(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 974 967 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.01.2016 Bulletin 2016/03

(51) Int Cl.:
B65B 13/02 *(2006.01)* ***B65B 13/08*** *(2006.01)*
B65B 13/18 *(2006.01)*

(21) Application number: **15382360.4**

(22) Date of filing: **07.07.2015**

(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
Designated Validation States:
MA

(30) Priority: **17.07.2014 ES 201430996 U**

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(54) HORIZONTAL STRAPPING CARRIAGE

(57) Horizontal strapping carriage, of the type that comprises a base platform equipped with wheels, a strapping tape reel holder and a boom, wherein the boom acts as a vertical guide for a platform for receiving a manual strapping appliance. The carriage has a tensioner which drives the platform upwards along the boom. The platform incorporates a brake for securing the platform at the required height on the boom.

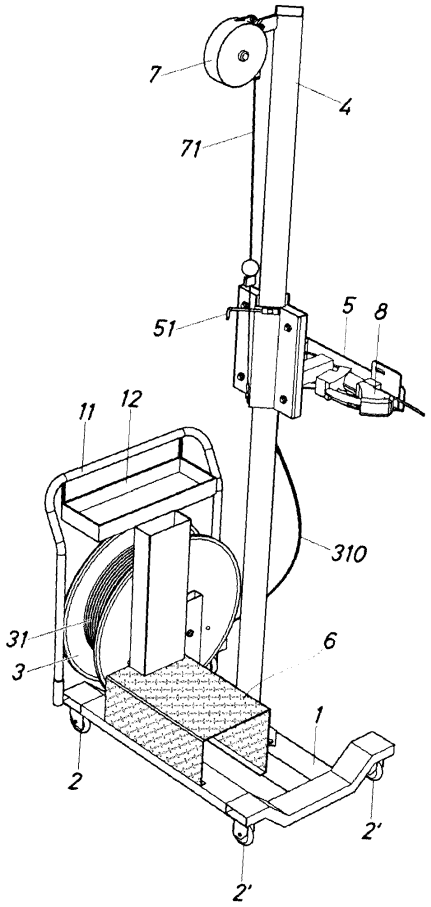

Fig.4

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Description

[0001] The present invention relates to a strapping carriage.

[0002] More particularly, the present invention relates to a strapping carriage the features of which make it especially suitable for the horizontal strapping, with plastic strapping tape, of large loads on pallets or platforms, although the invention is not necessarily limited to said application.

[0003] Various types of movable appliances for the horizontal strapping of loads are known. These are industrial strapping heads, electrically supplied at 220 V by mains cables or by a bulky autonomous electric energy generating system. The use of these heads requires weld strength always to be maintained at a given temperature, with the resulting electricity consumption. In addition, a counterweight is required to balance the head in operation. These appliances are characterised by their great weight and very limited strapping tape tensioning capacity, and installation thereof therefore produces practical problems and results in limited productivity.

[0004] Due to the dimensions of the loads and the weight of the appliance, is it difficult to produce horizontal strapping without assistance. The operator must use a hook or fastening device to keep the machine in position while he positions the ends of the strapping tape appropriately, prior to the tensioning and welding cycle. There is a risk of damage to the machine if it is accidentally dropped and the work is awkward, particularly in the more elevated cycles.

[0005] In addition, the strapping tape often becomes misaligned during the cycle, with a loss of tensioning and packing and a poor aesthetic result.

[0006] In addition, the strapping tape reel must be transported in an additional reel-holder carriage, to allow suitable dispensing thereof with no untying problems.

[0007] Strapping carriages are also known the object of which is to maintain the strapping appliance suspended by means of a cable. However, said carriages have problems of stability and positioning precision due to the lack of a guide. There is also the danger of accidentally knocking and damaging the appliance.

[0008] Spanish utility model ES 1018581U discloses a movable strapping machine which comprises a base and a column on which a strapping unit is mounted which can be actuated upwards and downwards by means of a cable.

[0009] Spanish patent ES 2255355 A1 discloses a vertical and horizontal strapping carriage which comprises a base and a column on which a bulky strapping head is mounted which must be supplied with electricity by mains cables or by batteries/an electric power unit which is also positioned on the carriage. The head is actuated vertically by means of a cable. The head has a rotating connection with the column by which it rises. The carriage is very heavy and difficult to transport, and the horizontal strapping operation is therefore extremely difficult. It is also difficult to balance the carriage. Furthermore, it has the drawbacks of the heads mentioned earlier.

[0010] An object of the present invention is to disclose a solution to the above-mentioned problems and drawbacks.

[0011] It is also an object of the present invention to disclose an appliance for the horizontal strapping of loads with plastic strapping tape which combines all the necessary elements including a reliable system for securing the appliance at the required height. Another object of the present invention is to disclose an appliance that is much lighter than the existing systems, allowing the ergonomics of the strapping work to be improved, and increasing productivity with great ease of use.

[0012] To achieve these objects the present invention comprises a horizontal strapping carriage provided with a base platform equipped with wheels, a strapping tape reel holder and a boom, in which the boom acts as a vertical guide for a platform for receiving a manual strapping appliance, and in which the carriage has a tensioner which drives the platform upwards along the boom and in which the platform for receiving the appliance has a brake for securing the platform at the required height on the boom.

[0013] The use of a platform for a manual appliance and the tensioner which causes the platform to rise produces a reduction in weight, facilitating the strapping task and therefore working precision. In order to reduce the weight still further, said tensioner comprises a windable cable actuated by a spring.

[0014] Preferably the carriage comprises a manual strapping appliance secured to the platform.

[0015] With the object of increasing lightness and thus working precision, the present invention also makes provision for the manual strapping appliance to comprise a non-thermal welding system. Preferably, the welding system is a vibration welding or ultrasonic welding system.

[0016] More particularly, the appliance comprises electricity supply batteries.

[0017] Still more preferably, the appliance is secured to the platform by means of screws.

[0018] The platform for the appliance may have at least one return pulley for the strapping tape.

[0019] More advantageously, it comprises a pedestal to make it easier for the operator to access the high part of the boom. Preferably, the reel holder is situated in the region of the base platform.

[0020] To improve strapping precision, the present invention makes provision for a return pulley system for delivering strapping tape to the operator from a reel located in the reel holder, the last pulley of the system being located on the appliance reception platform.

[0021] For a better understanding, the accompanying drawings show an explanatory but non-limiting example of an embodiment of a support for a strapping machine according to the present invention.

Fig. 1 is a view in side elevation of an embodiment of a strapping carriage according to the present invention.

Fig. 2 is a view in front elevation of the carriage of Fig. 1.

Fig. 3 is a view from above of the embodiment shown in Fig. 1 and 2.

Fig. 4 is a perspective view of the embodiment shown.

Fig. 5 is a view of a detail of the platform in which the positioning of the strapping machine on the platform can be seen.

Fig. 6 is another perspective view of the platform from a different point of view, in which the brake mechanism of the platform and the connection with the plaiting cable can be seen.

Fig. 7 is a detail of the upper portion of the carriage boom, in which the tensioner which compensates for the weight of the platform can be seen.

Fig. 8 is a perspective view showing diagrammatically an embodiment of the carriage according to the present invention.

Fig. 1 to 6 show an embodiment of a horizontal strapping carriage according to the present invention.

[0022] The embodiment shown comprises a light carriage which can be easily actuated by an operator which comprises a base platform -1- with a pair of front wheels -2'- and another pair of rear wheels -2-, both front wheels -2'- having the ability to rotate about a vertical axis. The base platform -1- also has a handle -11- for pushing the carriage, and, connected to said handle has a tray -12- for depositing objects and tools. On the base platform -1- in the rear portion of the carriage, a reel holder -3- is also provided in which a reel -31- of plastic strapping tape -310- is arranged. As can be seen, the reel holder -3- is at a workable height, and is not high up, which allows the reel -31 to be replaced with ease. The reel holder -3- can allow the use of reels with mandrels of different diameters, for example 200, 280 and 405 mm.

[0023] The base platform -1- also has a pedestal -6- which allows the user to reach the upper portions of the boom -4- and also to access the appliance (not shown in the figures) more easily when carrying out strapping in the high part of the pallets.

[0024] As can be seen, the base platform -1- is positioned near the ground, which makes the carriage very stable and avoids the possibility of accidental overturning.

[0025] In the centre of the base platform -1- a boom -4- is situated, made up in this case of a square-section profile which serves as a vertical guide for the carriage or platform -5- for the vertical strapping appliance -8-.

[0026] The platform -5- can slide along the boom -4- and is in the form of a tray. In the example shown, the platform -5-, the horizontal arrangement of which provides space for receiving the last of the return pulleys -52- for the strapping tape -310-, also has a tray zone for placing strapping corner pieces, for example, or other objects.

[0027] The platform -5- can receive a manual battery-operated vibration-soldering strapping machine -8-, which has the advantage of being very compact, all the elements for performing the tensioning and welding cycle, and in this case, also a lithium-polymer (LiPo) battery, being contained in a small space in the appliance -8-.

[0028] As there is no need to heat thermal elements, the battery of the appliance -8- can have small dimensions and be incorporated therein. In addition, it is possible to provide a battery with the appliance and another being charged outside the carriage. If there is a fault, the strapping appliance -8- can easily be removed for repair, as it is possible to attach it to the platform -5- with just two retaining screws, for example.

[0029] The platform -5- for the appliance -8- is weight-compensated by the ascending vertical traction produced by a tensioner cable -71- hooked to the platform -5- by a hook -72-. A take-up cylinder -7- for the tensioner cable -71- is situated in the upper portion of the boom and is spring-actuated. The tensioner -7- pulls upwards from the platform -5- and therefore compensates for the weight of the platform -5-. To fix the platform at a particular height, said platform has a locking mechanism -51- or brake, by means of a pin or any other system. The tensioner -7- is connected to the boom -4- by a bracket -47-.

[0030] The tensioner system using a spring also contributes, in the absence of a counterweight, to keeping the total weight of the carriage down, which is extremely convenient for the handling thereof.

[0031] Fig. 8 is a perspective view which shows schematically an operating example of the carriage shown in Fig. 1 to 6, in which the carriage is placing strapping tape -310-horizontally on a package -1000- on a pallet -1001-.

[0032] Elements that are the same or similar to those shown in the earlier figures have been identified with identical reference numerals and will not be explained in depth.

[0033] In operation, the operator positions the appliance next to the pallet to be strapped. The platform -5- is moved vertically with the appliance to the required height. At this point, the height can be locked by means of the locking mechanism -51- to prevent the accidental movement thereof. Next, the operator surrounds the block -1000- on the pallet -1001- with the strapping tape -310- and places the ends thereof in the strapping appliance (not visible in the figure), which carries out the tensioning and welding cycle.

[0034] Although the invention has been described with

respect to preferred embodiments, said preferred embodiments should not be considered as limiting the invention, which will be defined by the widest interpretation of the following claims.

Claims

1. Horizontal strapping carriage, of the type that comprises a base platform equipped with wheels, a strapping tape reel holder and a boom, **characterised in that** the boom acts as a vertical guide for a platform for receiving a manual strapping appliance, and **in that** the carriage has a tensioner which drives the platform upwards along the boom and **in that** the platform incorporates a brake for securing the platform at the required height on the boom.

2. Carriage according to claim 1, **characterised in that** said tensioner comprises a windable cable actuated by a spring.

3. Carriage according to claim 2, **characterised in that** it comprises a manual strapping appliance secured to the platform.

4. Carriage according to claim 3, **characterised in that** the manual strapping appliance comprises a non-thermal welding system.

5. Carriage according to claim 4, **characterised in that** the welding system is a vibration welding or ultrasonic welding system.

6. Carriage according to any of claims 1 to 5, **characterised in that** the appliance comprises electricity supply batteries.

7. Carriage according to any of claims 3 to 6, **characterised in that** the appliance is secured to the platform by means of screws.

8. Carriage according to any of claims 1 to 7, **characterised in that** it comprises a pedestal to make it easier for the operator to access the high part of the boom.

9. Carriage according to any of claims 1 to 8, **characterised in that** the reel holder is situated in the region of the base platform.

10. Carriage according to any of claims 1 to 9, **characterised in that** it comprises a return pulley system for delivering strapping tape to the operator from a reel
located in the reel holder, the last pulley of the system being located on the appliance reception platform.

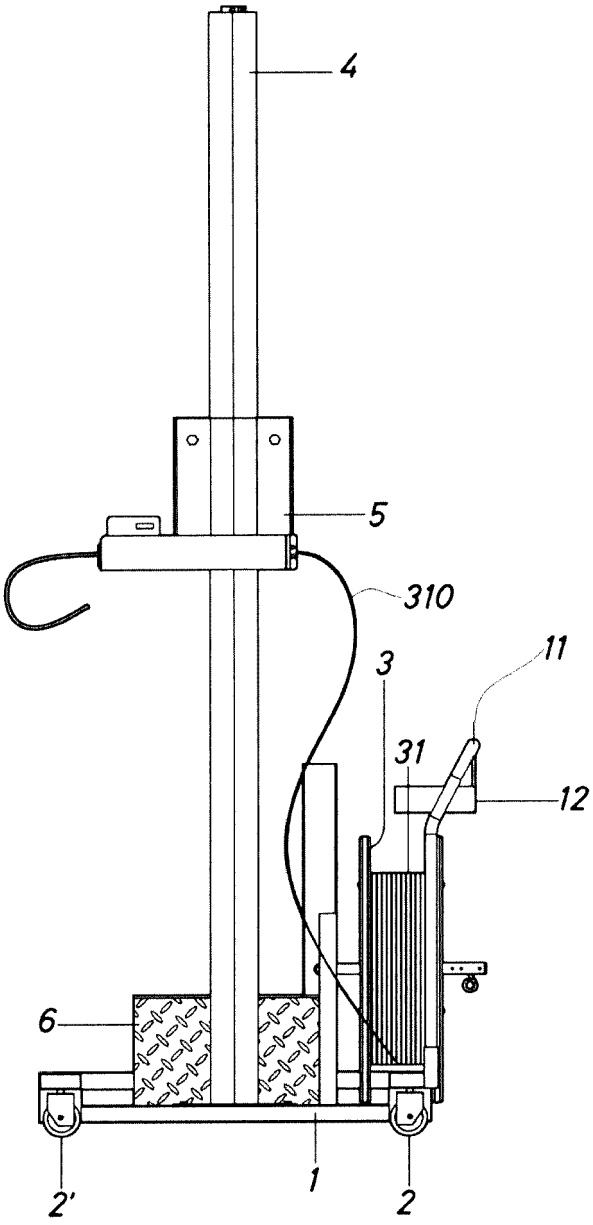

Fig.1

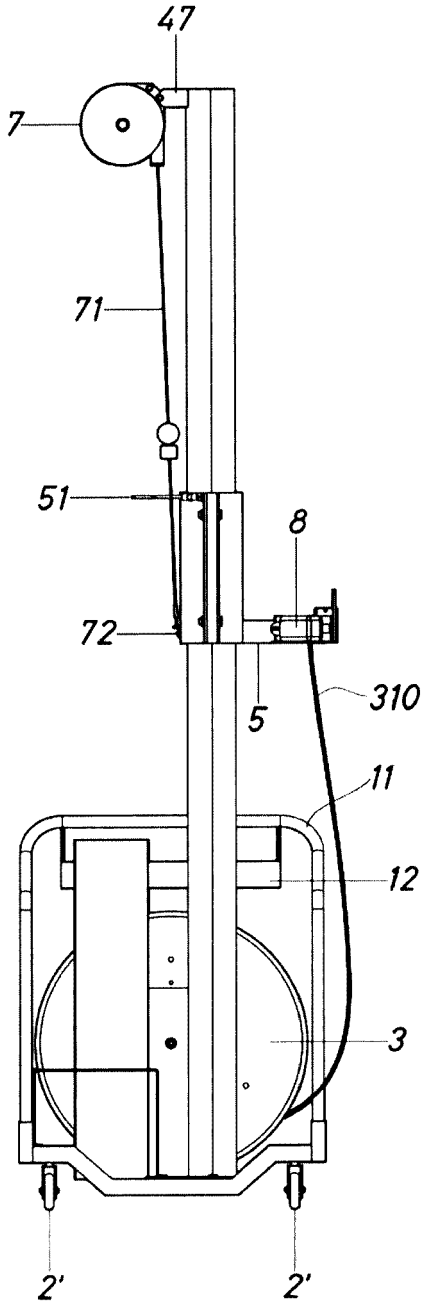

Fig.2

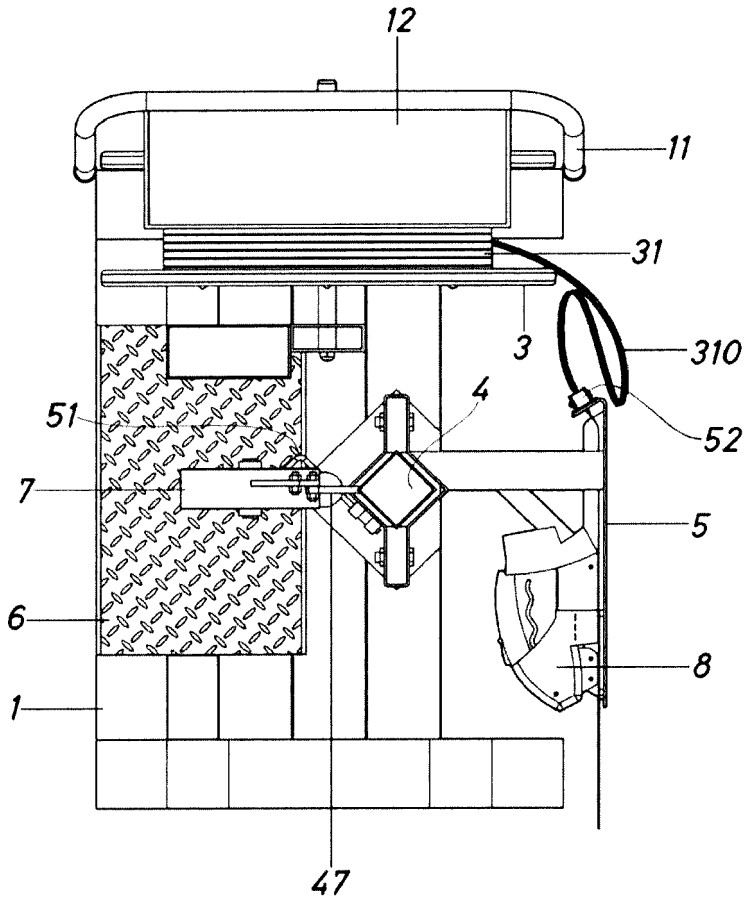

Fig.3

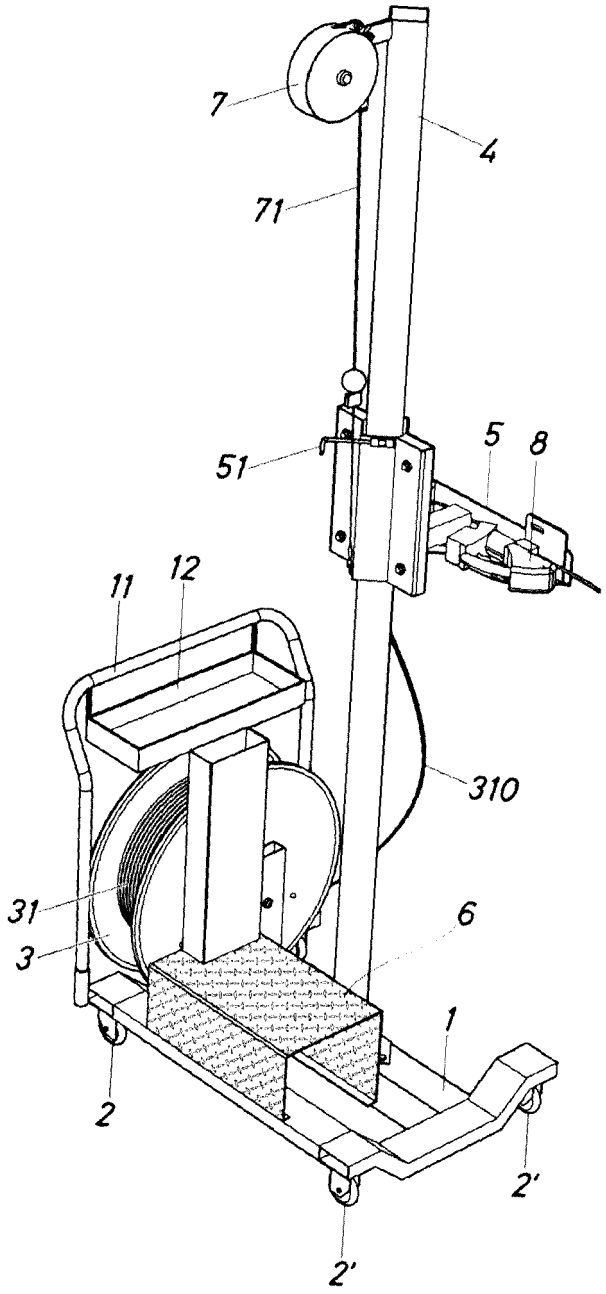

Fig.4

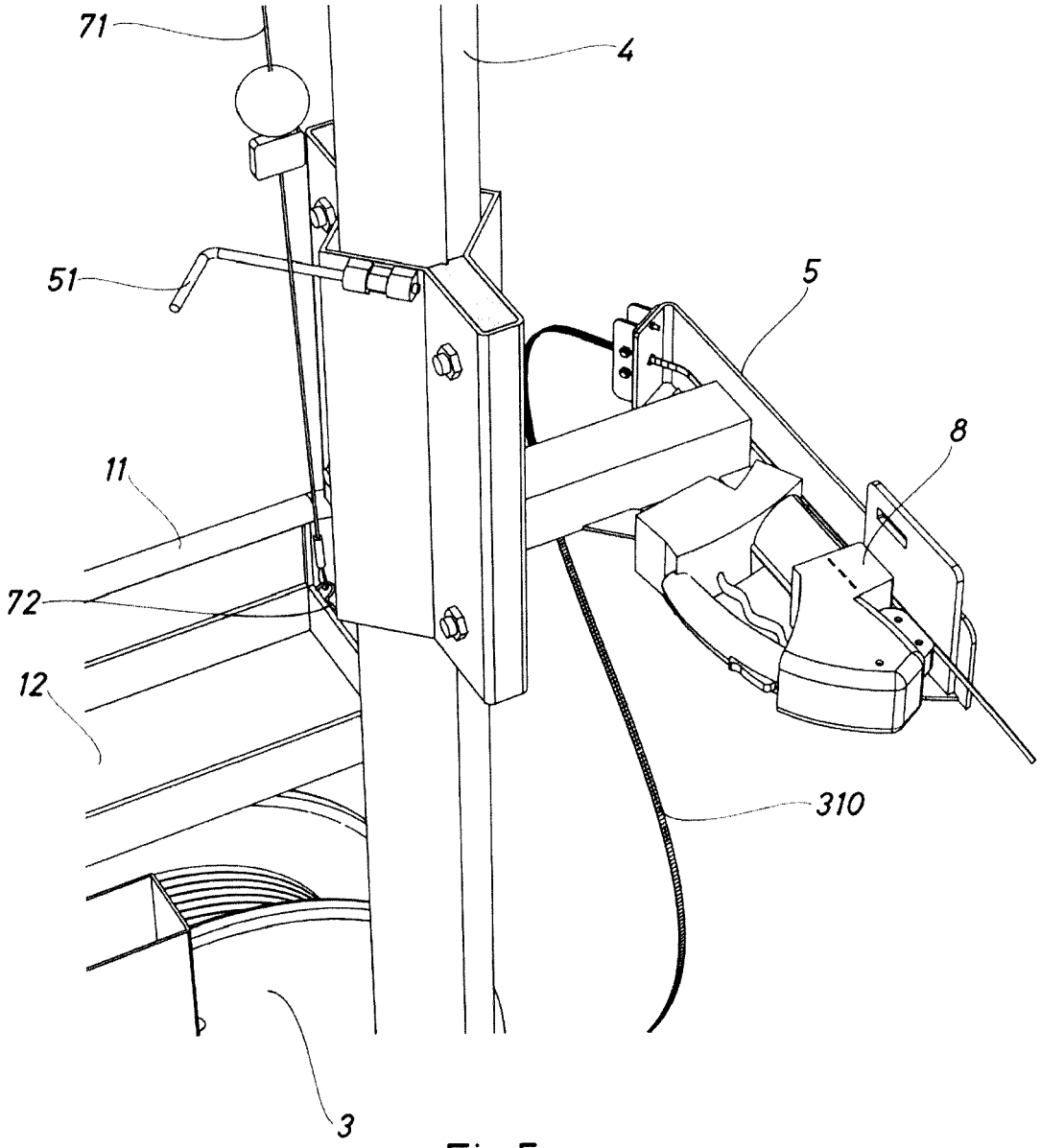

Fig.5

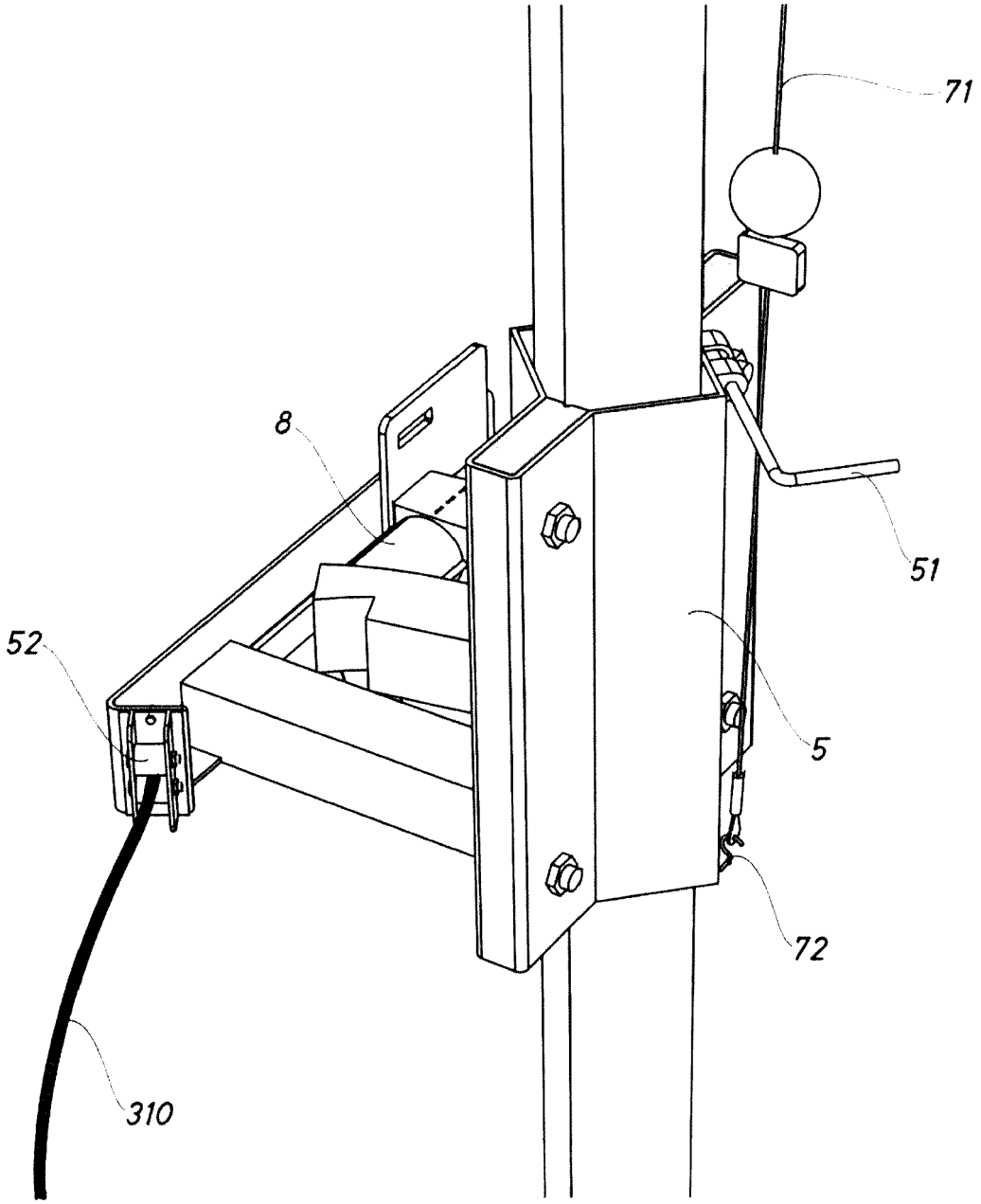

Fig.6

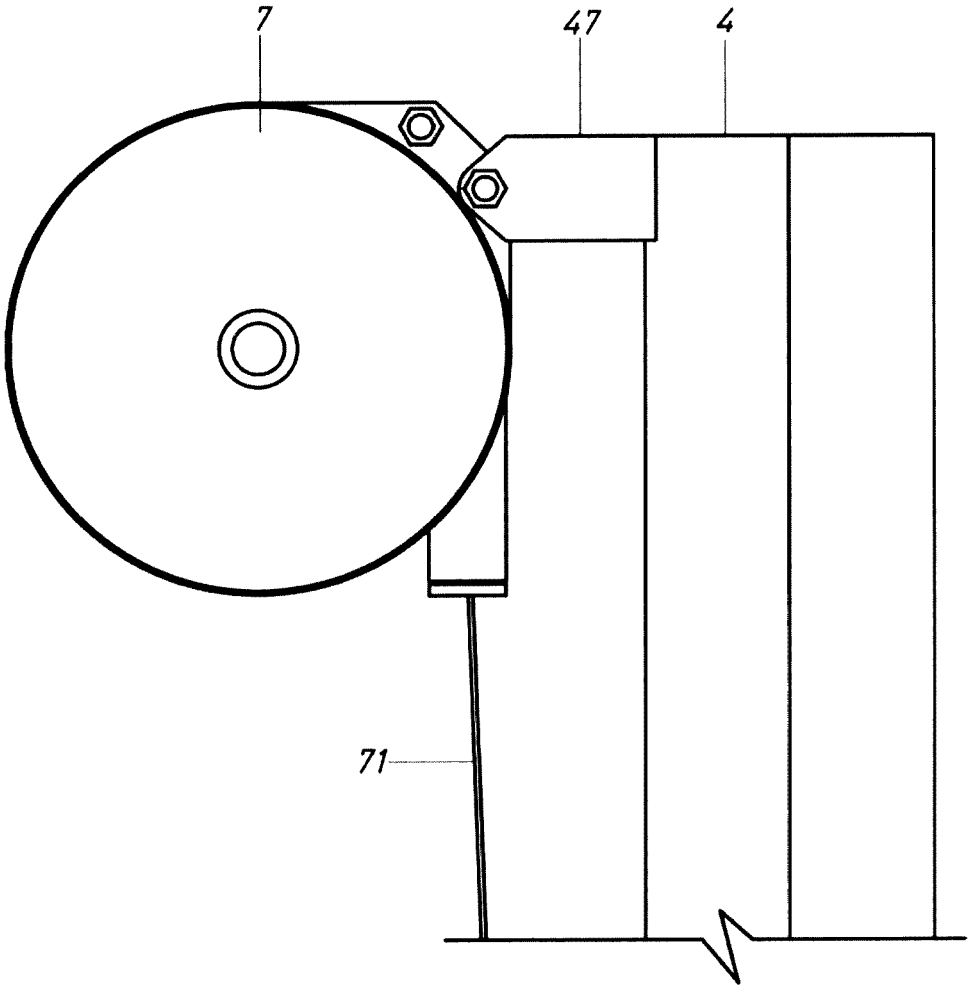

Fig.7

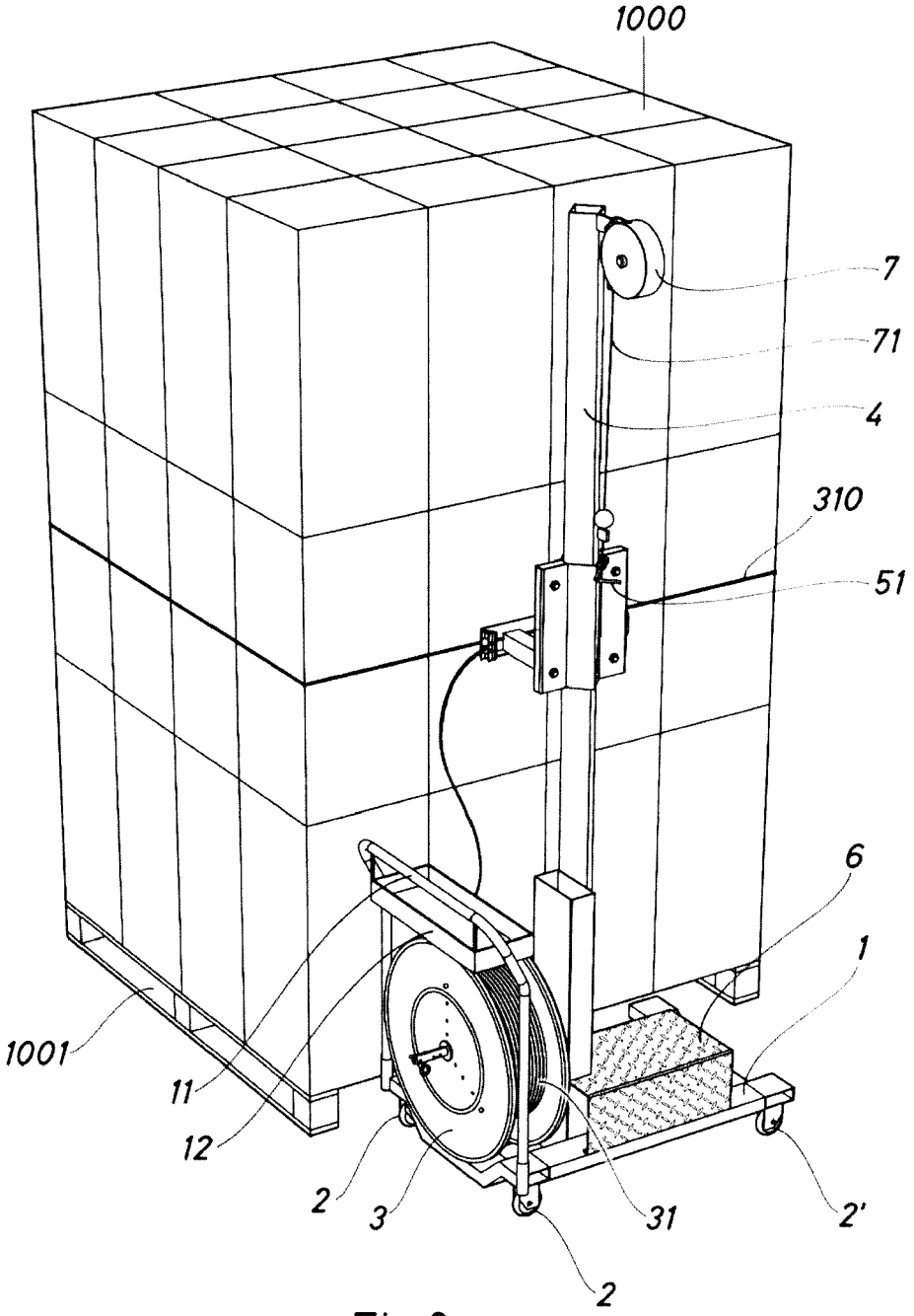

Fig.8

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EUROPEAN SEARCH REPORT

Application Number
EP 15 38 2360

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y	WO 2005/090164 A1 (ROBERT & KAREN BORSATO PTY LTD [AU]; IBS ENGINEERING SUPPLIES PTY L [A) 29 September 2005 (2005-09-29) * page 5, line 1 - line 2 *	2-10	
Y	FR 2 469 350 A1 (BRUNON SA CERCLAGE [FR]) 22 May 1981 (1981-05-22) * the whole document *	2-10	
A	US 2011/219960 A1 (JOWETT CLEMENT [US] ET AL) 15 September 2011 (2011-09-15) * the whole document *	1-10	
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			TECHNICAL FIELDS SEARCHED (IPC)
			B65B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 October 2015	Yazici, Baris

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- ES 2255355 A1 **[0009]**