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(54) Process for mechanical riveting

(57) This utility model refers to a process for mechanical riveting whose evident object consists in allowing the definitive mechanical connection and fixing of parts and pieces, for instance hinges for hinged ladders, in a form that dismisses the means hitherto known and used in the art.

The fixing by this mechanical riveting process of, for instance, hinge (1) for hinged ladders consists in specially reamed recesses or drillings (3) made out in the

inner parts (2) in a number depending from the applications and respective loads at stake, and in mechanical deformations or protrusions (5) made out by pressures exerted from outside upon the ends (4) of the outer parts of the connection to be established, in order to provoke the penetration of said deformations or protrusions (5) into said reamings (3).

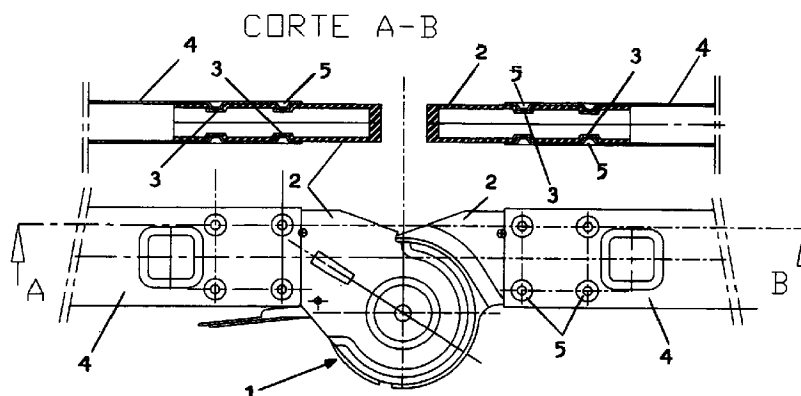


Fig. 1

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Description

[0001] This specification relates to a demand for an utility model to a method for mechanical riveting, whose evident object consists on allowing the definitive mechanical connection and fixing of parts and pieces, namely hinges designed, for instance, for articulate ladders in such a form that it dismisses the means known and used in the art till present day.

[0002] Methods and/or processes for mechanical connection and/or fixing are well known, namely through tightening screws undispensable for removable connexions but also by means of several types of welding or riveting connections.

[0003] Generally known are the troubles linked with some processes as, for example, welding, when it is to connect different materials as steel or iron and aluminium, or mechanical tightening by screws, wich through use and innerent vibrations tend to require a periodical inspection of respective tightness, or also riveting, even with fast rivets, that is time wasting and expensive to be executed.

[0004] Long since the art has been asking progressively more for working methods and processes that along with a better global quality could present lesser production costs.

[0005] It is a main object of this utility model to conceive a process for mutual riveting of parts and pieces consisting of different materials, and that simultaneously presents an appropriate mechanical strength and low production costs.

[0006] Thus, the process described thereafter consists basically on foreseeing some reamed drillings upon the part with stronger material (for example, iron or steel), hollow or solid, and that is designed to be introduced into an hollow end of another part made from a different and weaker material (for instance, aluminium), which will will suffer from outside and exactly in the direction of each one of said reamed drillings of the inner side, a pessure the forces the soft material of the outer side to warp in and to enter into said reamed zones, thus fixing together respectively a part or piece one another.

[0007] With the aid of the annexed figures that integrate this description without any limitative character, refering only one of several possible forms of execution of the processe, its innerent virtues shall stand out therefrom once that any and all the variants of this process will fall under the scope of it, unresponsive to the method and type of machinery used.

Fig. 1 - Is an elevational side view of an hinge and a partial section AB;

Fig. 2 - is an elevational side view of a type of hinged ladder, with the hinges refered in Fig. 1, in compasses overture.

[0008] The hinge (1) used, for instance, in hinged ladders (Fig. 2) presents two terminal arms (2), with specially reamed recesses or drillings (3) in number of four or more, depending on the applications and loads at stake, mainly made of tougher material (iron or steel), where each one of said terminals (2) of the hinge enter respective aluminium tube ends (4) for exemple with a rectangular profile, in which at least two of its opposed sides, and in the direction of each one of respective reamed recesses or drillings (3) from the inner located part, are produced by means (punches) already basically known some pressures that conduct to the mechanical deformation of the outer part material unresponsive to the method used therefor, forcing it to fit precisely and closely into the rounded ream and in depth into respective special reamed recesses or drillings (3) with the produced respective protrusions (5).

[0009] The reams (3), are specially executed with the shape of rounded edges in order to avoid the weaker material being the target to shearing stress when subject to respective mechanical deformation or protrusion (5).

[0010] Mechanical deformations (5) as well as special reams (3) are executed by specific tool elements, obviously designed and conceived for this new riveting process, although this elements are operated by known machines of manual, electrical, hydraulic or pneumatic command.

[0011] This way connections resistant to traction and flexing as per international normative claims are obtained, without resource to classical riveting, welding or mechanical clipping, a novelty that leads necessarily to an economy in production.

Claims

1. Process for mechanical riveting, that consists in allowing a definitive mechanical connection and fixing of parts and pieces made of differente materials as, for instance, hinges (1) for hinged ladders dismissing the classical means hitherto known and used in the art, characterized in that the parts under connexion (2 and 4) present respectively the inner one (2), some specially reamed recesses or drillings (3) with rouded edges, and the outer one (4), on at least two of its opposed sides, some respective mechanical deformations or protrusions (5) in relation to each one of said recesses or drillings (3), where they enter with a close fitting and precisely, to fix togheter one another the parts (2 and 4).

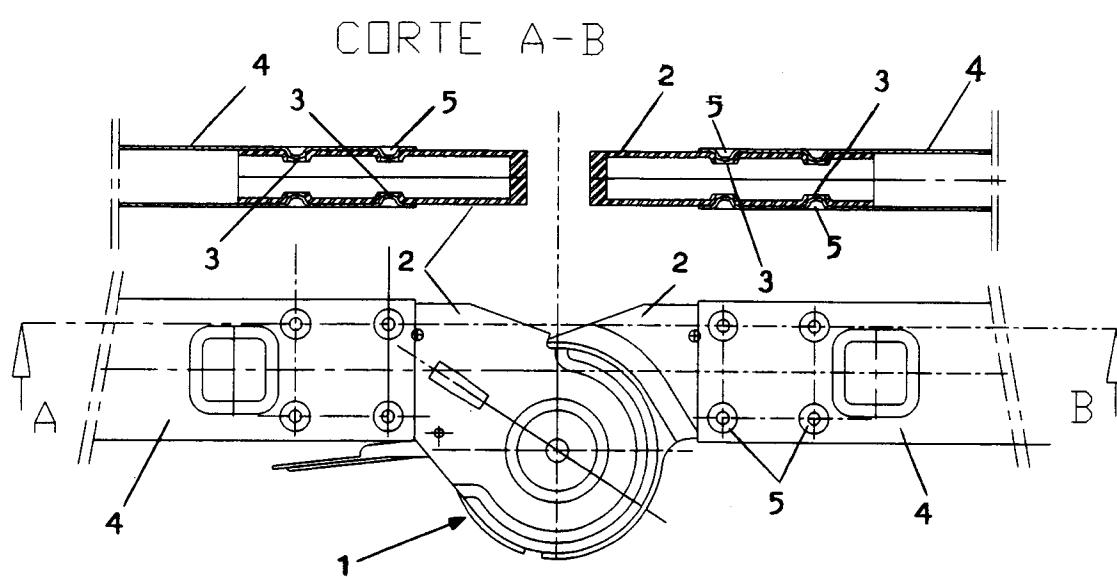


Fig. 1

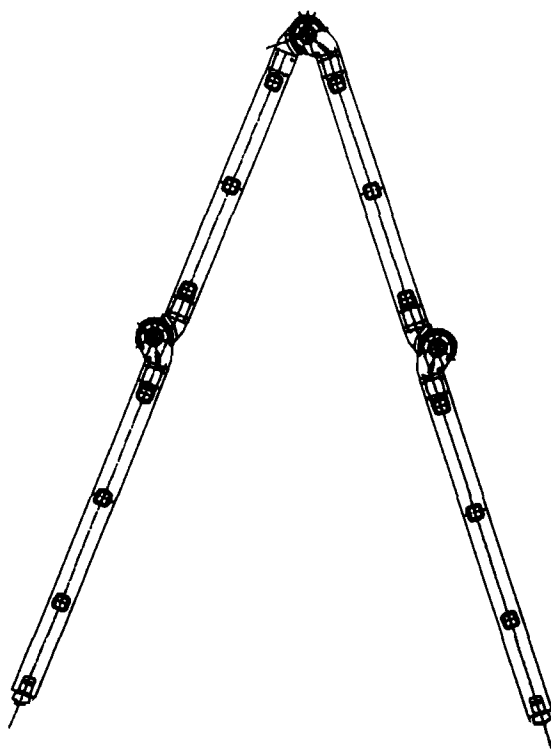


Fig. 2