HU000032243T2

(19) **HU**

(11) Lajstromszám: **E 032 243**

(13) **T2**

MAGYARORSZÁG
Szellemi Tulajdon Nemzeti Hivatala

EURÓPAI SZABADALOM
SZÖVEGÉNEK FORDÍTÁSA

(21) Magyar ügyszám: **E 07 701289**
(22) A bejelentés napja: **2007. 01. 31.**

(96) Az európai bejelentés bejelentési száma:
EP 20070701289
(97) Az európai bejelentés közzétételi adatai:
EP 1979558 A1 **2007. 08. 09.**
(97) Az európai szabadalom megadásának meghirdetési adatai:
EP 1979558 B1 **2016. 11. 23.**

(51) Int. Cl.: ***E04F 10/06*** *(2006.01)*

(86) A nemzetközi (PCT) bejelentési szám:
PCT/AT 07/000043
(87) A nemzetközi közzétételi szám:
WO 07087659

(30) Elsőbbségi adatok:
1442006 **2006. 02. 01.** **AT**

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(54) **Feszítőeszköz feltekerőrúd kihúzható napellenzőhöz**

120759-3766 SZT

TENSIONING DEVICE FOR AN AWNING WHICH CAN BE UNWOUND FROM A WINDING SHAFT

Description

Technical Area

The invention relates to a tensioning device for an awning which can be unwound from a winding shaft, with a tensioning cable on which at least one spring acts, wherein the spring is formed as a pneumatic spring for tensioning the cable store which comprises two tensioning roller sets, which can be displaced with respect to one another with the aid of the pneumatic spring, for the tensioning cable which runs to and fro between the tensioning roller sets so as to form a looped arrangement.

Prior Art

In order to wind an awning, which is connected along a dividing line to a winding shaft and can be drawn off at the ends facing away from the dividing line in opposite directions from the winding shaft, in a simple manner onto the winding shaft or to draw it off therefrom, providing the winding shaft with a drive and returning the cable pulls required for drawing off the awning, which engage at the ends of the awning facing away from the dividing line, via deflection rollers to the winding shaft and to fasten them on winding rollers which are connected in a rotationally-fixed manner to the winding shaft is known (EP 0 865 555 B1), so that during a rotation of the winding shaft in the unwinding direction, the awning is drawn off from the winding shaft with the aid of the cable pulls, which are wound onto the winding rollers as a cable store, specifically to the extent of its unwinding from the winding shaft. To compensate for possible length differences and to tension the awning, tensioning devices which are under a springy pre-tension are provided between the cable pulls. However, such awnings which can be wound and unwound have the disadvantage that a substantial structural expenditure is linked to the additional return of the cable pulls to the winding shaft and the tensioning devices provided between the returned cable pulls. In addition, springy anchoring of the cable pulls provided by the tensioning device is not sufficient to protect the supporting construction and the awning from an overload, for example, due to gusts of wind or downpours. In addition, the winding shaft having the drive for winding and unwinding the awning is to be designed as sufficiently rigid, which results in a restriction of the awning size upon a corresponding limiting of the winding shaft diameter.

To provide advantageous structural conditions in awnings for shading trapezoidal or triangular window areas having a winding shaft, which is arranged along a lower edge and is provided with a drive, for the awning cloth, which can be unwound upward with leading tip via a cable pull, providing pneumatic springs arranged along the lateral edges inclined toward one another in longitudinal rails, which are to be connected to the tip of the awning cloth by means of cable pulls, which are guided like pulleys via deflection rollers at the upper fixed end of the pneumatic springs, is already known (DE 197 06 251 A1). However, it is not possible to drive the winding shaft in the winding direction with the aid of the pneumatic springs.

Description of the Invention

The invention is therefore based on the object of designing a tensioning device for an awning of the type described at the outset so that it enables good tensioning of the awning over the entire extension length and is accompanied by the condition of being active in the winding direction.

The invention achieves the stated object in that the pneumatic spring is disposed with the cable store in a pipe-shaped stand, the tensioning cable engages on a winding roller for a tensioning cable drum, said winding roller being drivingly connected to the winding shaft and disposed at the upper end of the pipe-shaped stand, the shaft of this winding roller, which is perpendicular to the stand axis, passes through the pipe-shaped stand or a bearing bracket for the winding roller and is drivingly connected to the winding shaft.

Because a tensioning cable guided via a cable store is used and the cable store is elastically pre-tensioned in the sense of a cable reel, over the entire extension length of the tensioning cable out of the cable store, a restoring force dependent on the spring load of the cable store can be ensured, specifically with a force curve which changes only comparatively slightly over the extension length because of the use of a pneumatic spring. Therefore, advantageous anchoring conditions result independently of the size of the awning, because the cable store, as a result of the looping tensioning cable guiding between two tensioning roller sets, can be adapted in a simple manner to the respective size of the awning to be tensioned by the selection of the number of the cable loops between the tensioning rollers, in spite of a restricted spring travel.

This also applies to the use of the tensioning device for winding the awning. To wind the awning, the tensioning cable is fastened on a winding roller which is drivingly connected to the winding shaft, and to which a torque acting in the winding direction is therefore applied. A drive provided for drawing the awning off of the winding shaft, which is to be connected to a cable pull engaging on the awning to draw off the awning, therefore has to draw off the awning against the retaining torque caused by the cable store, which enables the required elastic anchoring of the awning via the winding shaft, specifically even if a rigid winding shaft is omitted and a winding shaft in the form of a cable pull tensioned between shaft stubs is used, so that awnings having larger awning surfaces can advantageously also be anchored.

The supporting structure for an awning of the type described typically comprises at least two stands, on which the awning is anchored. If the pneumatic spring is disposed with the cable store in one of these pipe-shaped stands, particularly simple structural conditions thus result, because neither the pneumatic spring nor the cable store has to be housed separately. Because the tensioning cable engages on the winding roller, which is to be connected in a rotationally-fixed manner to the winding shaft, the pipe-shaped stand can accommodate the winding roller at its upper end, the shaft of this winding roller, which is perpendicular to the stand axis, passing through the pipe-shaped stand or a bearing bracket for the winding roller and being drivingly connected to the winding shaft.

Brief Description of the Invention

The subject matter of the invention is shown by way of example in the drawing. In the figures:

Figure 1 shows a tensioning device applied to an awning in the extension direction, in a simplified longitudinal section,

Figure 2 shows a section along line II-II of Figure 1 in an enlarged scale,

Figure 3 shows a tensioning device according to the invention in detail in the connection area of a winding shaft, which can be acted upon with the aid of the tensioning device, in a longitudinal section in an enlarged scale,

Figure 4 shows an awning which is acted upon with the aid of the tensioning device in a schematic diagram, and

Figure 5 shows an illustration of a further embodiment of an awning tensioned using a tensioning device.

Embodiments of the Invention

The tensioning device according to Figures 1 and 2 has a cable store 1, which comprises two tensioning roller sets 2, 3. While the tensioning roller set 2 is mounted fixed in place in a pipe-shaped stand 4, the tensioning roller set 3 is disposed so it is axially displaceable in the pipe-shaped stand 4 on a head plate 5, specifically on the piston rod 6 of a pneumatic spring 7, which is linked fixed in place in the region of the tensioning roller set 2. The arrangement is made in this case so that both the tensioning roller set 2 and also the linkage axis 8 of the pneumatic spring 7 are held in a bearing insert 9 of the pipe-shaped stand 4. The tensioning cable 10 fastened on the head plate 5 runs to and fro between the two tensioning roller sets 2 and 3 so as to form a looped arrangement, wherein the tensioning cable drum 11 extending away from the cable store 1 is led outward via a deflection roller 12 radially to the stand 4.

An awning 13 which is not according to the invention is schematically shown in Figure 4, which is fastened along a dividing or folding line 14 on a winding shaft 15, which is held between two stands 16, 17 and can be driven with the aid of a motor provided inside the winding shaft 15 in a manner known per se in the winding direction of the awning 13. The ends 18 of the awning 13 facing away from the winding shaft 15 are connected to a cable pull 19, which is supported in a load-dissipating manner on one side via a deflection guide 20 on the tensioning cable drum 11 and on the other side via a deflection guide 21 on a stand 22, which is opposite to the stand 4 with respect to the winding shaft 15. Therefore, if the winding shaft is released by the associated drive motor, the awning 13 is thus drawn off from the winding shaft 15 and tensioned by the force of the pneumatic spring 7, because the tensioning cable drum 11 is drawn by the moving apart of the two tensioning roller sets 2, 3 with the aid of the corresponding pre-tensioned pneumatic spring 7 into the cable store 1.

The awning 13 which is not according to the invention is shown in the tensioned position in Figure 4. To wind the awning 13, the motor of the winding shaft 15 is actuated, so that the awning 13 is rolled against the tensioning force of the cable store 1 onto the winding shaft 14. The cable store 1 which the pneumatic spring 7 acts upon therefore holds the awning 13 tensioned in any winding position. If the tensioned awning 13 is loaded to an extent which exceeds the tensioning force of the cable store 1 by external forces, for example, by wind forces or by downpour-related weight forces, the tensioning cable drum 11 is thus drawn out of the cable store 1 until the external load again falls below the tensioning force of the cable store 1. This can be caused by decrease of the wind forces or by draining off of the downpour water collecting on the awning 13. With the decrease of the external load, the awning 13 therefore returns into its starting position, wherein the external load of the awning 13 and the load-dissipating construction is restricted by the maximum tensioning force of the cable store 1.

According to Figure 5, according to the invention the winding shaft 15 is mounted between the stand 4 which accommodates the cable store 1 and the opposite stand 22, while the stands 16 and 17 are used to support the cable pull 19, which engages at the ends 18 of the awning 13, via deflection guides 20, 21. A drive cable 30 is used to act upon the cable pull 19, which can be wound by a motor or by hand onto a winding shaft 23 and runs via a deflection roller 24 to the deflection guide 20, to which it is connected in a tension-resistant manner.

The winding shaft 15 is drivingly connected to a winding roller 25, which is mounted on the stand 4 with the cable store 1, as can be inferred from Figure 3. The tensioning cable drum 11 extending from the cable store 1 engages on this winding roller 25, so that the winding roller 25 is loaded via the tensioning cable drum 11 by the spring-loaded cable store 1 in the unwinding direction by a torque, which acts on the winding shaft 15 in the winding direction of the awning 13, however, so that the awning 13 is held via the winding shaft 15 loaded in the winding direction in the respective extended position, which is determined by the drive cable 30 rolled onto the winding shaft 23. In this case, however, the release of the awning 13 in the event of an external load is restricted by the respective extension length of the awning winding still remaining on the winding shaft 15.

To provide simple structural conditions, the bearing bracket 26 for the winding roller 25 is disposed on the upper end of the stand 4, wherein the shaft 27 of the winding roller 25 passes through the bearing bracket 26 and is connected in a rotationally-fixed manner to the winding shaft 15. For this purpose, the shaft 27 of the winding roller 25 forms a receptacle fork 28 for an attachment web 29 of the winding shaft 15. The winding shaft 15 does not have to be formed as a rigid shaft, however, but rather can also consist of traction means which are tensioned between attachment shaft stubs, on which the awning 13 is fastened along a folding or dividing line 14, because it is only important to wind the awning 13 around the core, whether it is a rigid shaft or tensioned traction means.

FESZÍTŐESZKÖZ FELTEKERŐRÚDRÓL KIHÚZHATÓ NAPELLENZŐHÖZ

Szabadalmi igénypont

Feszítőeszköz feltekerőrúdról (15) kihúzható napellenzőhöz (13), melynek legalább egy rugóval csatlakoztatott feszítőkötele (10) és a feszítőkötél (10) számára kötéltárolója (1) van, ahol a kötéltároló (1) feszítéséhez a rugót gázrugó (7) képezi, a kötéltároló egymáshoz képest a gázrugó (7) révén állítható két feszítőgörgő-szettel (2, 3) rendelkezik a két feszítőgörgő-szett (2, 3) között ide-oda vezetett, hurkot képező feszítőkötél (10) számára, **azzal jellemezve**, hogy a gázrugó (7) a kötéltárolóval (1) cső alakú állványban (4) van elrendezve, továbbá a feszítőkötél (10) egy a feltekerőrúddal (15) hajtottan csatlakoztatott, a cső alakú állvány (4) felső végén feszítőkötélvéghez (11) elrendezett tekercselőgörgővel (25) kapcsolódik össze, melynek az állvány tengelyére merőleges tengelye (27) a cső alakú állványon (4) vagy egy a tekercselőgörgő (25) számára szolgáló csapágybakon (26) halad keresztül és a feltekerőrúddal (15) hajtottan van csatlakoztatva.

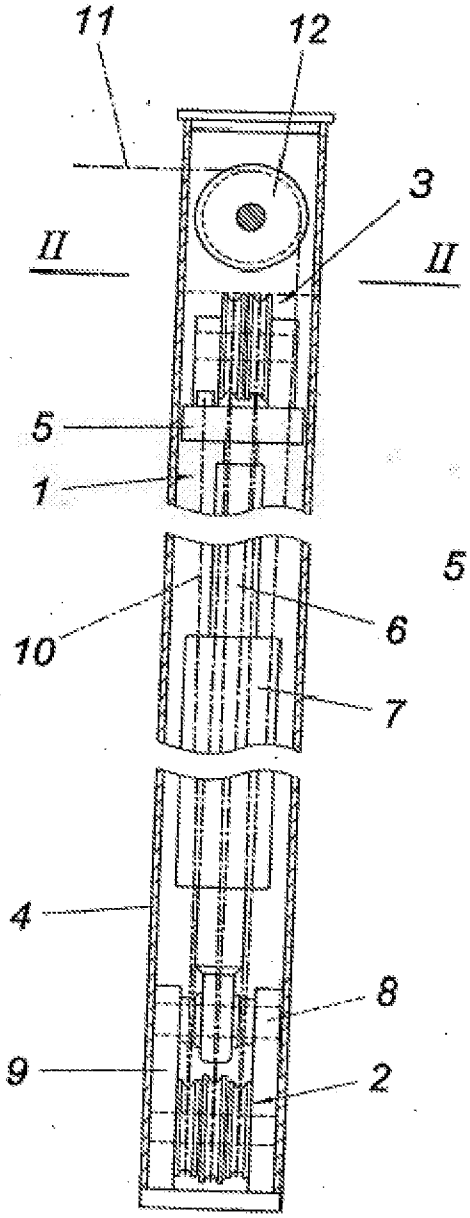

FIG.1

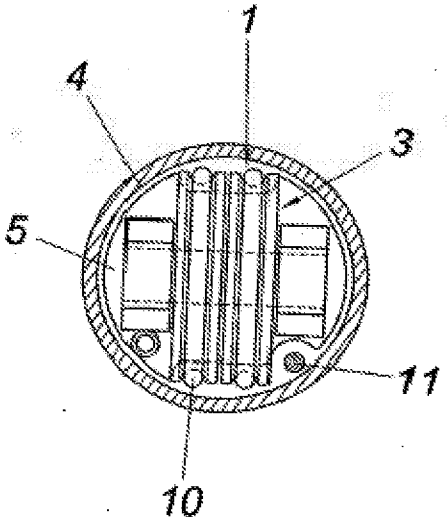

FIG.2

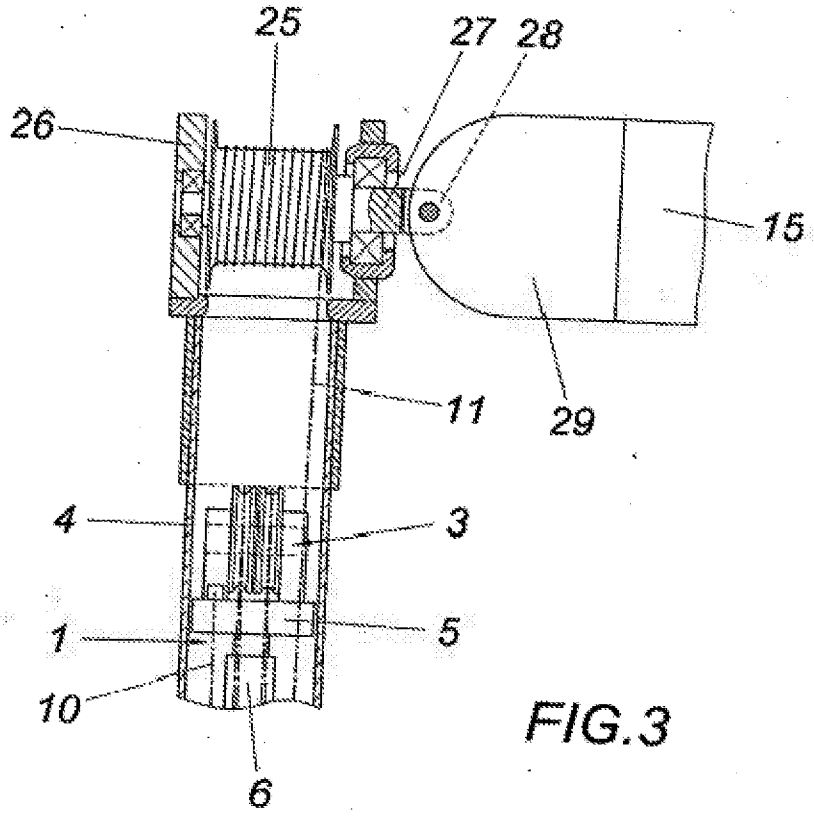

FIG.3

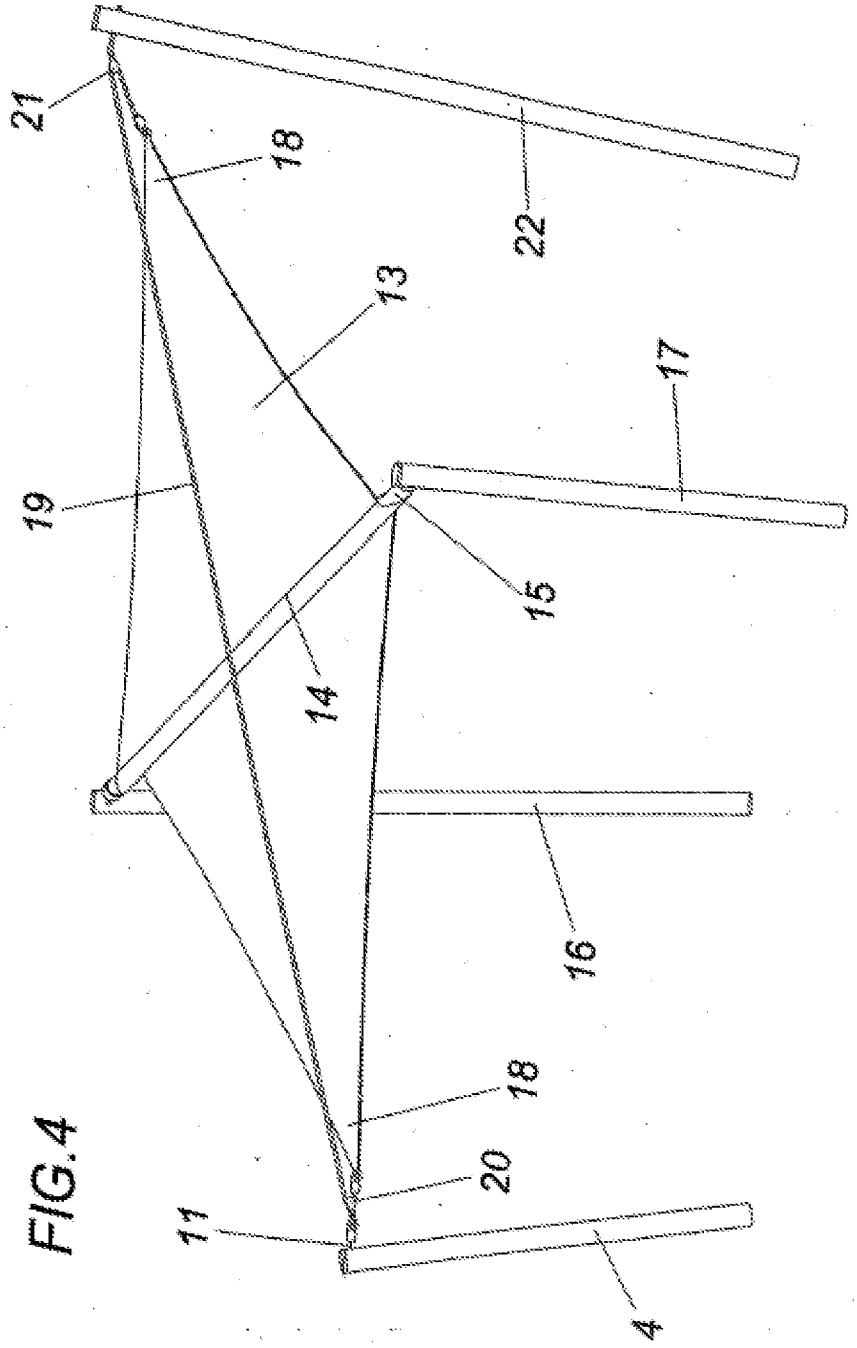

FIG.4

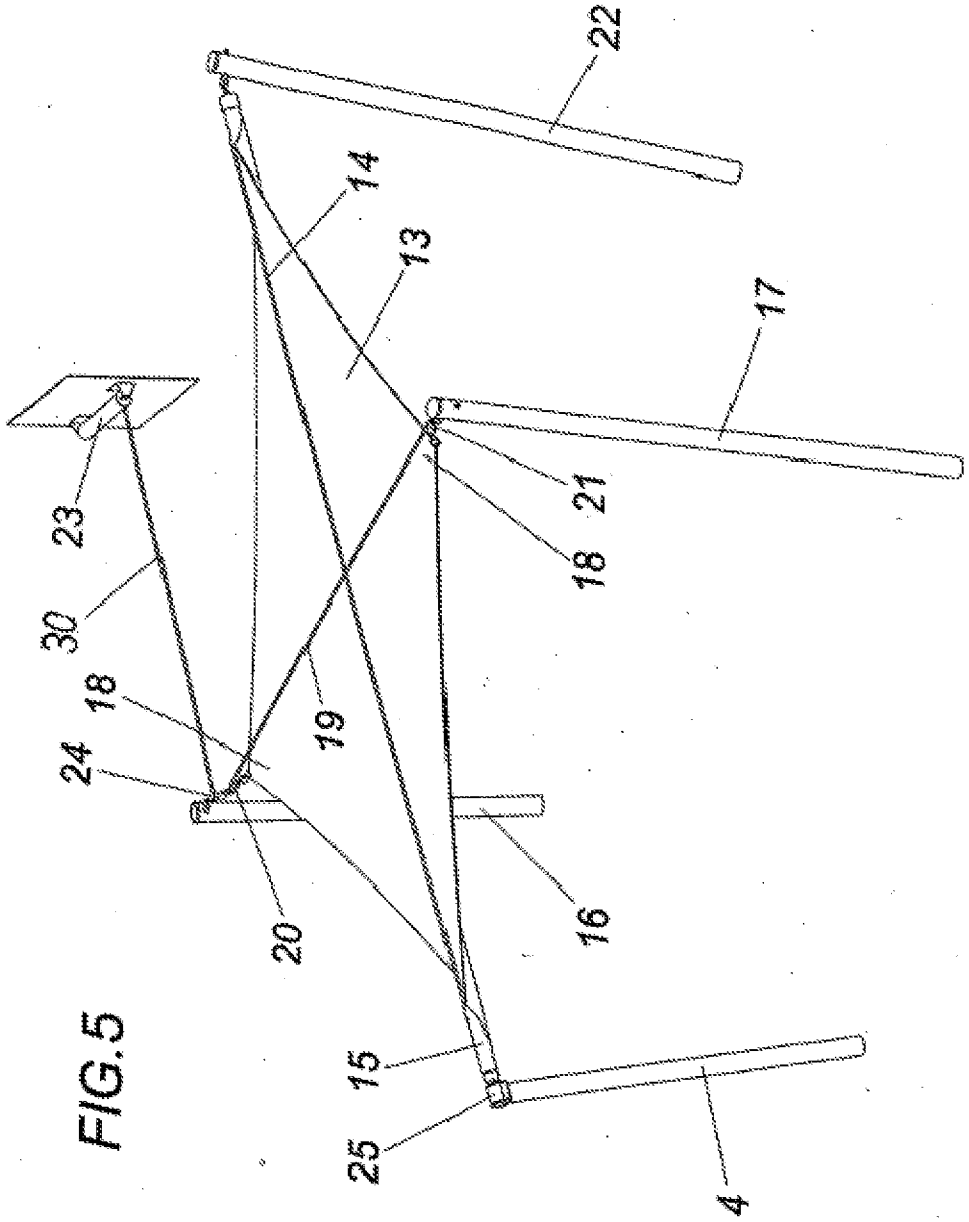

FIG.5