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**INTEGRATED CABLE DESIGN FOR INSIDE RELEASE AND INSIDE LOCK  
FUNCTION**

**ABSTRACT**

A cable end fitting for use in a latch is provided including a sheath for surrounding a portion of a first cable and a second cable. A portion of the sheath, including a first end is positioned within a housing. A base plate is coupled to the second end of the sheath. A first bore and a second bore extend through the base plate and the sheath. The base plate retains the cable end fitting in a position in the latch.

We claim:

1. A cable end fitting for use in a latch comprising:  
  
a sheath for surrounding a portion of a first cable and a second cable, wherein a portion of the sheath, including a first end, is positioned within a housing; and  
  
a base plate coupled to a second end of the sheath, such that a first bore and a second bore pass through the base plate and the sheath, wherein the base plate retains the cable end fitting in a position in the latch.
2. The cable end fitting according to claim 1, wherein the base plate includes an arm, a portion of which is separated from the base plate by a gap.
3. The cable end fitting according to claim 2, wherein a protrusion is disposed at an unattached end of the arm, and the protrusion retains the cable end fitting.
4. The cable end fitting according to claim 1, wherein a portion of an outside surface of the housing has a contoured surface complementary to the sheath.
5. The cable end fitting according to claim 4, wherein a portion of an outside surface of the housing, opposite the contoured surface, extends from two substantially perpendicular surfaces to form a substantially right angle.
6. The cable end fitting according to claim 5, wherein one of the surfaces forming the right angle of the housing includes a groove.
7. The cable end fitting according to claim 1, wherein the first cable is a release cable.
8. The cable end fitting according to claim 1, wherein the second cable is a sill cable.

9. A cable assembly within a latch comprising:

a back plate having a cable abutment, wherein the cable abutment includes an arm and a hook that extend substantially perpendicular from the cable abutment and form a slot; and

a cable end fitting for retaining a first cable and a second cable about a latch end, wherein a portion of the cable end fitting is disposed and retained within the slot.

10. The cable assembly according to claim 9, wherein the cable end fitting further comprises:

a sheath for surrounding a portion of the first cable and the second cable, wherein a portion of the sheath is disposed within a housing; and

a base plate coupled to an end of the sheath, such that a first bore and a second bore extend through the base plate and the sheath.

11. The cable assembly according to claim 10, wherein the arm and the hook of the cable abutment extend about a portion of the sheath between the base plate and the housing, such that the housing is disposed on a first side of the arm and the hook, and the base plate is disposed on a second side of the arm and the hook.

12. The cable assembly according to claim 11, wherein a width of the portion of the sheath between the base plate and the housing is at least equal to a width of the arm and hook of the cable abutment.

13. The cable assembly according to claim 10, wherein the base plate of the cable end fitting includes a base arm and a protrusion disposed at an end of the base arm, the protrusion extending substantially perpendicular from the plane of the base plate in the direction of the housing.

14. The cable assembly according to claim 13, wherein the arm of the cable abutment includes an elbow such that a gap exists between the elbow and the cable abutment.

15. The cable assembly according to claim 14, wherein the protrusion at the end of the base arm is disposed within the gap between the elbow and the cable abutment, and engagement between the protrusion and the arm prevents movement of the cable end fitting.

16. The cable assembly according to claim 9, wherein the first cable is a release cable.

17. The cable assembly according to claim 9, wherein the second cable is a sill cable.

18. A method for installing cables within a latch comprising:  
inserting a first cable into a first bore extending through a sheath and base plate of a cable end fitting;

inserting a second cable into a second bore extending through a sheath and base plate of the cable end fitting; and

connecting the cable end fitting to a back plate of the latch.

19. The method for installing cables within a latch according to claim 18, wherein the cable end fitting is inserted into a slot of a cable abutment of the back plate.

20. The method for installing cables within a latch according to claim 19, wherein the slot is formed by an arm and a hook, and the arm and the hook limit movement of the cable end fitting relative to the back plate.

Dated this 1<sup>st</sup> day of March, 2012.

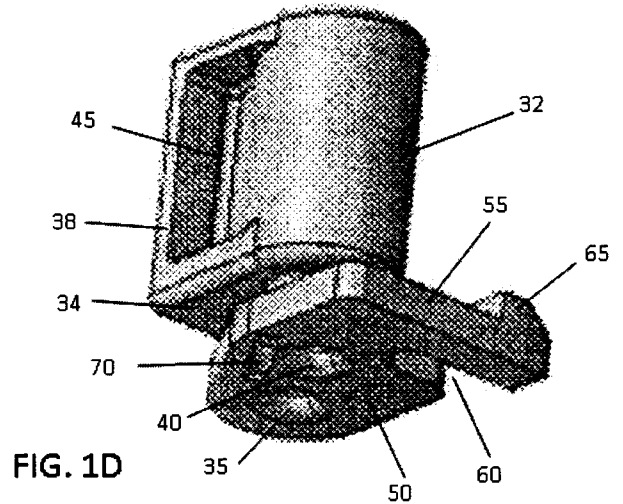
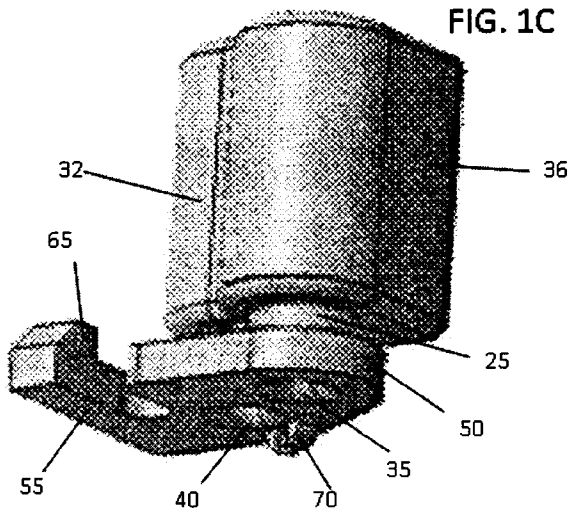
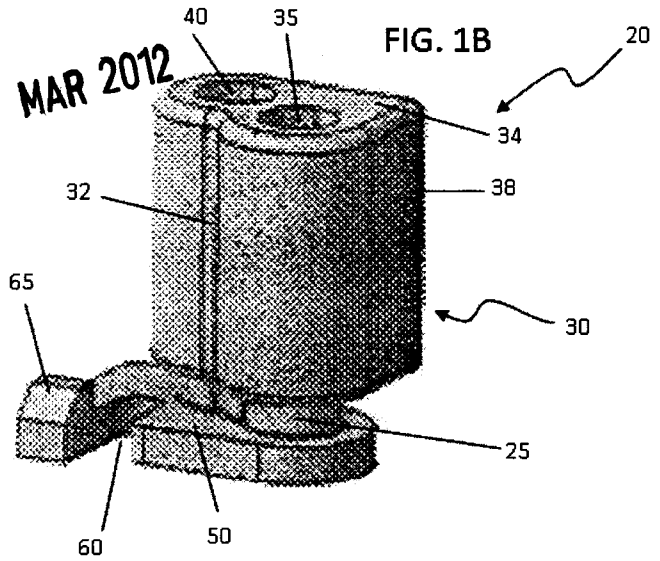
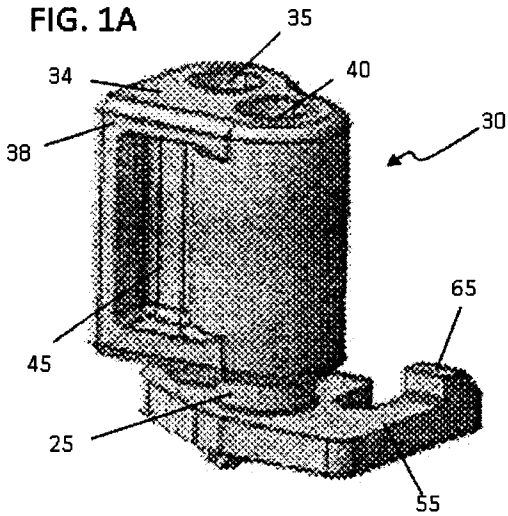
  
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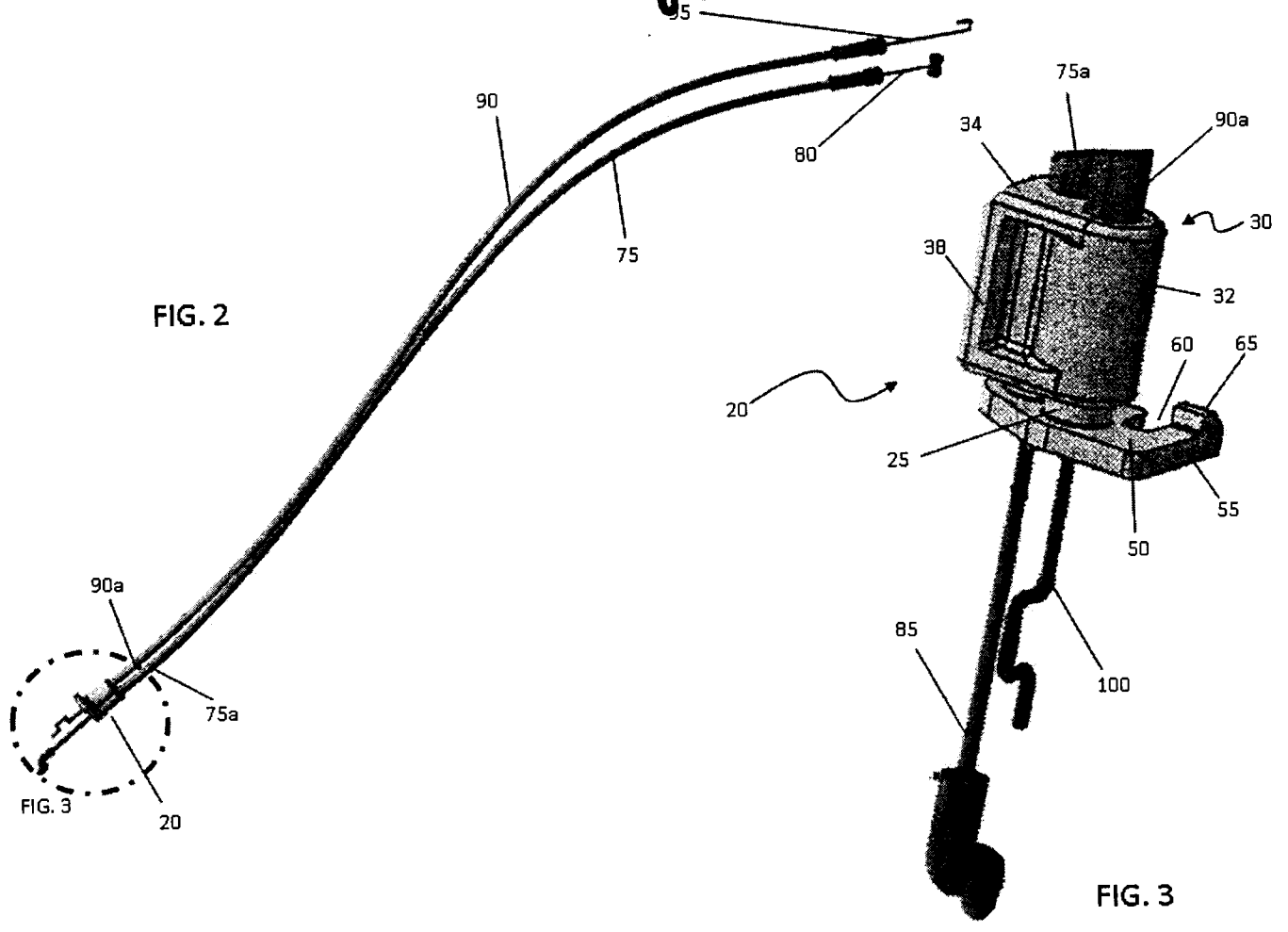


FIG. 2

FIG. 3

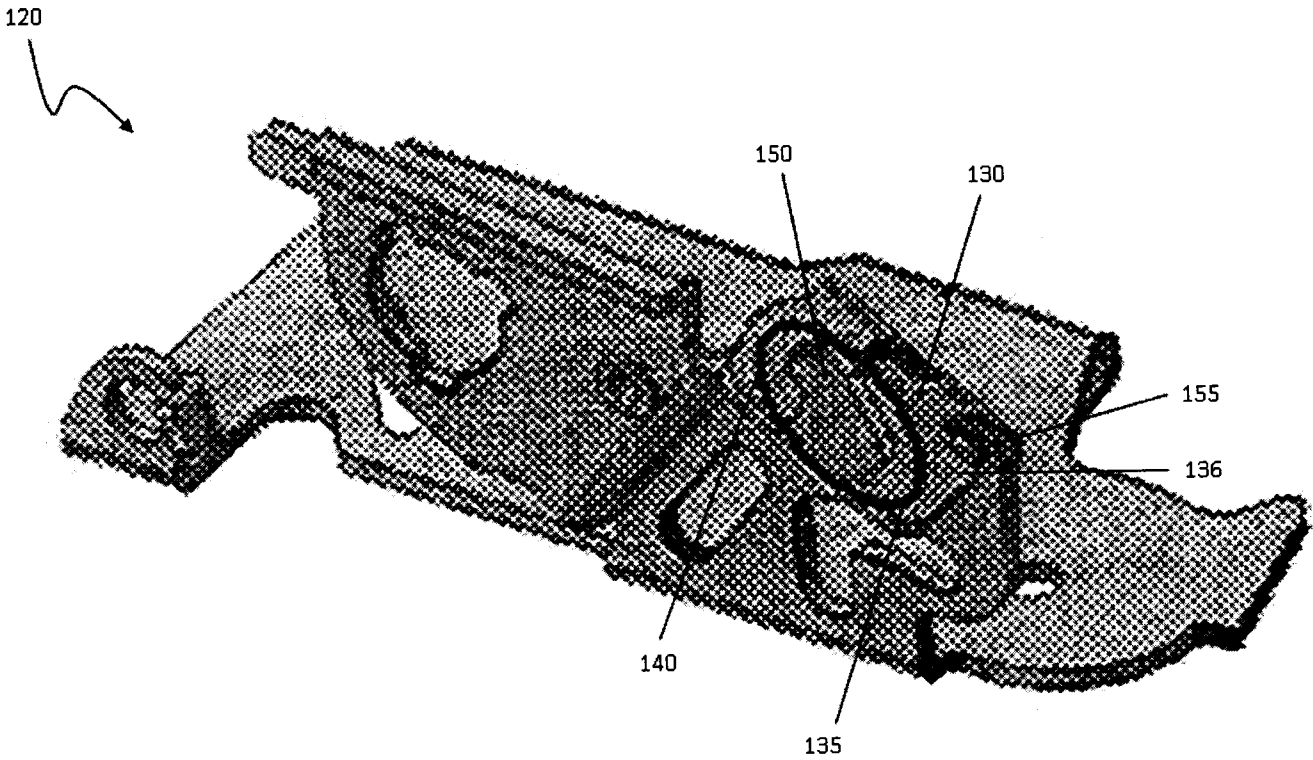
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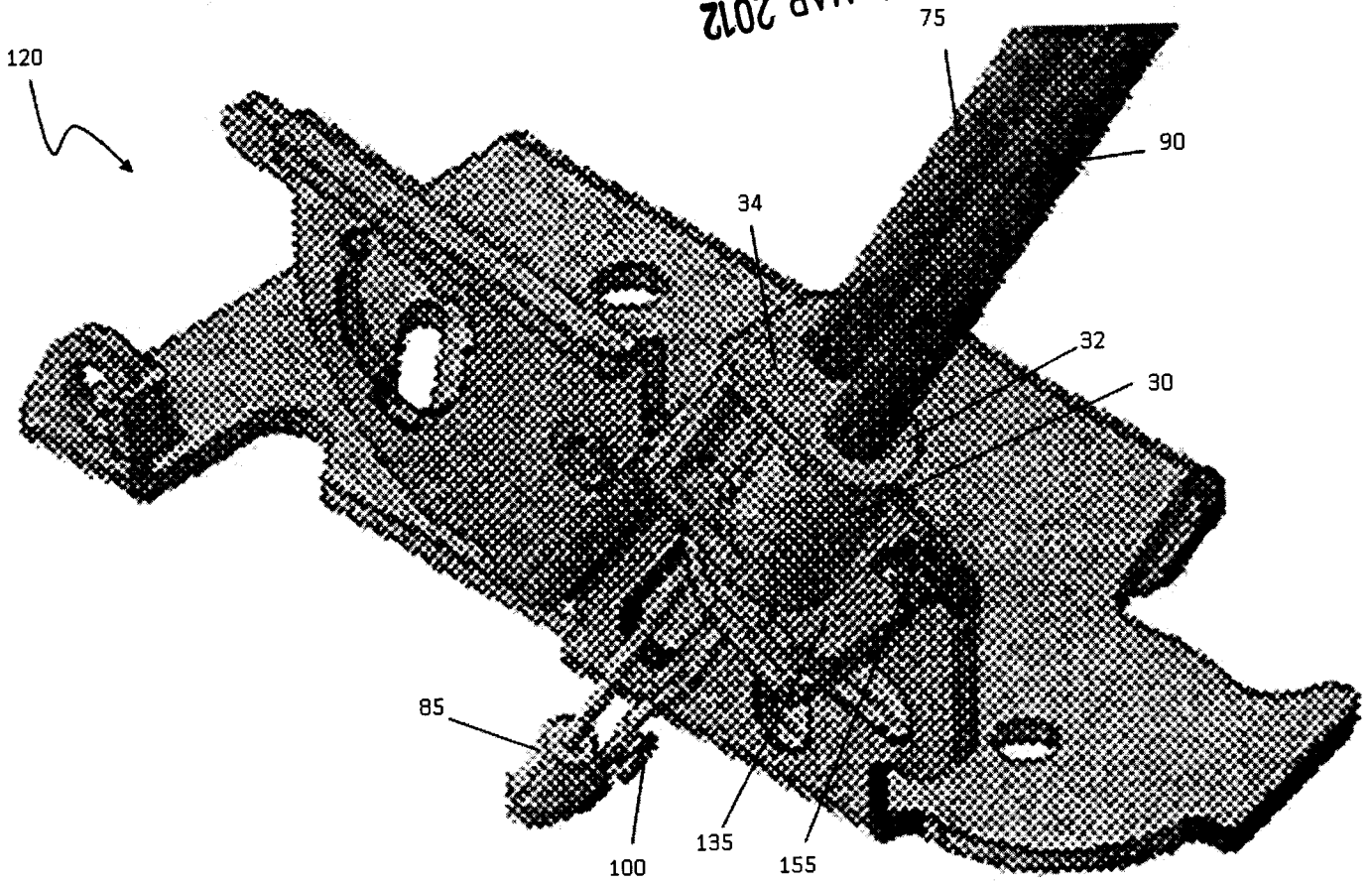
FIG. 4




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FIG. 5



  
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FIG. 6

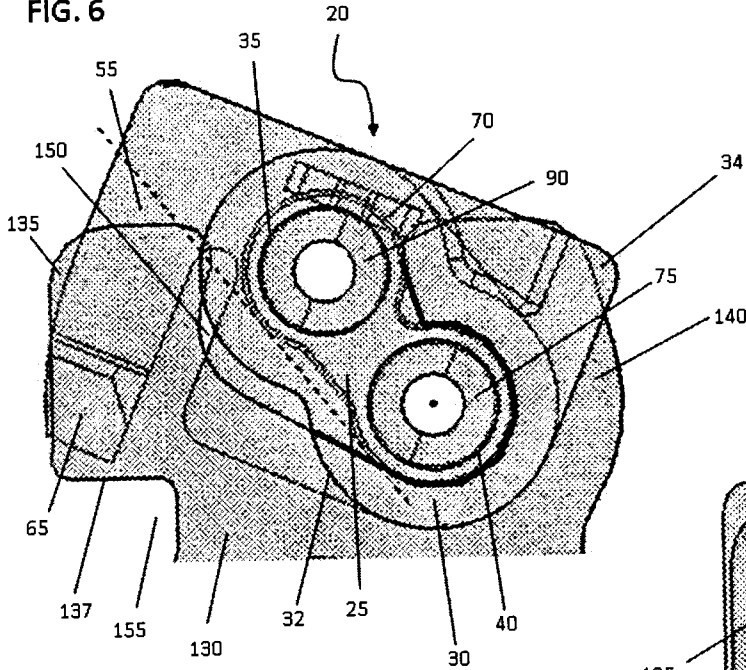
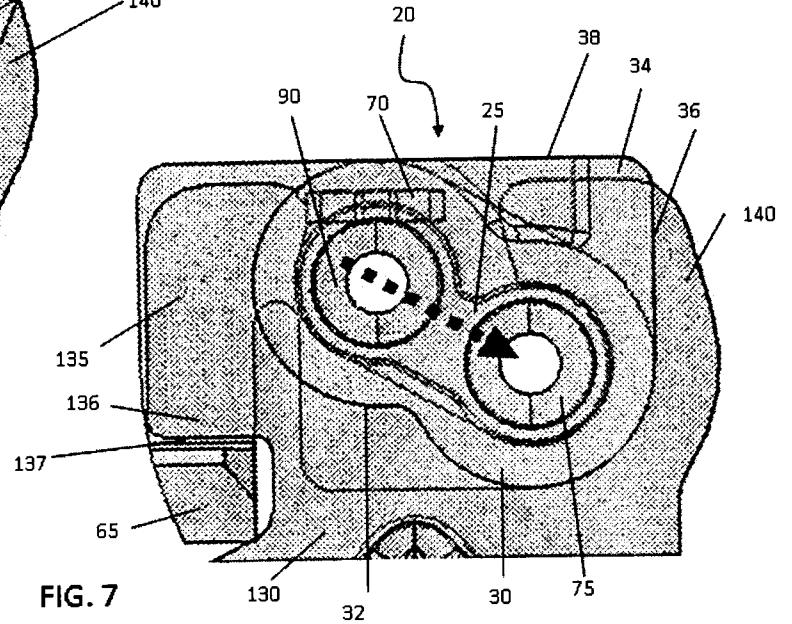



FIG. 7



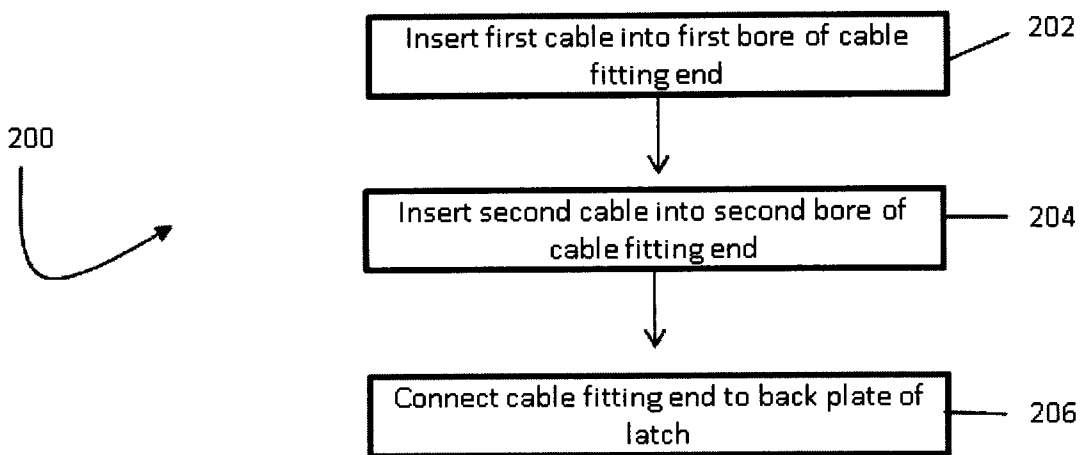
  
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FIG. 8



  
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# INTEGRATED CABLE DESIGN FOR INSIDE RELEASE AND INSIDE LOCK FUNCTION

## BACKGROUND

[0001] Exemplary embodiments of the present invention relate generally to latch mechanisms and, more particularly, to end fittings for cables in latch mechanisms.

[0002] Conventional latch mechanisms may include multiple cables, each coupled to a lever for carrying out various functions, such as locking and releasing the latch for example. Often, these cables have to be connected to the interior of the latch, accessible by only a small opening through which the cable is inserted. In addition, other components of the latch, such as the door trim fixing plug, may interfere with the positioning of the cable as it is inserted into the latch. This can make the assembly process difficult, time consuming, costly and prone to error. It is also difficult to disassemble the cable connection for maintenance without damaging the cable, the cable fitting or the latch.

[0003] Accordingly, it is desirable to provide a latch mechanism wherein multiple cables can be installed together, thereby reducing the number of parts of the latch and simplifying the cable installation process.

## SUMMARY OF THE INVENTION

[0004] According to an exemplary embodiment of the present invention, a cable end fitting for use in a latch is provided including a sheath for surrounding a portion of a first cable and a second cable. A portion of the sheath, including a first end, is positioned within a housing. A base plate is coupled to the second end of the sheath. A first bore and a second bore pass through the base plate and the sheath. The base plate retains the cable end fitting in a position in the latch.

[0005] According to another embodiment of the present invention, a cable assembly within a latch is provided including a back plate having a cable abutment. The cable abutment includes an arm and a hook that extend substantially perpendicular to the cable abutment. The arm and hook form a slot. The cable

assembly additionally includes a cable end fitting for retaining a first cable and a second cable about a latch end. A portion of the cable end fitting is disposed and retained within the slot.

[0006] According to yet another embodiment, a method is provided for installing cables within a latch including, inserting a first cable into a first bore of a cable end fitting. A second cable is then inserted into a second bore of the cable end fitting. The cable end fitting is then connected to a back plate of the latch.

[0007] The above-described and other features and advantages of the present invention will be appreciated and understood by those skilled in the art from the following detailed description, drawings, and appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

[0009] FIGS. 1A- 1D are various perspective views of an exemplary embodiment of the present invention;

[0010] FIG. 2 is a perspective view of a set release cable and a sill cable according to the present invention;

[0011] FIG. 3 is a detailed view of the cable end fitting assembly as illustrated in FIG.2;

[0012] FIG. 4 is a perspective view of a base plate of a latch according to an embodiment of the present invention;

[0013] FIG. 5 is a perspective view of the assembled base plate and cable fitting according to the present invention;

[0014] FIG. 6 is a front view of the base plate and cable fitting during assembly; and

[0015] FIG. 7 is a front view of the assembled base plate and cable fitting according to the present invention.

## DETAILED DESCRIPTION

[0016] Referring now to FIGS. 1A- 1D, a cable end fitting 20 for retaining more than one cable in a latch is illustrated. The cable end fitting 20 includes a sheath 25 for surrounding a first cable and second cable. A portion of the sheath 25, including one end, is encompassed within a housing 30. The opposite end of the sheath 25 is coupled to a base plate 50. A first bore 35 and a second bore 40, each having a substantially uniform cross-section along its length, extend from the base plate 50, through the sheath 25. In one embodiment the first bore 35 and the second bore 40 are equal in diameter. In another embodiment, the first bore 35 and the second bore 40 have different diameters.

[0017] The housing 30 surrounds the entire circumference of the outer surface of the sheath 25. In one embodiment, at least a portion of the outside surface of the housing 30 has a contoured surface 32 complementary to the shape of the exterior of the sheath 25. A portion 34 of the housing 30, opposite the contoured outside surface 32, may extend between perpendicular surfaces 36 and 38 to form a substantially right angle. One of the surfaces 38 forming the right angle 34 of housing 30 includes an inlet or groove 45 to provide a relief to reduce the risk of the housing 30 interfering with adjacent components of the latch. The base plate 50 includes an arm 55 separated from the portion of the base plate 50 having the first bore 35 and the second bore 40 by a gap 60. The distal end of the arm 55 includes a protrusion 65 extending substantially perpendicular from the base plate 50 in the direction of the sheath 25 and the housing 30. In one embodiment, the base plate 50 is made of a resilient material such that the arm 55 is able to bend or deform out of the plane of the base plate 50. The base plate 50 additionally includes a small clip 70 positioned adjacent the second bore 40.

[0018] Referring now to FIGS. 2 and 3, a first cable 75 and a second cable 90 are attached to the cable end fitting 20 before the cable end fitting 20 is connected to the latch. In one embodiment, the first cable 75 is a release cable and the second cable 90 is a sill cable. The first cable 75 is inserted into the housing 30 and through the first bore 35 of the sheath 25. When in position, a first connector 85, attached at a latch end 75a of the first cable 75, extends beyond the base plate 50 of the cable end fitting 20. Similarly, the second cable 90 is inserted through the second

bore 40 of the sheath 25 such that the second connector 100, attached at a latch end 90a of the second cable 90, is disposed adjacent the base plate 50. The clip 70 (FIG. 1) on the bottom of the base plate 50 maintains the position and direction of the second cable 90, thereby making it easier to assemble the second cable 90 into the cable end fitting 20.

[0019] FIG. 4 illustrates an exemplary back plate 120 of a latch mechanism in accordance with an embodiment of the present invention. The back plate 120 includes a cable abutment 130 having an arm 135 and a hook 140 that extend substantially perpendicular from the cable abutment 130. Together, the arm 135 and the hook 140 form a slot 150 into which a portion of the cable end fitting 20 may be located. The slot 150 (also see FIGS. 6 and 7) has a contour complementary to the outside surface of the sheath 25. In addition, arm 135 extends away from the cable abutment 130, thereby creating a gap 155 between an elbow 136 of the arm 135 and the cable abutment 130. A portion of the cable end fitting 20 extends into the gap 155 to prevent movement of the cable end fitting 20 relative to the back plate 120.

[0020] Referring now to FIGS. 5 – 7, the assembly of the base plate 120 and the cable end fitting 20 is illustrated. Once the first cable 75 and the second cable 90 are connected to the cable end fitting 20, the cable end fitting 20 may then be attached to the back plate 120. After positioning the cable end fitting 20 within slot 150, the first connector 85 at the latch end of the first cable 75 and the second connector 100 at the latch end of the second cable 90 may be coupled to other portions of the latch mechanism. To couple the cable end fitting 20 to the base plate 120, the exposed portion of the sheath 25, not covered by housing 30, is slid into position within the slot 150 of the cable abutment 130. The first cable 75 is located adjacent hook 140 and the second cable 90 is adjacent arm 135. The hook 140 and arm 135 extend about the sheath 25 such that the housing 30 is disposed on one side of the hook 140 and arm 135, and the base plate 50 is disposed on the other. In one embodiment, the exposed portion of the sheath 25 between the housing 30 and the base plate 50 has a length at least equal to the width of the arm 135 and the hook 140 of the cable abutment 130. The arm 55 of the base plate 50 is located adjacent the arm 135 of the cable abutment 130 such that the protrusion 65 is located within gap 155. Because the protrusion 65 extends substantially perpendicular to the plane of the

base plate 50, an edge of the protrusion 65 engages a surface 137 of the arm 135, thereby retaining the cable end fitting 20 in position relative to the base plate 120.

[0021] The method 200 of installing cables within a latch is illustrated in FIG. 8. In block 202, a cable, such as first cable 75 for example, is connected to the cable end fitting 20 through the first bore 35. Another cable, such as second cable 90 for example, is then connected to the cable end fitting 20, as shown in block 204, through the second bore 40. In block 206, the cable end fitting 20, having a first connected cable and a second connected cable is then coupled to a back plate 120 of a latch. To couple the cable end fitting 20 to the back plate 120, the exposed portion of the sheath 25 is inserted into a slot 150 of a cable abutment 130. As the cable end fitting 20 is rotated into position in the slot 150, the arm 55 of the base plate 50 is located adjacent the arm 135 of the cable abutment 130. When the sheath 25 is in its final position within the slot 150, the arm 135 and hook 140 of the cable abutment 130 limit the movement of the cable end fitting 20 out of the plane of the cable abutment 130 by contacting either the base plate 50 or the housing 30. Additionally, the protrusion 65 of the distal end of the arm 55 of the base plate 50 engages a surface of the arm 135 of the cable abutment 130 adjacent the elbow, thereby preventing rotation of the cable end fitting 20 relative to the cable abutment 130.

[0022] While the invention has been described with reference to an exemplary embodiment, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.