

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 902 112 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.03.1999 Bulletin 1999/11

(51) Int. Cl.⁶: **D04B 11/24**

(21) Application number: **98116573.1**

(22) Date of filing: **02.09.1998**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Casadio, Alfio**
40026 Imola, Prov. of Bologna (IT)

(74) Representative:
Modiano, Guido, Dr.-Ing. et al
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

(30) Priority: **09.09.1997 IT BO970545**

(71) Applicant: **Tecnotessile S.r.l.**
40026 Imola (Prov. of Bologna) (IT)

(54) **Device for transferring the borders of knitted products arranged on an accumulator reed onto the needle beam of a cotton loom**

(57) A device for transferring the borders (C) of knitted products from a beam (25) for supporting the borders onto the needle beam of a Cotton loom by way of a transfer reed, wherein the transfer reed (6) is connected to lever systems (4, 5) so as to perform an approach stroke and a spacing stroke with respect to the supporting beam (25); the lever systems (4, 5) being adapted to allow, in the approach position, the positioning of the reed (6) with respect to the beam in order to receive a border therefrom and, in the spacing position, the positioning of the reed with respect to the needle beam in order to allow the transfer of the border (C) onto the beam; the lever systems (4, 5), in the approach position, being adapted to allow the rotation of the reed (6) into an inactive position.

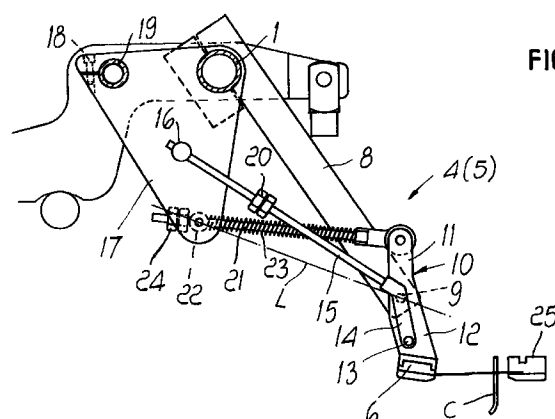


FIG. 2

EP 0 902 112 A2

Description

[0001] The present invention relates to a device for transferring the borders of knitted products onto the needle beam of a Cotton loom.

[0002] It is known that the borders of knitted products, known as ribbing, are prepared in special machines and are then transferred onto the needle beam of a Cotton loom. In order to perform this operation, the ribbing is applied to a temporary support beam and is transferred from there onto another transfer reed, which is then placed in front of the needle beam of the Cotton loom to allow the transfer of the stitches of the ribbing from the needles of the reed onto the needles of the beam of the Cotton loom.

[0003] In some looms, positioning of the transfer reed in front of the needle beam is performed automatically. However, the arrangement of the reed in the loom is such that it cannot free the work area and accordingly creates a substantial hindrance to the intervention of the operator who tends the loom.

[0004] The reed is also a hindrance for visual inspection of the knitted product being formed.

[0005] The aim of the present invention is to provide a device which allows to obviate the drawbacks found in Cotton looms, particularly as regards transferring the ribbing from the transfer reed onto the needle beam and the possibility to allow maximum accessibility and visibility of the work area.

[0006] This aim is achieved with a device for transferring the borders of knitted products from a beam for supporting said borders onto the needle beam of a Cotton loom by way of a transfer reed, characterized in that it comprises: two levers, which are fixed to a shaft of the Cotton loom which is actuated with an oscillating motion, so that said levers perform an approach stroke and a spacing stroke with respect to said supporting beam; two rockers, which are pivoted to the ends of said levers, each rocker comprising a first arm and a second arm, a first stem and a second stem being respectively articulately coupled to said first arm and to said second arm, said stems being able to slide in respective fixed supports, the ends of said transfer reed being fixed to said second arms; further characterized in that a first adjustable abutment is arranged on said first stem, outside the portion that lies between the respective fixed support and said first arm, and in that a second adjustable abutment is arranged on said second stem, in the portion that lies between the respective fixed support and said second arm, a spring being arranged on said first stem between said first arm and said first abutment, said spring acting so as to keep said second abutment in contact against the respective support, said arms and said stems being such that when the lever is actuated toward said approach position, said transfer reed arranges itself in said approach position in order to receive a border from said supporting beam, while when the lever is actuated into the position for spacing

from said supporting beam the transfer reed arranges itself in the position for transferring the ribbing onto the needle beam of the loom.

[0007] Further characteristics and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the device in an operating position;

Figure 2 is a view of the device, taken along the length of the Cotton loom;

Figure 3 is a view, similar to Figure 2, in another operating step;

Figure 4 is a front view of the device;

Figure 5 is a sectional view, taken along the plane V-V of Figure 4;

Figure 6 is a view of the device in the inactive position.

[0008] With reference to the above Figures, 1 designates a shaft of the Cotton loom which is connected to a motor drive so as to perform angular strokes of a preset extent.

[0009] The shaft 1 lies above the work areas, only one of which is shown in Figure 1. Said area features the beam 2 of the Cotton loom, which supports vertical needles 3 whereon a knitted product is formed.

[0010] The work area lies between two lever systems, generally designated by the reference numerals 4 and 5, which support the transfer reed 6. The lever systems 4 and 5 are structured so that by actuating the shaft 1, the transfer reed 6 moves from a position for approach to a supporting beam 25 for a border (ribbing) of a knitted product, so as to receive therefrom ribbing C, into a position in which the ribbing is transferred onto the needles 3 of the beam 2. The rib supporting beam 25 (also known as reserve beam owing to its function of supporting a plurality of ribbings arranged side by side), in a conventional manner and accordingly not shown, is mounted on a carriage which slides on a rail 7 that lies in front of the work area in order to supply all the work areas of the Cotton loom.

[0011] The lever systems 4 and 5 are mutually mirror-symmetrical, and each one comprises a lever 8 which is radially rigidly coupled to the shaft 1 and protrudes downward.

[0012] A rocker 10 is articulated to the lower end of the lever 8 by means of a pivot 9. The rocker 10 has a first arm 11 and a second arm 12.

[0013] The ends of the transfer reed 6 are rigidly coupled to the ends of the arms 12 of the rockers 10 of the two lever systems 4 and 5. A finger 14 is articulately connected to the arm 12 by means of a pivot 13, and a stem 15 extends from said finger.

[0014] The stem 15 can slide in a diametrical hole of a pivot 16 protruding laterally from a plate 17 in which it

is rotatably fixed.

[0015] The plate 17 is mounted on the shaft 1 externally with respect to the lever 8 and, by means of a clamp 18, is fixed to another stationary shaft 19 which is parallel to the shaft 1.

[0016] An abutment 20 is arranged on the portion of the stem 15 that lies between the arm 12 and the pivot 16 and is composed of a nut and a lock nut to allow to position the abutment 20 along the stem 15.

[0017] A second stem 21 is articulated to the end of the arm 11 and is slideable in a diametrical hole of a pivot 22 which protrudes from the plate 17 on the opposite side with respect to the pivot 16. The pivot 22 is also rotatable in the plate 17 in order to allow, like the pivot 16, oscillations of the stems 15 and 21 on planes which are perpendicular to the shaft 1.

[0018] A spring 23 is mounted on the stem 21, on the portion that lies between the arm 11 and the pivot 22, and acts by compression, while on the portion of the stem 21 that lies outside the pivot 22 an abutment 24 is provided which is composed of a nut and of a lock nut to allow to position it on the stem 21.

[0019] The operation of the device is as follows.

[0020] Assuming that, in the initial position, the parallelogram composed of the pair of levers 8 and of the transfer reed 6 is in the position shown in Figure 2, in which the abutment 24, by abutting against the pivot 22, retains the arm 11, producing, in combination with the oscillation of the lever 8, the rotation of the rocker 10 into a position in which the reed 6 is substantially horizontal and is ready to receive a ribbing C from a supporting beam 25.

[0021] The transfer of the ribbing C from the needles of the supporting beam 25 onto the needles 26 of the reed 6 is performed manually by the operator assigned to the loom.

[0022] Once the ribbing C has been transferred onto the transfer reed 6, the lever 8 is actuated clockwise to move the reed 6 away from the beam 25.

[0023] At this point, since the stem 21 is prevented from sliding in the pivot 22 by means of the spring 23, which retains the abutment 24 against the pivot 22, the rocker 10 rotates clockwise. However, when the lever 8 has covered a given oscillation angle, the abutment 20 rests against the pivot 16, so that as the oscillation of the lever 8 continues, the spring 23 is compressed and the rocker 10 is arranged so that the needles 26 of the reed 6 are aligned with the needles 3 of the needle beam 2 in order to transfer the ribbing onto said beam.

[0024] Once the transfer has ended, the lever 8 is again moved forward to allow the rotation of the reed 6 into a position in which it does not hinder the maneuvers of the operator on the fabric being formed.

[0025] For this purpose, the operator, by acting manually, lifts the reed 6, turning it counterclockwise. When the fulcrum of the stem 21 in the arm 11 of the rocker 10 has moved beyond the line L that joins the pivot 22 to the fulcrum 9 of the rocker 10, the spring 23 pushes the

rocker 10 into a stable position in which the abutment 20 rests against the pivot 16. It is evident that the reed 6 is raised into an inactive position, with respect to the previous positions, which allows the hands of an operator to pass easily below the reed to act on the knitted product being formed.

[0026] It is evident that the invention perfectly achieves the intended aim. In the practical embodiment of the invention, the shapes and dimensions can vary according to requirements without thereby abandoning the scope of the protection defined in the appended claims.

[0027] The disclosures in Italian Patent Application No. BO97A000545 from which this application claims priority are incorporated herein by reference.

[0028] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A device for transferring the borders (C) of knitted products from a beam (25) for supporting said borders onto the needle beam (2) of a Cotton loom by way of a transfer reed, characterized in that said transfer reed (6) is connected to lever systems (4, 5) so as to perform an approach stroke and a spacing stroke with respect to the supporting beam (25); said lever systems (4, 5) being adapted to allow, in the approach position, the positioning of said reed (6) with respect to said beam (25) in order to receive a border (C) therefrom and, in said spacing position, the positioning of said reed (6) with respect to the needle beam (2) in order to allow the transfer of said border (C) onto said beam; said lever systems (4, 5), in said approach position, being further adapted to allow the rotation of said reed (6) into an inactive position.
2. The device according to claim 1, characterized in that said lever systems (4, 5) comprise: two levers (8), which are fixed to a shaft (1) of the Cotton loom which is actuated with an oscillating motion so that said levers perform an approach stroke and a spacing stroke with respect to said supporting beam (25); two rockers (10), which are pivoted to the ends of said levers (8), each one of said rockers (10) comprising a first arm (11) and a second arm (12), a first stem (15) and respectively a second stem (21) being articulately coupled to said first and second arms and being able to slide in respective fixed supports (16, 22), the ends of said transfer reed (6) being fixed to said second arms (12); further characterized in that on said second stem (21), outside

the region between the respective fixed support (22) and said first arm (11), a first adjustable abutment (24) is provided, and in that on said first stem (15), in the portion between the respective fixed support (16) and said second arm (12), a second adjustable abutment (20) is provided; a spring (23) being arranged on said second stem (21), between said first arm (11) and said first abutment (22), and acting so as to keep said second abutment (20) rested against the respective support (16); said arms (11, 12) and said stems (15, 21) being such that when the lever (8) is actuated toward said approach position, said transfer reed (6) arranges itself in said approach position in order to receive a border (C) from said supporting beam (25), while when the lever (8) is actuated into the position for spacing from said supporting beam (25), the transfer reed (6) arranges itself in the position for transferring the border (C) onto the needle beam (2).

20

25

30

35

40

45

50

55

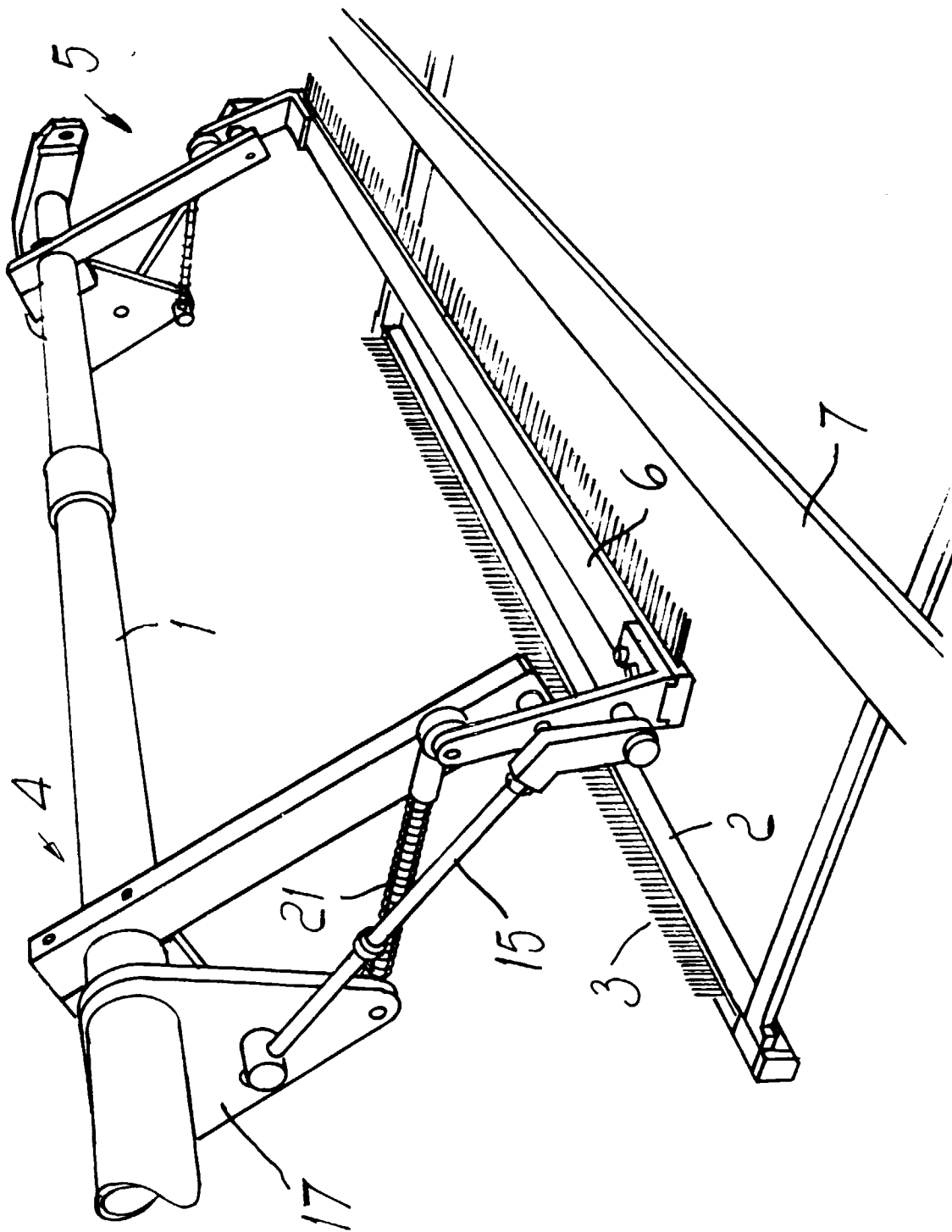


FIG.1

FIG.3

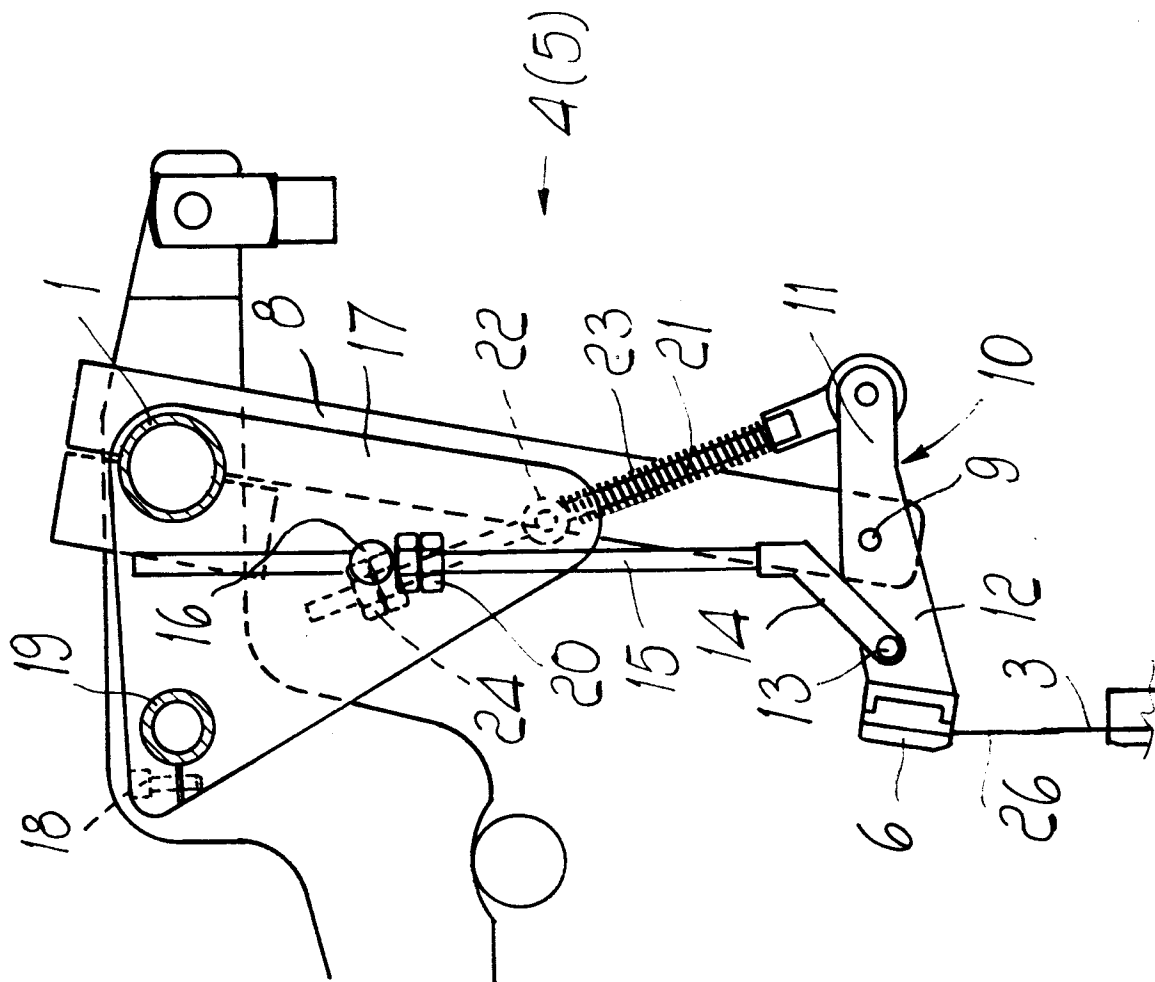


FIG. 4

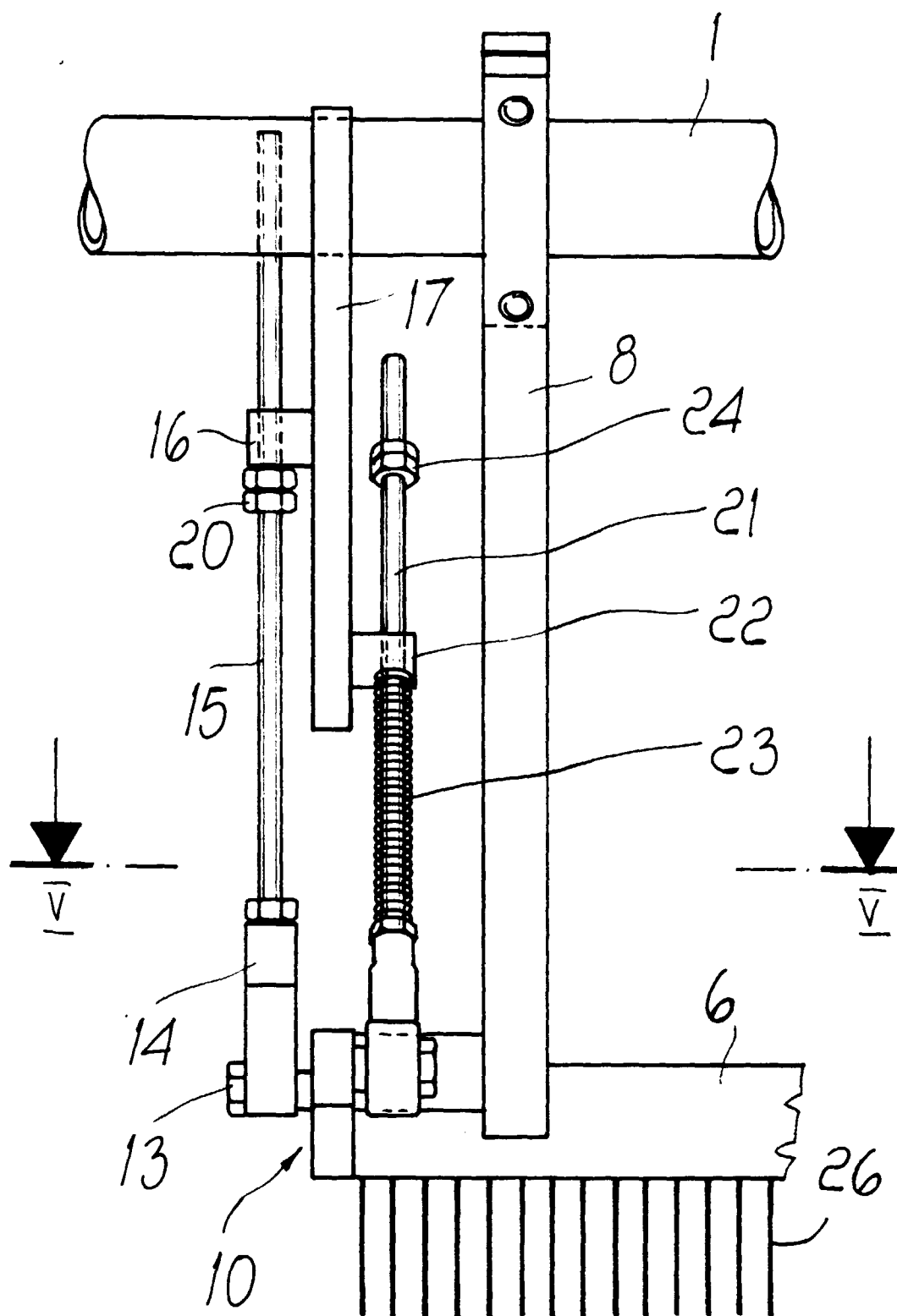


FIG. 5

