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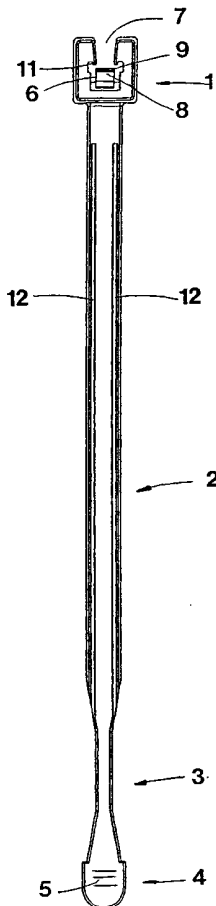
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[Continued on next page]

(54) Title: DEVICE AT A BUNDLE TIE



(57) Abstract: The invention relates to a device in a cable tie. This comprises an elongated tie part (2) of a certain width and thickness, which at one end has an elongated insertion part (3) of lesser width than the tie part (2) and at its other end a locking head (1). In the latter there is, on the one hand, a through-opening (6) intended for the tie part (2) and having a width substantially the same as the tie part (2) but a height greater than the thickness of the tie part (2), and on the other, in one transverse wall of the opening (6), a groove-shaped recess (7). The width of the recess (7) is such that it allows the insertion part (3) to be inserted into the opening (6) via the recess (7) forming a tie loop. Interacting members are provided on the tie part (2) and in the locking head (1) that are designed by positive interlocking engagement with one another to lock the tie part (2) relative to the locking head (1). At each edge of the recess (7) there is furthermore a pin-shaped projection (11) pointing towards the through-opening (6) and designed to engage with corresponding grooves (12) running along each edge of the tie part (2) when the tie part (2) is inserted into the opening (6).

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

DEVICE AT A BUNDLE TIE

The present invention relates to a device in a cable tie according to the pre-characterising clause of the attached claim.

A cable tie of this type is described in more detail in SE 510 655.

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In this cable tie the tightening force at which the head part is no longer capable of holding the tie part is largely determined by the wall thickness of the head part. Particularly disadvantageous in this context is the fact that the head part has a groove-shaped recess, which although it facilitates the introduction of the tie part nevertheless involves a weakening of the head part.

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There is therefore a desire here to achieve a strong locking force with a relatively thin-walled and slender locking head.

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US 3,837,047 discloses a moulded plastics cable tie, which is designed so that it can be produced by a normal moulding process, in which the moulded parts and any inserts move in the same directions, that is across one another. A section of the cable tie is designed with locking flanges along the edges, which flanges extend upward and downward, that is to say out from both sides of the tie. When the said section of the cable tie is inserted into the locking head the cable tie forms a bridge-like reinforcement in the locking head due to the positive interlocking engagement between the locking flanges and parts in the locking head of complementary shape. The locking flanges give the cable tie greater thickness and flexural rigidity, which may limit the flexibility of the cable tie and thereby constitute a disadvantage when tying thin cable bundles.

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The object of the present invention in cable ties of the said type is to produce a device, which appreciably increases the force that is required in order to forcibly break open the cable tie, whilst preserving the pliability and serviceability of the cable tie even when tying thin cable bundles. This is achieved by the means indicated in the characterising part of the claim.

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The invention will be explained in more detail below with reference to the drawing attached, in which figure 1 in a diagrammatic plan view shows a cable tie according to the invention. Figure 2 shows the head part of the cable tie to a larger scale, with tie part inserted.

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The embodiment of a cable tie according to the present invention shown in the drawing contains a head part 1, a tie part 2, an insertion part 3 of lesser width than the tie part 2 and an end part 4 serving as grip tab. The length of the tie part 2 is in principle arbitrary as is the length of the insertion part 3, which is at least as long as the head 1. The end part 4 has a greater width than the tie part 2 and is provided on at least one side with transverse ridges 5 to facilitate gripping of the part when tensioning the tie around a cable bundle or the like, for example.

The head 1 is provided with a through-opening 6, which extends in the longitudinal direction of the head 1 and across the tie parts 2-4. A groove-shaped recess 7 extends through the upper wall of the head and has a width adapted to receive the insertion part 3, together with outwardly bevelled edges, which may also be regarded as guide edges for guiding the insertion part 3 down into the through-opening 6. Arranged in the latter is a locking member in the form of a tongue 8. This proceeds from the bottom of the through-opening 6 and extends largely diagonally towards the opposite end of the opening 6 and towards the groove-shaped recess 7. On the side facing the groove-shaped recess 7 the tongue 8 is provided with a number of ratchet teeth 9, which are intended to interact with corresponding ratchet teeth 10 on the tie part 2. After threading the insertion part 3 into the through-opening 6 on top of the tongue 8, as shown in figure 2, this will be pressed down against the bottom of the through-opening 6 and will then spring back in order to secure the engagement between the teeth 9 and 10. It should be noted in particular that the shape of the tongue and the fastening position in the opening 6 mean that the engagement between the teeth 9 and 10 increases with increasing tensile force in the tie part 2.

The end part 4 has a further important function. Due to the fact that its width prevents it escaping out through the opening 6, it is easily possible, by bringing the insertion part 3 down in the recess 7, to produce a loop, which loosely surrounds a bundle of cables, for example. Further cables may be introduced through the said loop as required before the cable tie is tightened.

According to the invention a projection 11 pointing in towards the through-opening 6 is provided on respective edges of the recess 7. A groove 12 runs along each edge of the tie part 2. The projections 11 are designed, when the tie part 2 is inserted into the opening 6, to engage with the grooves 12. Locking of the walls of the head 1 is thereby achieved by means of the tie part 2, so that the said walls are held together even under relatively high tensioning forces, that is to say the width of the recess 7 remains unaltered. Secure locking of the cable tie is therefore achieved even under strong tightening forces.

Claim

A device in a cable tie comprising an elongated tie part (2) of a certain width and thickness, which at one end has an elongated insertion part (3) of lesser width than the tie part (2) and at its other end has a locking head (1) with, on the one hand, a through-opening (6) intended for the tie part (2) and having a width substantially the same as the tie part (2) but a height greater than the thickness of the tie part (2), and on the other, in one transverse wall of the opening (6), a groove-shaped recess (7), the width of which is such that it allows the insertion part (3) to be inserted into the opening (6) via the recess (7) forming a tie loop, interacting members being provided on the tie part (2) and in the locking head (1) that are designed by positive interlocking engagement with one another to lock the tie part (2) relative to the locking head (1), and pin-shaped projections (11) pointing towards the through-opening (6) being provided at each edge of the recess (7), **characterised in that** the tie part (2) has grooves (12) running along its respective edges, which grooves are designed to engage with the free end of the respective projection (11) when the tie part (2) is inserted into the opening (6).

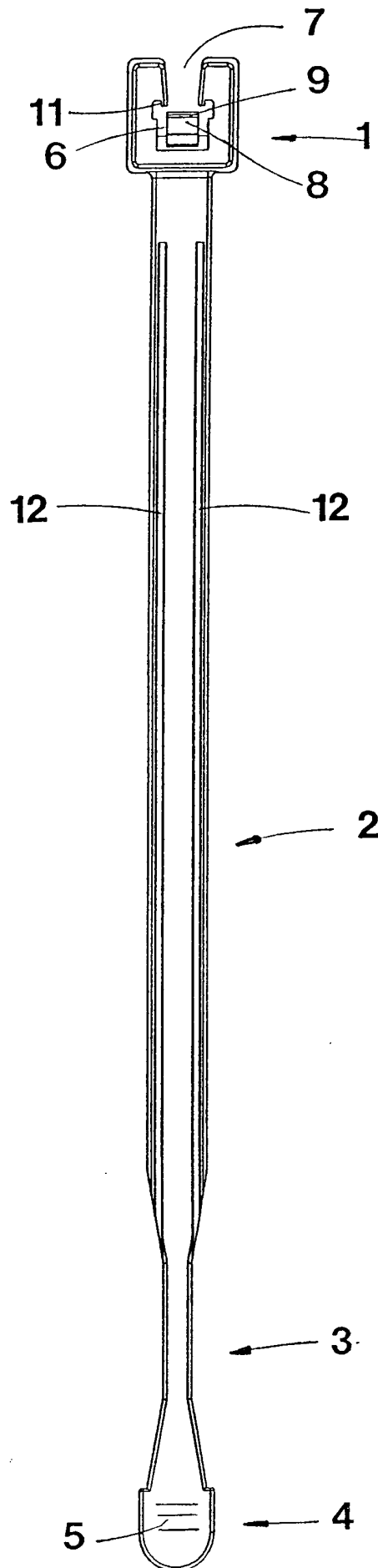
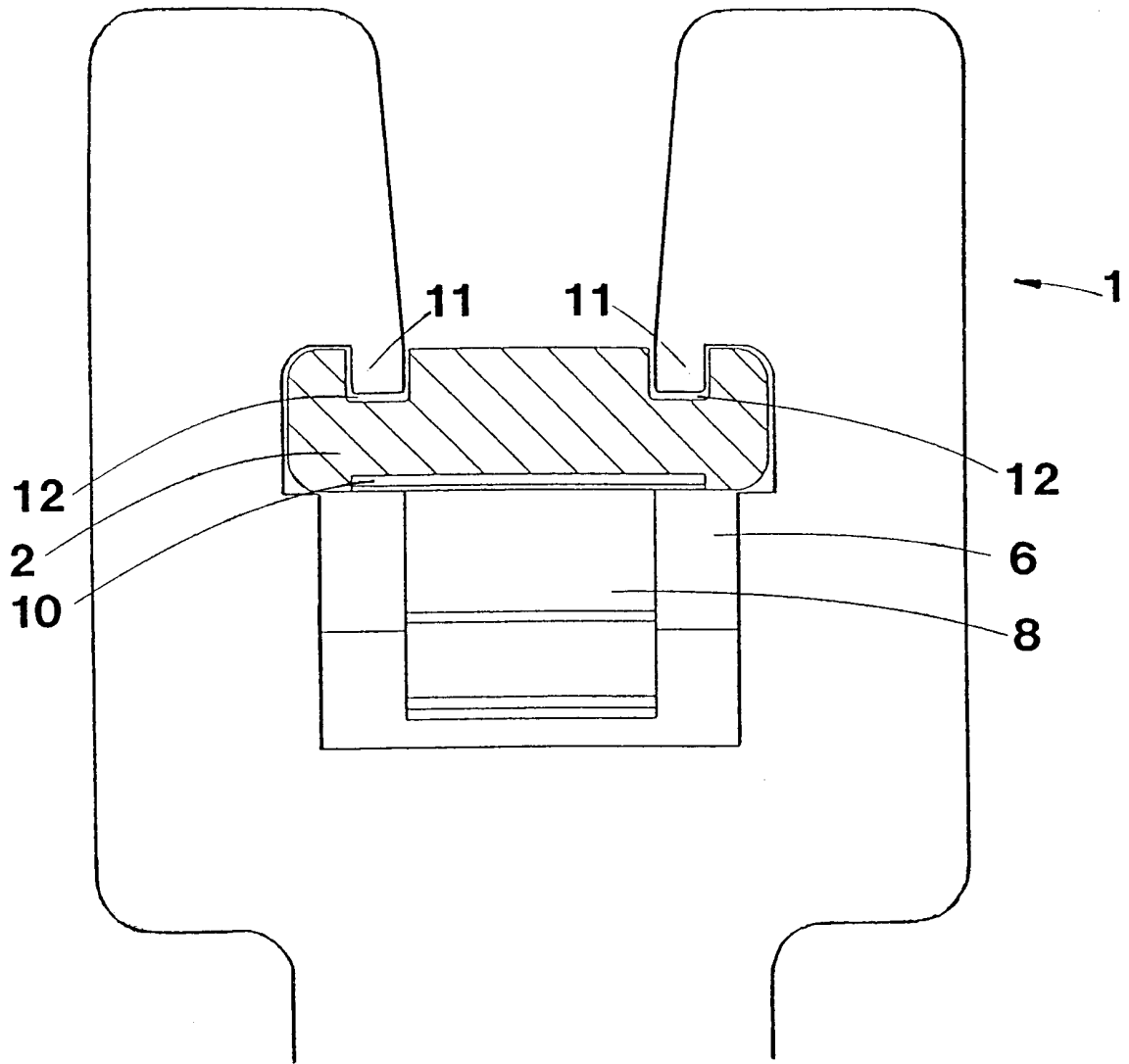


FIG 1

FIG 2



**INTERNATIONAL SEARCH REPORT**

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**PCT/SE 00/01809**

**A. CLASSIFICATION OF SUBJECT MATTER**

**IPC7: B65D 63/10**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

**IPC7: B65D**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**SE,DK,FI,NO classes as above**

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3837047 A (BUNNELL), 24 Sept 1974 (24.09.74) --	
A	WO 9618554 A1 (AB KONSTRUKTIONS-BAKELIT), 20 June 1996 (20.06.96) --	
A	US 4788751 A (SHELY ET AL), 6 December 1988 (06.12.88) -- -----	

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

02/11/00

International application No.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3837047 A	24/09/74	NONE	
WO 9618554 A1	20/06/96	EP 0796206 A SE 503217 C SE 9404328 A	24/09/97 22/04/96 22/04/96
US 4788751 A	06/12/88	DE 3812500 A GB 2210924 A,B GB 8808327 D US 4897899 A	20/04/89 21/06/89 00/00/00 06/02/90