An overriding latch mechanism for positioning a pair of members in a first and second predetermined positions. A bracket portion contains an end wall, an enlarged width slot and a reduced width slot adjacent thereto. The bracket portion is secured to one of the members. A lipped spring portion contains a lip surface, an enlarged width portion and a reduced width portion. The lipped spring portion is secured to the other member. The lip surface interlocks with the bracket portion end wall when the members are in a first predetermined position. When the members are moved from the first position to a second position, the reduced width portion and the enlarged width portion pass through the reduced width slot and the enlarged width slot, respectively, during the movement. The bracket and lipped spring portion may be formed integrally with the members.

5 Claims, 7 Drawing Figures
OVERRIDING LATCH MECHANISM

The invention relates, in general, to overriding latch mechanisms and more particularly, to devices which require a locking and quick-release capability.

BACKGROUND OF THE INVENTION

In U.S. Pat. Application No. 129,786 filed Mar. 31, 1971, there is depicted an electrical contact insertion-extraction tool for removing an electrical contact from a connector assembly. The tool, which is self-aligned, is inserted from the rear of an electrical connector and is used to spread inwardly extending tangs of a contact retention clip so as to allow insertion or removal of a contact from the connector assembly. Such a tool is normally spring biased, so that the tip portion is generally closed and defines a cylindrical member. Squeezing together of the holder portions of the tool causes the tip portion to separate, thus moving the tongs. Release of the holder portion causes the tip portions to move together again. Such a tool is normally difficult to operate. Continued squeezing of the member together can result in over stressing of the tip portions. Moreover, where speed is a requirement the tool has been found to be slow and cumbersome.

In order to overcome the attendant disadvantages of prior art overriding latch systems, the present invention provides a latching mechanism wherein movement of members of the mechanism together causes the tool to reach a first predetermined condition. Continued movement of the opposed surfaces allows reversal of movement of the tool to occur with the result that the tool returns to the initial position.

The advantages of the invention, both as to its construction and mode of operation, will be readily appreciated as the same becomes better understood from reference to the following detailed description when considered in connection with the accompanying drawings in which like referenced numerals designate like parts throughout the figures.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts a perspective view of the overriding latch mechanism positioned on a conventional tool;

FIG. 2 illustrates an alternative version of the overriding latch mechanism wherein the mechanism is made an integral part of the tool;

FIG. 3 shows an exploded view of the latching portion of the tool depicted in FIG. 2; and

FIGS. 4 through 7 depict various positions of the latching mechanism during the operation thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, there is shown in FIG. 1 a latching mechanism mounted on a conventional contact insertion-extraction tool. The latching mechanism comprises a fixed angular slotted bracket 14 and a lipped spring member 16. A pair of holder members 18, 22 are secured together at their ends 24, 26, respectively, and then diverge outwardly. At their diverging portions the members 14 and 16 are each mounted on one of the surfaces thereof. The front end of the tool contains a cylindrical member 28 which is normally split in half to form a pair of semi-cylindrical portions. Movement of the holder portions 18 and 22 together causes the semi-cylindrical portions at the tip 28 to spread apart. Further movement of the holder portions 18 and 22 causes the tips to move together again.

Referring now to FIG. 2, there is shown an alternative arrangement for making the latching mechanism. In FIG. 2 the latching mechanism is stamped from a generally U-shaped sheet of material 32 which performs the same function as the holder portion 18 and 22. The member 32 has a first side member 34 and a second side member 36 which are joined together at one end by a U-shaped member 38. The angular slotted bracket portion 42 and lipped spring portion 44 are each stamped from the members 34 and 36, respectively, and are integral therewith.

As shown in greater detail in FIG. 3, the fixed angular slotted bracket 42 is of a uniform width and is formed of a portion 52 member which extends perpendicularly from the inner surface of the member 54. Further, a slotted bracket portion 54 extends at an acute angle with respect to the portion 52 with a curved portion 56 defining the junctions of the portions 52 and 54. The portion 54 contains an enlarged slot 62, which is adjacent a reduced size slot 64. The slot 64 extends from the end wall 66 of the portion 54 to a pair of shoulder surfaces 68, 72 and is defined by a pair of side walls 74, 76. The enlarged slot 62 contains an end wall 78 and a pair of side walls 82, 84. The opposite end of the slot 62 is defined by the shoulder surfaces 68, 72 and the opening into the slot 64.

The lipped spring portion is formed of a generally rectangular section 92 which extends perpendicularly from the inner surface of the side wall member 36 towards the bracket portion 42. The section 92 is integral with an enlarged width rectangular section 94. The end of the rectangular section 94 furthest from the section 92 contains a U-shaped section 96 which is secured to a rectangular section 98 folded onto and having the same width as the section 94. However, the length of the section 98 is less than that of the section 94 so that a lip surface 102 defines the end of the section 98.

The distance between the side walls 82 and 84 is greater than the width of the section 94. Moreover, the distance between the side wall 74 and 76 is greater than the width of the portion 92.

Thus, when the side members 34 and 36 are squeezed together, as shown in FIG. 4, the U-shaped section 96 initially touches the outer surface of the portion 54 closest thereto. The U-shaped section then rides along the outer surface of the portion 54 as shown in FIG. 5, until the lip surface 102 interlocks with the end wall 66 of the portion 54, as shown in FIG. 6. At this point, the semi-cylindrical portions of the members 28 are spread apart. Continued movement of the members 34 and 36 together causes the section 92 to move through the reduced size slot 64 and the members 34 and 36 automatically tend to spread apart to their initial position, as shown in FIG. 3. As the movement continues, as shown in FIG. 7, the section 94 will slide through the enlarged slot 62. Finally, the members 34 and 36 will return to their original position of FIG. 2.

While the latching mechanism has been described for use with an electrical connector tool, it should be
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understood, of course, that numerous other applications with tools or other devices are possible. Moreover, the latching mechanism could be used with hemostatic type tweezers or tap-release cabinet door latches.

What is claimed is:

1. An overriding latch mechanism for positioning a pair of members in a first predetermined position and a second predetermined position comprising:
   a bracket portion having an enlarged width slot and a reduced width slot adjacent thereto, and having an end wall, said bracket portion being secured to one of said members; and
   a lipped spring portion having an enlarged width section, a reduced width section and a lip surface, said lipped spring portion being secured to the other of said members, said lip surface interlocking with said bracket portion end wall when said members are in a first predetermined position, movement of said members from said first predetermined position enabling said members to move to a second position, with said reduced width section and said enlarged width section passing through said reduced width slot and said enlarged width slot, respectively, during said movement.

2. A latch mechanism in accordance with claim 1 wherein said bracket portion and said lipped spring portion are each integrally formed with one of said members.

3. A latch mechanism in accordance with claim 1 wherein said bracket portion slots are adjacent each other.

4. A latch mechanism in accordance with claim 1 wherein the width of said enlarged slot and said reduced slot is greater than the width of said enlarged width section and said reduced width section, respectively.

5. A latch mechanism in accordance with claim 1 wherein the slotted part of said bracket portion is formed at an acute angle with the main bracket portion.