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(54) **CLAMPING DEVICE**

KLEMMVORRICHTUNG

DISPOSITIF DE SERRAGE

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Description

Technical field

[0001] The present invention relates to a clamping device which can alternatively be used for the clamping of a contact line of a current collector having a certain dimension and design, and for the clamping of other electrical conductors or parts of different dimensions and designs in electrical conductor constructions, respectively.

Prior art

[0002] Clamping devices, for the purpose of grounding apparatus, to be applied to high tension lines for grounding these during major repairs, are known. See SE-B-8204818-2 and FR-A-1 367 708, for example. These clamping devices are intended for electrical conductors of a relatively coarse size. They are intended to clamp conductors with a relatively broad contact surface to get as firm a grip as possible. These known clamping devices are not adapted for contact lines, as the area of contact can be damaged.

[0003] The section of a contact line is more or less circular but with two grooves on the upper part for engagement with a wire holder. The part of the lower part of the section being used for abrasion is 25% of the section of the conductor, i. e. an abrasion of 25 % is permitted, giving an unsymmetry of the section, resulting in difficulties of the clamping by means of conventional clamping devices. It is easy to clamp a contact line "obliquely", after which the clamped conductor can be turned between the clamping surfaces during the manipulating of the devices, involving a great risk for the conductor to get loose from the clamping device.

Summary of the invention

[0004] The object of the invention is to provide a clamping device to be used alternatively at the clamping of contact lines for current collectors, and for the clamping of other electrical conductors or parts, respectively. The advantages of the clamping device according to the invention are, that the area of current contact of the contact line, which is easily damaged, is protected during the clamping according to the invention, that said clamping device can be used both for the clamping of easily damaged contact lines and for the conductors or details that better tolerate stresses from the clamping, that an abrasive, unsymmetrical contact line can be clamped firmly, and that an "obliquely" clamped contact line cannot get loose from the clamping device.

[0005] The invention is characterised by the features indicated in the claims.

Description of an embodiment

[0006] Now the invention will be described by means

of an embodiment illustrated in the drawings.

[0007] Figure 1 indicates schematically a clamping device according to the invention used as a clamping device for a contact line.

[0008] Figure 2 indicates schematically a clamping device according to the invention used as a clamping device for another conductor.

[0009] The clamping device according to the figure 1 comprises a fixed gripping claw 1 and a pivoting gripping claw 2 being pivoted around an axis 3 such that the gap between the gripping claws 1, 2 can be opened and closed. According to the embodiment shown an upper surface 5 of an upwards and downwards sliding operating rod 4 (indicated by broken lines in the figures) co-operates with means 6 of the operating part 2a of the pivoting gripping claw in such a way that when the operating rod 4 moves upwards, by screwing, for example, the pivoting gripping claw 2 is forced towards the fixed gripping claw 1 and the gap is reduced. When the operating rod 4 is lowered, by screwing, for example, the gap is opened, either by the gravity influence on the operation part 2a of the pivoting clamping claw, or by spring influence, magnetic influence or otherwise. In the embodiment shown the rod 4 moves in a passage arranged in the fixed gripping claw 1. For example, the rod can be arranged to be screwed up and down in a threaded passage (not shown in the figure). Of course, other designs of the operating rod 4, influence means of the operating part 2a, gripping claws 1, 2, and another method for the displacement of the rod, than those indicated in the embodiment, are possible.

[0010] At each side 7 of the respective gripping claw 1, 2, facing one another, near the innermost part of the formed gap, closest to the rotation axis 3, there is a protruding acute engagement element 8, within which a cavity is formed for picking up the upper part 9 of a contact line. During the clamping, the engagement elements 8 engage with the grooves of the contact line, but the lower part 10 of the contact line, including the area of contact 11, is outside the engagement elements. In this way the easily damaged area of contact 11 is protected from a mechanical effect by means of the clamping device which otherwise can have an effect on or destroy the smooth area of contact 11. The contact line cannot be released from the clamping device.

[0011] At the surface 7 of the respective gripping claw 1, 2 there are also arranged recesses 12 for the reception of a main cable 13 having a bigger dimension, see figure 2. These recesses can have suitably formed surfaces, with contact surfaces which are relatively broad, for the reception and the clamping of a main cable or another detail having bigger dimensions and form.

[0012] The clamping device acts as follows. When the clamping device is hooked on the conductor or the detail to be clamped, the clamping device is open, i. e. the gripping claws 1, 2 have a certain distance from each other forming a gap such that the contact line, main cable or the like can be picked up into the space in question. The

operating rod 4 is at a not upwards pushed position and the operating part 2a of the rotating gripping claw 2 is lowered as a result of the gravitation or another force.

[0013] When the clamping device has a position over the contact line 9, 10 to be gripped and to be clamped, the operation rod 4 is forced upwards (is screwed) such that the upper end 5 is affecting the means 6 of the operating part 2a, the gripping claw 2 being rotated such that the gap between the gripping claws decreases. The engagement elements 8 engage into the grooves of the contact line 9, 10 which is clamped.

[0014] If a conductor 13 or another part of thicker dimension is to be clamped, this is accomplished in a similar way but with the difference that it is the recesses 12 that form the space for picking up the conductor 13 and for clamping this between its surfaces.

Claims

1. A clamping device adapted both for the clamping of the contact line of a current collector and for the clamping of other electrical conductors or parts, e. g. a main cable, the clamping device comprising two gripping claws (1, 2) arranged with a gap in between to be opened or closed, where the surfaces (7) of each claw (1, 2) facing the gap present protruding engagement means (8) and recesses characterized in that the protruding engagement means are adapted for gripping into grooves of the contact line (9, 10) and which recesses (12) are adapted for protecting the area of current contact of the contact line during the clamping of a current conductor, and which surfaces of each claw also are adapted for the reception and the clamping of e.g. a main cable (13).
2. A clamping device according to the claim 1, **characterized in** that the gap is arranged to be closed and to be opened by means of a movable operating rod (4), being arranged to act on one of the gripping claws (2), which is pivotally arranged around an axis (3), the one end (5) of the operating rod being arranged to act on an operating part (2a) of the pivoting gripping claw (2).

Patentansprüche

1. Klemmvorrichtung, die sowohl zum Klemmen der Kontaktlinie eines Stromkollektors als auch zum Klemmen von anderen elektrischen Leitern oder Teilen, beispielsweise eines Hauptkabels, geeignet ist, wobei die Klemmvorrichtung zwei Greifklauen (1, 2) umfasst, die mit einer Lücke dazwischen zum Öffnen oder Schließen angeordnet sind, wobei die Oberflächen (7) jeder Klaue (1, 2), die in Richtung auf die Lücke gerichtet sind, vorspringende Ein-

griffsmittel (8) und Aussparungen darstellen, dadurch gekennzeichnet, dass die vorspringenden Eingriffsmittel geeignet sind, in Nuten der Kontaktlinie (9, 10) einzugreifen, und wobei die Aussparungen (12) geeignet sind, das Gebiet des Stromkontakts der Kontaktlinie während des Klemmens eines Stromleiters zu schützen, und wobei die Oberflächen jeder Klaue auch geeignet zum Aufnehmen und Klemmen von beispielsweise einem Hauptkabel (13) sind.

2. Klemmvorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Lücke angeordnet ist, dass sie durch eine bewegbare Betätigungsstange (4) geöffnet und geschlossen werden kann, die angeordnet ist, dass sie auf eine der Greifklauen (2) wirkt, die schwenkbar um eine Achse (3) angeordnet ist, wobei das eine Ende (5) der Betätigungsstange angeordnet ist, dass es auf ein Wirkteil (2a) der schwenkbaren Greifklaue (2) wirkt.

Revendications

1. Un dispositif de serrage adapté à la fois pour le serrage de la ligne de contact d'un collecteur de courant et pour le serrage d'autres conducteurs ou pièces électriques, par exemple un câble principal, le dispositif de serrage comprenant deux mâchoires (1, 2) disposées avec un intervalle entre elles afin d'être ouvertes ou fermées, où les surfaces (7) de chaque mâchoire (1, 2) dirigées vers l'intervalle présentent des moyens d'engagement en saillie (8) et des évidements, caractérisé en ce que les moyens d'engagement en saillie sont adaptés pour s'agripper dans des gorges de la ligne de contact (9, 10) et en ce que les évidements (12) sont adaptés pour protéger la zone de contact de courant de la ligne de contact pendant le serrage d'un conducteur de courant, les surfaces de chaque mâchoire étant également adaptées pour la réception et le serrage de par exemple un câble principal (13).
2. Un dispositif de serrage selon la revendication 1, caractérisé en ce que l'intervalle est disposé pour être fermé et pour être ouvert au moyen d'une tige mobile d'actionnement (4), en étant disposée pour agir sur une des mâchoires (2), laquelle est disposée de manière pivotante autour d'un axe (3), l'extrémité (5) de la tige d'actionnement étant disposée pour agir sur une partie d'actionnement (2a) de la mâchoire pivotante (2).

