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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.

Title: SLIP PROTECTING MEANS

Abstract: The invention refers to a slip protection means in the form of a tip or the like to improve and simplify a mounting procedure of said slip protecting means (1), which is intended to be screwed into a gripping surface (5) on e.g. a tyre for a vehicle such as tractors. Said slip protecting means (1) is formed like a screw (8) having at least one screw thread (3), a first end (11) and a tightening portion (4) in another end (13) having at least one friction extension (2) and said tightening portion (4) having mainly the same diameter or width (15) across the longitudinal direction (17) of the screw (8) as the diameter (7) of the screw thread (3), whereby during the screwing of the slip protecting means (1) into the gripping surface (5) with the first end (11) directed towards the gripping surface (5) by aid of a tool (9) grasping around at least a portion of said tightening portion (4), a penetration is obtained at least one part of said tightening portion (4) into the gripping surface (5), said gripping surface (5) in that case is pressing against said tool (9), which then automatically is released from its gripping around said tightening portion (4) at the same time as the screwing procedure is stopped, when a desired, predetermined screwing in length (12) of the slip protecting means (1) has occurred into the gripping surface (5) and then also the extension (2) is situated in a desired, predetermined position for improving the friction against the foundation (6).
Slip protecting means

The present invention refers to a slip protecting means to improve and simplify the mounting procedure of the same and said slip protecting means can be screwed into a gripping surface on e.g. a tyre, a high boot, a shoe or the like in providing of an increased friction between the gripping surface and a foundation, such as a slippery road way, said slip protecting means looks like a screw having a screw thread and a tightening portion having the same diameter or width as the screw diameter of the screw thread so that during the screwing of the slip protecting means into the gripping surface by aid of a tool grasping around said tightening portion a penetration of the tightening portion into the gripping means is achieved, which is pressing towards the tool in the way that it automatically looses the grip around the tightening portion at the same time as the fastening screwing into the gripping surface is automatically stopped at a desired, predetermined length of screwing.

Existing structures on the market today use slip protecting means which look like screws and can be screwed into a gripping surface on e.g. a tyre, a high boot, a shoe or the like in providing an enhanced friction between the gripping surface and a foundation, such as a slippery road way, by aid of traditional tools, by an user not being a professional worker. The problem then arises for the user during the mounting procedure when screwing in the slip protecting means, since he cannot determine when the mounting shall be stopped. Sometimes the user screws in the slip protecting means to too much into the gripping surface and then it cannot work effectively and grip into the road surface. Sometimes the length screwed into the gripping surface will be too short and in this case the slip protecting means protrudes out too much from the gripping surface and cannot work effectively into the road surface, the same will be destroyed. Further, it is time consuming in trying to screw in and out in order to be sure in that the screw-in length will be the right one.

One object of the present invention is to solve those problems existing in the above mentioned structures by providing the slip protecting means which looks like a screw with a tightening portion having mainly the same diameter or width as a thread in the screw, so that during the mounting of the slip protecting means by aid of a tool into the gripping
surface, said tool gets free from the tightening portion at a certain screwed-in length, when the gripping surface is pressing away said tool.

Thanks to the present invention an improved slip protecting means, which is simple to manufacture and mount and which during use can give an improved friction between a gripping surface on e.g. a tyre for vehicles as tractors, trucks, snow removing vehicles, a sole of a shoe as a high boot, a shoe or the like against a foundation as a slippery road way, a wet muddy ground surface or the like. The slip protecting means according to the present invention looks like a screw having a screw operation thread, a first end having a drill formation or a pointed formation in order to make the screwing easier. A tightening portion is provided in its second end. On said tightening portion is provided a friction extension of hard metal or the like in the top of the tightening portion, which at the screwed-in condition in the gripping surface creates an extraordinary good friction against a foundation. The friction extensions are according to a preferred embodiment of the invention separately manufactured and made of e.g. hardened steel and thereafter fastened in the tightening portion by soldering, gluing, wedging, and forming the tightening portion around the friction extension, clamping or the like. The tightening portion has mainly the same diameter or width across the longitudinal direction of the screw as the diameter of the screw thread. During the mounting of the slip protecting means into the gripping surface with the first end directed towards the gripping surface by aid of a tool, which grasps around the tightening portion an penetration of the tightening portion into the gripping surface is achieved, the gripping surface being pressed against the tool, so that it automatically looses its grip around the tightening portion and the screwing process is automatically stopped, when a desired predetermined screwed-in length of the slip protecting means has been penetrated into the gripping surface. In a preferred embodiment example of the invention the tightening portion as well as the screw thread has a length of about 4 – 8 mm in providing of an optimal function. The tool used during the mounting process consists of e.g. a nut tightener, a sleeve, a wrench, a hollow key, a bits or the like, so that the mounting easily can be made by a person not skilled in the art by aid of these traditional tools. In a preferred embodiment example of the invention the tightening portion looks like a nut head having at least one mainly flat supporting surface for the tool to grasp around during the screwing procedure. The supporting surface extends in this case mainly in one direction, parallel to longitudinal direction of the screw so that different embodiment examples can be used on the nut head as e.g. a three edge formation having
three supporting surfaces, a four edge formation having four supporting surfaces, a five edge formation having five supporting surfaces and so on up to an O-formation having a great number of supporting surfaces forming grooves to grasp around for the tool. The best advantages with the invention are that a slip protecting means has been provided which is cheap to manufacture and easy to mount by aid of conventional tools and which automatically determines when the screwing process shall be stopped.

The invention will now be described in more detail below with help of a preferred embodiment example with reference to the accompanying drawing, on which

Fig. 1 shows a perspective view of a portion of a tyre having a number of slip protecting means mounted in the gripping surface of a tyre,

Fig. 2 shows a slip protecting means in a perspective view,

Fig. 3 shows a part of the slip protecting means in a perspective view and the end having a tightening device and

Fig. 4 shows a perspective view of a part of a slip protecting means during the mounting or screwing of the same into a gripping surface by aid of a tool.

As can be seen from fig. 1 in the drawings here is shown a number of slip protecting means 1 mounted in a gripping surface 5 in a tyre in order to improve the friction against a foundation or basis 6.

As can be seen from fig. 2 here is shown that the slip protecting means 1 looks like a screw 8 having a screw thread 3 with a first end 11 having pointed formation 14 in the form of a drill formation 10 and a tightening portion 4 in the other end 13 of the slip protecting means 1 having a diameter or width 15 across the longitudinal direction 17 of the screw 8 which mainly corresponds with the diameter 7 of the screw thread 3. The tightening portion 4 has in its turn supporting surfaces 16.

As can be seen from fig. 3 here is shown a friction extension 2 provided on said tightening portion 4.
As can be seen from fig. 4 here is shown a tool 9 having the form of a hollow key provided with a bit, which can grip around said tightening portion 4 having flat supporting surfaces 16, extending mainly in one direction parallel to the longitudinal direction 17. A desired screw-in length 12 of the slip protecting means 1 occurs when the tool gets loose or is released.
Claims

1. A slip protection means in the form of a tip or the like to improve and simplify a mounting procedure of said slip protecting means (1), which is intended to be screwed into a gripping surface (5) on e.g. a tyre for a vehicle such as tractors, trucks, snow removing vehicles, soles for foot wears, such as high boots, shoes or the like in providing of increased friction between the gripping surface (5) and a foundation (6), such as a slippery road, a wet muddy ground or the like, characterized in that said slip protecting means (1) is formed like a screw (8) having at least one screw thread (3), a first end (11) and a tightening portion (4) in another end (13) having at least one friction extension (2) and said tightening portion (4) having mainly the same diameter or width (15) across the longitudinal direction (17) of the screw (8) as the diameter (7) of the screw thread (3), whereby during the screwing of the slip protecting means (1) into the gripping surface (5) with the first end (11) directed towards the gripping surface (5) by aid of a tool (9) grasping around or provided at least a portion of said tightening portion (4) a penetration is obtained of at least one part of said tightening portion (4) into the gripping surface (5), said gripping surface (5) in that case is pressing against said tool (9), which then automatically is released from its gripping around said tightening portion (4) at the same time as the screwing in procedure is stopped, when a desired, predetermined screwing in length (12) of the slip protecting means (1) has been occurred into the gripping surface (5) and then also the extension (2) is situated in a desired, predetermined position for improving the friction against the foundation (6).

2. A slip protecting means according to claim 1, characterized in that the tool (2) consists of e.g. a nut tighten, a sleeve, a wrench, a hollow key, a bits or the like, so that the mounting easily can be made by one not skilled in the art by aid of traditional tools.

3. A slip protecting means according to claim 1, characterized in that the tightening portion (4) as well as the screw thread (3) has a length of about 4-8 mm in providing of an optional function.
4. A slip protecting means according to claim 1, characterized in that the tightening portion (4) has friction against the foundation (6).

5. A slip protecting means according to claim 1, characterized in that the friction extension (2) is formed by e.g. hardened steel, hard metal.

6. A slip protecting means according to claim 1, characterized in that the friction extension (2) is separately manufactured and provided in the tightening portion (4) by aid of soldering, gluing, wedging, and forming the tightening portion (4) around the friction extension (2), clamping or the like.

7. A slip protecting means according to claim 1, characterized in that the screw (8) in its first end (11) is provided with a drill formation (10) or a pointed formation (14) in order to make the screw procedure into the gripping surface (5) easier.

8. A slip protecting means according to claim 1, characterized in that the tightening portion (4) having at least one mainly flat supporting surface (16) for the tool (9) to grasp around during the mounting, said supporting surface (16) extending mainly in a direction parallel to the longitudinal direction (17) of the slip protecting means (1).

9. A slip protecting means according to claim 1, characterized in that the tightening portion (4) can be provided with different formations viewed towards the tightening portion (4) in the longitudinal direction from the other end (13) towards the first end (11) like a nut head having e.g. a three edge formation with three supporting surfaces (16), a four edge formation with four supporting surfaces (16), a five edge formation with five supporting surfaces (16) and so on up to an O-formation having a great number of supporting surfaces (16) forming grooves.
INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2005/001875

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet
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)

IPC: B60C, A43C

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)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>A</td>
<td>US 5458174 A (WESSEL), 17 October 1995 (17.10.1995), figures 1-5, abstract</td>
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<td>A</td>
<td>GB 191112231 A (WILLIAM EDWARD CARMONT), 28 March 1912 (28.03.1912), figures 1-7</td>
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<td>A</td>
<td>SE 182767 C1 (C A FORSLUND), 5 March 1963 (05.03.1963), figures 1-7</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:
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B60C 11/16 (2006.01)

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### INTERNATIONAL SEARCH REPORT

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International application No.
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Form PCT/ISA/210 (patent family annex) (April 2005)