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(54) Multipurpose exercise machine

(57) A universal gym having a main frame on which are mounted a pair of rotatable arms, a pair of rowing arms and a leg press, characterized in a motor which is connected with the rotatable arms, the rowing arms and the leg press via a cable so as to provide a pulling force for the rotatable arms, the rowing arms and the leg

press so that the user must apply a larger force than the pulling force in order to operate the rotatable arms, the rowing arms and the leg press thereby giving exercise to the user.

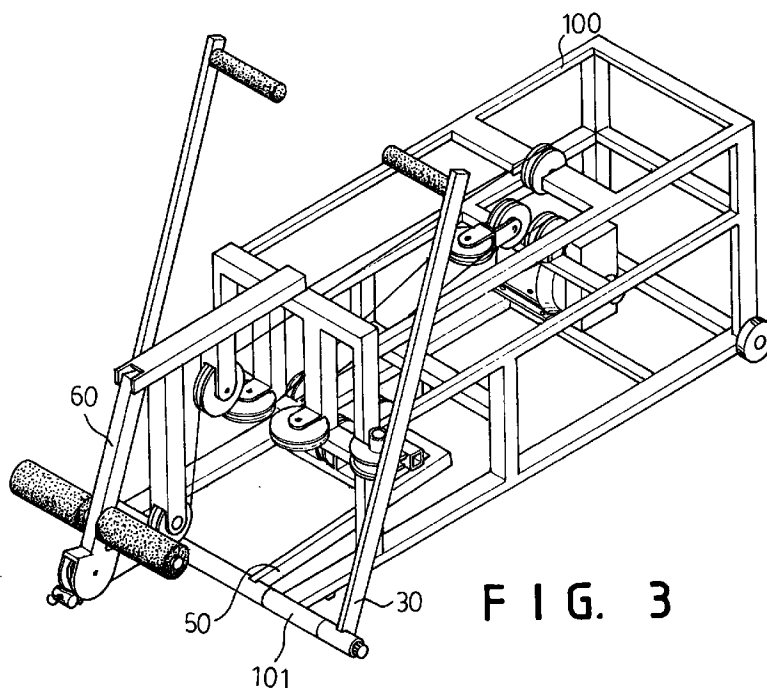


FIG. 3

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Description

This invention relates to a motorized pulling system for a universal gym.

1. Field of the Invention

This invention relates to an improved pulling system for a universal gym.

2. Description of the Prior Art

It has been found that the conventional universal gym is too bulky in size thereby rendering it unsuitable for use in ordinary homes. In addition, such universal gym utilizes a plurality of weights to produce a load for a user. However, it is inconvenient to adjust the weights and also impossible to adjust the weights linearly.

Therefore, it is an object of the present invention to provide an improved pulling system for a universal gym which can obviate and mitigate the above-mentioned drawbacks.

This invention relates to a motorized pulling system for a universal gym.

It is the primary object of the present invention to provide a pulling system for a universal gym which utilizes a motor to provide pulling force against the user so that the user must apply a larger force than the pulling force in order to operate the gym.

It is another object of the present invention to provide a pulling system for a universal gym which can simplify the structure of the universal gym.

It is still another object of the present invention to provide a pulling system for a universal gym which can reduce the size of a universal gym.

It is still another object of the present invention to provide a pulling system for a universal gym which can be adjusted conveniently and linearly.

It is a further object of the present invention to provide a pulling system for a universal gym which is simple in construction.

Other objects of the invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists of features of constructions and method, combination of elements, arrangement of parts and steps of the method which will be exemplified in the constructions and method hereinafter disclosed, the scope of the application of which will be indicated in the claims following.

FIG. 1 is a perspective view of a universal gym according to the present invention;

FIG. 2 is a perspective view of the universal gym with its main board at the upright position;

FIG. 3 is a perspective view of the universal gym with some component parts removed;

FIG. 4 is a side view of the universal gym;

FIG. 5 is a top view of the universal gym;

FIG. 6 shows the structure for connecting the main frame with the rowing arm;

FIG. 7 is a sectional view showing the connection of between the main frame, the auxiliary frame and the rowing arm;

FIGS. 8A and 8B show the working principle of the rowing arms;

FIG. 9A and 9B show the working principle of the rotatable arms;

FIG. 10 shows the working principle of the leg press; and

FIG. 11 is a perspective view showing the connection between the first cable and the gear reduction device.

For the purpose of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawings. Specific language will be used to describe same. It will, nevertheless, be understood that no limitation of the scope of the invention is thereby intended, such alternations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated herein being contemplated as would normally occur to one skilled in the art to which the invention relates.

With reference to the drawings and in particular to FIGS. 1 through 5, the universal gym according to the present invention comprises a main frame 100 on which are mounted a pair of rotatable arms 20, a pair of rowing arms 30, a leg press 40, and a motor 80. The rotatable arms 20, the rowing arms 30 and the leg press 40 are connected with a motor 80 via two cables 71 and 72 and a plurality of pulleys.

This invention is characterized by utilizing a motor 80 to provide pulling force for a universal gym instead of weights thereby reducing the size of the universal gym and enabling the load to be adjusted conveniently and linearly.

The motor 80 is fixedly mounted the main frame and engaged with a gear reduction device 81 which has an output shaft 82.

The main frame 100 includes an auxiliary frame 50 and a movable leg 60. The auxiliary frame 50 is fitted between two supports 101 of the main frame 100. The rowing arm 30 is provided at the lower end with a pin 301 extending through the support 101 of the main frame 100 into the auxiliary frame 30 so that the auxiliary frame 30 will be rotated in unison with the rowing arm 30 (see FIGS. 3, 6 and 7). The movable leg 60 is rotatably connected with the main frame 100 and has a pair of rods 61 enclosed with sponge-like material.

The rotatable arms 20 are each vertically rotatably connected with one side of the main frame 100.

A first pulley 1 is fixedly mounted on the main frame 100.

A second pulley 2 is fixedly mounted on the auxiliary frame 50 so that the second pulley 2 will be moved

together with the rowing arm 30. The second pulley 2 is disposed at the left side of the first pulley 1 (see FIG. 4).

A third pulley 3 is fixedly mounted on the main frame 100 and disposed at the left side of the second pulley (see FIG. 4).

A fourth pulley 4 is fixedly mounted on the main frame 100 and located above the third pulley 3.

A fifth pulley 5 is fixedly mounted on the main frame 100 and disposed above the fourth pulley 4.

A sixth pulley 6 is fixedly mounted on the main frame 100 and disposed above the fifth pulley 4.

A seventh pulley 7 is disposed between the fifth pulley 5 and the sixth pulley 6.

An eighth pulley 8 is fixedly connected with the seventh pulley 7 (see FIGS. 3, 4 and 5).

A ninth pulley 9 is fixedly mounted on the main frame 100 (see FIGS. 3 and 4).

A tenth pulley 10 is fixedly mounted at the right side of the ninth pulley 9 (see FIG. 5).

An eleventh pulley 11 is rotatably mounted at one side of the main frame 100.

An twelve pulley 12 is rotatably mounted at the other side of the main frame 100.

A thirteenth pulley 13 is fixedly mounted on the main frame 100.

A fourteenth pulley 14 is fixedly mounted on the main frame 100 and disposed under the thirteenth pulley 13 (see FIG. 4).

A fifteenth pulley 15 is fixedly mounted at the lower end of the movable leg 60 so that the fifteenth pulley 15 will move in unison with the movable leg 60.

The cable 71 is connected with the fifteenth pulley 15 at one end and with the output shaft 82 of the gear reduction device 81 at the other end. The cable 70 passes in sequence through the lower side of the first pulley 1, the upper side of the second pulley 2, the lower side of the third pulley 3, the upper side of the fourth pulley 4, the right side of the fifth pulley 5, the left side of the seventh pulley 7, the right side of the sixth pulley 6, the upper side of the thirteenth pulley 13, the lower side of the fourteenth pulley 14, and the lower side of the fifteenth pulley 15. The second cable 72 is connected with the eleventh pulley 11 at one end and with the twelve pulley 12 at another end. Further, the second cable 72 sequentially passes through the left side of the ninth pulley 9, the right side of the eighth pulley 8 and the left side of the tenth pulley 10.

It should be noted, however, that the motor 80 is connected with an electronic controlling device (not shown) through which the speed of the motor 80 can be adjusted linearly. Such an electronic controlling device may be of any conventional design well known to those skilled in the art and is not considered a part of the invention. Further, the connection between the first cable 71 and the output shaft 82 of the gear reduction device 81 is shown in FIG. 11.

FIGS. 8A and 8B show the working principle of the rowing arms 30. As illustrated, when the rowing arms 30 is pushed forward in the arrow direction shown FIG. 8B,

the auxiliary frame 50 will have a tendency to rotate upward with respect to the support 101 of the main frame 100. When the force applied on the rowing arms 30 by an user (not shown) is larger than the pulling force of the output shaft 82 of the gear reduction device 81, the second pulley 2 will be lifted thus giving exercise to the user.

FIG. 9A and 9B show the working principle of the rotatable arms. As shown, when the rotatable arms 40 are rotated inward, the second cable 71 will pull the eighth pulley 8 to go forward. However, the rotatable arms 40 can only be rotated when the force applied on the rotatable arms 40 by the user is larger than the pulling force of the output shaft 82 of the gear reduction device 81.

FIG. 10 shows the working principle of the leg press 60. As can be seen, when the fifteenth pulley 15 is rotated upward, the motor 80 will tend to pull the first cable 71. Only when a force applied to the leg press 60 is larger than the pulling force of the output shaft 82 of the gear reduction device 81 will the leg press 60 be rotated upward.

The invention is naturally not limited in any sense to the particular features specified in the foregoing or to the details of the particular embodiment which has been chosen in order to illustrate the invention. Consideration can be given to all kinds of variants of the particular embodiment which has been described by way of example and of its constituent elements without thereby departing from the scope of the invention. This invention accordingly includes all the means constituting technical equivalents of the means described as well as their combinations.

Claims

1. A universal gym having a main frame on which are mounted a pair of rotatable arms, a pair of rowing arms and a leg press, characterized in a motor which is connected with said rotatable arms, said rowing arms and said leg press via cable so as to provide a pulling force for said rotatable arms, said rowing arms and said leg press so that an user must apply a larger force than said pulling force in order to operate said rotatable arms, said rowing arms and said leg press.
2. The universal gym as claimed in Claim 1, wherein said main frame includes an auxiliary frame and a movable leg, said auxiliary frame being fitted between two supports of said main frame, said rowing arm being provided at a lower end with a pin extending through a support of said main frame into said auxiliary frame so that said auxiliary frame will be rotated in unison with said rowing arm, said movable leg being rotatably connected with said main frame and having a pair of rods enclosed with sponge-like material, said rotatable arms being

each vertically rotatably connected with one side of said main frame.

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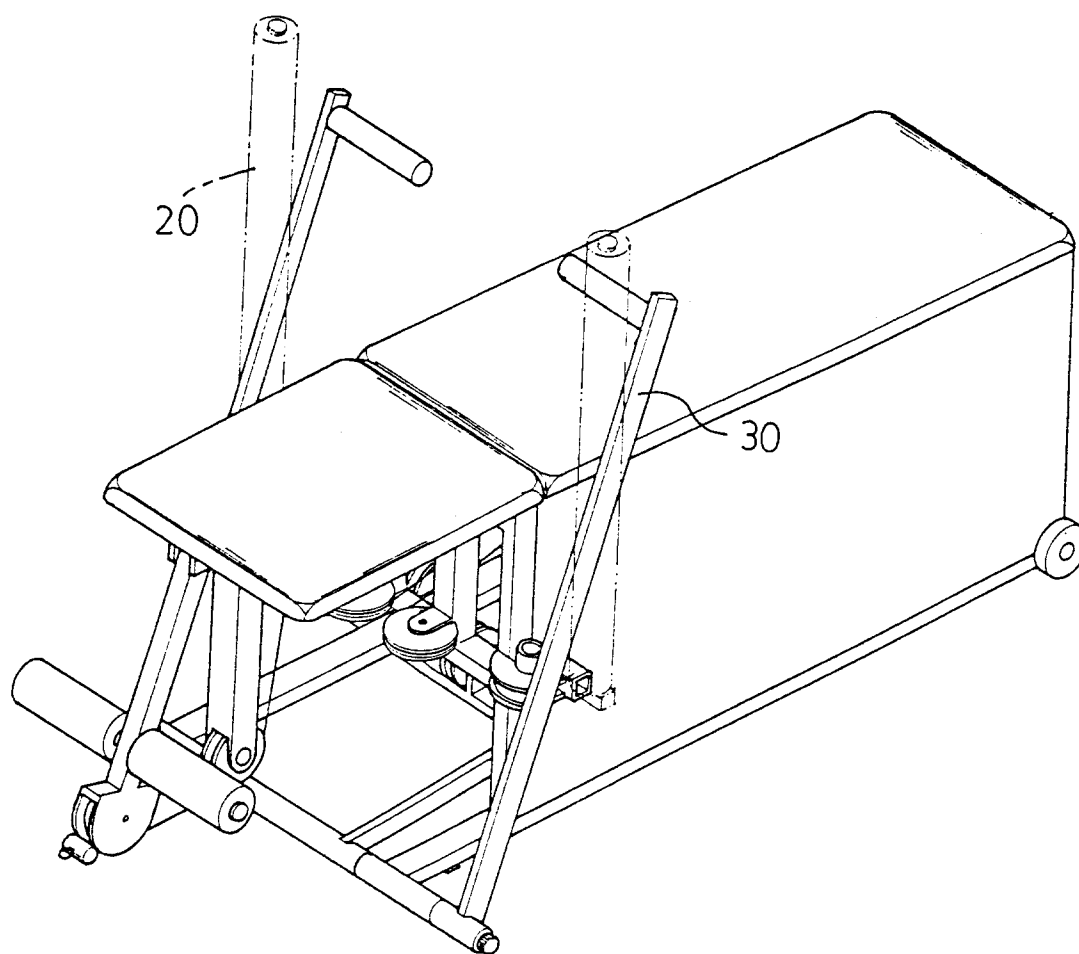


FIG. 1

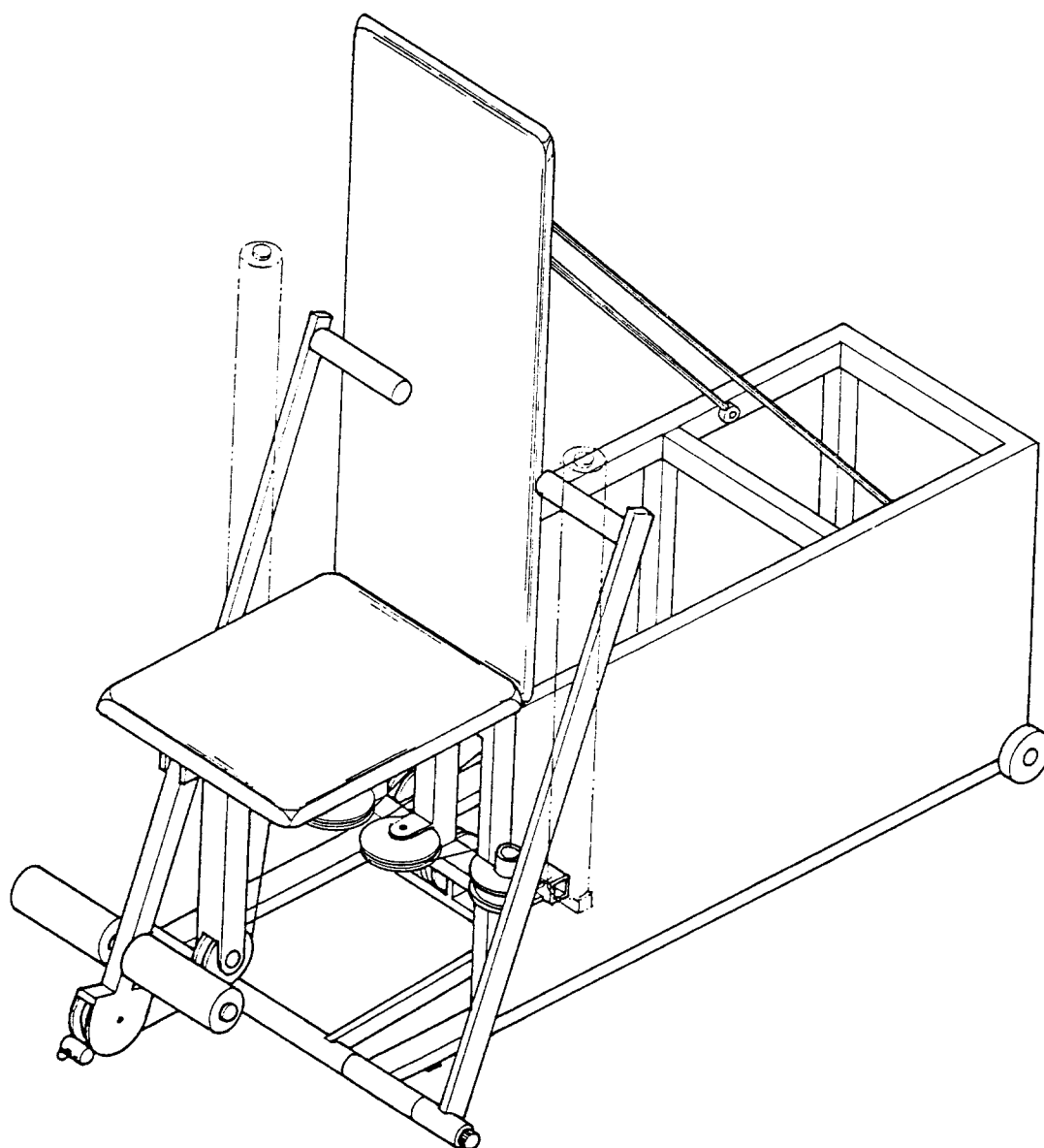
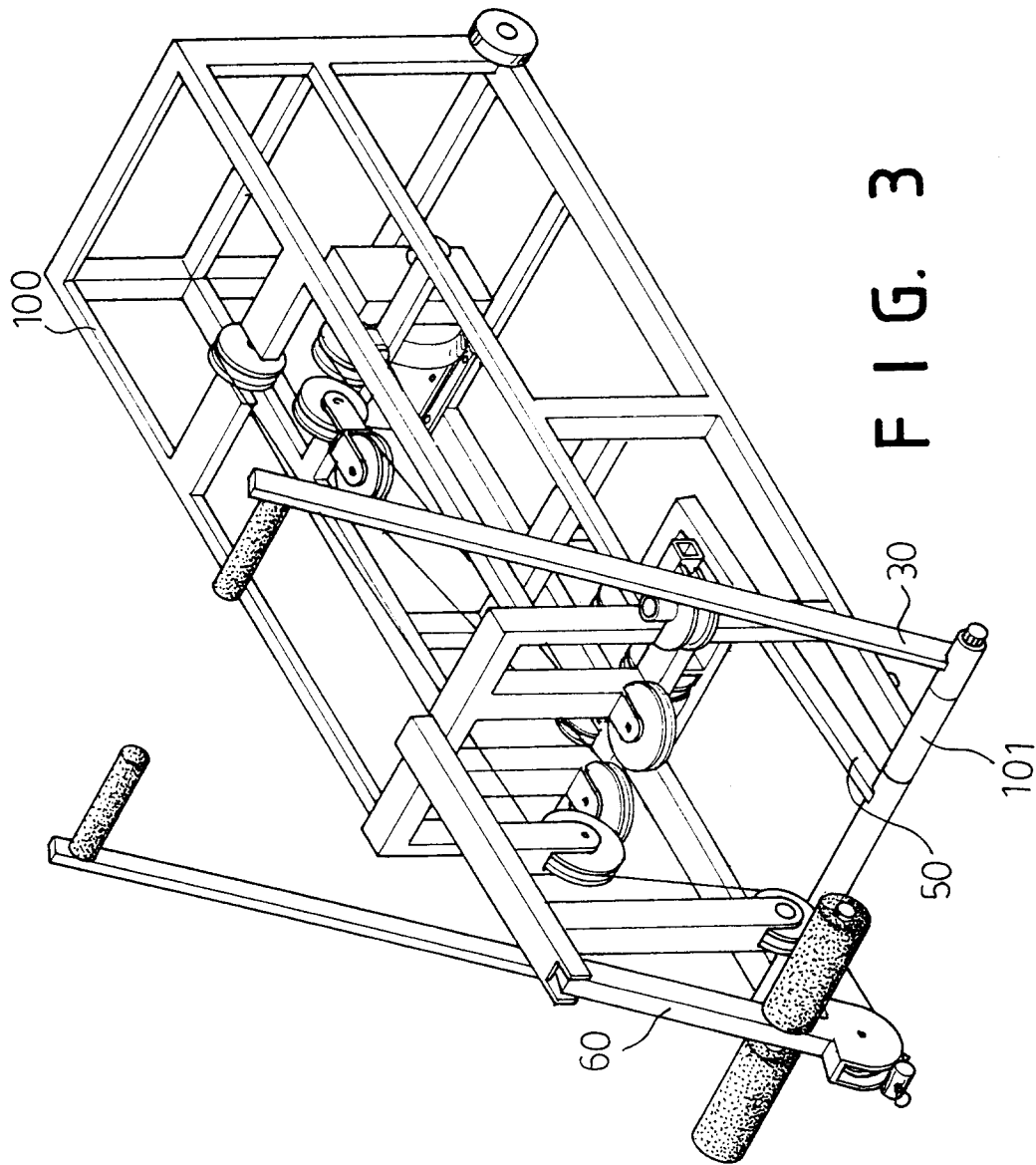


FIG. 2



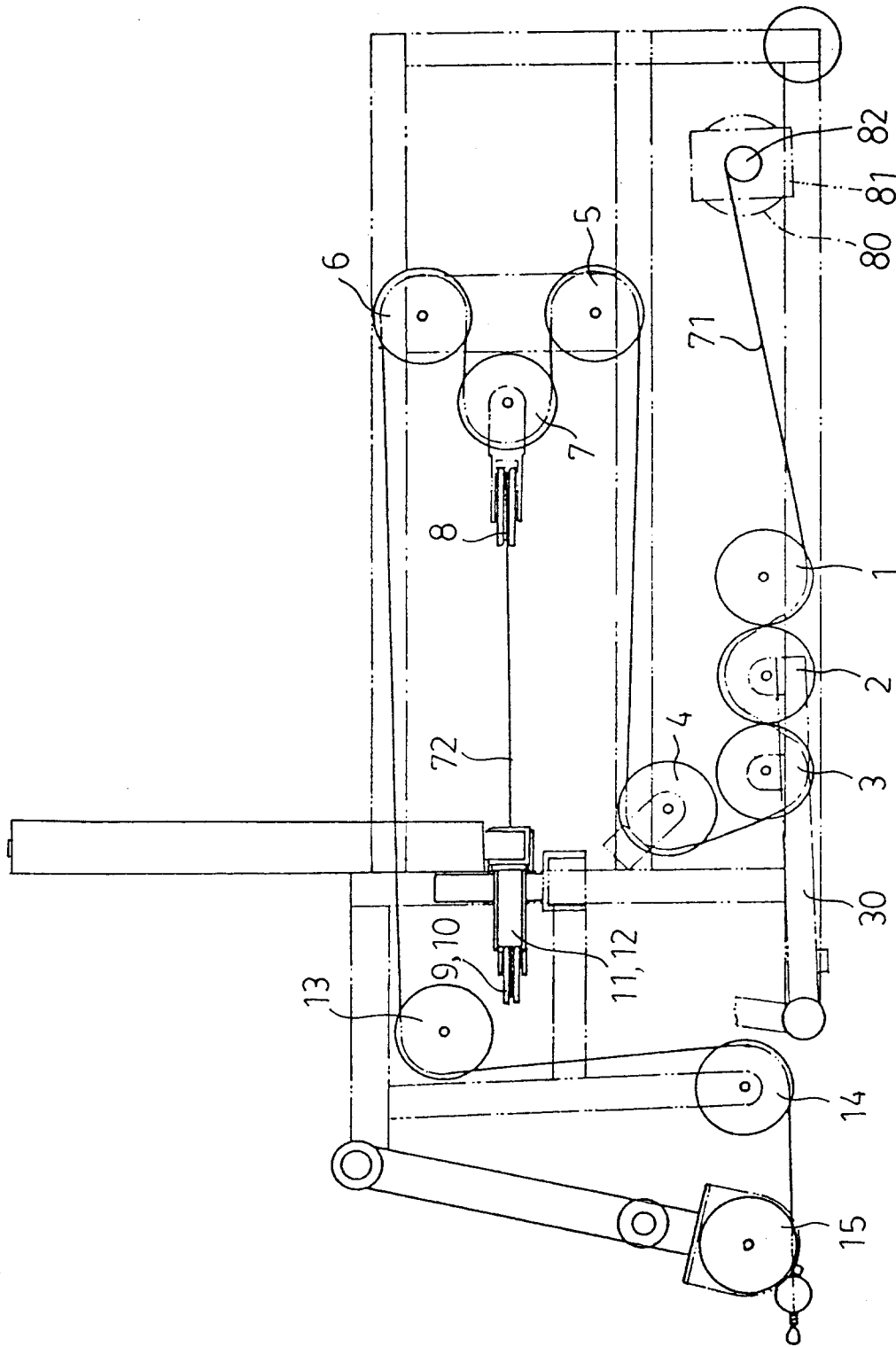


FIG. 4

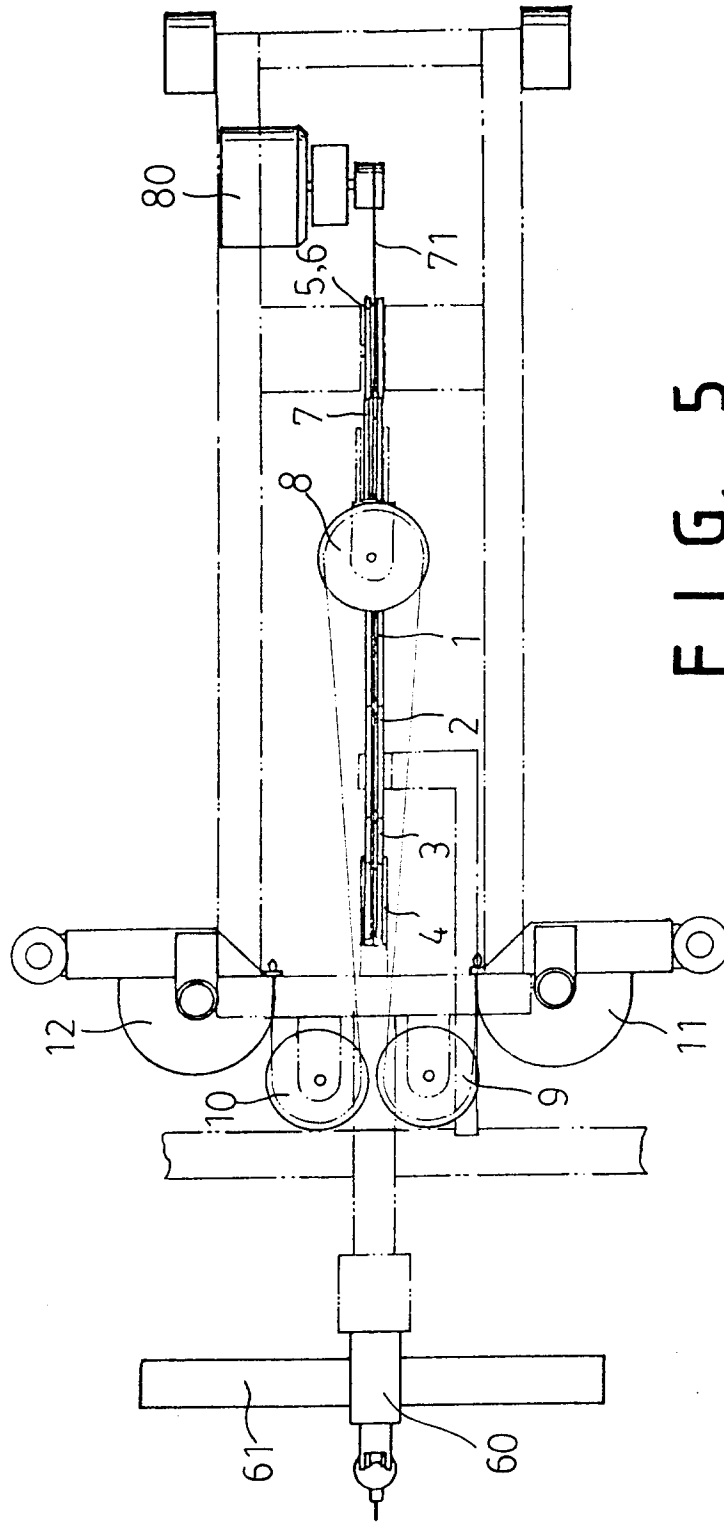


FIG. 5

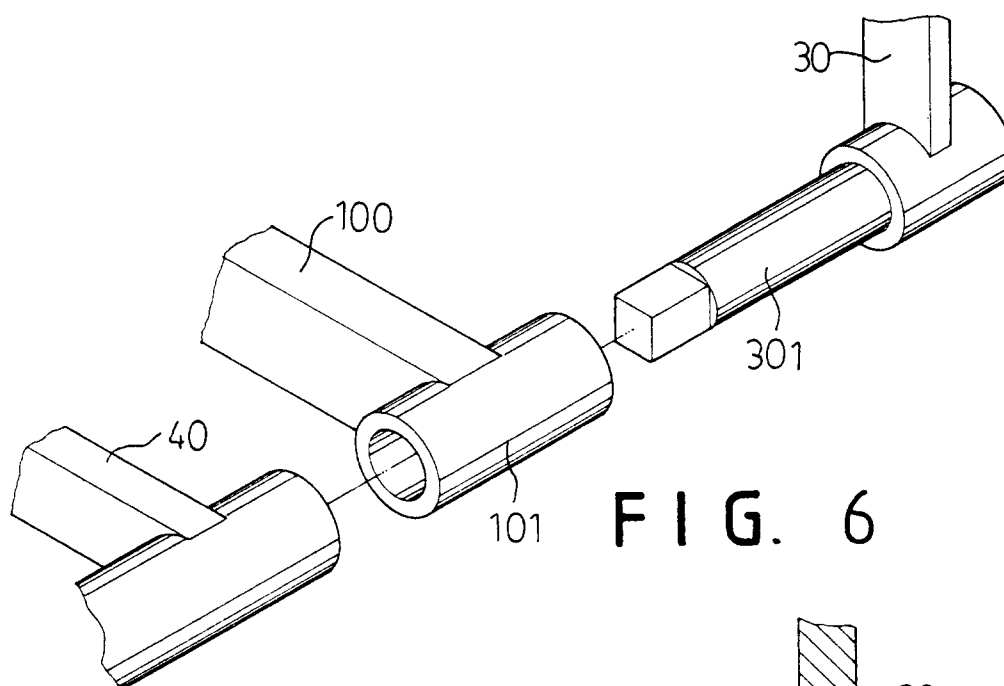


FIG. 6

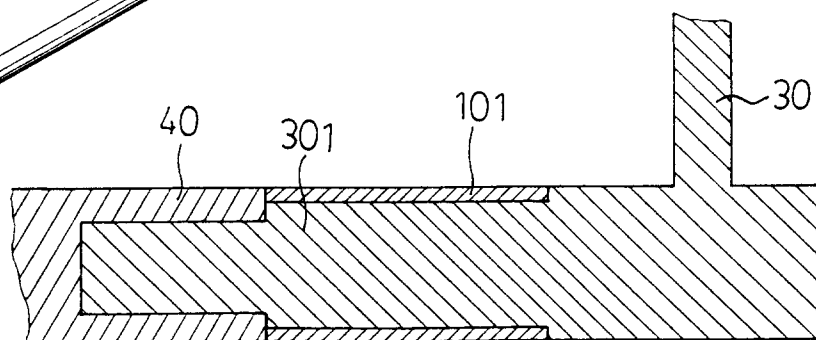


FIG. 7

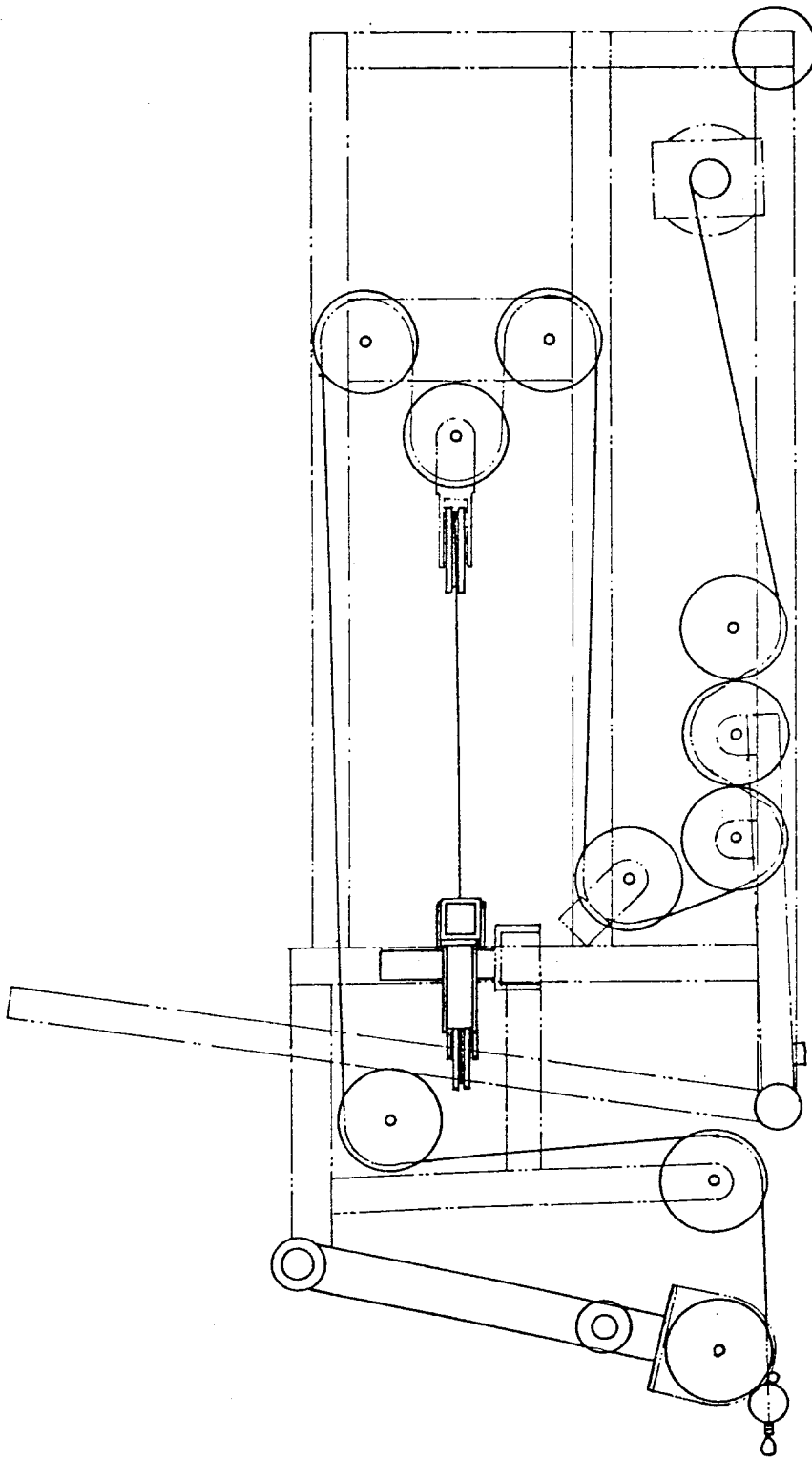


FIG. 8A

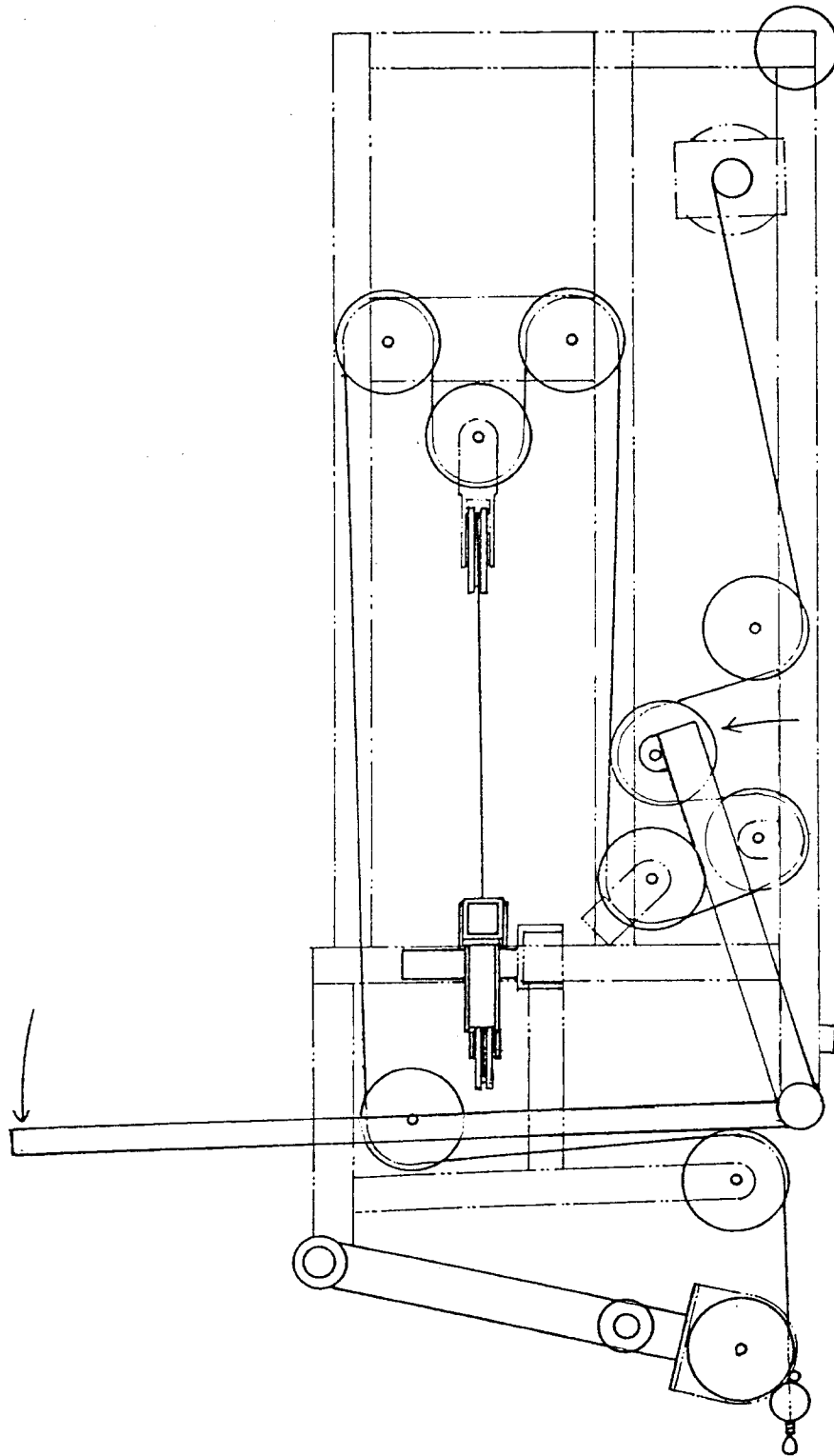


FIG. 8B

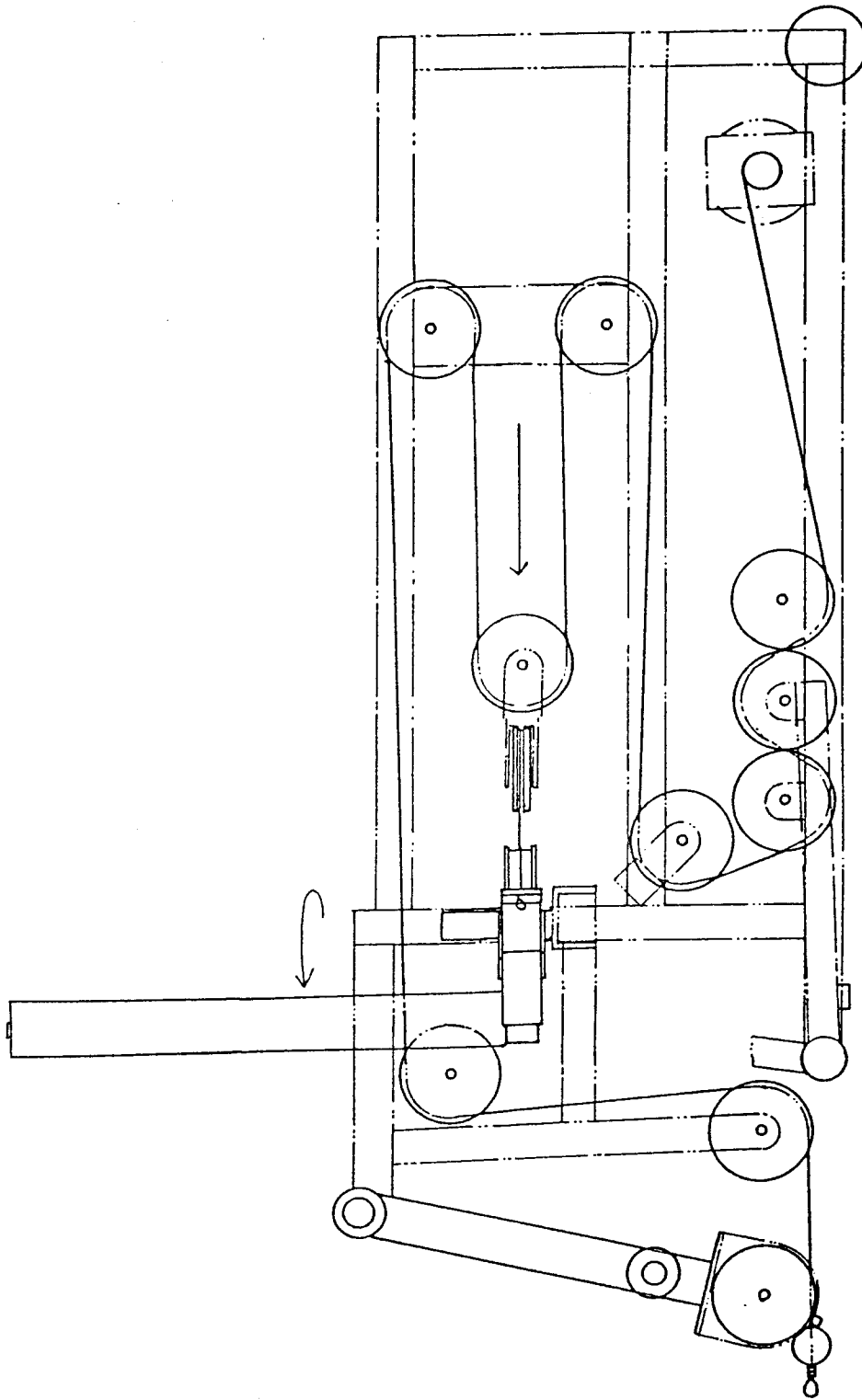
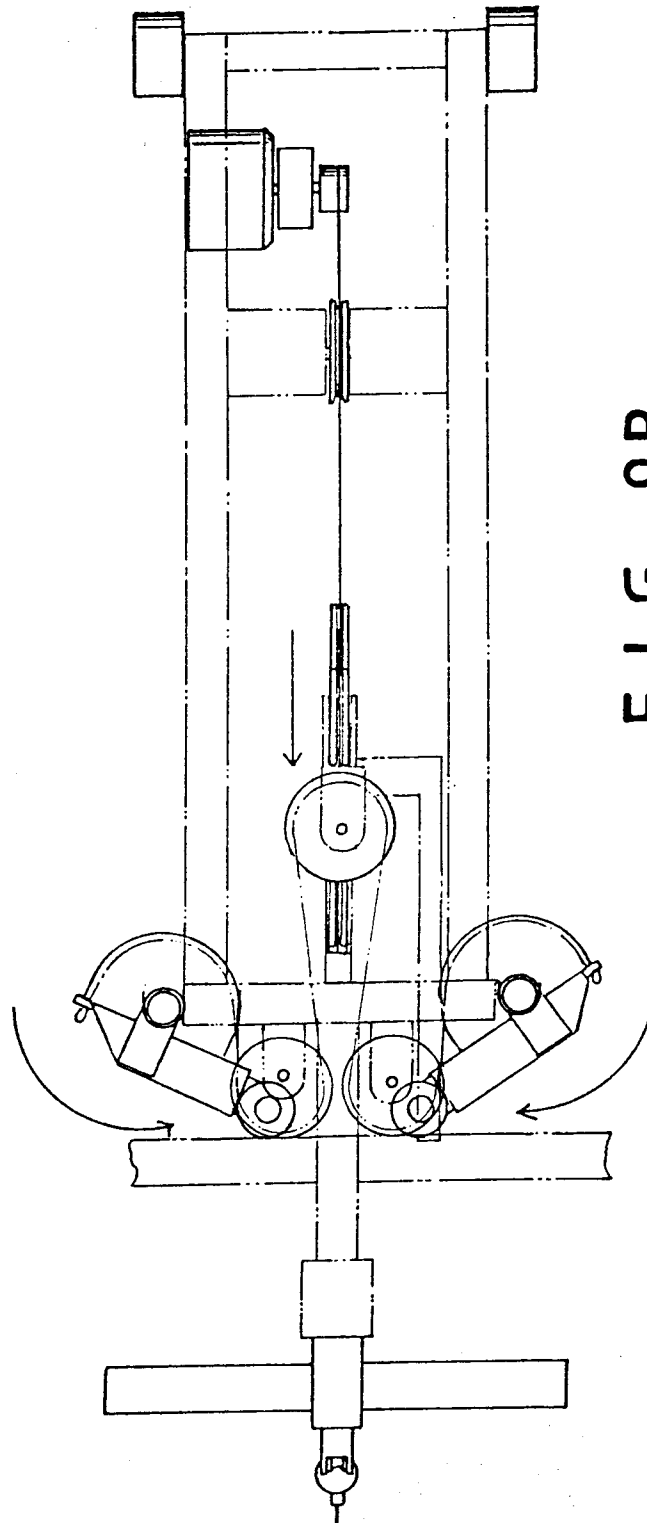


FIG. 9A



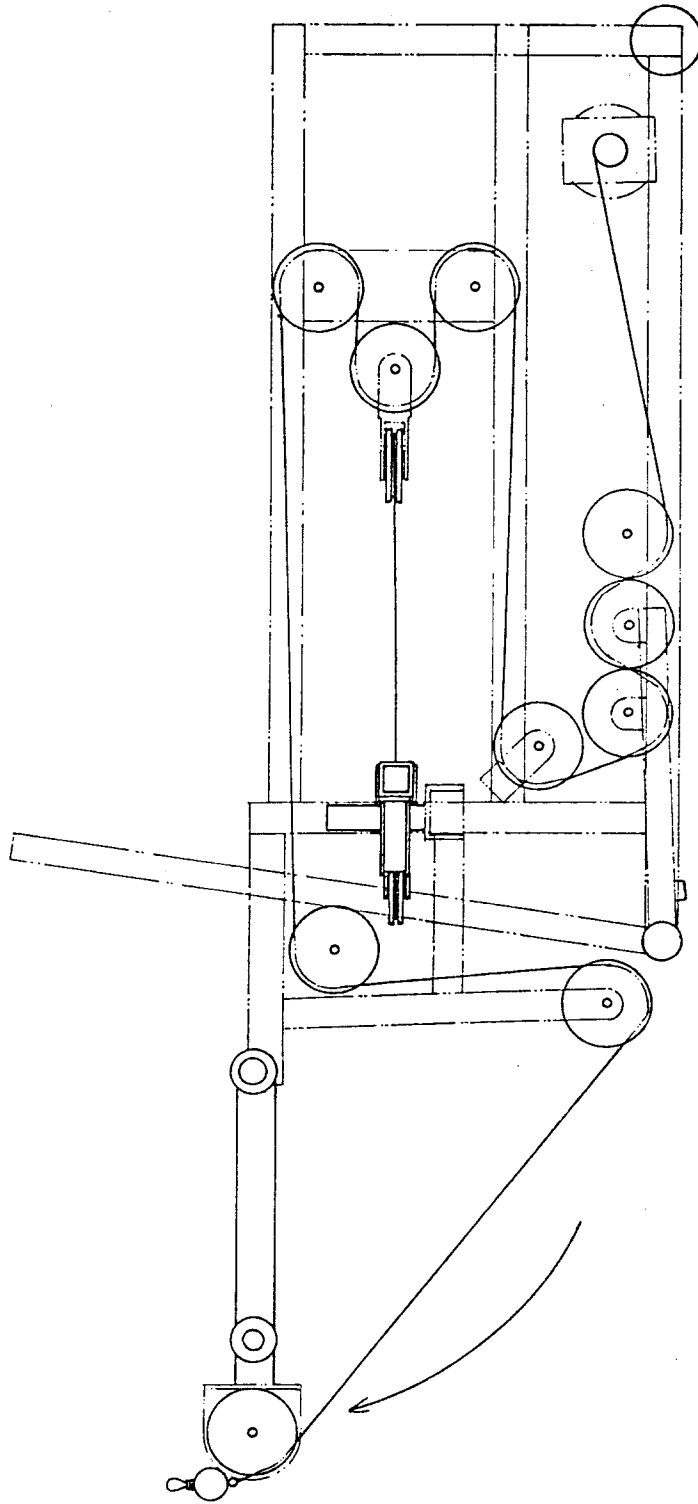
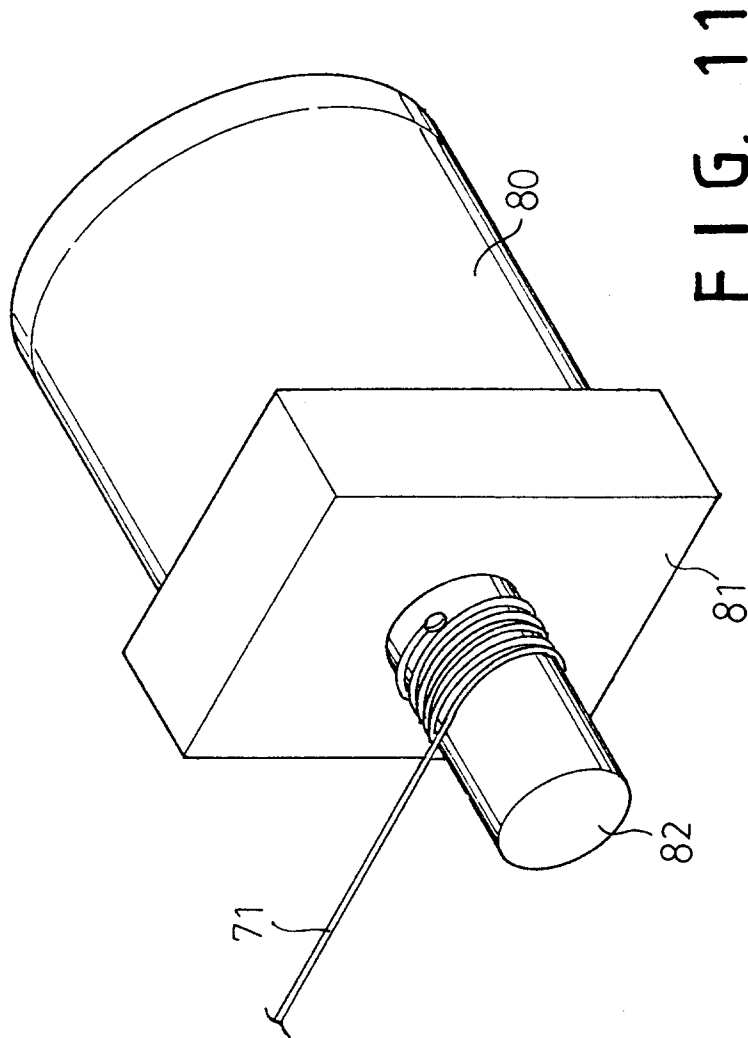


FIG. 10





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EUROPEAN SEARCH REPORT

Application Number
EP 95 81 0242

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	US-A-5 263 915 (HABING) * the whole document *	1	A63B21/00 A63B21/062
A	---	2	
Y	US-A-5 304 104 (CHI) * the whole document *	1	
A	---		
A	DE-A-34 09 246 (SEEBALD ET AL.) * claim; figures *	1	
A	---		
A	US-A-5 316 534 (DALEBOUT ET AL) * abstract; figures *	1	
A	---		
A	DE-U-93 03 454 (CHEN) -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) A63B
Place of search THE HAGUE		Date of completion of the search 8 September 1995	Examiner Giménez Burgos, R
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