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(54) **Stenter chain**

(57) A stenter chain consists of top plates (1) and bottom plates (2) joined in a hinged way to the adjacent plates by a pin (3) housed within the bushing (4) of a bearing (5), and further includes a sleeve (6) of thermo-

plastic material interposed between the pin (3) and the bushing (4) and provided with a top anti-rotation collar (9) shaped so as to enter a corresponding punching (10) formed in the top plate (1).

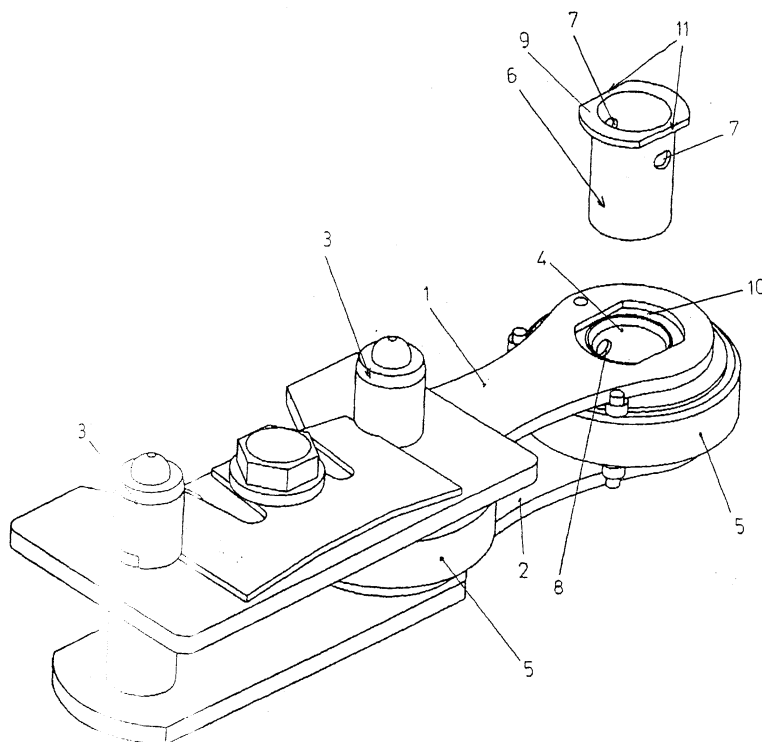


Fig. 1

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Description

[0001] The present invention relates to machines for fabric finishing, and in particular to a stenter chain.

[0002] It is known that a stenter is a machine where the fabric undergoes a thermal treatment by going through a heating tunnel. The fabric is tensioned and carried by clips mounted on chains driven by motors for transporting the fabric through the tunnel.

[0003] These chains can be very long and thus include a very high number of links, in the range of the hundreds or even thousands. The crucial point for these chains is the wear occurring between the pins and bushings of the bearings which mutually connect the links in a hinged way. Since both said members are made of steel, it is vital to prevent their direct sliding in order to reduce the wear which would otherwise be very quick.

[0004] The simplest method is to place a special grease between pin and bushing, but said method requires a considerable labour and has a short service life. Moreover it does not provide any guarantee as to endurance, in that the action of the grease may be more or less effective depending on the amount of grease applied and to the precision of application by the operator.

[0005] A more advanced and reliable solution consists in winding around the pin a film of metallic net coated with a low friction coefficient material (e.g. graphite, PTFE). However, in this case the required labour becomes even greater since the film must be cut to measure, wound and then secured by seaming along the upper edge of the bushing. Also, when the film muff must be replaced it is necessary to remove it with a suitable tool and then perform a cleaning of the bushing from possible residues before applying the new film. As a consequence, this solution involves considerable costs due to labour and machine downtime.

[0006] Another drawback of this solution stems from the fact that in the film muff there must be formed holes for the passage of the lubricant fed into the pin and intended for the bearing. These holes must be precisely located at the corresponding holes formed in the bushing, but during the mounting or during use thereafter it is possible that the muff rotates. In this instance it becomes difficult where not impossible to properly lubricate the bearing, while it is not possible to remedy this problem unless by replacing the film muff.

[0007] Therefore the object of the present invention is to provide a stenter chain which overcomes the above-mentioned drawbacks.

[0008] This object is achieved by means of a chain including a sleeve of synthetic material interposed between pin and bushing and provided with a top anti-rotation collar. Other advantageous features are disclosed in the dependent claims.

[0009] A first considerable advantage of this chain is that the sleeve requires a very small labour for mounting and replacement, thus reducing the costs caused by downtime.

[0010] Another significant advantage is provided by the ease and precision of mounting which allow to have the lubrication holes certainly aligned, both upon mounting and during use thereafter.

[0011] Still another great advantage of the present chain is the possibility of producing the sleeve with different materials and/or processes depending on cost, endurance and mechanical strength requirements. For example, the sleeve may be injection molded to reduce costs, or it can be turned from an extruded rod to increase its strength.

[0012] These and other advantages and characteristics of the chain according to the present invention will be clear to those skilled in the art from the following detailed description of an embodiment thereof with reference to the single drawing, annexed as fig.1, wherein a link of the chain is shown in a diagrammatic perspective view.

[0013] As shown in said figure, the chain substantially consists of top plates 1 and bottom plates 2 joined to the adjacent plates by a pin 3 housed within the bushing 4 of a bearing 5. The novel aspect of the chain according to the present invention is the presence of a sleeve 6 of thermoplastic material interposed between pin 3 and bushing 4.

[0014] Sleeve 6 is provided with side holes 7 for the passage of lubricant formed at holes 8 of bushing 4, and also with a top anti-rotation collar 9 shaped so as to enter a corresponding punching 10 formed in the top plate 1. In particular, the illustrated collar 9 has a pair of straight parallel segments 11 connected by circular arcs, but it could have any other non-circular contour suitable to prevent the rotation of sleeve 6 around its vertical axis.

[0015] The presence of collar 9 assures the correct axial and radial positioning of holes 7 and also prevents possible mounting errors in that the sleeve can not be mounted upside down. Furthermore, the symmetry of sleeve 6 with respect to a vertical mid-plane allows to mount it indifferently in the illustrated position or rotated through 180° around its vertical axis.

[0016] As a result, it is extremely simple and quick to mount sleeve 6 with the absolute guarantee of the alignment of the lubrication holes 7, 8, both upon mounting and during use thereafter.

[0017] It is clear that the above-described and illustrated embodiment of the chain according to the invention is just an example susceptible of various modifications. In particular, as previously mentioned, the exact shape of collar 9 and of the corresponding punching 10 are freely variable as long as the anti-rotation function of said members is retained.

Claims

1. A stenter chain substantially consisting of a plurality of top plates (1) and bottom plates (2) joined in a hinged way to the adjacent plates by a pin (3)

housed within the bushing (4) of a bearing (5), characterized in that it further includes a sleeve (6) interposed between said pin (3) and said bushing (4), said sleeve (6) being provided with side holes (7) for the passage of lubricant formed at corresponding holes (8) of the bushing (4), and also with a top anti-rotation collar (9) shaped so as to enter a corresponding punching (10) formed in said top plate (1).

2. A chain according to claim 1, characterized in that the collar (9) and the corresponding punching (10) have a contour consisting of a pair of straight parallel segments (11) connected by circular arcs.
3. A chain according to claim 1 or 2, characterized in that the sleeve (6) has a symmetrical structure with respect to a vertical mid-plane.
4. A chain according to one or more of the preceding claims, characterized in that the sleeve (6) is made of thermoplastic material.
5. A chain according to claim 4, characterized in that the sleeve (6) is obtained by injection molding.
6. A chain according to claim 4, characterized in that the sleeve (6) is obtained by turning from an extruded rod.

