



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.03.2012 Bulletin 2012/13

(51) Int Cl.:
E06B 9/324 (2006.01)

(21) Application number: **11466018.6**

(22) Date of filing: **28.06.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **ZEBR s.r.o.**
691 88 Milovice (CZ)

(72) Inventor: **Zelinka, Frantisek**
691 88 Milovice (CZ)

(74) Representative: **Holasova, Hana**
Krizova 4
CZ-603 00 Brno (CZ)

(30) Priority: **24.09.2010 CZ 201023253 U**

(54) **Stringing device**

(57) Device for stringing the supporting string hinge pin to the hook of the louver lamella contains a guiding element (9) of the supporting string (2) placed in a movable way towards and away from the louver lamella (4) and equipped with a backstop (21), the tensioning element (23) of the supporting string (2) placed on a ledge (22) connected with the guiding element (9) and pincers

(12) placed in a pushing way with the guiding element (9) to the hook (3) of the louver lamella (4), while the guiding element (9) of the supporting string (2) is assigned to the movable backstop (28) of the louver lamella (4) and the guiding element (9), the pincers (12) and the tilting backstop (28) are equipped with driving units (17, 30, 29).

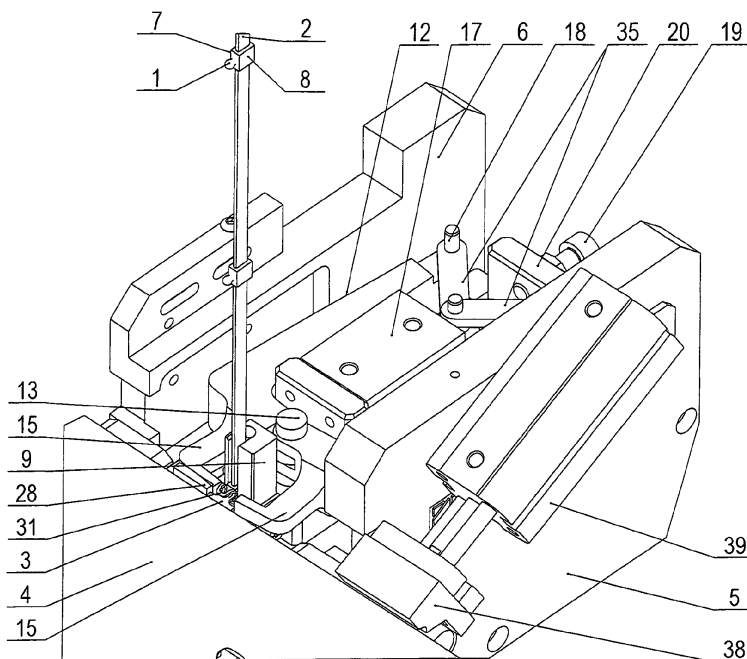


Fig. 5

Description

Technical Field

[0001] The technical solution relates to the stringing device for stringing the supporting string hinge pin to the louver lamellae hooks on the stacking device.

The Contemporary State of the Art

[0002] After their cutting, the louver lamellae string to the supporting ladder or they are hung for hooks placed on the louver lamellae to the hinge pins regularly distributed on supporting strings.

[0003] At the present time there is known the mechanical stringing of lamellae to supporting ladders - between the loops of simple supporting ladders for thin louver lamellae or between doubled shunt arms of the supporting ladder in case of wider types of louver lamellae.

[0004] Up to now, there was not successfully improved the device for stringing the hooks on louver lamellae into supporting string hinge pins directly on the machine. At the present time, stringing is performed only after stacking the louver lamellae and it is usually manually done. It seems that the main problem preventing the mechanical stringing is the mutual instability, the distance between the hinge on the bearing string and problems with leading of ball pivots into hooks on louver lamellae.

Technical Solution Base

[0005] The aim of the technical solution is to create a device that would allow - on the machine for production of louver lamellae - stringing of ball pivots on supporting strings to the hooks of louver lamellae during their stacking on the machine.

[0006] This can be reached to a significant level by a device for stringing the supporting string hinge to the hook of the louver lamella according to this technical solution, which is based mainly on the fact that it contains the supporting string leading element movably placed towards and away from the louver lamella and equipped with a backstop, a tensioning element of the supporting string placed on the ledge with the leading element and pincers, placed in an extending way with the leading element to the hook of the louver lamella, while the leading elements of the supporting string is assigned with the movable backstop of the louver lamella and the guiding element, pincers and movable backstop are equipped with driving units.

[0007] From the functional point of view it seems advantageous for the pincers to be placed on the guiding element body and their arms to be connected by pulls with the driving unit, while a regulation screw is connected to the pulls so as to regulate the gripping of the pincers jaws.

[0008] For correct function of the stringing device and its precision it seems advantageous for the guiding element

to be equipped with a backstop and if the supporting string tension element is placed in a pushing way on the ledge connected with the guiding element.

[0009] From the point of view of reliability and efficiency of the stringing device it seems advantageous for the ledge of the supporting string guiding element to be connected with a sensor for sensing the position of the tensioning element magnet.

[0010] For correct leading of the supporting string it is advantageous if an auxiliary guiding element is connected to the guiding element via the ledge and a pressure segment with a drive is assigned to the movable backstop.

Figures in Drawings

[0011] The technical solution will be explained in detail using the drawings, where fig. 1 shows an axonometric top view of the device for stringing the heads of supporting string hinge pins to the hook of the louver lamellae, fig. 2 shows an axonometric bottom view of the device according to fig. 1, fig. 3 shows a detail of placement of the supporting string guiding element and pincers in layout view and fig. 4 shows a cut of the supporting string guiding element and fig. 5 shows a detail of the device according to fig. 1 in axonometric view.

Sample Version Description

[0012] The devices for stringing the head 1 of the hinge 8 pin 7 of the supporting string 2 to the hook 3 on the louver lamella 4 are always used at least in a pair on the machine and they are organised in a mirror-way opposite to each other on the side of the louver lamella 4 on the stacking device stand, between its front part 5 and its back part 6 see Fig. 1. The device contains the guiding element 9 of the supporting string 2, which is placed using the body 10 on the holder 11 in a movable way along the guiding element 14 towards and away from the louver lamella 4. The holder 11 is fixed on the back part 6 and after releasing the screws 36 it is possible to adjust its vertical position using the screw 37. In this way it is possible to adjust the vertical position of the head 1 of the hinge 8 pin 7 of the supporting string 2 in relation to the hook 3 on the lamella 4. The guiding element 9 of the supporting string 2 is connected in a pushing way with the pincers 12 placed with their axis 13 on the body 10 of the guiding element 9 in a position, when their jaws 15 surround the guiding element 9 and between their arms 16 there is placed the driving unit 17, which is connected with the arms 16 of the pincers 12 by pulls 35 using the pin 18. Adjustment of jaws 15 gripping is regulated by the regulation screw 19 placed in the wall 20 of the body 10 of the guiding element 9. The guiding element 9 is moved towards and away from the louver lamella 4 by the driving unit 30 placed on the holder 11.

[0013] The guiding element 9 is equipped with a backstop 21 of the supporting string 2 placed on the guiding

element 9 and a sprung spring 32 (see fig. 4). The guiding element 9 also houses the ledge 22 for the tensioning element 23 placed in a pushing way on the ledge 22 and suspended using sprung pulley 24 (see fig. 4) on the hinge 8 pin 7 behind its head 1. the lift of the tensioning element 23 up is limited by an auxiliary guiding element 25 and down by the backstop 26 placed on the bottom edge of the ledge 22. To check the movement of the tensioning element 23, the ledge 22 houses - using the holder 27 - a sensor sensing the position of the magnet 33.

[0014] For correct setting of the position of the louver lamella 4 towards the supporting string 2, the holder 11 houses a movable backstop 28 with the driving unit 29 and so as to void sliding of the supporting string 2 off the guiding element 9, the guiding element 9 houses a plan-gette 34. The pressing segment 38 extended by the drive 39 fixes the lamella 4.

[0015] As the driving units 17, 30, 29, 37 there are preferentially selected the pneumatic valves with their activity controlled by the control unit of the machine, while the above mentioned control unit is connected with the sensor for sensing the position of the magnet 33.

[0016] Before putting the device into operation, the supporting string 2 is guided to the tensioning element 23 and the guiding element 9. Before guiding the louver lamella 4, the driving unit 29 extends the movable back-stop 28, which stops the louver lamella 4 moved to the stacking device in a position, when the hook 3 on the louver lamella 4 is positioned with its cut-out 31 against the head 1 of the hinge 8 pin 7 of the supporting string 2. Now, the driving unit 39 moves the pressing segment 38, fixing the lamella. Now, the driving unit 30 moves the guiding element 9 and movably connected pincers 12 to the louver lamella 4 in such a way so as the head 1 of the pin 7 goes through the cut-out 31 to the hook 3. Consequently, the driving unit 17 puts into operation the pincers 12, while the gripping of their jaws 15 and pressing of the hook 3 is set by the regulation screw 19. After pressing the hook 3, the pincers 12 are opened by the driving unit 17 and they are moved by the driving unit 30 together with the guiding element 9, the auxiliary guiding element 26 and the tensioning element 23 away from the louver lamella 4. Now, the louver lamella 4 is lifted and released by the stacking device which moves the supporting string 2 in one hinge 8. The correct position of the supporting string 2 in vertical direction is secured by its retraction to the backstop 21 by the tensioning element 23, which - while moving upwards - leans against the backstop 25, alternatively against the guiding element 9, which enables pulling the pin 7 through the sprung pulleys 24 and consequent release of the tensioning element 23, which moves by its own weight to the next pin 7 of the hinge 8 of the supporting string 2 and the procedure repeats up to stringing of the last louver lamella 4.

Claims

1. Device for stringing the supporting string hinge pin to the hook of the louver lamella, **characterised by** the fact that it contains a guiding element (9) of the supporting string (2) placed in a movable way towards and away from the louver lamella (4) and equipped with a backstop (21), the tensioning element (23) of the supporting string (2) placed on a ledge (22) connected with the guiding element (9) and pincers (12) placed in a pushing way with the guiding element (9) to the hook (3) of the louver lamella (4), while the guiding element (9) of the supporting string (2) is assigned to the movable backstop (28) of the louver lamella (4) and the guiding element (9), the pincers (12) and the tilting backstop (28) are equipped with driving units (17, 30, 29).
2. Device according to claim 1, **characterised by** the fact that the pincers (12) are placed on the body (10) of the guiding element (9) and their arms are connected by pulls (35) with the driving unit (17), while the pulls (35) are equipped with an adjacent regulation screw (19) to regulate the gripping of the pincers (12).
3. Device according to claim 1 or 1 and 2, **characterised by** the fact that the guiding element (9) is equipped with a backstop (21) and the ledger (22) connected with the guiding element (9) houses the tensioning element (23) of the supporting string (2) placed in a pushing way.
4. Device according to claim 1, **characterised by** the fact that the ledge (22) of the guiding element (9) of the supporting string (2) houses a sensor for sensing the position of the magnet (33) of the tensioning element (23).
5. Device according to claim 1, **characterised by** the fact that an auxiliary guiding element (25) is connected through the ledge (22) to the guiding element (9).
6. Device according to claim 1, **characterised by** the fact that movable backstop (28) is assigned to the pressing segment (38) with a drive (39).

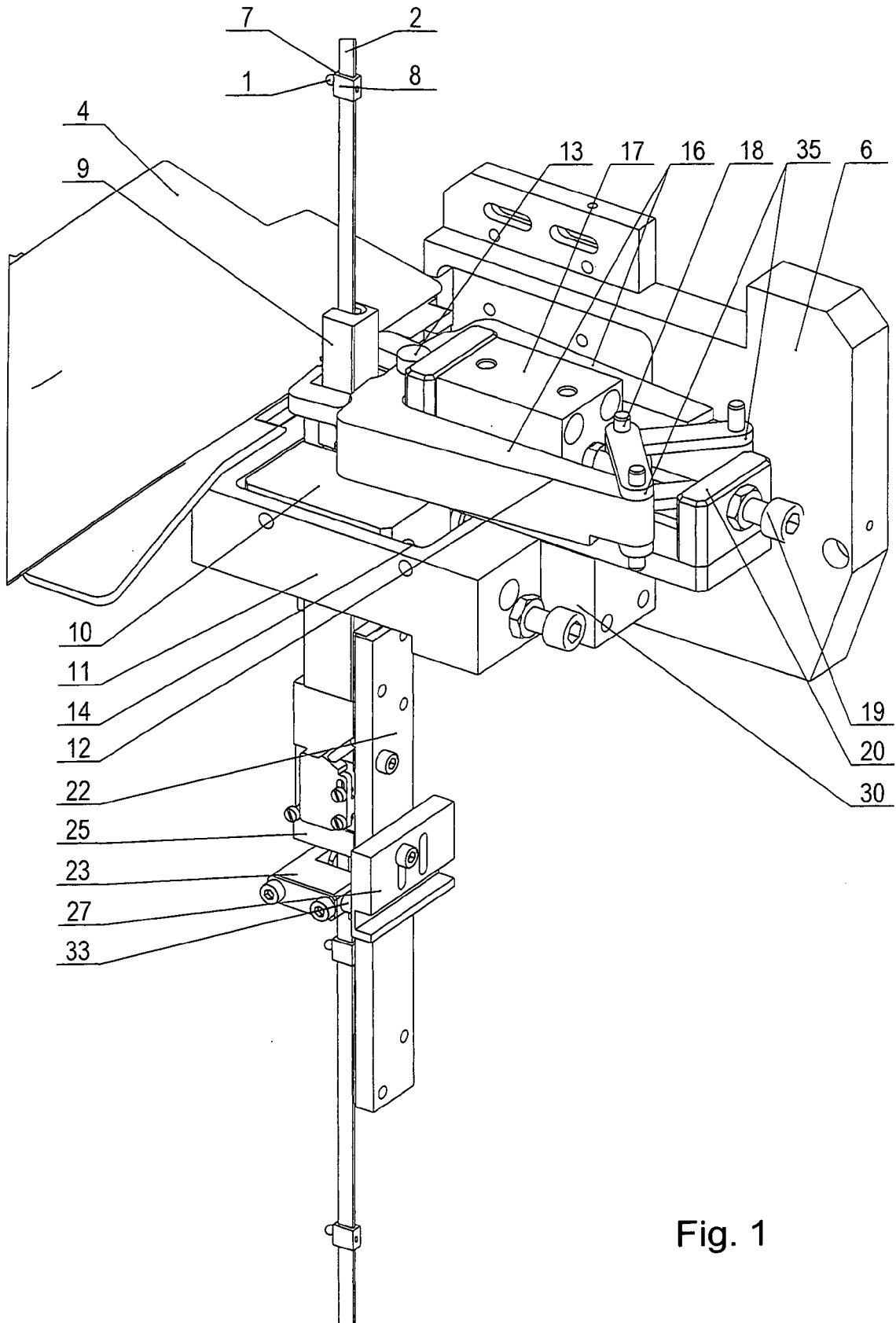


Fig. 1

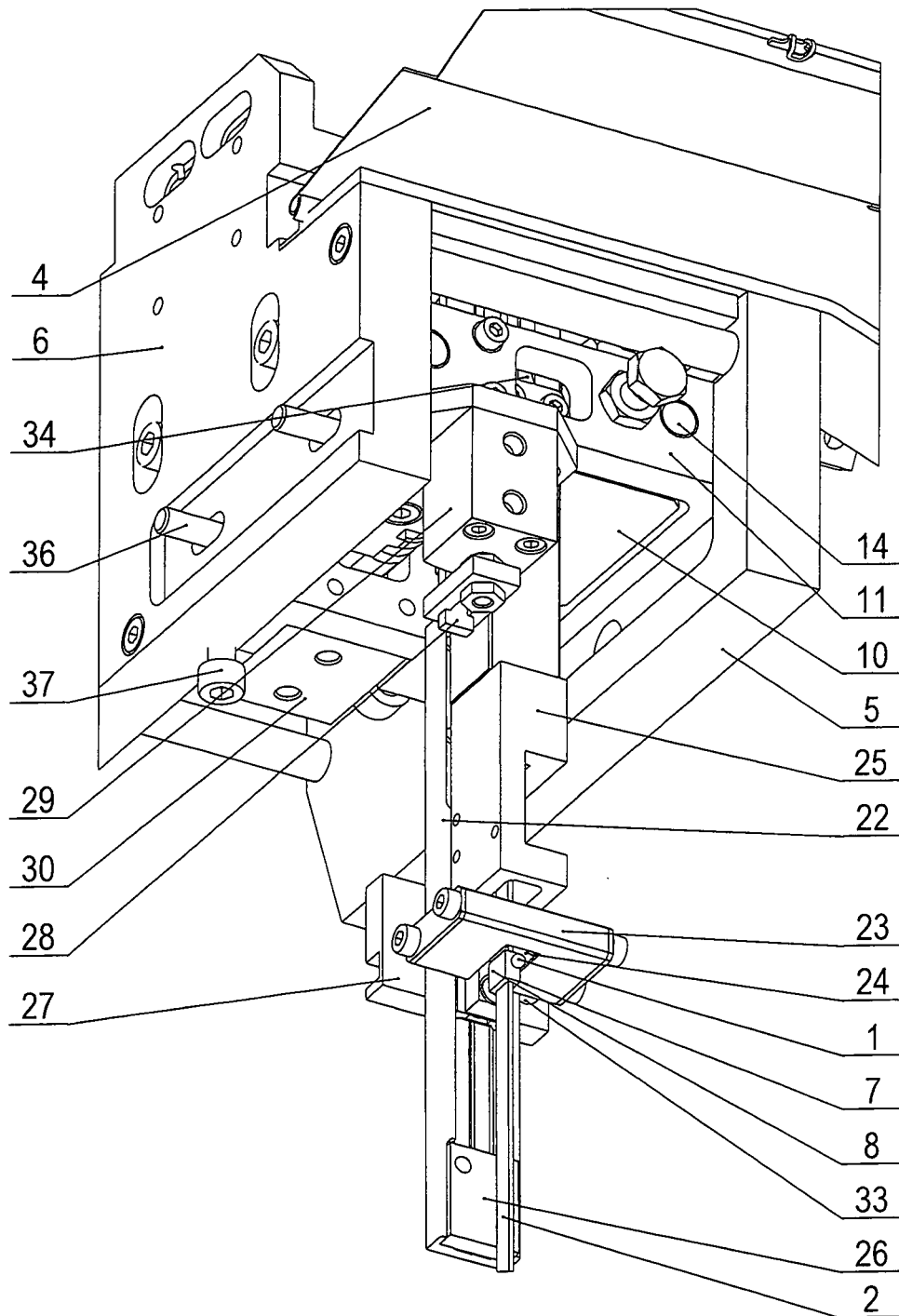


Fig. 2

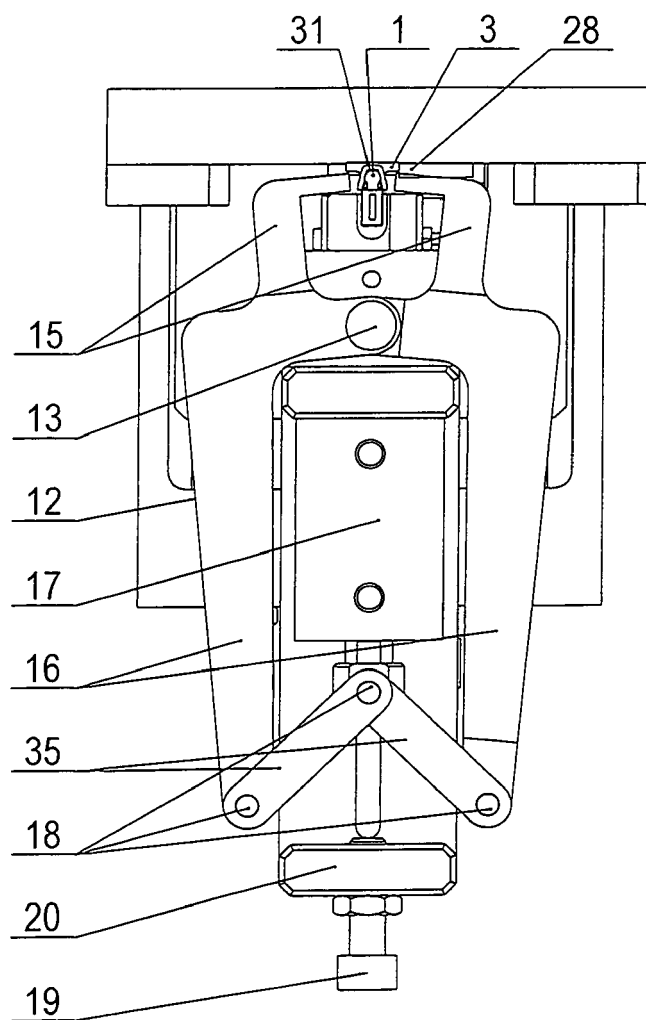


Fig. 3

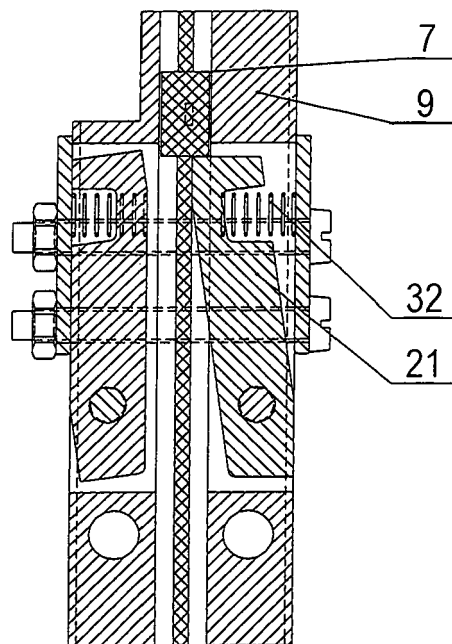


Fig. 4

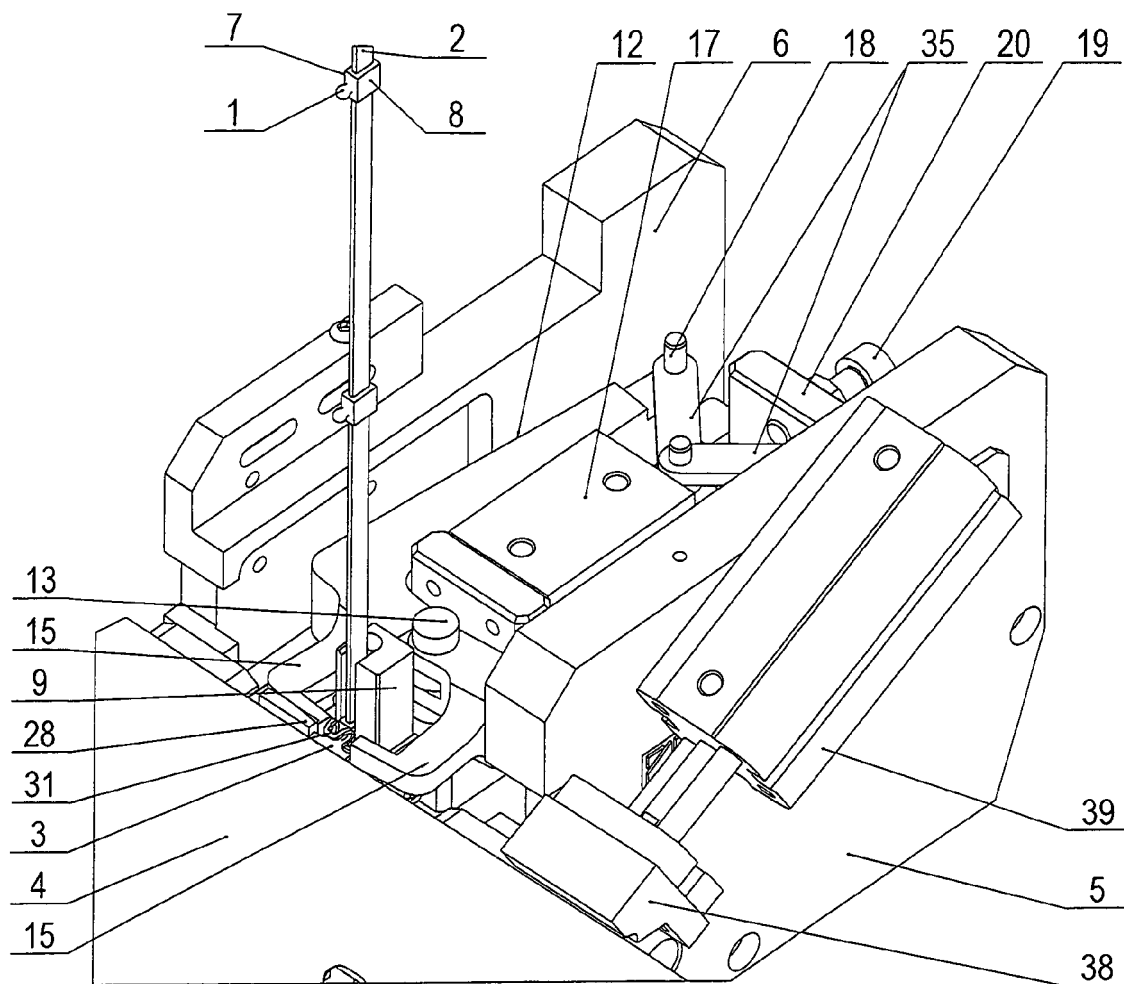


Fig. 5