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(54) **Device for adjusting the pressure exerted by a taping machine unit transporting carriage on a parallelepiped box in transit for a taping operation**

Vorrichtung zum Regulieren des Druckes einer Klebestreifen-Anbringeinheit auf eine Schachtel in einer Anbringmaschine für Klebestreifen

Dispositif pour régler la pression exercée par le chariot transporteur de l'applicateur de bande dans une machine pour fermer une boîte au moyen d'une bande adhésive

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Description

[0001] The present invention concerns a device for adjusting the pressure exerted by a taping unit transporting carriage on a parallelepiped box in transit for a taping operation.

5 **[0002]** It is known a compressed air pneumatic system patented by Augusto Marchetti (US-4060442).

[0003] A pneumatic system demands obviously a complexity of installation, use and maintenance certainly not negligible.

[0004] The total cost of said system also compromises the commercial success that a mechanical system without the problems above mentioned could guaranty.

10 **[0005]** It is also comprehensible the necessity of limiting at pleasure the load of said taping unit transporting carriages on the box in transit, since said pressure could compromise the right closure of the box and finally the security of the transport of the product housed in the box, which will next be moved more times before arriving at the final consumer.

[0006] The risk of losing the product for damaging justifies the effort for reaching a good and economically convenient solution.

15 **[0007]** In view of this state of the art, object of the present invention is to realize a cheap device that allows to adjust mechanically the pressure exerted downwards by the taping unit transporting carriage on the box in transit.

[0008] Said object is reached by means of a device according to claim 1.

[0009] The following description of an embodiment of said device will clear its extreme simplicity. No pneumatic or oil-dynamic command system is necessary.

20 **[0010]** The lightening function is carried out by a very simple spring system.

[0011] The characteristics and the advantages of the present invention will be made evident by the following detailed description of an embodiment thereof, which is illustrated as non-limiting example in the enclosed drawings, in which:

Fig. 1 is a perspective view of a machine comprising a device according to the present invention;

25 Fig. 2 is a sectional frontal view of the device according to the present invention;

Fig. 3 is a sectional view from right of Fig. 2;

Fig. 4 is an enlarged sectional view of a particular of Fig. 3;

Fig. 5 is a sectional view according to the line V-V of Fig. 3;

Fig. 6 is a sectional view according to the line VI-VI of Fig. 3;

30 Fig. 7 is a sectional view of the spring system with said spring unloaded;

Fig. 8 is a sectional view of the spring system with said spring preloaded.

[0012] A machine for the motion of "plane belts" parallelepiped boxes comprises (Fig. 1) a base frame 1 which supports an internal motor 2 that commands a lower driving group 3 and a higher driving group 4 held up by a hollow beam 5

35 bound in a vertical sliding adjustable way to a hollow vertical column 6.

[0013] Said internal motor 2 commands, by means of a transversal shaft 80, a transmission 7 (Fig. 2) that is formed by a toothed belt 8 stretched between two pinions 9-10, the second one embracing a pivot 11 connected by a lower angle transmission 12 to a vertical spline shaft 13.

[0014] The lower driving group 3, driven by said transversal shaft 80 by means of a chain transmission 14, comprises a small transversal shaft 15 at the ends of which two pulleys 16 and 17 are splined that transmit the motion to driving belts 18.

[0015] The vertical spline shaft 13 transmits the motion to a higher angle transmission 19 connected with a unit transporting carriage 51 comprising the higher driving group 4 and the hollow beam 5, which supports a transversal shaft 20 that, by a chain transmission 21, moves higher driving belts 22.

45 **[0016]** A device 50 (Fig. 2-8) movable along bars 70 allows to adjust the pressure exerted by the unit transporting carriage 51 on the parallelepiped box 23. Said device comprises a support 53 of said unit transporting carriage 51 that is held up by an adjusting screw 54, which embraces another adjusting screw 55 rotatable by means of a crank 60.

[0017] A housing 52 contains a screw nut 59 and an adjusting nut 57 screwed on the adjusting screw 54, that allows a preloading of a spring 58 placed between said nut 57 and the screw nut 59.

50 **[0018]** The operation of said device 50 is somewhat easy but at the same time extremely effective. Fig. 7 shows the device 50 with the spring 58 unloaded. In this situation the support 53 and the adjusting screw 54 rest on the housing 52, and therefore on the screw nut 59, so that all the weight of the unit transporting carriage 51 rests on the box 23 during the taping step.

[0019] On the contrary in Fig. 8, having moved opportunely the nut 57, the spring 58 has been preloaded, so that the load that rests on the adjusting screw 54 is balanced with the upward push of the preloaded compression spring. In this situation the box 23 meets a lower resistance of the unit transporting carriage 51 thanks to the spring 58 that releasing itself makes easy the lifting of the unit transporting carriage 51, which exerts a lower pressure on the box 23.

[0020] By means of the screw nut 59 and of the rotation of the adjusting screw 55, driven by the crank 60, it is possible

to adjust the height of the unit transporting carriage, without changing the adjustment of the spring 58.

[0021] After having adjusted the device 50, it is possible to start the command device which allows the perfectly synchronized movement of the belts 18 and 22.

[0022] The motor 2 in fact commands the rotation of the transversal spline shaft 80 that, by means of the transmission 7 and the lower angle transmission 12, allows the rotation of the vertical spline shaft 13 which, by means of the higher angle transmission 19, moves the higher transversal spline shaft 20 that, by means of the transmission 21, transmits the motion to the higher driving belts 22.

[0023] A chain transmission 14 transmits the motion from the transversal spline shaft 80 to the belts 18 of the lower driving group 3.

Claims

1. Device for adjusting the pressure exerted by a carriage (51) transporting a taping unit on a parallelepiped box (23) in transit for a taping operation, comprising a support (53) for said unit transporting carriage (51) adjustable in height by means of a first adjusting screw (55) moved by a crank (60) and cooperating with a screw nut (59) **characterized in that** it comprises a spring (58) placed between said screw nut (59) and an adjusting nut (57) screwed on a second adjusting screw (54) sliding along said first adjusting screw (55) and carrying said support (53).
2. Device according to claim 1, **characterized in that** the adjusting nut (57), the spring (58) and the nut screw (59) are contained in a housing (52).
3. Device according to claim 1, **characterized in that** said support (53) is sliding along vertical bars (70).
4. Device according to claim 1, **characterized in that** said unit transporting carriage (51) comprises a top driving group (4) supported by a hollow beam (5).

Patentansprüche

1. Vorrichtung zur Regelung des von einer Klebestreifen-Anbringeinheit (51) auf eine Schachtel (23) ausgeübten Drucks, die im Durchgang für das Anbringen eines Klebestreifens ist, eine Stütze (53) für diese Klebestreifen-Anbringeinheit (51) umfassend, die mittels einer ersten Einstellschraube (55) in der Höhe einstellbar ist, angetrieben von einer Kurbel (60), mit der ein Muttergewinde (59) zusammenarbeitet, **dadurch gekennzeichnet, dass** die Tatsache, eine Feder (58) zu umfassen, die zwischen dem genannten Muttergewinde (59) und einer Einstellmutter (57) positioniert ist, geschraubt auf eine zweite Einstellschraube (54), die entlang der genannten ersten Einstellschraube (55) läuft und, die genannte Stütze (53) trägt.
2. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die genannte Einstellmutter (57), die Feder (58) und das Muttergewinde (59) in einem Behälter (52) enthalten sind.
3. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die genannte Stütze (53) vertikale Stangen (70) entlang laufen kann.
4. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die genannte Klebestreifen-Anbringeinheit (51) eine obere Zuggruppe (4) umfasst, die von einem Hohlträger (5) getragen wird.

Revendications

1. Dispositif pour régler la pression exercée par un chariot (51) transporteur de un applicateur de ruban, sur une boîte parallélépipédique (23) en transit pour une opération d'enrubannage, comprenant un support (53) pour dit chariot (51) transporteur de l'applicateur, réglable en hauteur à l'aide d'une première vis de réglage (55), mû par une manivelle (60) avec laquelle coopère une vis sans fin (59), **caractérisé par** le fait de comprendre un ressort (58) interposé entre dite vis sans fin (59) et un écrou de registre (57) vissé sur une deuxième vis de registre (54) qui coulisse le long de dite première vis de réglage (55) et portant dit support (53).
2. Dispositif selon la revendication 1, **caractérisé par le fait que** dit écrou de registre (57), le ressort (58) et la vis

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sans fin (59) sont enfermés dans un récipient (52).

3. Dispositif selon la revendication 1 **caractérisé par le fait que** dit support (53) est coulissant le long de barres verticales (70).

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4. Dispositif selon la revendication 1, **caractérisé par le fait que** dit chariot (51) transporteur de l'applicateur comprend un groupe d'entraînement supérieur (4) soutenu par une entretoise creuse (5).

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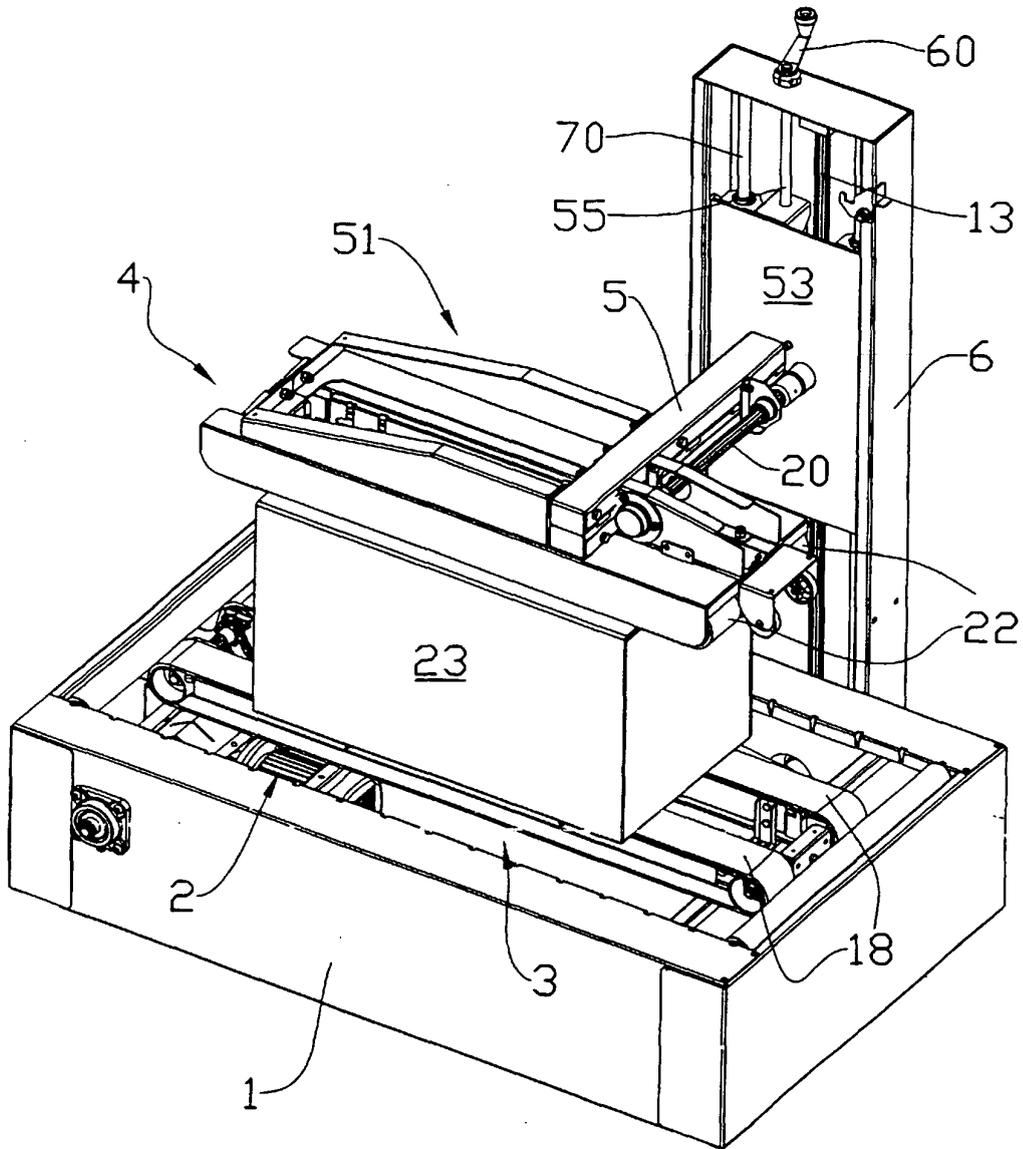


FIG.1

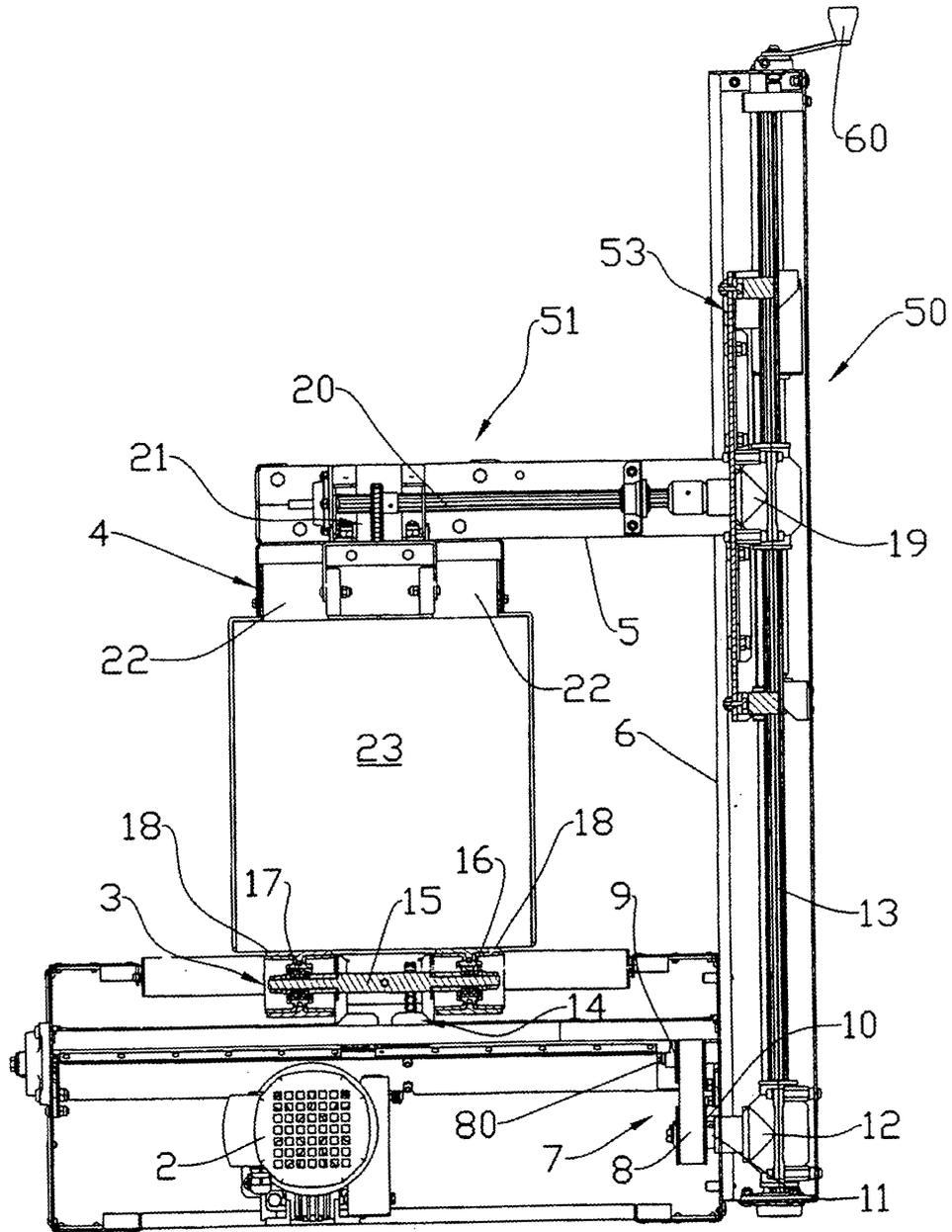


FIG.2

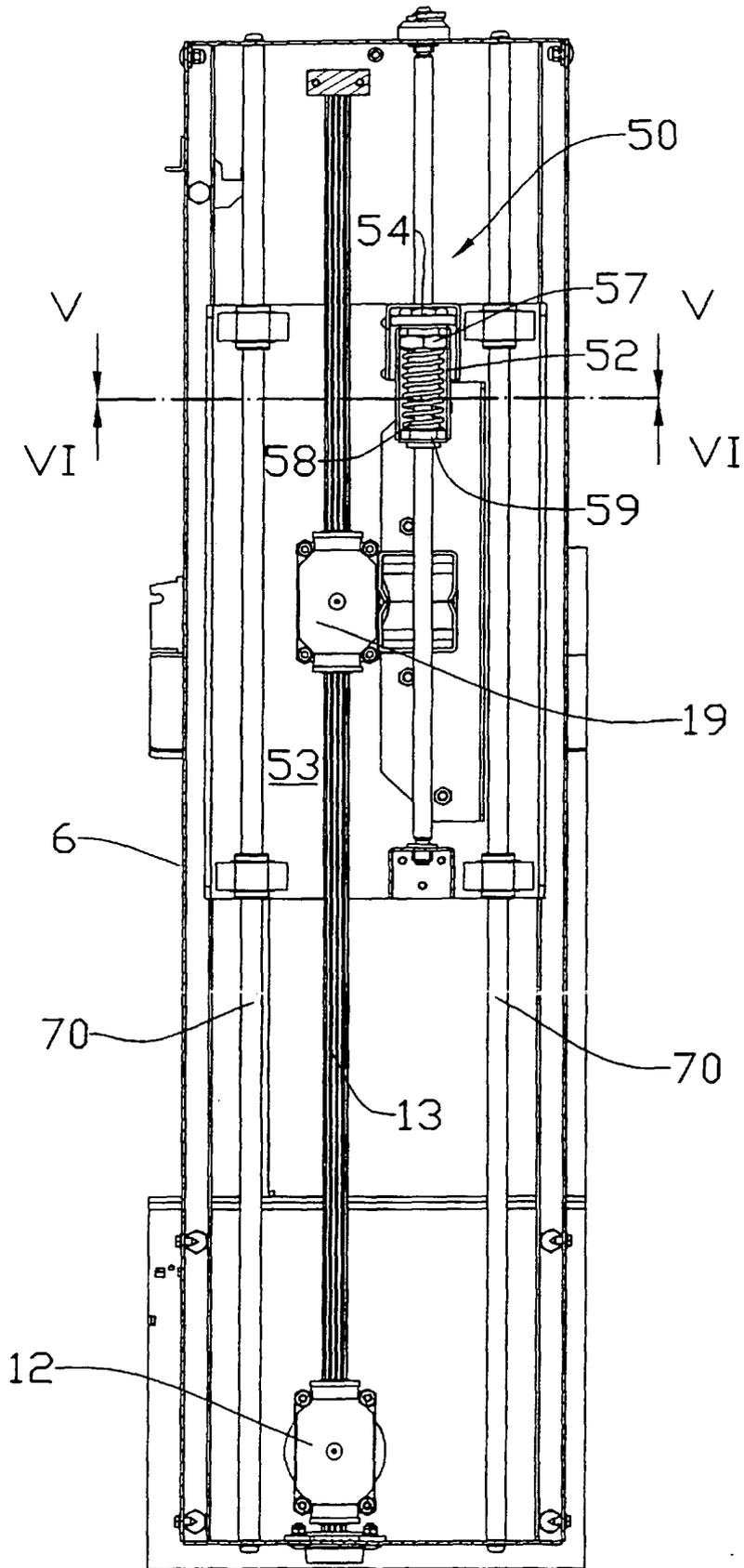


FIG.3

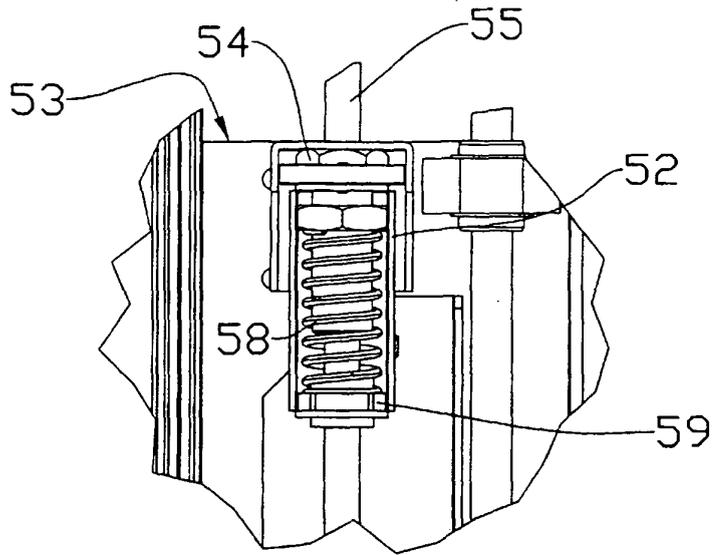


FIG. 4

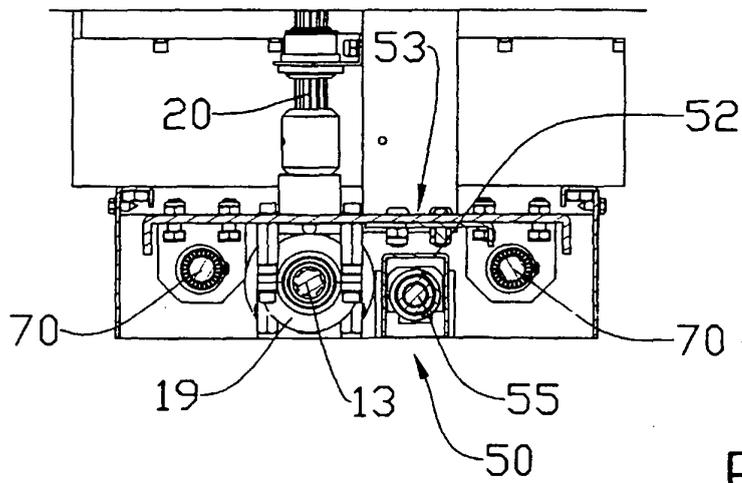


FIG. 5

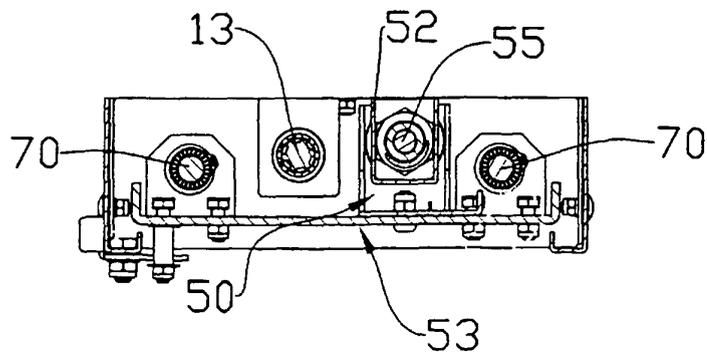


FIG. 6

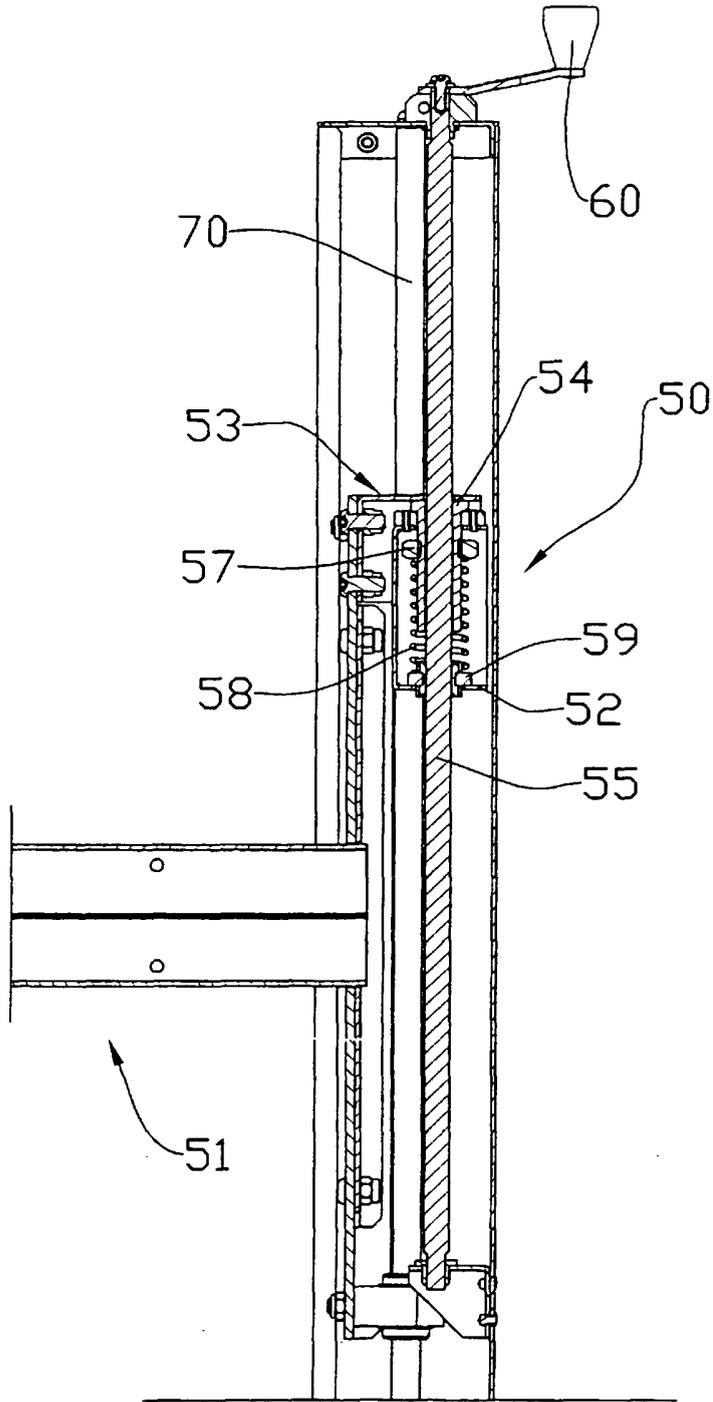


FIG. 7

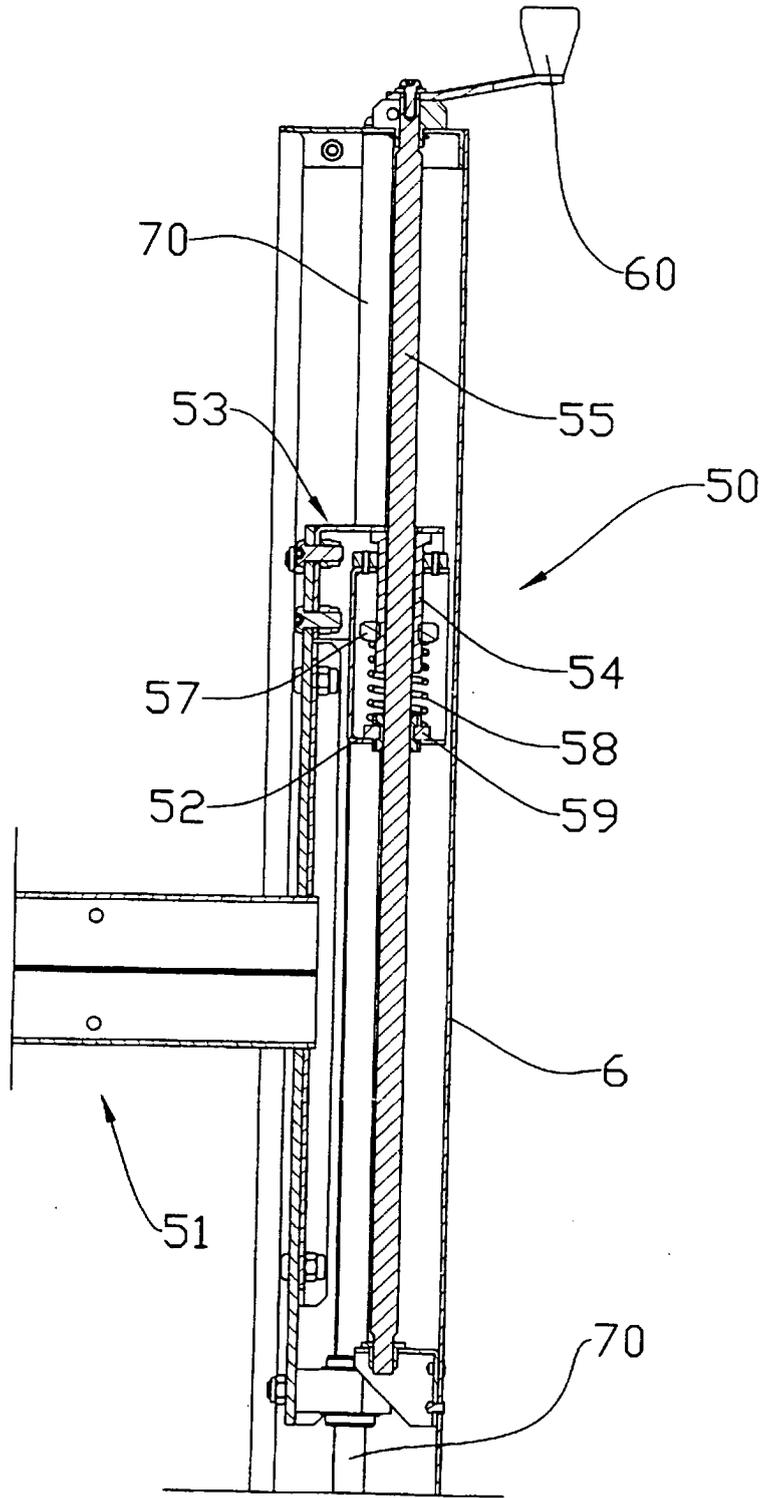


FIG. 8