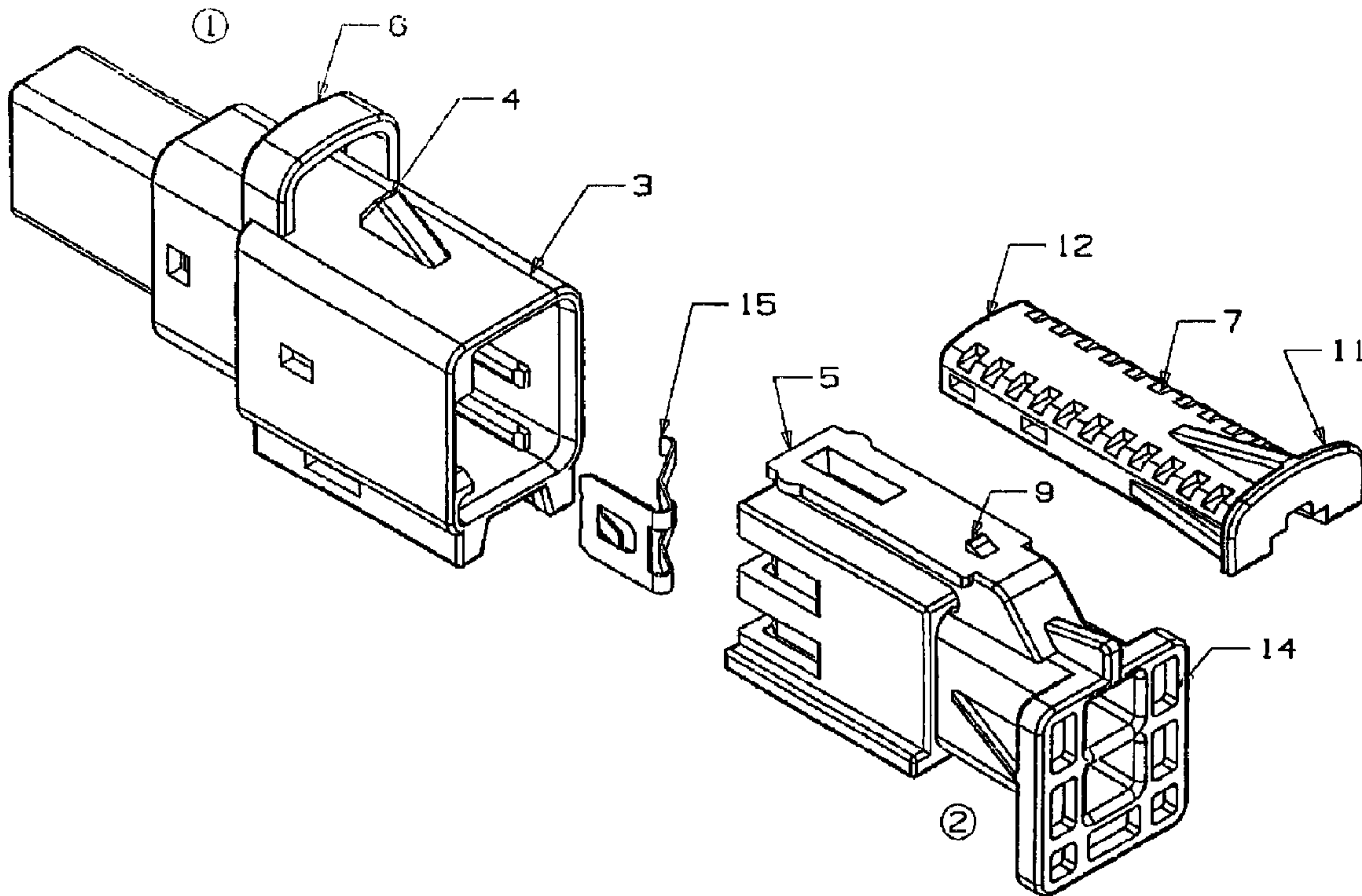




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(54) Titre : UN CONNECTEUR MUNI D'ELEMENTS DE VERROUILLAGE SUPPLEMENTAIRES
 (54) Title: A CONNECTOR HAVING ADDITIONAL LOCKING



(57) Abrégé/Abstract:

This invention relates to a connector having a two-part casing (1, 2) whose parts are adapted to be plugged together, the first casing part (1) engaging at least to some extent by way of a collar (3) around the second casing part (2) in the plugged-together position; and an additional latchable locking means (4, 5) disposed on the two casing parts (1, 2). The additional locking means comprises: a catch projection (4) disposed on the collar surface (3); a locking arm (5) secured to the second casing part (2) and cooperating with the catch projection (4), and a slide (7) as a means for securing the locking arm, the slide (7) being movable on the locking arm (5) lengthwise thereof and prolonging the locking arm (5) into an advanced position until the locking arm engages in a stirrup (6) disposed on the collar (3) after the catch projection (4) as seen from the locking arm (5).

A B S T R A C T**A CONNECTOR HAVING ADDITIONAL LOCKING**

This invention relates to a connector having a two-part casing (1, 2) whose parts are adapted to be plugged together, the first casing part (1) engaging at least to some extent by way of a collar (3) around the second casing part (2) in the plugged-together position; and an additional latchable locking means (4, 5) disposed on the two casing parts (1, 2). The additional locking means comprises: a catch projection (4) disposed on the collar surface (3); a locking arm (5) secured to the second casing part (2) and co-operating with the catch projection (4), and a slide (7) as a means for securing the locking arm, the slide (7) being movable on the locking arm (5) lengthwise thereof and prolonging the locking arm (5) into an advanced position until the locking arm engages in a stirrup (6) disposed on the collar (3) after the catch projection (4) as seen from the locking arm (5).

Fig. 1

CONNECTOR HAVING ADDITIONAL LOCKING

5 The present invention relates to a connector having additional
latchable locking means, of the type used, for example but not
exclusively, in cases in which the pluggable connection
experiences along the plugging axis a pull which may cause
accidental disengagement of the connector parts, something
10 which must be prevented.

FIG. 4 shows a prior art connector having a plug part 1 and a
complementary second part 2, the part 1 having a collar near
15 the plug pins. A catch projection 4 is disposed on the outside
surface of the collar and its ramp-like surface slopes down
towards the pins. The second part of the prior art connector
has a locking arm 5 which is formed with a slot and which is
secured by way of foot on the casing of the second part of the
20 connector. The foot is disposed at a place between the ends of
the locking arm, so that, when the connection end of the
locking arm is pushed down the front part thereof is raised so
that it can be raised far enough for the slot, which is in the
front part of the arm 5 and in which the catch projection 4
25 has engaged in the latched position, can disengage from the
catch projection so that the plug-in connection can be
released.

30 A disadvantage of an additional locking of this kind is that
it can be released accidentally, for example, when the sleeve
part is pulled in a downward inclination so that the locking
arm is raised and simultaneously a force component releases
the connection.

35

It is an object of this invention so to improve a connector of the kind described that the additional locking is protected against accidental release.

5

More specifically, in accordance with the present invention, there is provided a connector having: a two-part casing with first and second casing parts adapted to be plugged together wherein, in the plugged-together position, the first casing part engages least partially around the second casing part by way of a collar; and an additional latchable locking means disposed on the two casing parts. The additional locking means comprises: a catch projection disposed on a surface of the collar; a locking arm secured to the second casing part and co-operating with the catch projection; and a slide as a means for securing the locking arm, the slide being movable on the locking arm lengthwise thereof and prolonging the locking arm into an advanced position until the locking arm engages in a stirrup disposed on the collar after the catch projection as seen from the locking arm.

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15
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An advantage of the connector is that the locking arm projecting beyond the stirrup provides a visual indication that the additional locking means cannot be released.

25

The foregoing and other objects, advantages and features of the present invention will become more apparent upon reading of the following non restrictive description of an illustrative embodiment thereof, given by way of example only in connection with the appended drawings in which:

30

FIG. 1 is a perspective view of the main components of the illustrative embodiment of the connector according to the invention;

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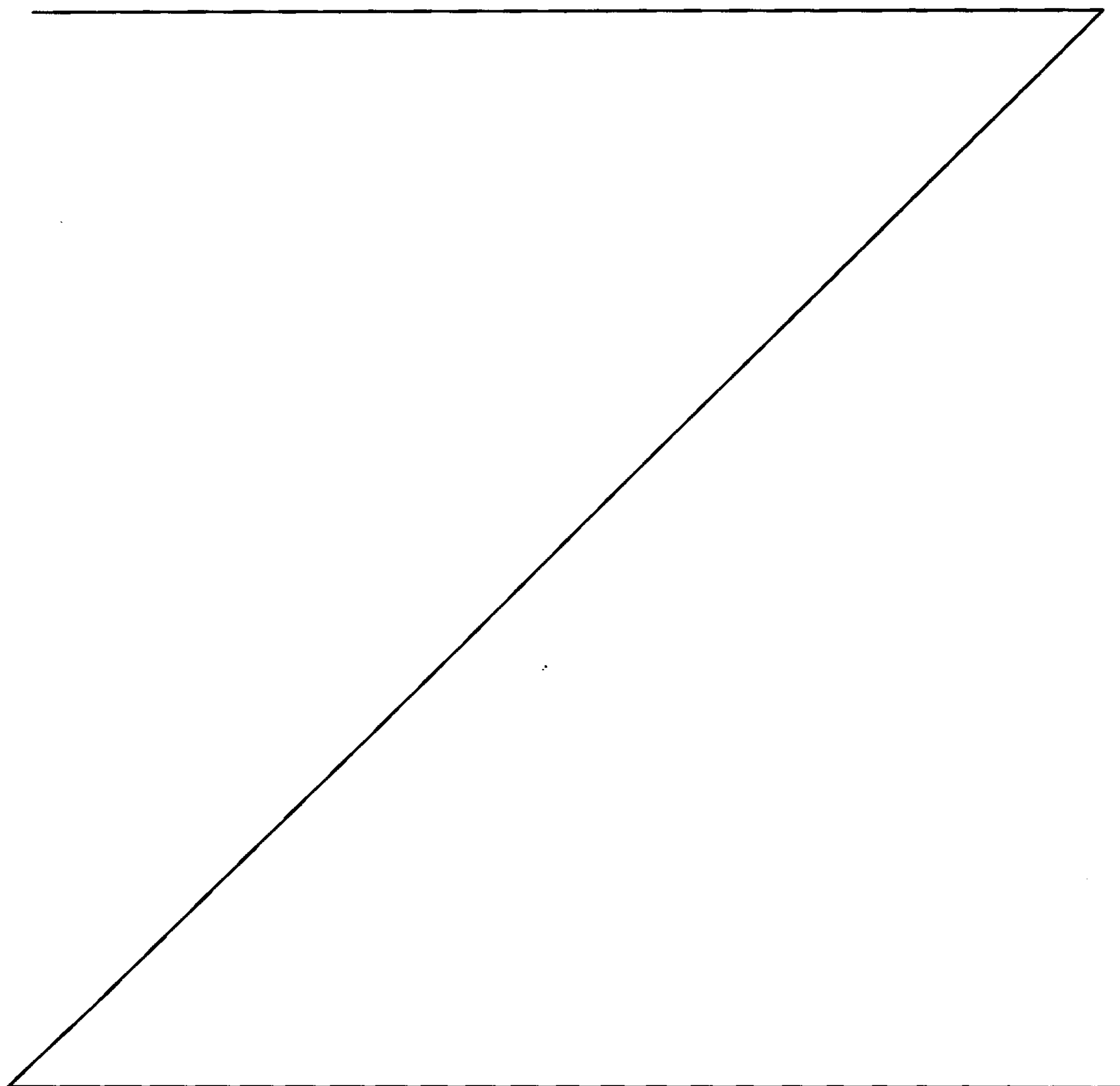
FIG. 2 is a detail view of the slide of the connector of Figure 1;

5

FIG. 3 shows the connector of Figure 1 in the plugged-together and latched position, and

10

FIG. 4 shows a prior art connector which has additional locking.



The connector shown in Fig. 1 has a first casing member 1, the same having a collar 3 to protect the plug pins. A ramp-like catch projection 4 is disposed on the collar surface with the ramp surface sloping shallowly down in the plugging direction. Opposite the catch shoulder of the projection 4 is a stirrup 6 which will be described in greater detail hereinafter. The second casing member has in its front region the second plug part which is complementary to the first plug part and which, with the connector in the closed position, engages completely in the collar 3 which extends around the pins of the first casing part 1. The foot of a locking arm 5 is disposed on the second casing member behind the second connector part, the locking arm extending substantially parallel to the surface of the collar 3 and above the same until it is raised at the front by the ramp surface of the projection 4 during the plugging-in operation, in order to snap resiliently into the latched position when the projection 4 is fully engaged in a corresponding aperture in the front part of the arm 5. In this position the connector is secured against accidental release. The geometry of the ramp 4 and arm 5 is such that if the plugging-in operation is not completed, the plug-in connection releases automatically inter alia because the end-face

part of the arm 5 slides back down the ramp of the projection 4. No electrical connection exists between the contact pairs in the released position. A short-circuit bridge 15 is installed in the part 1 and consists of two metal tongues which are interconnected by way of a web and which are pressed resiliently against the contact pins, the tongues being released by the entry of the second plug part from the contact pins of the first plug part. The tongues extend inclinedly rearwards from an inner wall of the collar 3 into the plug interior towards the pins. A resilient ramp is thus formed which, in the event of plugging-in being incomplete, also resiliently pushes back and, therefore, separates, the second plug part from the first plug part. The locking arm 5 has on its top a locking arm receiving means, in the form of a slide 7, which is slidable in the plugging direction. As can be seen from Fig. 2, the slide 7 is formed on its longitudinal edges with grooves 8 open towards the interior and engageable by projections on the arm 5, so that the slide 7 is guided in its longitudinal movement. When in the front end position the front end 12 of the slide 7 engages below the stirrup 6 and projects therefrom at its other end, as will be clearly apparent from Fig. 3, so that the secured position of

the connection is readily perceptible visually. In the release movement of the slide from the stirrup the slide is secured captive by a catch projection 9 on the arm and on the inside of the slide 7 by a corresponding abutment projection 10. The slide 7 and the stirrup 8 are so constructed that in the event of the slide 7 already being in its end position before the plugging operation, the slide is blocked during the closing of the plug parts 1 and 2 by the stirrup 6 on the plug part 1 and closure is prevented. If the plugging operation continues, the blocked slide 7 returns to its initial position in the opposite direction and the connection is closed by the dynamic movement of the plugging operation.

A grip edge 14 is disposed on the plug part 2 and simplifies manipulation during the opening and closing of the connection. In the withdrawn position the slide 7 projects to the rear beyond the foot of the arm 5 so that a vertical pressure applied to the slide end 11 raises the slide front end 12 together with the locking arm 5 secured thereon, whereafter the arm 5 disengages from the projection 4 so that the connection between the two connector parts can be released.

Consequently, the connector according to the invention can be released as required just as readily as the prior art connectors but there is no risk of the additional locking accidentally opening. The additional security is achieved by simple means which are simple to devise and which do not greatly increase the cost of production.

The invention is not limited to the embodiment hereinbefore described but comprises all variants falling under the wording of the claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

5 1. A connector having:

a two-part casing with first and second casing parts adapted to be plugged together wherein, in the plugged-together position, the first casing part engages least partially around the second casing part by way of a collar;
10 and

an additional latchable locking means disposed on the two casing parts;

wherein the additional locking means comprises:

15 a catch projection disposed on a surface of the collar;

a locking arm secured to the second casing part and co-operating with the catch projection; and

20 a slide as a means for securing the locking arm, the slide being movable on the locking arm lengthwise thereof and prolonging the locking arm into an advanced position until the locking arm engages in a stirrup disposed on the collar after the catch projection as seen from the locking arm.

25 2. A connector according to claim 1, wherein the slide and the locking arm are interconnected by way of slideways, and catch projections which are disposed on the locking arm and on the slide and are adapted to be moved into abutment with one another to define a front and/or a rear end position
30 of the slide.

35 3. A connector according to claim 2, wherein a rear end of the slide when in a drawn-back position projects so far beyond a rear end of the locking arm that depressing the rear end of the slide causes the locking arm to release from the catch projection on the surface of the collar.

4. A connector according to claim 3, wherein a blocking
element for the slide and locking arm is positioned on the
second casing part below the rear end of the slide and
prevents the locking arm from releasing from the catch
5 projection on the surface of the collar.

5. A connector according to any of claims 1 to 4,
wherein the slide is of a length such that when in a forward
position it projects by way of a tip thereof beyond the
10 stirrup so that its tip is visible.

6. A connector according to any of claims 1 to 5,
wherein, in the event of incomplete latching, the catch
projection on the surface of the collar and the locking arm
15 slide off one another and release the plug connection.

7. A connector according to any of claims 1 to 6,
wherein a short-circuit bridge is provided having resilient
tongues which extend inclinedly and like a ramp from a front
20 of the first casing part towards plug pins and short-circuits
the same in the event of an incomplete latching of the
additional locking means.

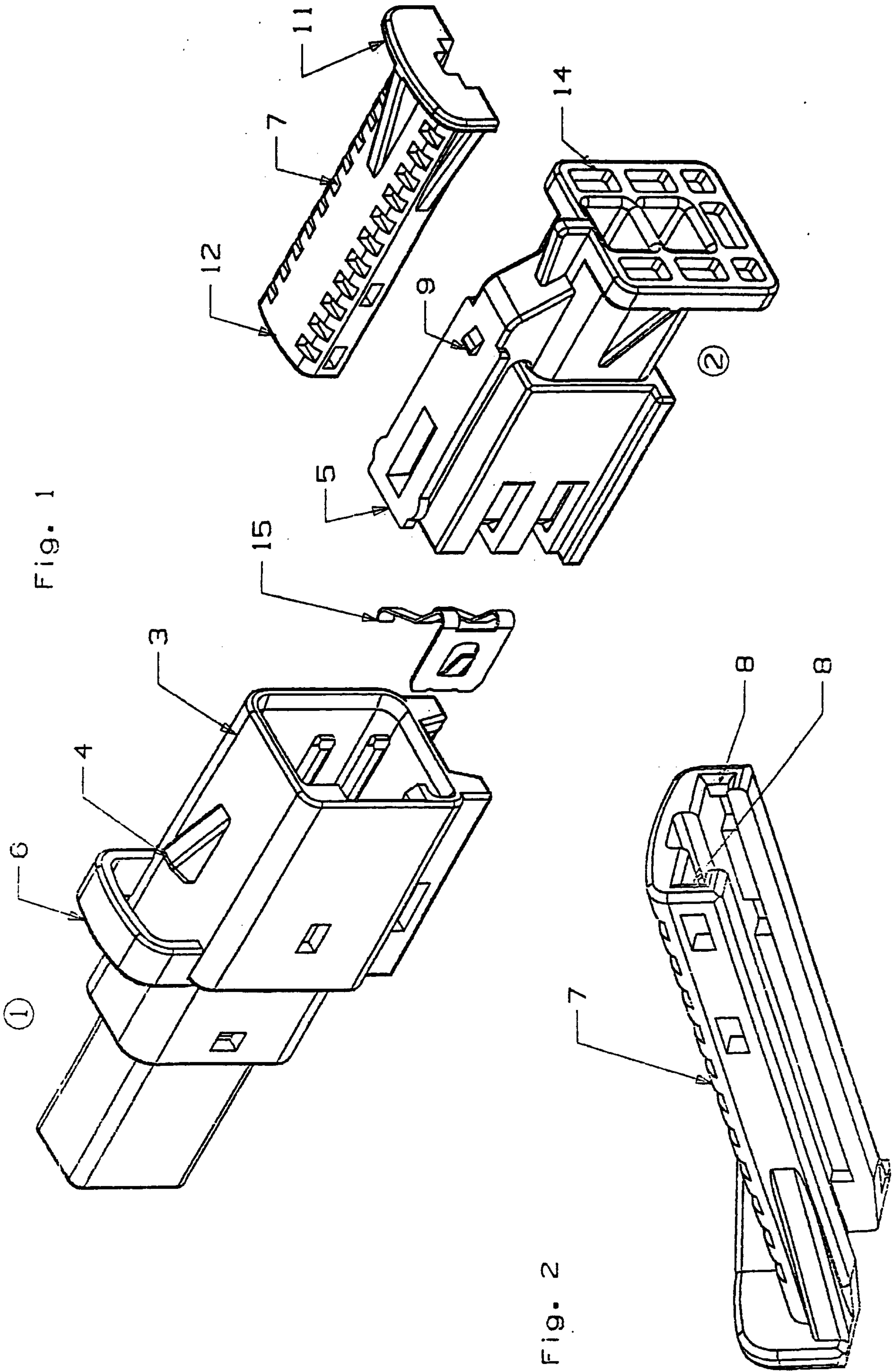
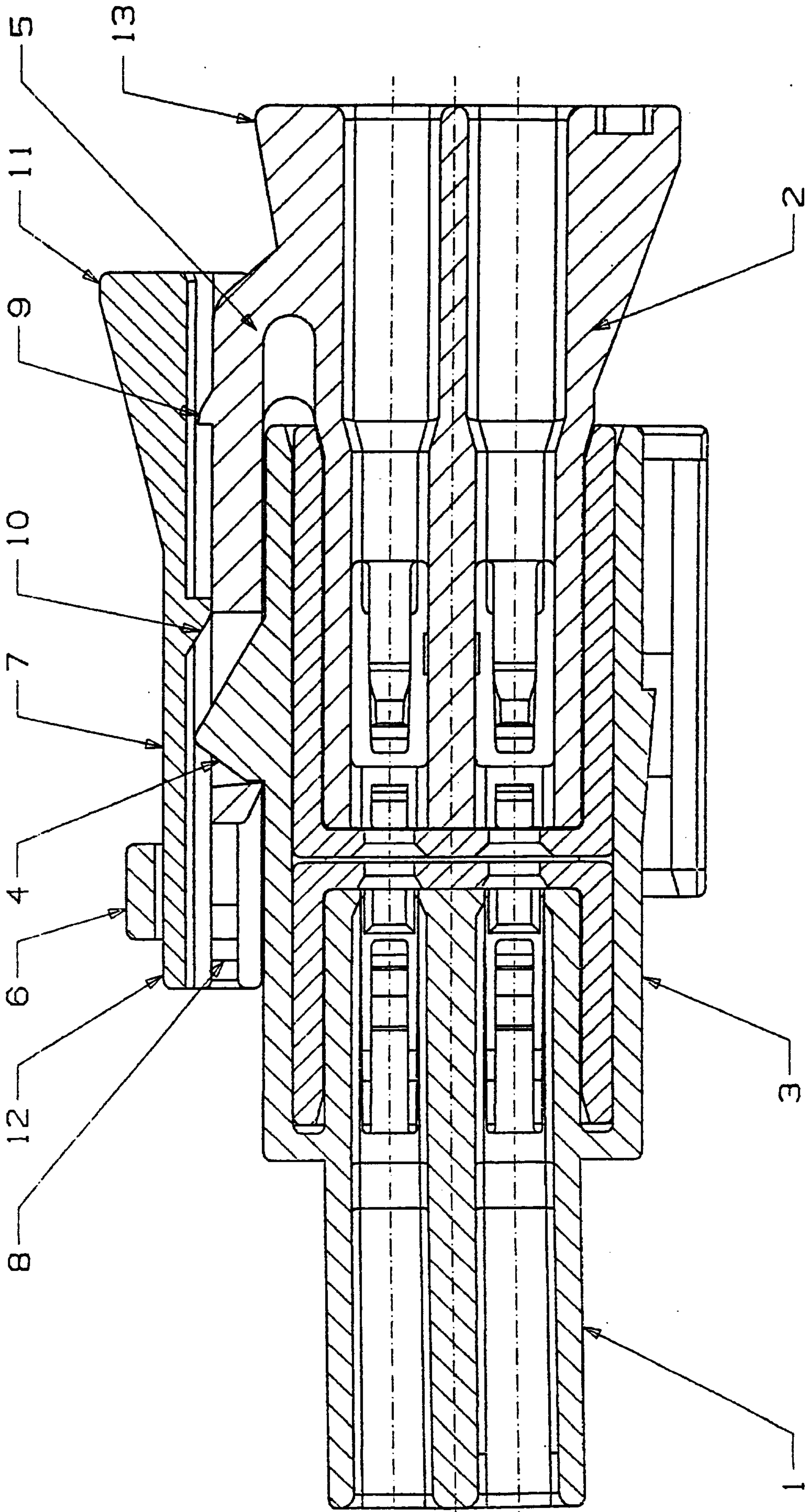


Fig. 1

Fig. 2

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Fig. 3



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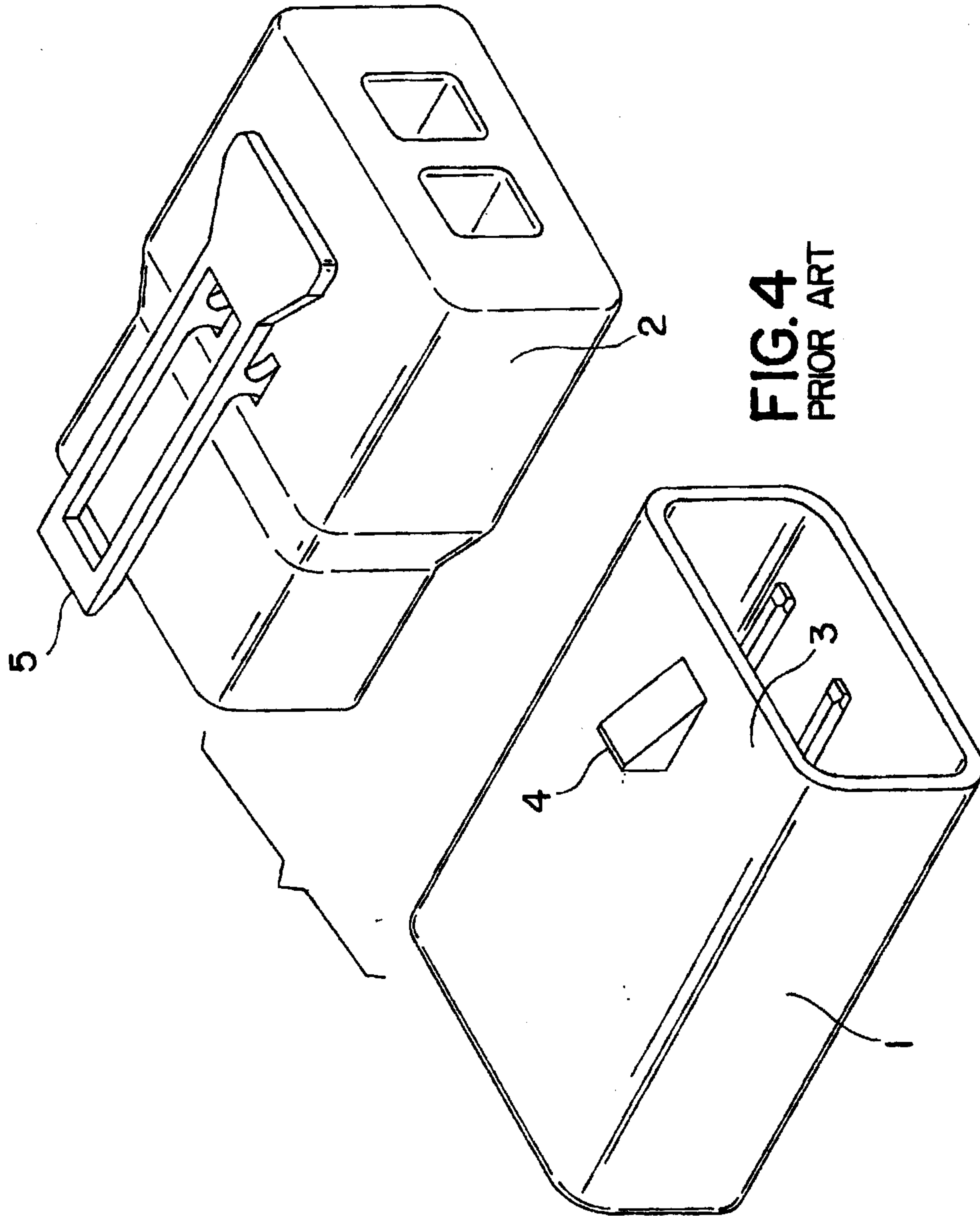


FIG. 4
PRIOR ART

