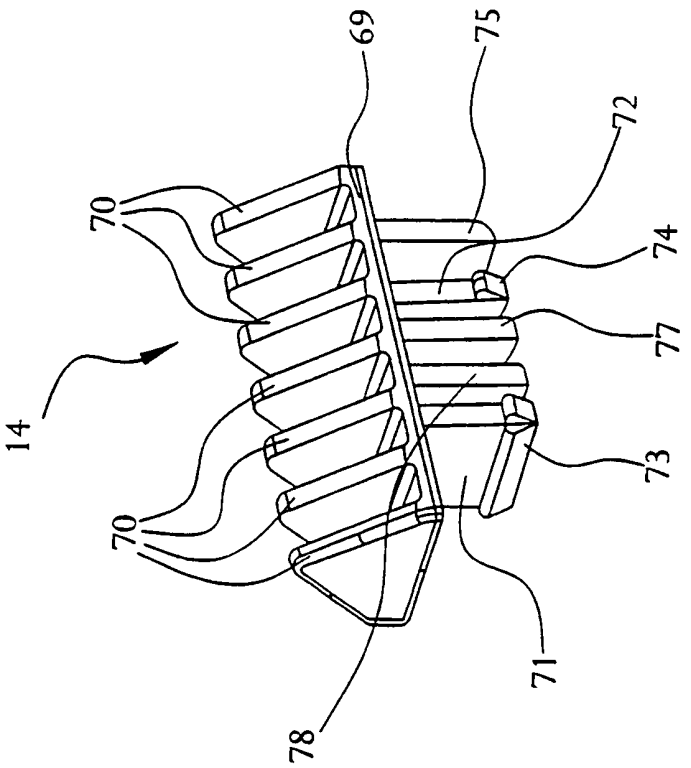

FIG. 9

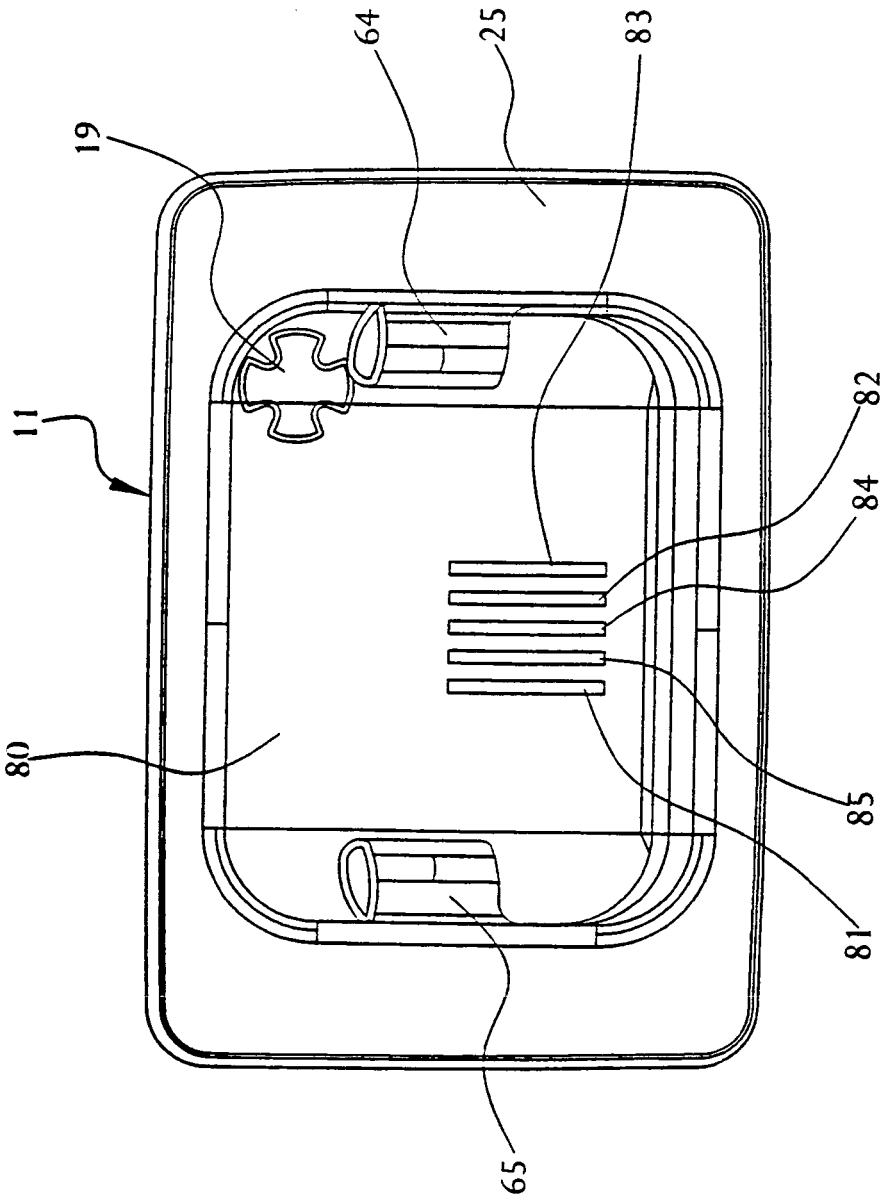

FIG. 10

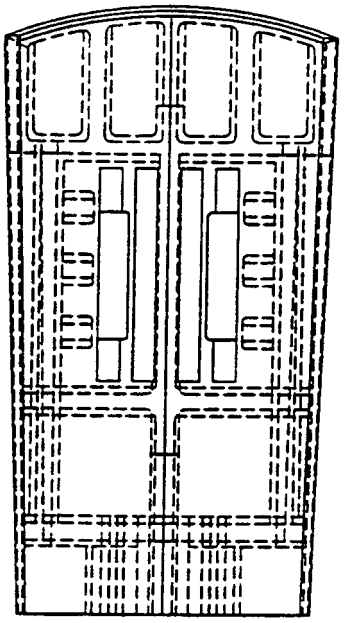

FIG. 11

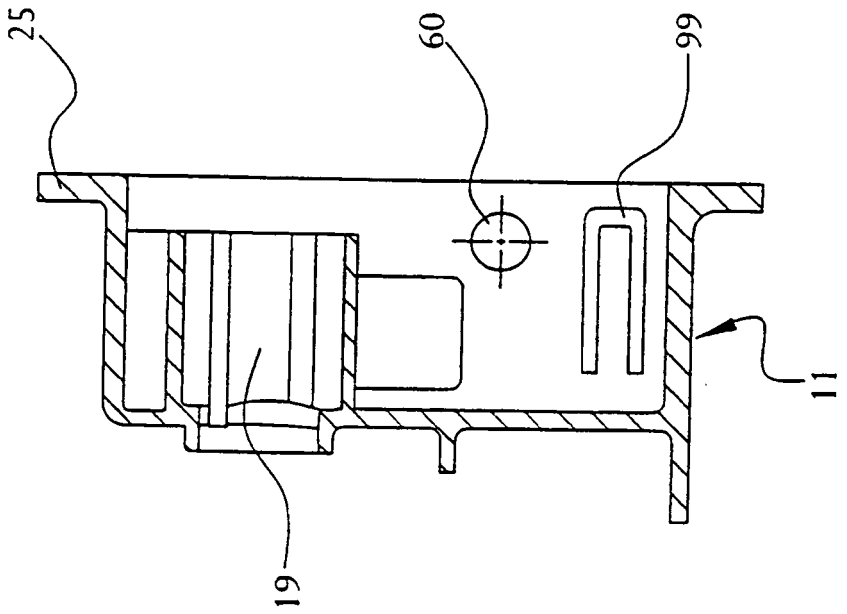

FIG. 12

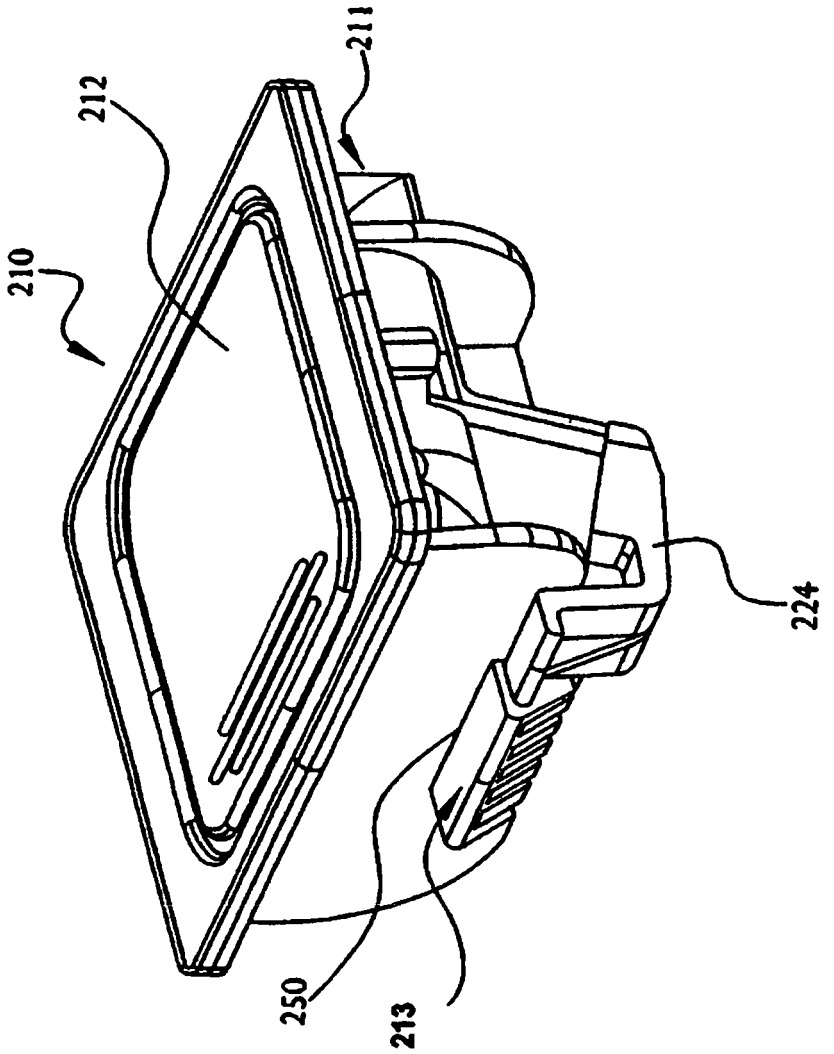

FIG. 13

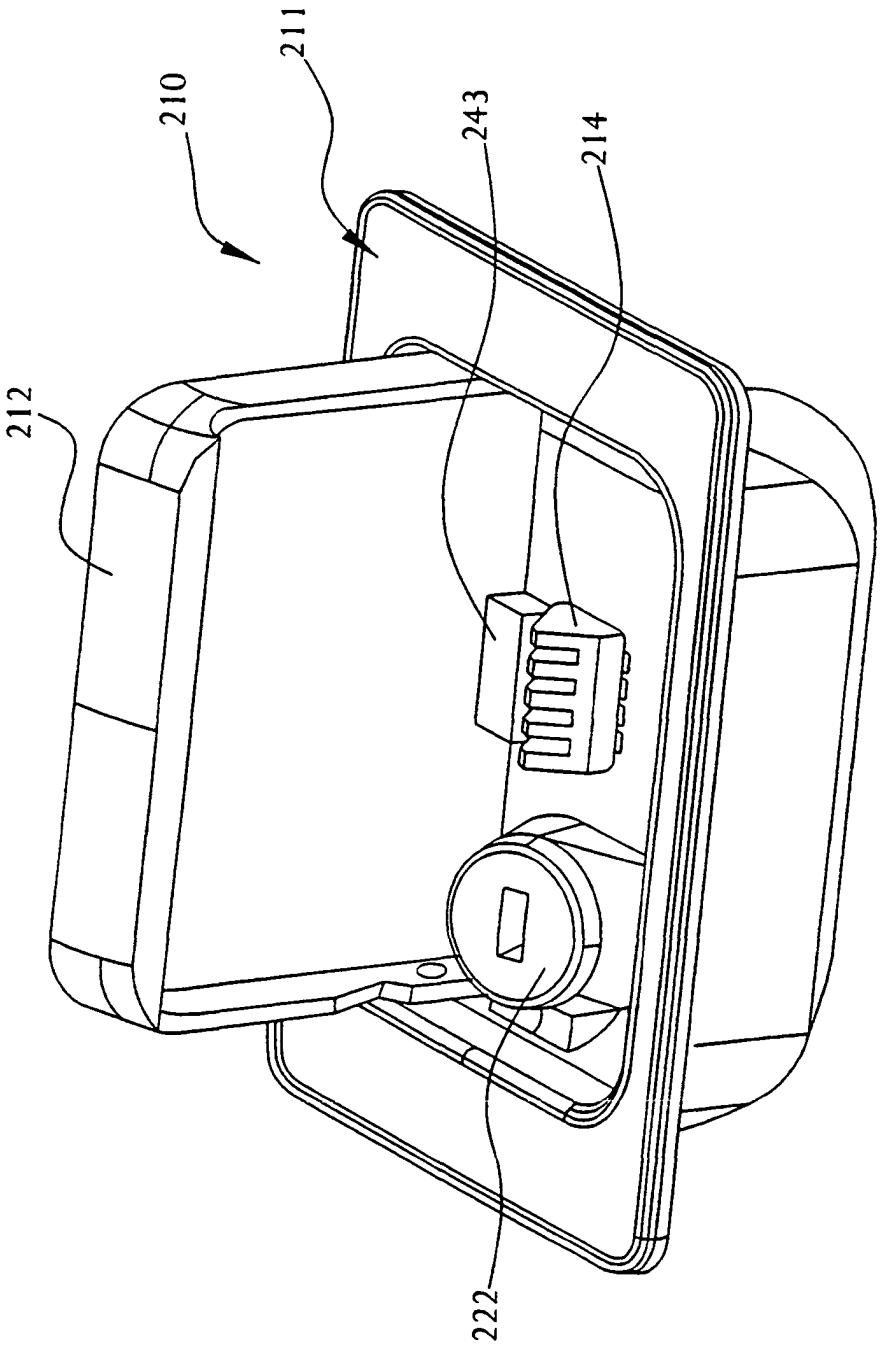

FIG. 14

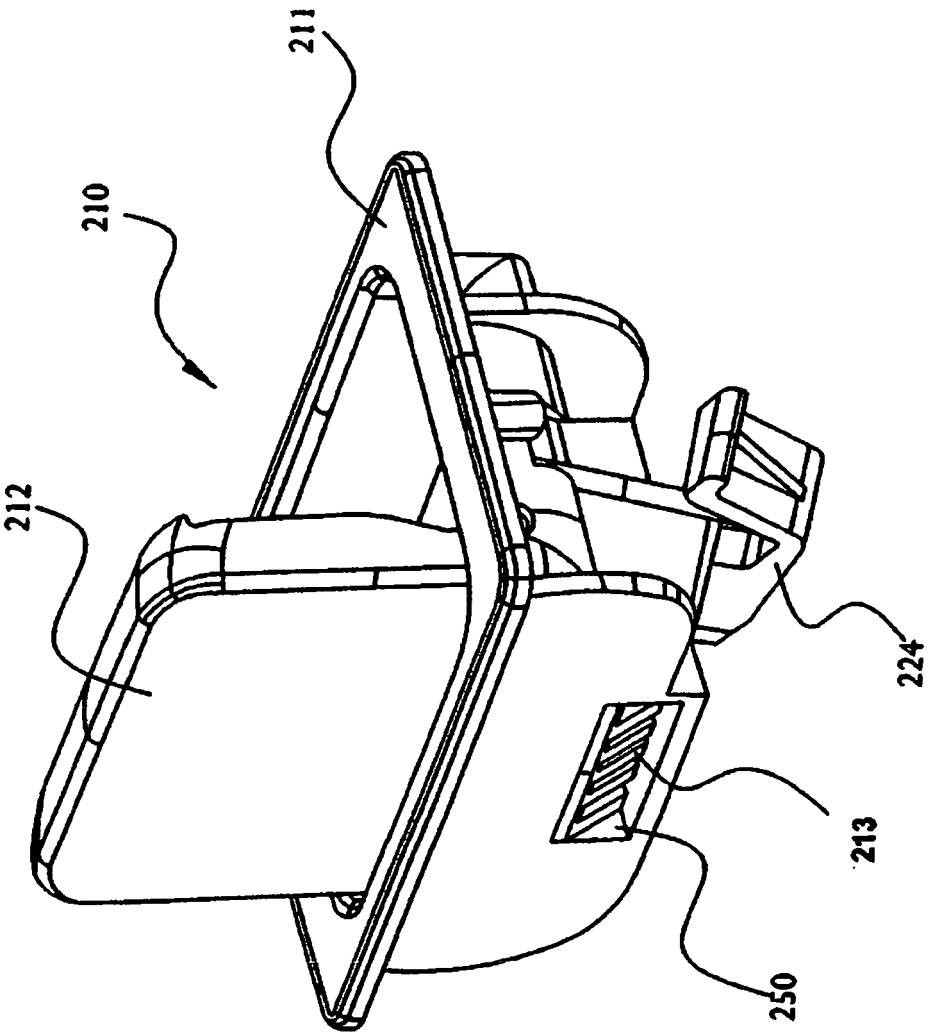

FIG. 15

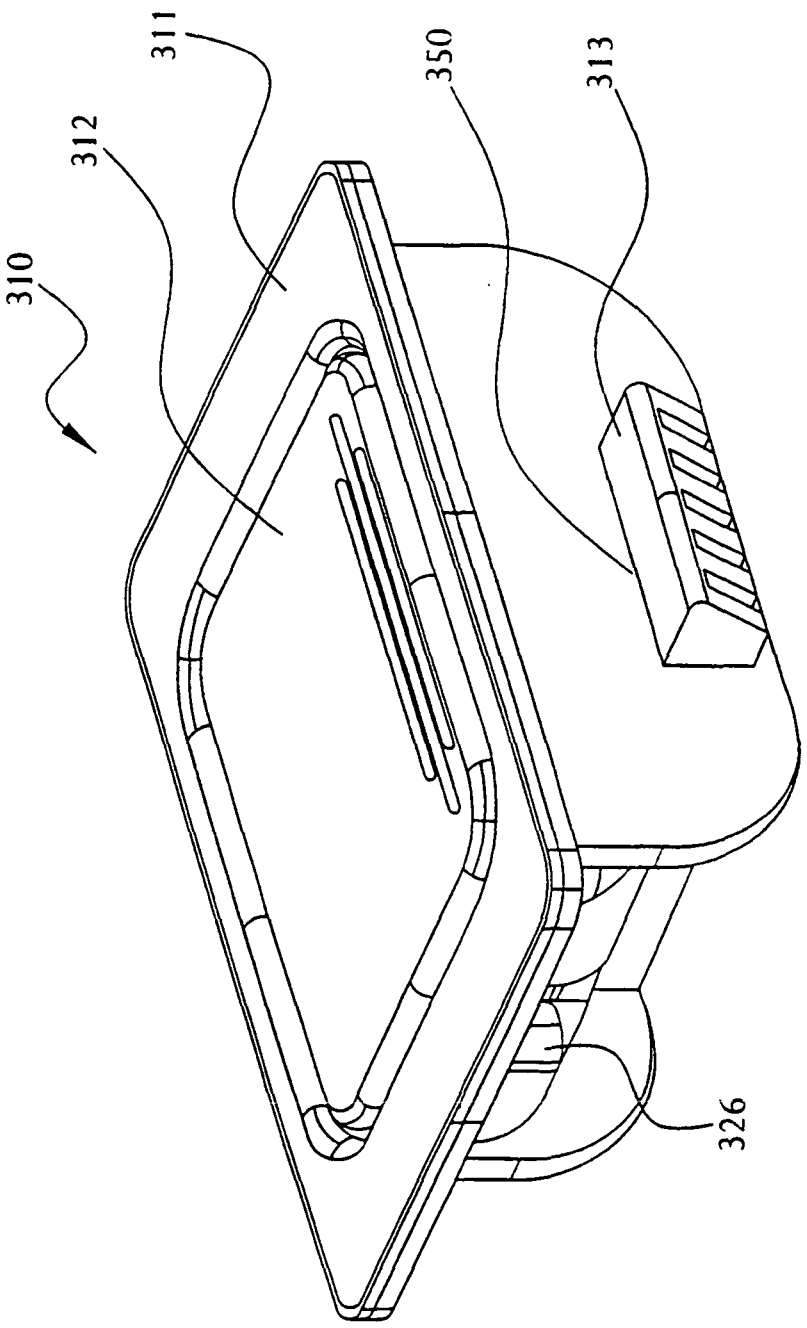

FIG. 16

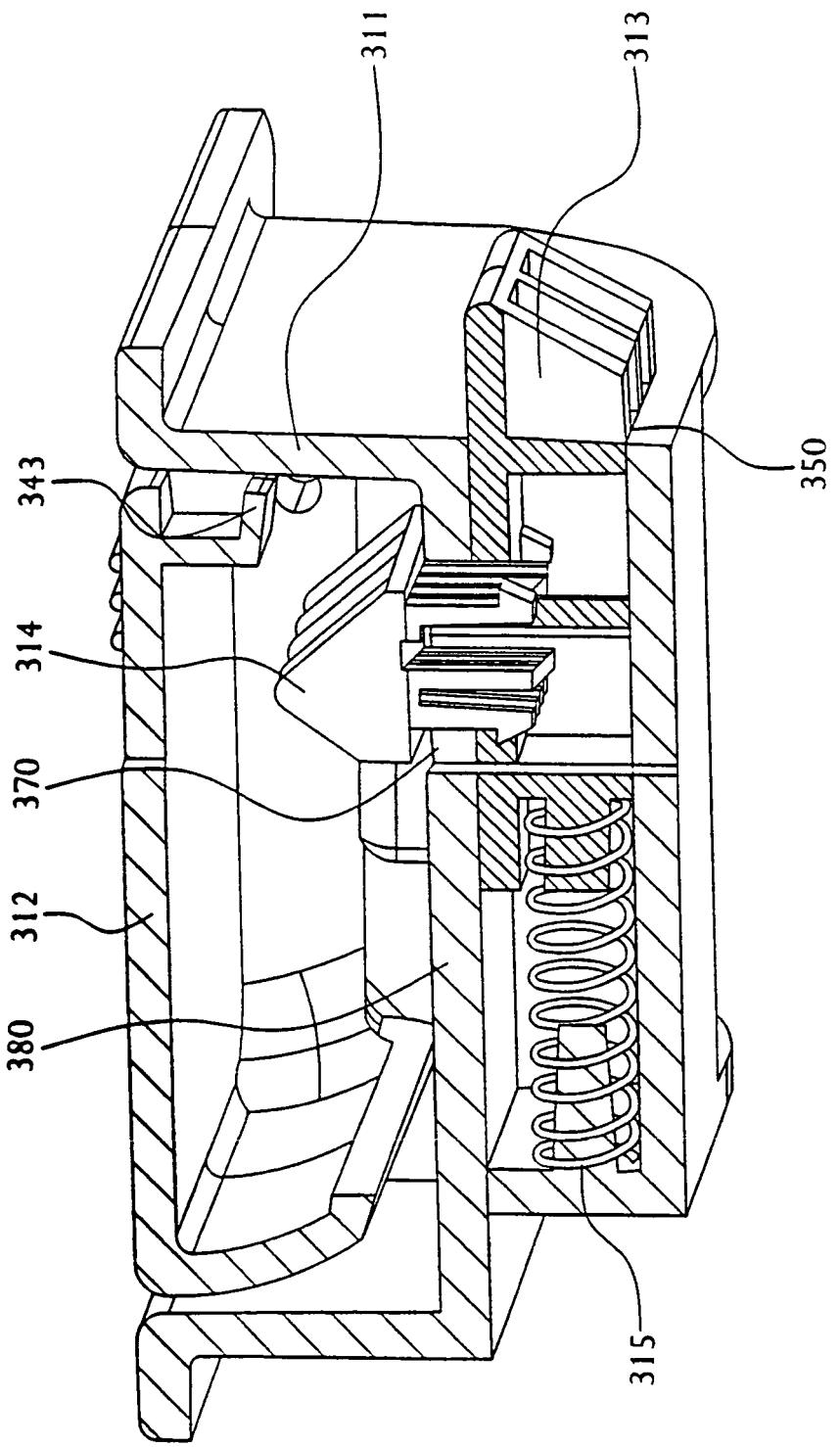

FIG. 17

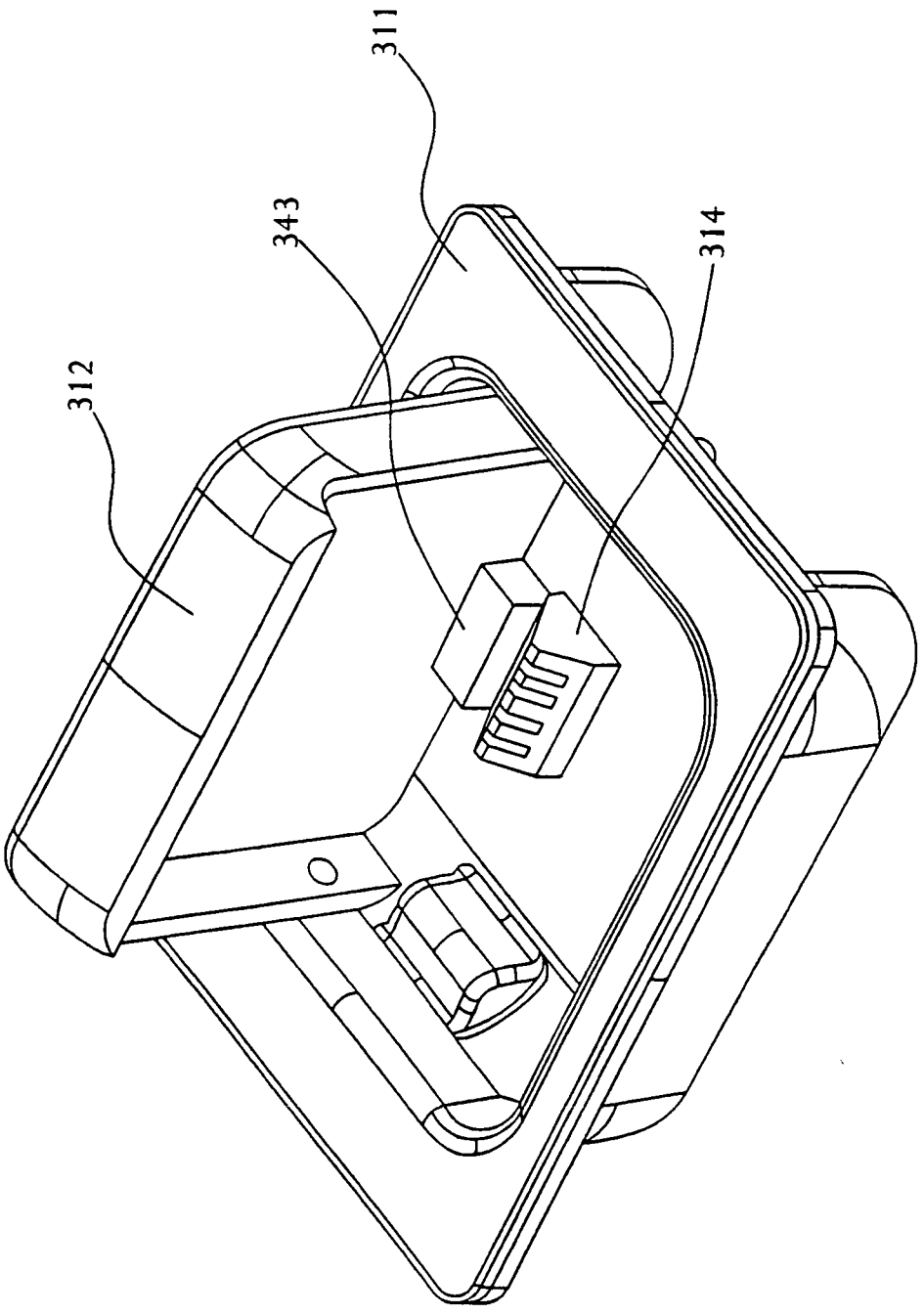

FIG. 18

REFERENCES CITED IN THE DESCRIPTION

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