The present invention concerns a connector with a housing lock, with a first locking component (1) on a first housing part (2), a second locking component (3) on a second housing part (4) and a securing slide (5) whose front face (6) opposes, by means of the force of a spring (7), the insertion of the first locking component (1) into the second locking element (3) and which, after reaching the locked position, locks the first and second locking components (1, 3). The first locking element (1) releases, after reaching the locked position, the securing slide, pre-tensioned by means of the strength of a spring, in order that it may return to its starting position. Whilst it is in this position, the securing slide (5) presses the front face (6) of the first locking component (1) into the second locking component (3) and supports itself against an inner wall (8) of the first housing part (2). A pull on the securing slide (5) in the direction opposite to that of the pull of the spring, places the front face opposite a recess (9) in the inner wall (8) of the housing, into which it moves and releases the lock with the second locking component (3).
Description

[0001] The present invention concerns a connector with a housing lock, according to the characterising clause of patent Claim 1. Such connectors are used when it is important to ensure without fail that the two connector parts are completely inserted into one another and do not remain stuck a short distance before their end position, for example through jamming.

[0002] A connector with a housing lock according to the characterising clause of patent Claim 1 is familiar from DE 197 14 459 A1. This connector provides for the two connector parts which are to be inserted into one another, to be forced away from one another by the force of a spring before they have become securely locked into their final position. This is achieved by means of a securing slide, whose front face opposes, by means of the force of a spring, the introduction of a locking component arranged on a first housing part, into a second locking component arranged on a second housing part, until the said components are securely locked into one another and which, acting as a secondary lock, then locks the locking elements into their final locked position. This type of housing lock has the drawback that in order to loosen the link, the securing slide must be withdrawn over its entire length against the force of a spring which is pushing it forward, in order to loosen the secondary lock brought about by the securing slide and make possible the release of the locking components. This requires a high operating force and can, in the case of difficulty accessible parts of the connector, lead to problems of operation.

[0003] DE 196 54 293 A1 describes a connector-loosening device, where the lock is released during the process of separation by pressing down an elastic locking component in the shape of a bridge. An unintentional loosening of the connector link by pressing the actuating projection is not possible.

[0004] DE 196 54 287 A1 describes a connector system, which is to a large extent similar to that described in DE 196 54 293 A1. The difference resides in the place of pressure actuation, at which the elastic locking component is actuated, in order to release the connector link. In this case, this is located immediately on the bridge-shaped locking component, but it can also be unintentionally pressed, releasing the connector link.

[0005] The present invention has the task of improving a connector according to the characterising clause of patent Claim 1, in such a way that a loosening of the securing slide can be implemented by means of a short movement, without the application of a great deal of force.

[0006] This task is solved according to the Claim. The subsidiary Claims characterise some preferred forms of embodiment of the present invention.

[0007] The present invention starts from the basic idea of releasing the locked position of the locking elements through the securing slide, by means of giving the said securing slide, following its withdrawal from its end position, the possibility of moving out of the way vertically to the direction of insertion by a short distance, which only accounts for a small fraction of the total travel of the spring components, in order to release the locked locking components. The securing slide need therefore not be moved back over the entire length of the locking arms, but in a actual case of a connector which is somewhat larger than a matchbox, by 1 to 3 mm

[0008] The invention is explained more fully below, with the help of the description of an embodiment example and by reference to the diagrams.

Fig. 1 shows a perspective views of the two housing parts of the connector according to the Invention,

Fig. 2 shows the connector from Fig 1 in the first locked position,

Fig. 3 shows the connector from Fig 2 in the second locked position,

Fig. 4 shows the connector in a perfect locked position and

Fig. 5 shows the connector during the process of loosening of the connector link.

[0009] Fig. 1 shows on the left side a first housing part 2 with a first locking component 1, which projects from the interior of the insertion face in the direction of insertion. In this embodiment, the insertion blades have not yet been inserted into the chambers provided for that purpose beneath the locking component.

[0010] The right side of Fig. 1 shows a second housing part 4 with a securing slide 5, which is arranged on the housing part 4 in a sliding manner over guide grooves and guide ribs and supports itself on the cable side end of the second housing part 4 via the springs 7. The securing slide 5 has at its back end a manipulation handle 15, by means of which it can be pulled with one finger in the opposite direction against the force of the spring. The securing slide 5 has a tongue with a free front face end, which is framed by the sides and the front edge of the securing slide 5.

[0011] Fig. 2 shows both the housing parts 2 and 4 in a first phase of the process of insertion. The first housing part has a skirt which protects the insertion blade (not shown) and into which the second housing part 4 shown in Fig 2. is inserted. Inside the skirt protrudes the first locking component in the direction opposite to that of insertion. The channel 12 in the second insertion housing 4 has at its opening a ramp 13, over which the front face 11 of the locking component 1 is lifted when the second housing component 4 is inserted further. When the second housing 4 continues to be inserted, the front face 11 of the first locking element 1 slides to the under-
A connector with a housing lock, with a first locking component (1) on a first housing part (2), a second locking component (3) on a second housing part (4) and a securing slide (5) whose front face (6) resists, by means of the force of a spring (7), the insertion of the first locking component (1) into the second locking component (3) and after reaching the locked position, locks the first and second locking components (1,3), characterised by the fact that the first locking component (1) releases the pre-tensioned securing slide after reaching the locked position, in order to springs back into its starting position; in that position, the securing slide (5) presses the front face (6) of the first locking component (1) into the second locking component (3) and in so doing supports itself against an inner wall (8) of the first housing part (2) and exerts a pull against the force of the spring in the direction opposite to that of the direction of insertion, on the securing slide (5), whose front face lies opposite a recess (9) in the housing wall (8), into which it escapes and releases the lock with the second locking component (3).

2. A connector according to Claim 1, characterised by the fact that the first locking component (1) is a locking arm which projects within the insertion face of the first housing part (2) in the direction of insertion and the second locking component (3) is a channel (12) within the second housing part (4), which receives the locking arm during the process of insertion and which has a locking recess (10) into which the front face (11) of the locking arm locks, when it is in its final position.

3. A connector according to Claim 2, characterised by the fact that the opening of the channel (12) has, in the second housing part on the same inside wall in which the locking recess (10) is located, a ramp (13), over which the locking arm is led under tension into the channel (12), during which process the said tension presses the locking arm in final end position, into the locking recess (10).

4. A connector according to Claims 1 to 3, characterised by the fact that the distance of the front face (6) of the securing slide (5) in its final position from the front edge (14) of the recess (9), is a small fraction of the depth of insertion of the second housing part (4) into the first housing part (2).

5. A connector according to one of the preceding Claims, characterised by the fact that the securing slide (5) is fastened in a sliding manner on the second housing part by means of guide grooves and guide ribs and supports itself at the cable end of the second housing part by two pressure springs extending to both sides of the channel (12).

6. A connector according to one of the preceding Claims, characterised by the fact that the securing slide (5) has on the cable side a manipulation handle (15) for pulling against the force of the spring.

7. A connector according to one of the preceding Claims, characterised by the fact that the securing slide (5) has a tongue which is framed by the front
end and the sides of the securing slide (5) and whose free end points in the direction of insertion and carries the front edge (6).

8. A connector according to one of the preceding Claims, characterised by the fact that in its inserted position, the recess (9) in the inner housing wall (8), extends as far as a few millimetres in front of the front edge (6) of the securing slide (5).