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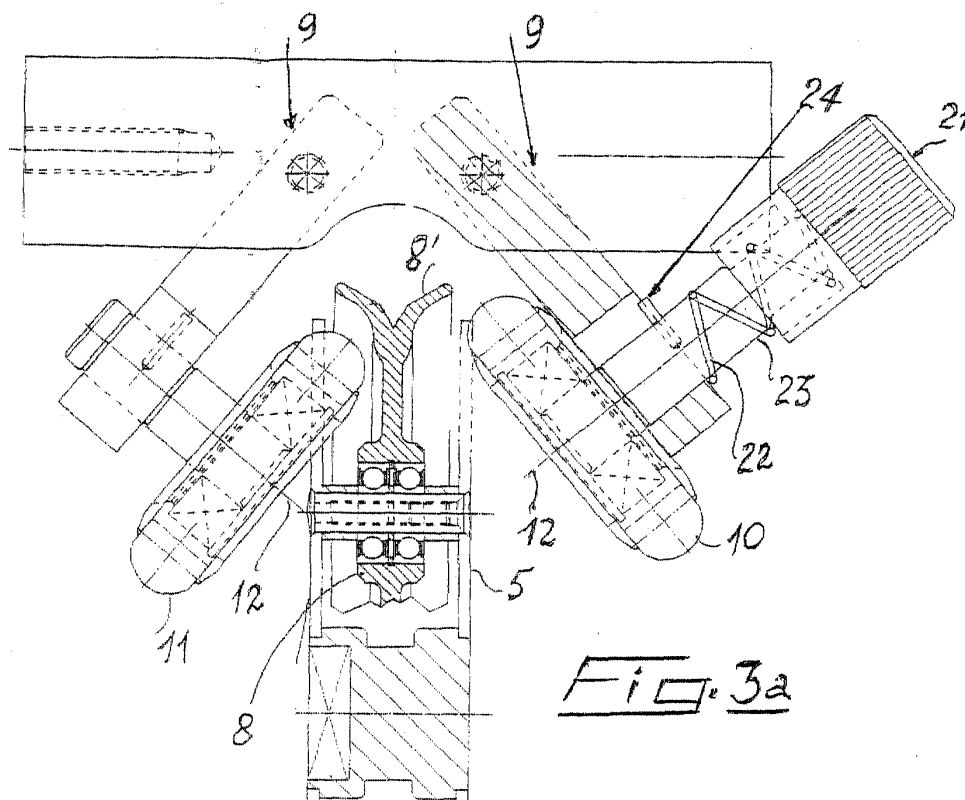
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(54) **Stretcher for tubular knitwear**

(57) A stretcher for tubular knitwear fabric, comprising: two arms (5, 6) and the inclined axis (12) safety wheels (10, 11), at least one of the latter (10, 11) with a

bolt (23), said bolt being provided with quick release means that are adapted to cause the safety wheel(s) (10, 11) to be displaced from the related arm (5, 6)



Description

[0001] The object of the present invention is a stretcher for tubular knitwear fabric, to be applied in particular to calenders and other machines for the treatment of tubular fabric.

[0002] It is known that in the course of tubular knitwear fabric finishing stretchers are used to stretch and spread the tubular item in order to ease the finishing operations.

[0003] Thus in calendering, which is usually the last finishing operation, it is necessary to use a stretcher in order to achieve a uniform steaming and to adjust the width of the tubular item onto the desired value.

[0004] There are known stretchers for tubular fabric with magnetic attraction to the outside of the stretcher arms along which the tubular fabric slides.

[0005] From patent PCT/IT99/00344 of the same proprietor as the present invention, it is known to support said arms by means of rotating inclined safety wheels that are carried by the fixed part of the stretcher. When the latter is operating, the magnets attract to the outside the stretcher arms, thereby stretching the tubular fabric.

[0006] Where the magnetic attraction would be lower than the tension of the fabric during the that stretching step, there would then be the danger of the arms would not be held while this occurs, but this is prevented by the presence the inclined wheels that hinder it, as described in detail here in below.

[0007] When it is desired to extract the arms in the shortest possible time, for example in order to adjust the magnetic attraction and especially for maintenance, the object of the present invention is a quick release means for the inclined safety wheels that are arranged at a side of each stretcher arm.

[0008] The features, advantages and the solution of the above-mentioned technical problem will be evident from the detailed description herein below of a preferred, non limiting embodiment of the subject stretcher, said embodiment being illustrated in a merely exemplary, non limiting way in the accompanying figure, in which:

Figure 1 represents a front view of the stretcher;
Figure 2 represents an enlarged fragmentary horizontal cross-sectional view of a stretcher through line II-II of Figure 1; and
Figures 3a and 3b represent the quick release device in two discrete positions; and
Figures 4a, 4b and 4c represent in a perspective view the details of the quick release device of a safety wheel.

[0009] Referring now to figure 1, the subject stretcher is comprised of stanchions 1 and 2 in which the various control and drive mechanisms are contained.

[0010] Said stanchions support the per se known steamer 3, inside which the tubular fabric is caused to run after passing through the stretcher.

[0011] Said stretcher is comprised of the stretcher

arms 5 and 6, which in turn are held on the herein below described support devices.

[0012] Within stanchions 1 and 2, motor means herein below described transmit the motion to the upper drive wheels 7a, and thus means not shown in the figure can determine the displacement in opposite directions of the stretcher arms 5 and 6, so as to possibly change the width of the tubular fabric.

[0013] The upper drive wheels 7a are coupled to the similar lower wheels 7b through means that are specified herein below.

[0014] As can clearly be seen from figures 1 and 2, the stretcher arms 5 and 6 are provided with wheels or rings 8 that are suitably shaped and are arranged in front of the convex part the drive wheels 7a and 7b are provided with. The latter in turn exhibit the supports 9 that carry the inclined axis (12) wheel pairs 10 and 11. Said wheels 10 and 11 are spaced apart with their peripheral parts from the circumferential outlines 8' of rings 8, this being due to the magnetic attraction force, as will be described later on.

[0015] The transportation of the tubular fabric 4 is obtained by means of belts 13 that are wound around the set of idle pulleys 14 on arms 5 and 6 along the outlines of the drive wheels 7a and 7b and of the rings 8.

[0016] Both inclined wheels 10 are motor driven as they are coupled by means of an elastic belt with the same drive wheels 7a and 7b.

[0017] In a similar way, the inclined wheels 11 are motor driven as they are coupled by means of an elastic belt with the same drive wheels 7a and 7b.

[0018] Said motor drive has the advantage that the transportation of the fabric is markedly improved.

[0019] In particular, the supports 9 consist of fork shaped brackets 16 for the adjustment of the working angles of arms 5 and 6.

[0020] The safety wheels 10 and 11 are kept spaced apart from the rings 8 by means of magnets 17, 18 that respectively attract the arms 5 and 6 outwards as shown by arrows B. said rings 8 carried by arms 5 and 6 remain spaced apart from the inclined wheels 10 and 11, and are attracted against the drive wheels 7a and 7b by said magnets 17 and 18, and the fabric is advanced between belts 13 and the drive wheels 7a and 7b.

[0021] It is moreover to be pointed out that the attraction force of magnets 17 and 18 can be adjusted, thereby assuring that rings 8 are spaced apart from the inclined wheels 10 and 11.

[0022] Said adjustment is obtained by means of a mechanism that takes the magnets 17 and 18 closer to a farther from arms 5 and 6 respectively. In fact the magnets 17 and 18 are coupled to said mechanism that is provided with an adjustment hand grip 19 that is adapted to move closer or farther the magnets 17 and 18 to and from the supports 17' and 18' that are fixed to bars 5 and 6.

[0023] Finally, guards 20 are provided above the mechanisms carrying the adjustment hand-grips 19.

[0024] The apparatus is operated as follows: the tubular fabric 4, that usually consists of various tubular pieces that are sewn together, is introduced upwards, as can be seen from figures 1 and 2, between wheels 10 and 11 and ring 8 and between ring 8 and wheels 7a and 7b of each arm and is thus transported upwards as indicated by arrow A upon rotation of the drive wheels 7a and 7b that are coupled to rings 8 and to pulleys 14 that are mounted on the arms 5 and 6, said arms being kept in position and sustained by the attraction force of magnets 17 and 18.

[0025] When a larger width of the tubular fabric is desired to be obtained, the arms 5 and 6 are displayed relative to one another until they reach the maximum distance shown in the positions of figure 1.

[0026] In case on an emergency, where the magnetic attraction should be insufficient or the magnets should be in such a position as not to attract the arms 5 and 6, the latter would nonetheless remain in position because the rings 8 would lean with their circumferential outlines 8' to the wheels 10 and 11. However, such a situation would be a temporary one and would become normal again upon a proper adjustment of the position of magnets 17 and 18 by means of hand grips 19.

[0027] The novelty of the present intention as it is shown in figures 3a, 3b, 4a, 4b, 4c concerns the quick release device that is applied to at least one of the inclined safety wheels 10 that are arranged at one side of each stretcher arm 5, 6, thereby allowing either or both of the safety wheels 10 to be displaced from the related arm, with the possibility of extracting the arms 5 and 6.

[0028] Said device comprises a hand grip 21 that presses a spring 22 that is wound around bolt 23 of safety wheel 10 and a detent 24 that is attached to bolt 23 which abuts against holder 9, said holder being a fixed part of the stretcher. The detent 24 is suited to slide in a slot 25 of said fixed part upon rotation of hand-grip 21 for the quick release of bolt 23 of safety wheel 10. Thus the displacement of the safety wheel 10 from the related arm is achieved, with the consequent extraction of the latter.

[0029] Changes can be carried out in the present invention in the practical application features of design details, nonetheless remaining in the scope of the invention as it is claimed hereinafter.

safety wheel(s) to be displaced the from the corresponding arm

2. A stretcher according to claim 1, **characterized in that** said quick release means comprise a hand grip (21) that presses a spring (22) against a fixed part (9) of the stretcher and a detent (24) that is fixed to bolt (23) that keeps the hand grip (21) and is suited to slide in a slot (25) of said fixed part upon rotation of hand grip (21) for the quick release with the consequent displacement of the safety wheel from the related arm.

Claims

1. A tubular fabric stretcher comprising one or more pairs of inclined safety wheels (10, 11) for every stretcher arm (5, 6) and magnets (17) that push fabric (4) outwards, so that, when the magnetic attraction force is lower than the tension of the fabric (4), the safety wheels (10, 11) hold the arms (5, 6) **characterized in that** the bolt (23) of at least one wheel of each couple of safety wheels (10, 11) comprises quick release means that are suited to cause the

Fig. 1

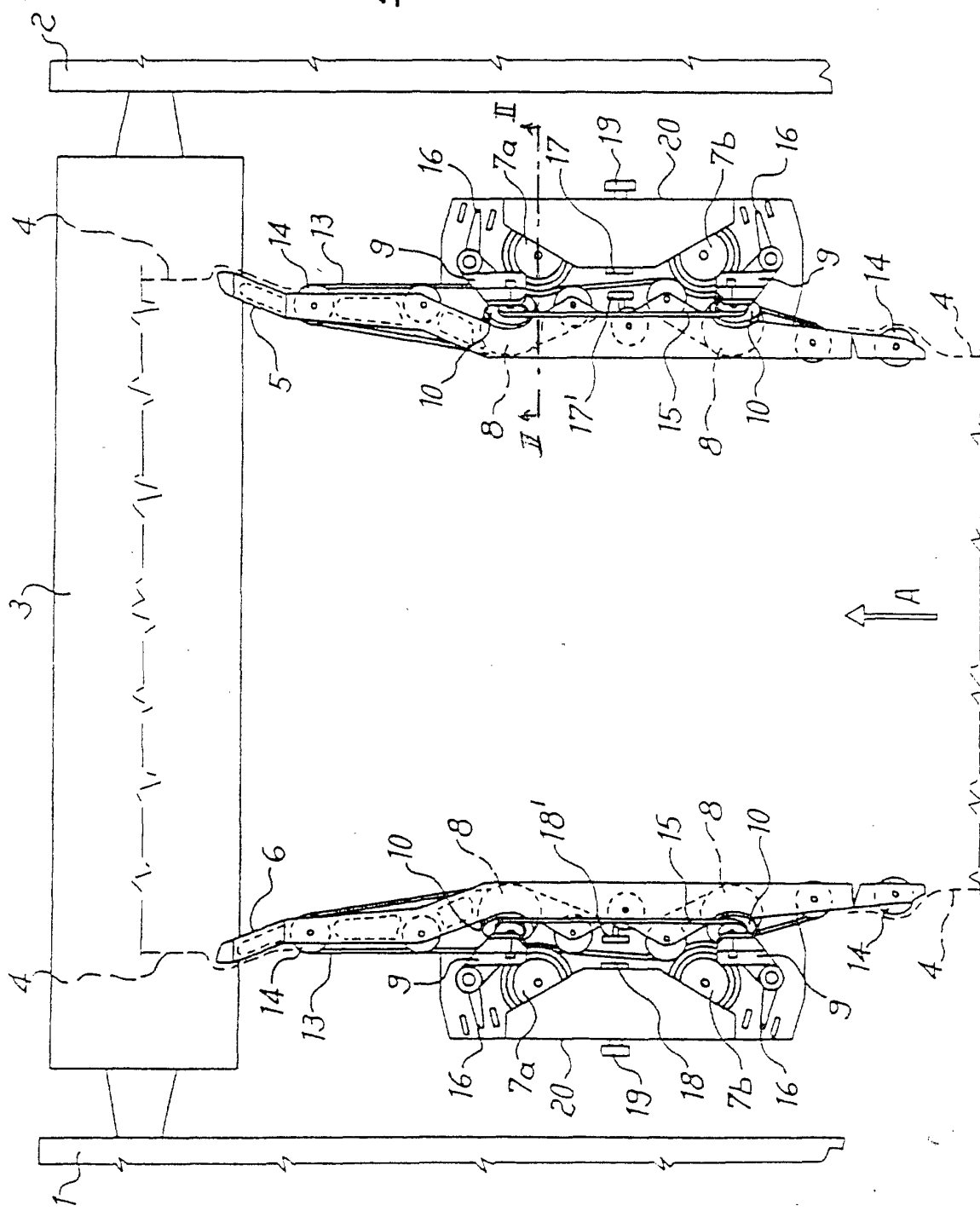


Fig. 2

