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(54) Cable clamp

(57) A device for clamping a cable comprises a clamping part (1,20) having at least one passage (2,21) for receiving a cable (3) and at least one resilient finger (4,22) movable to reduce the size of the passage. A housing part (5) has a passage (6) with a chamber (7) at one end for receiving the clamping part. A fastening part (9) to fasten the clamping part (1,20) and housing part (5) to one another is provided to force the resilient finger(s) (4,22) inwardly to reduce the size of the passage of the clamping part. The clamping part comprises a conical section (10) with a conical outer side and the conical section includes the resilient finger(s) (4,22). The chamber (7) of the housing part (5) is provided with a conical inner wall adapted to engage the conical outer side of at least the resilient finger(s). The fastening part (9) forces the clamping part (1,20) axially into the chamber (7) during fastening to thereby force the resilient finger(s) (4,22) inwardly.

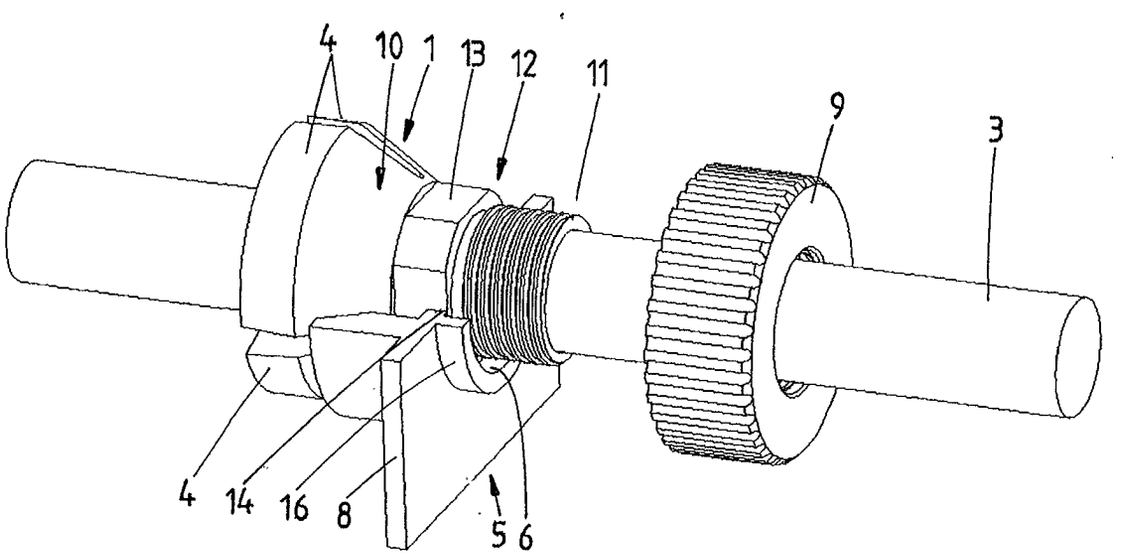

fig.1

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Description

[0001] The invention relates to a device for clamping a cable, comprising a clamping part having at least one passage for receiving a cable and at least one resilient finger movable to reduce the size of the passage, a housing part having a passage with a chamber at one end for receiving the clamping part, and a fastening part to fasten the clamping part and housing part to one another to thereby force the resilient finger(s) inwardly to reduce the size of the passage of the clamping part.

[0002] EP-A-0 913 900 discloses a device for clamping a cable of this type, wherein the housing part consists of two housing halves together determining a mainly cylindrical passage for receiving the clamping part. The resilient fingers of the clamping part are provided with radial projections pressing the resilient fingers inwardly to reduce the size of the passage of the clamping part so that the fingers grip the outer side of the jacket of the cable. The two housing halves are fixed together by means of clamping bolds.

[0003] EP-A-0 736 933 discloses a cable connector, wherein a housing of the connector is provided with a conical clamping device for connecting the shielding of the cable to the housing of the connector. The cable is clamped to the housing of the connector by means of a clamping strip.

[0004] The invention aims to provide an improved device of the above-mentioned type.

[0005] To this end the device for clamping a cable of the invention is characterized in that the clamping part comprises a conical section with a conical outer side, the conical section including the resilient finger(s) and in that the chamber of the housing part is provided with a conical inner wall adapted to engage the conical outer side of at least the resilient finger(s), wherein the fastening part forces the clamping part axially into the chamber during fastening to thereby force the resilient finger(s) inwardly.

[0006] In this manner a device for clamping a cable is obtained wherein the conical section of the clamping part and the conical inner wall of the chamber of the housing part are cooperating to force the resilient fingers inwardly to thereby grip the outer side of the cable. The clamping part moves axially into the chamber, wherein the axial movement of the clamping part is translated into a radial movement of the resilient fingers. The performance of the clamping operation of the device is largely independent of variation in cable diameter, so that tolerances of cable diameter are not critical. In applications of the device of the invention in a cable connector, wherein the clamping part is located at the inner side of the cable connector, the clamping operation of the device will increase if a pulling force is exerted on the cable.

[0007] The invention will be further explained by reference to the drawings in which some embodiments of the device of the invention are shown.

[0008] Fig. 1 is a perspective view of an embodiment of the device of the invention during assembly.

[0009] Fig. 2 is a perspective view of the device of fig. 1 during assembly.

[0010] Fig. 3 is a perspective view of the device of fig. 1 as fully assembled.

[0011] Fig. 4 shows a perspective view of the device of fig. 1 partly disassembled.

[0012] Fig. 5 is a perspective view of a further embodiment of the device of the invention as fully assembled.

[0013] Fig. 6 is a perspective view of a further embodiment of the device of the invention during assembly.

[0014] Fig. 7 shows a perspective view of the device of fig. 6.

[0015] Figs. 1-4 show an embodiment of a cable clamp or device for clamping a cable, wherein the device is shown in a fully assembled state in fig. 3. The device comprises a clamping part 1 having a passage 2 for receiving a cable 3 and three resilient fingers 4, wherein the fingers 4 are moveable inwardly to reduce the size of the passage 2. It will be understood that a different number of resilient fingers can be used.

[0016] The device further comprises a housing part 5 having a passage 6 with a chamber 7 at one end for receiving the clamping part 1. As shown in the drawings, the housing part comprises two housings halves 8. In a preferred embodiment of the invention, the housing part 5, i.e. the housing halves 8, are part of a cable connector housing not further shown. The invention is however not restricted to use of the device described in cable connectors.

[0017] A fastening part 9 which in the embodiment shown is made as a nut, is provided to fasten the clamping part 1 and housing part 5 to one another to obtain the fully assembled state of fig. 3.

[0018] As clearly shown in the drawings, the clamping part 1 comprises a conical section 10 with a conical outer side and this conical section includes the resilient fingers 4. The chamber 7 of the housing part 5 is provided with a conical inner wall adapted to engage the conical outer side of the fingers 4. At its axial end opposite of the conical section 10 the clamping part 1 is provided with a fastening section 11 having a screw thread. This fastening section projects out of the passage 6 of the housing part 5 when the conical section 11 is received in the conical chamber 7 as shown in figs. 1 and 2. When the nut 9 is fastened on the fastening section 11, the clamping part 1 will be pulled in axial direction into the conical chamber 7 so that the resilient fingers 4 are forced inwardly to reduce the size of the passage 2 and the cable 3 will be clamped within the passage 2.

[0019] Rotation of the clamping part 1 is prevented as the clamping part is provided with a section 12 having a plurality of flat outer services 13. The passage 6 of the housing part 5 is provided with a section 14 having a plurality of flat inner walls 15 engaging the flat outer services 13 of the clamping part 1.

[0020] To prevent opening of the housing halves 8 by

the mutual co-operation of the conical clamping part 1 and the conical chamber 6, the housing halves 8 each are provided with a projecting collar 16 enclosing a part of the passage 6 of the housing. The collar 16 is received in an annular space of the nut 9. It will be understood that if the housing part 5 is a single part, it is not necessary to provide the housing part with a collar.

[0021] Fig. 5 shows an embodiment of the device described, wherein the housing part 5 is provided with a resilient locking element 17 having a projection 18 at its free end engaging in a groove of the serrated outer side 19 of the nut 9. In this manner the nut 9 will be automatically locked so that it can not be unscrewed unintentionally.

[0022] Figs. 6 and 7 show a further embodiment of the invention, wherein a clamping part 20 is used having two passages 21 for cables 3. For each passage 21 three resilient fingers 22 are provided, wherein the fingers 22 together determine the conical section 10 of the clamping part 20. In fig. 6 one housing half 8 is shown and the nut 9 is not yet screwed on the fastening section 11 of the clamping part 20. It can be clearly seen that the fastening section 11 in this case includes the section 12 with flat surfaces 13. Further it can be seen that the housing half 8 determines half of the passage 6 of the housing part with a chamber 7 with conical inner wall.

[0023] In fig. 7, the nut 9 has been fastened on the fastening section 11 of the clamping part 20 so that the resilient fingers 22 are forced inwardly by the co-operation between the conical parts of clamping part 20 and housing part 5.

[0024] The device for clamping a cable described shows the advantage that the clamping performance is independent of variations in diameter of the cables 3, so that tolerances of cable diameters are not critical. An efficient squeezing of the cable(s) is obtained, so that after assembly of the device displacement of the cable can not occur and no stress can be exerted on terminated wires of the cable. Moreover, if a pulling force is exerted on the cable, the clamping part 1, 19 will be tensioned such that the clamping part 1, 9 will be locked even more tightly. No special tools are required to assemble the clamping device. If the device is used in a cable connector for example, the wires of the cable can be terminated and the clamping device can be assembled at the end of the termination procedure. Moreover the clamping device can be dismantled easily and is fully repairable. In case of a one piece housing part 5, the clamping part 1, 19 and fastening part 9 can be pre-assembled.

[0025] The invention is not restricted to the above described embodiments which can be varied in a number of ways within the scope of the attached claims.

Claims

1. Device for clamping a cable, comprising a clamping part (1,20) having at least one passage (2,21) for receiving a cable (3) and at least one resilient finger (4,22) movable to reduce the size of the passage, a housing part (5) having a passage (6) with a chamber (7) at one end for receiving the clamping part (1,20), and a fastening part (9) to fasten the clamping part and housing part to one another to thereby force the resilient finger(s) (4,22) inwardly to reduce the size of the passage of the clamping part, **characterized in that** the clamping part (1,20) comprises a conical section (10) with a conical outer side, the conical section (10) including the resilient finger(s) (4,22) and **in that** the chamber (7) of the housing part (5) is provided with a conical inner wall adapted to engage the conical outer side of at least the resilient finger(s) (4,22), wherein the fastening part (9) forces the clamping part (1,20) axially into the chamber (7) during fastening to thereby force the resilient finger(s) (4,22) inwardly.

2. Device according to claim 1, wherein the clamping part (1,20) is provided with a section (12) having one or more flat outer surfaces (13), wherein the passage (6) of the housing part (5) is provided with a section (14) having one or more flat inner walls (15) adapted to engage the flat outer surfaces of the clamping part.

3. Device according to claim 1 or 2, wherein the clamping part (1,20) is provided with a fastening section (11) opposite of the conical section (7), said fastening section (11) projecting out of the passage (6) of the housing part (5) when the conical section (10) is received in the conical chamber (7), wherein the fastening section (11) is adapted to cooperate with the fastening part (9) to fasten the clamping part (1,20) in the chamber (7) of the housing part (5).

4. Device according to any one of the preceding claims, wherein the housing part (5) comprises two housing halves (8), wherein the housing halves each are provided with a projecting collar (16) enclosing a part of the passage (6) of the housing part (5) opposite of the chamber (7), wherein the fastening part (9) is provided with annular space for receiving the collar (16).

5. Device according to any one of the preceding claims, wherein the fastening part (9) is made as a nut, wherein the housing part (5) is provided with a locking element (17) for locking the nut.

6. Device according to any one of the preceding claims, wherein the clamping part (20) is provided with two passages (21), wherein at least one resilient finger (22) is located at the circumference of each passage, and wherein the resilient fingers of all passages are part of the conical section (10) of

the clamping part (20) and are forced inwardly to reduce the size of the corresponding passage during fastening of the clamping and housing parts.

7. Clamping part (1,20) for a device according to any one of the preceding claims.

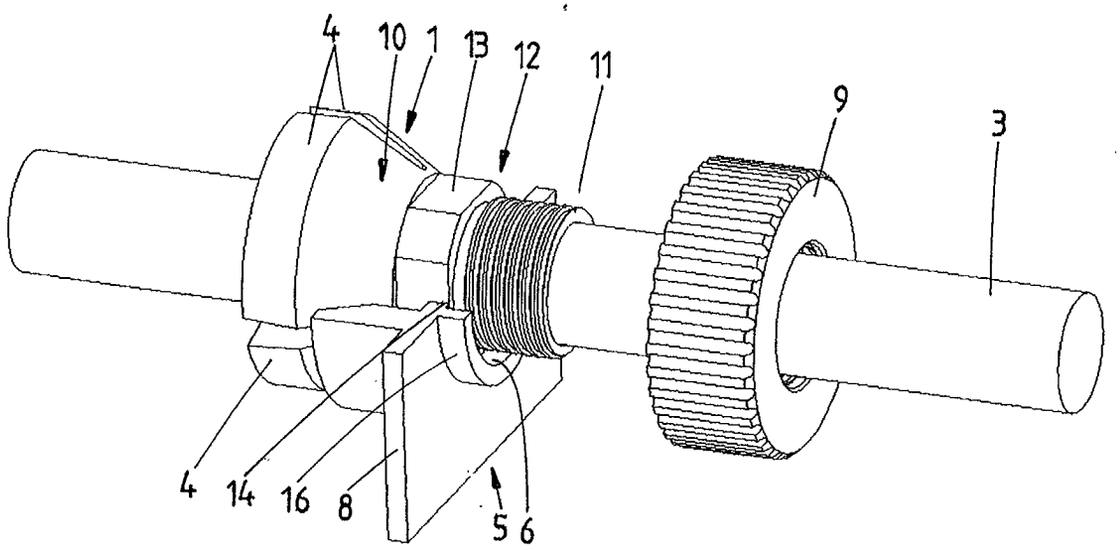

fig.1

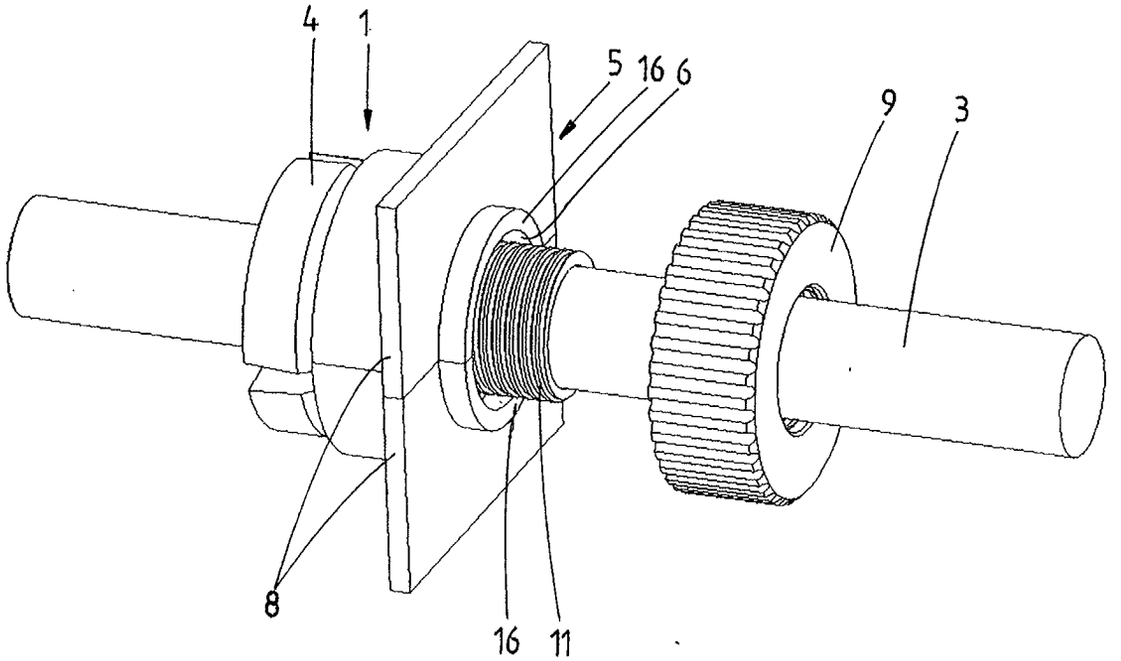

fig.2

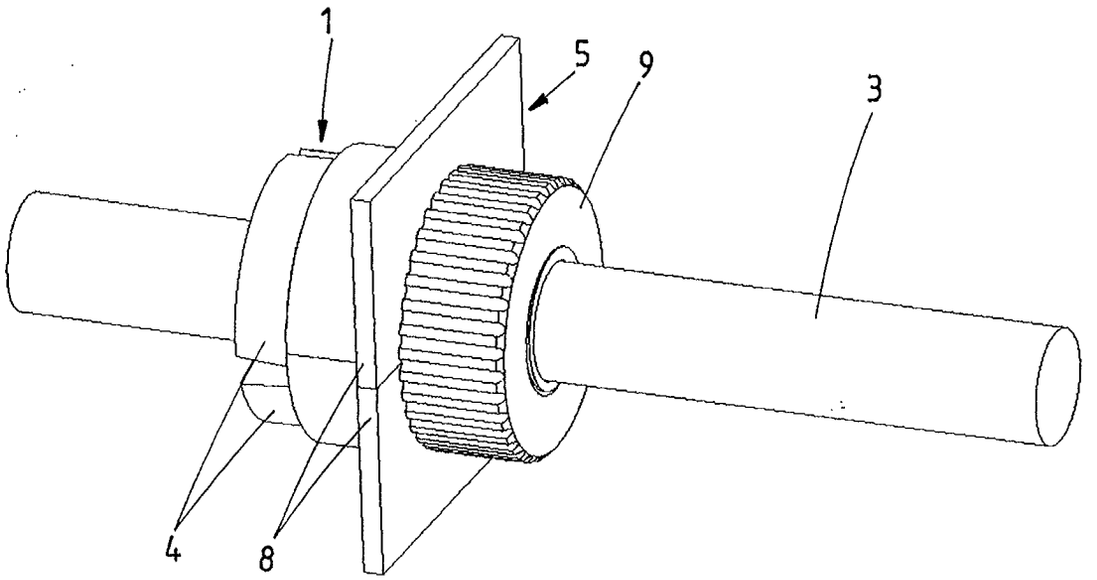

fig.3

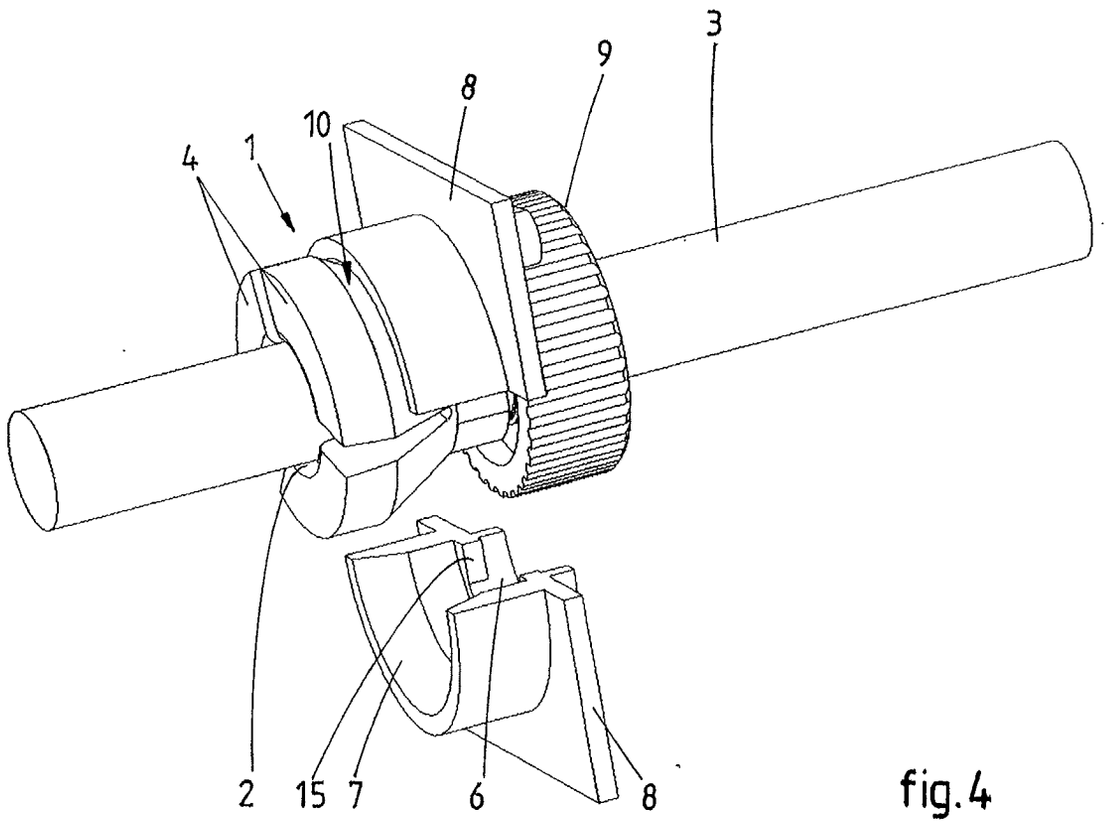

fig.4

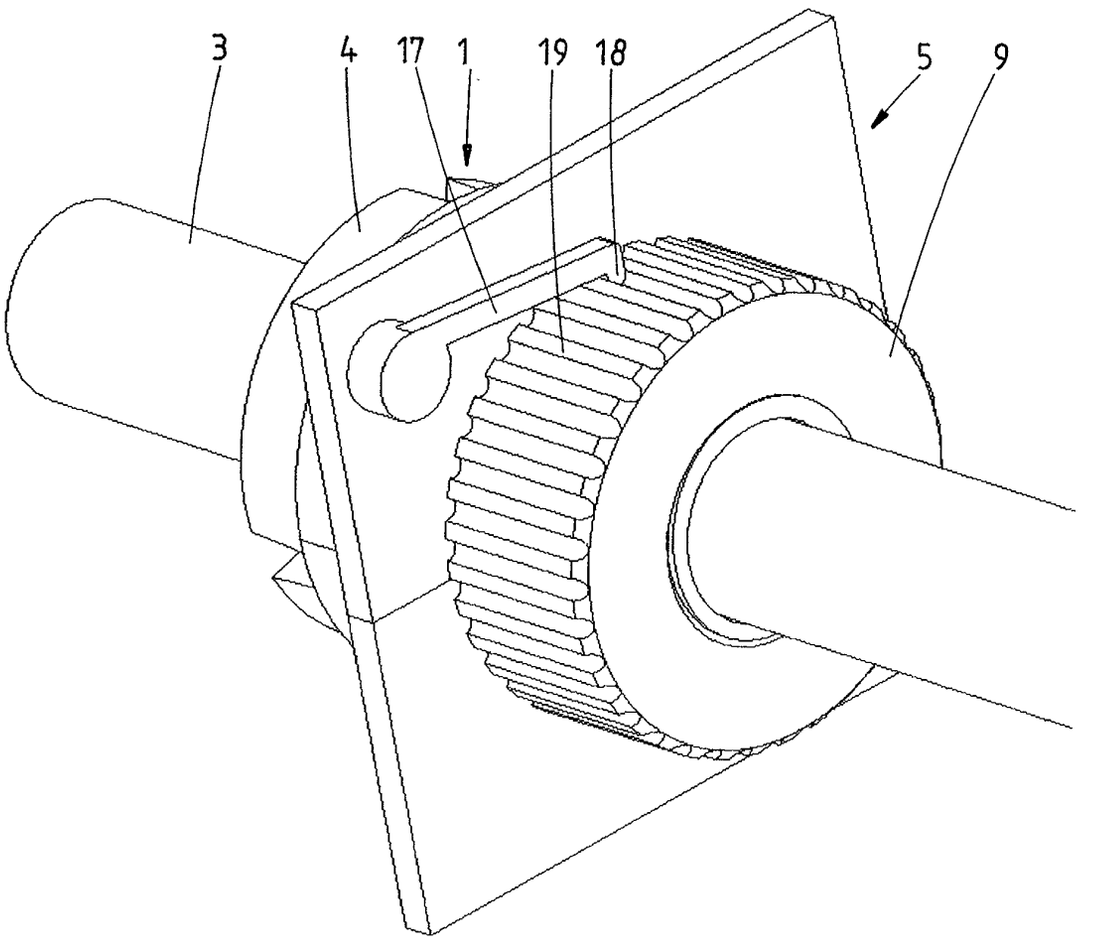

fig.5

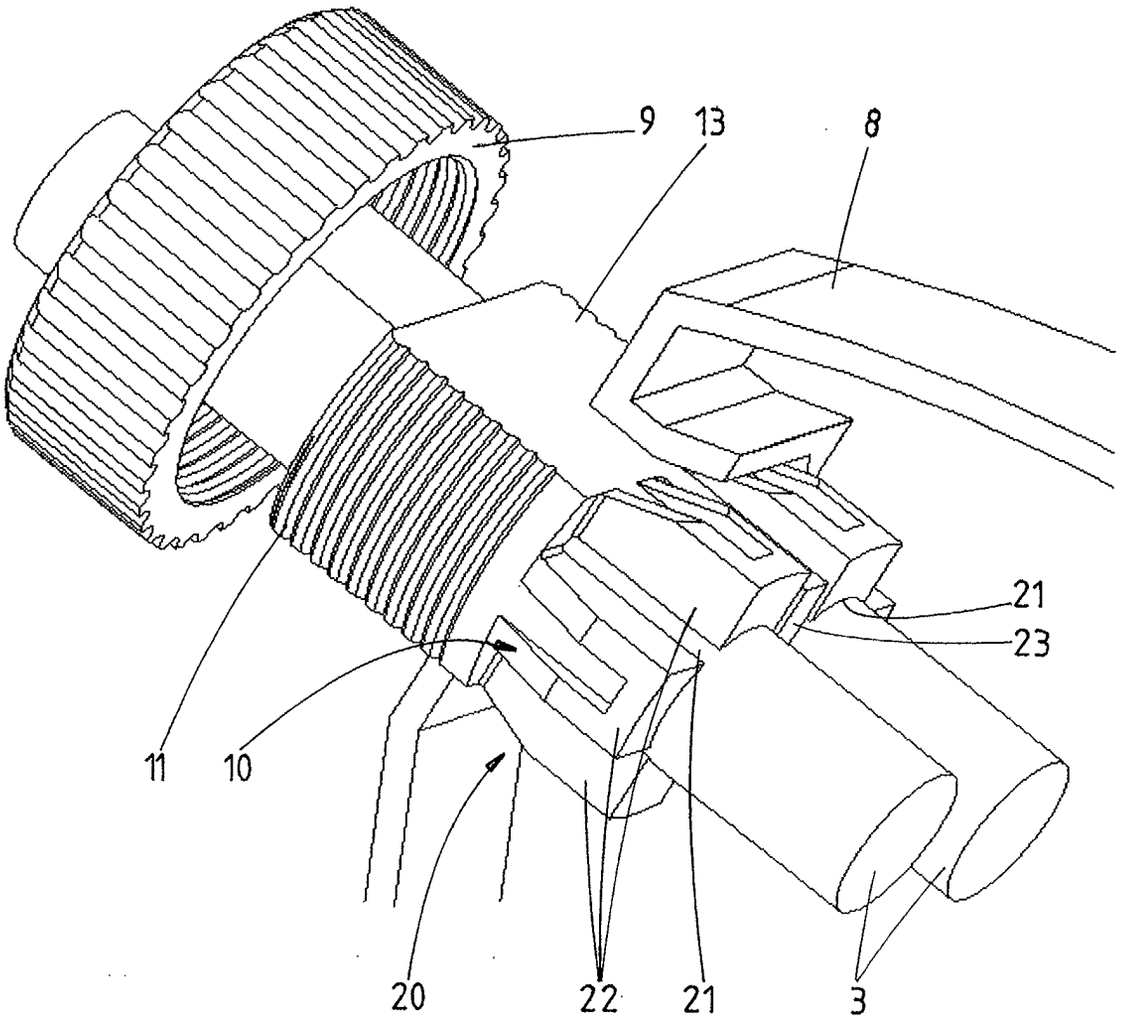

fig.6

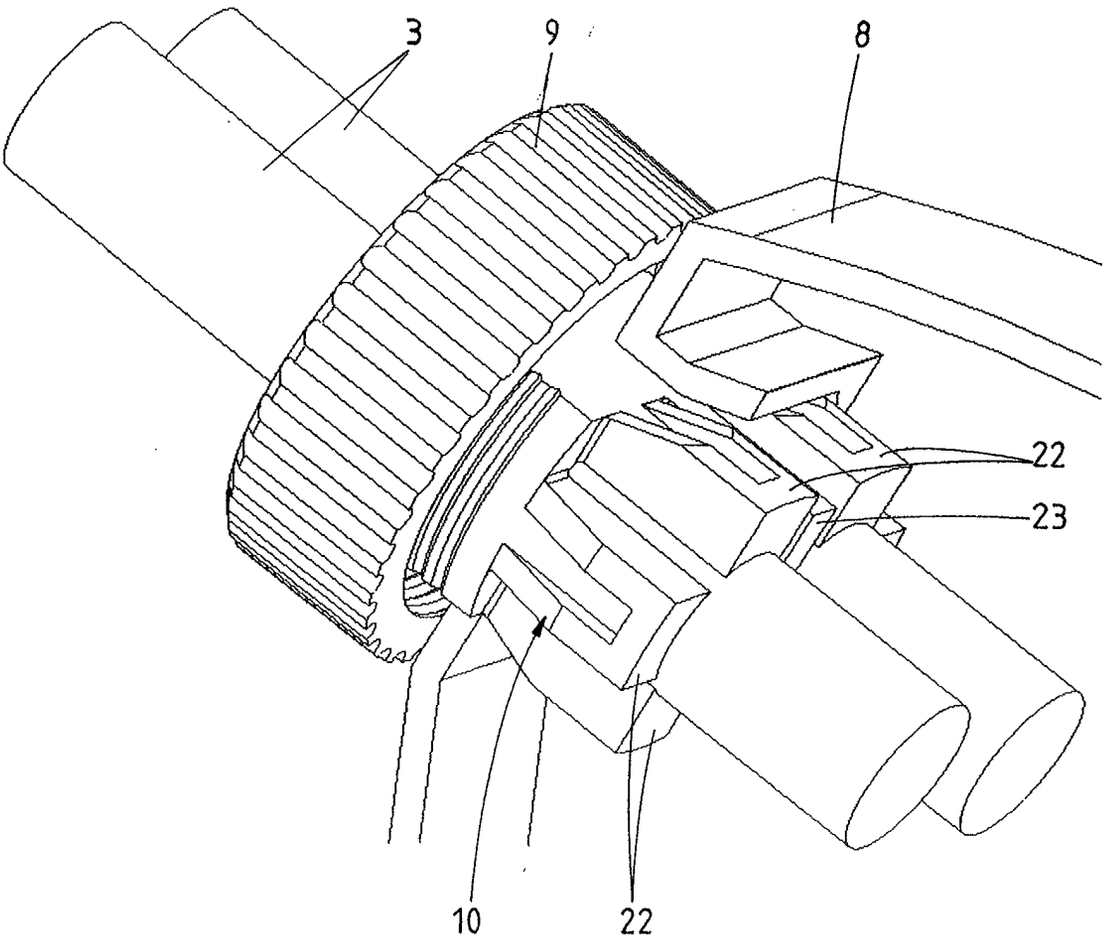

fig.7

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EUROPEAN SEARCH REPORT

Application Number
EP 02 07 6236

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	US 4 065 201 A (WAHI CHANDER M) 27 December 1977 (1977-12-27) * column 2, line 4 - column 3, line 28 *	1,5-7 2-4	H01R13/59
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10 June 2002	Demol, S

CATEGORY OF CITED DOCUMENTS

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