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(71) Applicant : **Garcia, Eduardo Roberto**
Lugones 4104
1430 Buenos Aires (AR)

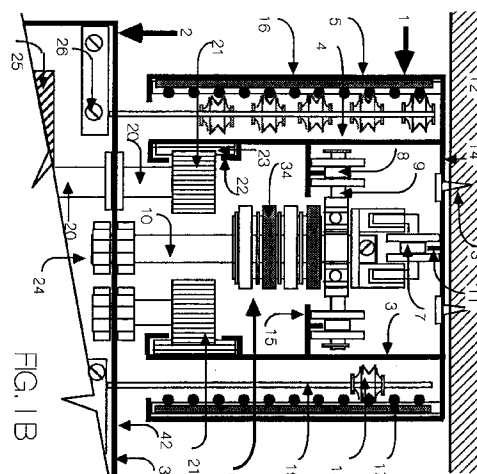
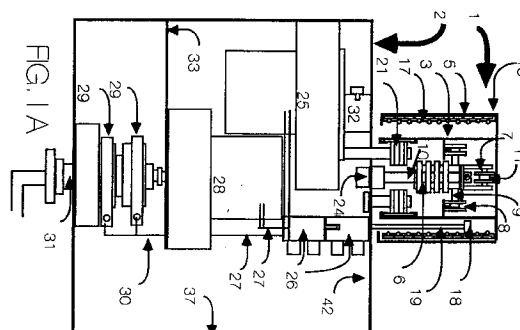
(71) Applicant : **Lazzeretti, Patricia**
Lugones 4104
1430 Buenos Aires (AR)

(72) Inventor : **Garcia, Eduardo Roberto**
Lugones 4104
Inventor : **Lazzeretti, Patricia**
Lugones 4104
1430 Buenos Aires (AR)

(74) Representative : **Pendlebury, Anthony et al**
PAGE, WHITE & FARRER 54 Doughty Street
London WC1N 2LS (GB)

(54) **Rail-guided apparatus-carrying system.**

(57) A rail-guided apparatus-carrying system for moving an apparatus such as a loudspeaker, a spotlight and the like along a predetermined path defined by the system when fixed in a wall or roof of a housing, the system comprising a raillike stationary holder to be fixed to said roof and a movable carrier including a driving motor unit for moving the carrier along the holder and an apparatus actuating unit for moving the apparatus relative to the carrier, the apparatus being connecting to the carrier by means of an apparatus hanging member, the carrier being supported in the holder by means of a stabilizing hanger mechanism, electrical means being provided to supply electricity to said units.



Technical field of the invention:

The present invention relates to a rail-guided apparatus-carrying system particularly applicable for moving apparatuses that should be applied to a roof or a wall of a housing, or any kind of structures of buildings wherein the apparatus needs to be moved or not and preferably for carrying the apparatus along a predetermined path. The term "apparatus or apparatuses" refers to the general concept of any kind of articles, objects, apparatuses, devices appliances, like loudspeakers, spotlights, tools, etc., which may need to be moved along the wall or a roof, particularly along a predetermined path and rotated, in any kind of housings, structures, offices, supermarkets, etc.

The preferred embodiments of the invention will be described in the following with reference to a system that may be applied to a roof of a house. However, the invention is not limited thereto. The invention can be applied to any kind of a wall or roof surface and it may be used embedded in a wall, in inclined walls, beams, profiles, etc. The system is also useful in showing objects in exposition, lectures, conferences, etc.

Background art:

For some considerable time, attempts have been made to provide simple, easy-installation, agreeable systems for installing for example, spotlights or loudspeakers in houses with the possibility of moving them along a predetermined path within a room, like a living-room, a bath-room, etc.

Most of the existent systems consist of a mere rail for supporting the spotlight stationary while it is necessary to move the spotlight by hand in order to place it in a desired position to remain in the stationary position that was selected. For this operation generally it is necessary the use of ladders that causes this operation to be cumbersome and dangerous.

Even when these spotlights may be moved by hand, generally the power supplying wires, that receive the electricity from the power housing line, has an insufficient length to allow the spotlight to be moved to extreme positions or, otherwise, when the spotlight is moved to a position closed to the place wherein the wires enter the roof or the electrical wall boxes, the excess of wire length causes these to hang from the roof.

Other wire-less devices, however, may be moved and kept stationary in predetermined locations of the rail wherein electrical connectors are provided for electrically feeding the device.

Disclosure of the invention:

It has now surprisingly been found that the problems and drawbacks of the techniques and devices

described above can be eliminated by the present invention.

The invention is directed to a rail-guided apparatus-carrying system for moving apparatuses such as electrical appliances, like spotlights, loudspeakers, tools, different objects and the like, along a predetermined path in a wall or a roof of a house, comprising a rail-like holding assembly to be fixed in the roof or wall of the housing, a movable carrier coupled to and pending from the holding assembly by means of a stabilizing guiding mechanism, the carrier including a driving motor unit for moving the carrier along the molding assembly, an apparatus-actuating unit for moving the carrier apparatus and an apparatus hanging member for connecting said apparatus to said carrier in order that the apparatus is supported by the carrier.

The invention is also directed to a rail-guided apparatus-carrying system that has an electrical-feeding system for supplying electrical power to the constituent elements of the movable carrier and to the carried apparatus.

The invention is also directed to a rail-guided apparatus-carrying system including batteries for operating the system and the carried apparatus.

The system of the invention is also capable of being operated by remote control such as an ultrasonic, infrared or radio control. The system may also be operated through a switch, for example embedded into the wall.

Other features and advantages of the invention will become apparent from the following description of preferred embodiments of the invention with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a cross-section view, taken along cutting lines A-A of Fig. 2, of the system according to the present invention.

Fig. 1B is an enlarged view of the holding assembly of Fig. 1A.

Fig. 2 is a top plan view of the system of Fig. 1, with the holding system removed and part of the carrier shown as being transparent for clarity purposes.

Fig. 3 is a cross-section view of the system of Fig. 1 taken along the cutting lines B-B of Fig. 2.

Fig. 4 is a cross-section view of the system of Fig. 1 taken along cutting lines C-C of Fig. 2.

Fig. 5 is a cross-section view of a second embodiment of the invention, taken along cutting lines A-A of Fig. 6.

Fig. 6 is a top plan view of the second embodiment of the invention with the holding assembly removed and the carrier shown as being transparent to show the elements housed within the carrier.

Fig. 7 is a cross-section view of the system of Fig. 5 taken along cutting lines B-B of Fig. 6.

Fig. 8 is a cross-section view of the system of Fig. 5 taken along cutting lines C-C of Fig. 6.

Fig. 9 is a cross-section view of a third embodiment of the invention, taken along cutting lines A-A of Fig. 10.

Fig. 10 is a top plan view wherein the holding system has been removed and the carrier is shown as being transparent to show the elements housed within the carrier.

Fig. 11 is a cross-section view of the system of Fig. 9 taken along cutting lines B-B of Fig. 10.

Fig. 12 is a top plan view of the system according to the invention showing a coupling between a curved section of the system and a straight section of the system.

Fig. 13 is a cross-section view taken along cutting lines A-A of Fig. 12, and

Figs. 14, 15 and 16 are schematic views of different embodiments of the stabilizing mechanism.

Detailed account of examples of the invention:

Referring to Figs. 1A to 4, an apparatus-carrying system according to a first embodiment of the present invention is shown. A holding assembly 1 and a movable carrier 2 capable of carrying an apparatus not shown are illustrated.

Holding assembly 1 includes a U-shaped profile holder 3 having a base 14 that may be affixed to a roof 12 by means of screws 13 or any other securing members. Base 14 has a vertical pending guiding rib 11 for the purposes described below. Although one rib is illustrated more than one may be provided even upright extended. A pair of parallel wings 4 pending from base 14 provide, in an inner side, opposite flanges 15 defining respective tracks lying in the same plane. At the lower end of wings 4, a track retaining profile 22 is provided for defining respective opposite tracks 23 in order that the movable carrier may move along the entire length of holder 3 as it will be described below. In the case that holder 3 is to be affixed to a vertical wall, it may be supported in the wall through one of the wings 4, with minor changes done in the system.

Parallely to inner wings 4 there is provided a pair of parallel outer wings 5 also pending, in this embodiment, from base 14 of holder 3. For defining an electrical-feeding system 16, outer wings 5 carry electrical contacts 17 which may be connected to the power line of the housing wherein the system of the present invention is installed. The purpose of the electrical-feeding system 16 is to supply power to the movable carrier 2 and to the apparatus (not shown) that is carried by the movable carrier 2. Contacts 17 may consist of elongated conductors like bars, tracks, rails and the like.

In order that the movable carrier 2 may move along the length of holder 3 and may hang therefrom,

a stabilizing guiding mechanism 6 is provided to connect, in a movable relationship, the holder 3 with carrier 2. For this purpose mechanism 6 is provided with a central hanger bar 10 which at a lower end thereof is connected to, for example, an upper wall 42 of a carrier box 37 of the carrier 2 by means of an upper hanger member 24.

Member 24 comprises any kind of retaining member, such as a threaded sleeve, etc., which allows the carrier 2 to be supported by hanger bar.

At an upper end, hanger bar 10 has at least one guide wheel 7 the purpose of which is to run over guiding rib 11 of holder 3 to guide carrier 2 along its predetermined movement path. At a lower level relative to guide wheel 7, hanger bar 10 is provided with an axis 9 rotatably mounted on shaft 9 by means of a ball-bearing or the like, axis 9 having a pair of supporting wheels 8 the purpose of which is to support the entire assembly formed by carrier 2 and the apparatus (not shown) carried by carrier 2. For this purpose wheels 8 run over the opposite flanges or tracks 15 of the inner wings 4 shown in Fig. 1 and 3. The guiding effect provided by rib 11 may be otherwise provided by tracks 15. In this case flanges 15 may include each an upright rib over which may run each supporting wheel 8 in which event wheels 8 will function as supporting and guiding wheels, therefore rib 11 is not necessary. In this case, the guiding and supporting mechanisms comprise only one assembly.

Additional stabilization and guide is provided by respective leading sliding bar 35 L and rear sliding bar 35 R. Of course, these reference numbers correspond to the carrier 2 moving in the sense indicated by the arrow in Fig. 3. If the carrier is moved to the contrary sense rear bar 35 R will be the leading bar in that movement. For clarity purposes these number references have been adopted in respect of the selected sense of movement indicated by arrow of Fig. 3. Similarly to the central hanger bar 10, sliding bars 35 L and 35 R have at their upper ends respective guide wheels 7 L and 7 R. At the lower end regarding guide wheels 7 L and 7 R, respective leading and rear axis 9 L and 9 R are provided, having stabilizing wheels 8 L and 8 R also running over tracks 15.

At least a pair of hinged arms 34 are pivotally connected at an end thereof, to a middle part of hanger bar 10 while at the other end, bars 34 are connected to the leading and rear sliding bars 35 L and 35 R. Leading and rear sliding bars 35 L and 35 R have at their respective lower ends sliding wheels 36 L and 36 R the purpose of which is to participate in the stabilization of carrier 2 by rotatably acting against the inner side of the upper wall 42 of the carrier box 37 which includes a grooved surface wherein the sliding wheels 36 L and R run into.

By means of the above described stabilizing hanger mechanisms 6, all the load of the carrier 2 as well as the apparatus (not shown), even those loads

that are offset of the gravity center of the entire assembly, are proportionally and uniformly unloaded over holder 3. Arms 34 also allow bars 35 L and 35 R to move along to sections of holder 3 by rotating about hanger bar 10. Holder 3 may be formed by assembling a plurality of straight and curved sections in order to define a predetermined and desired design of path. For moving carrier 2 along holder 3, at least one driving wheel 21 acts against the inner side of wing 4 of holder 3. Driving wheel 21 is provided at an upper end of a driving shaft 20 which in turn is powered by a driving motor unit 25 housed within a carrier box 37. In this embodiment driving wheel 21 is a toothed wheel that runs over a toothed track 23 in order to move carrier 2 along holder 3. Although both driving wheels 21 may be powered by the motor unit 25, only one shaft 20, in this embodiment, is connected to the driving motor unit 25 while the shaft 20, located at the right side as viewed in Fig. 1, is a freely-rotatably-mounted shaft. Driving wheels 21 may be metal, plastic or rubber made wheels. It may be necessary to keep an appropriate pressure on the driving wheels 21 and against the track 23 to generate the driving effect in which case it may be necessary to provide a pressure regulator 32 that will move driving shaft 20 in order to place driving wheels 21 against track 23 and to exert more pressure against the latter to improve the driving conditions.

Driving motor unit may comprise a DC or AC motor or any kind of suitable appropriate motor and the pressure regulator 32 may include springs, screw-regulated springs and the like. Movable carrier 2 also includes an apparatus actuating unit 28 comprising one or more motors generating rotations about a vertical, an horizontal or an inclined axis, as well as a holding mechanism. In the case that more than one motor is provided one motor may move a support wherein another motor is mounted to obtain a wide variety of movements. The purpose of unit 28 is to provide the carried apparatus (not shown) with the required movement thereof. For example, if the apparatus is a spotlight, it may be necessary to provide a spotlight with a rotating movement to direct the light beam to the desired part of the room. The spotlight may be moved by unit 28 about an horizontal axis as well as about a vertical geometrical axis. One or more motors may be provided together with electromagnetic clutches, servomechanisms, etc.

Unit 28 may be mounted on a supporting plate 33 although it may be connected to any other part of the carrier box 37 by means of screws, or any other retaining means.

Since unit 25 and 28 as well as the carried apparatus need power to operate, a plurality of multi-terminals or connector boxes 26 are provided within carrier box 37. To supply electricity to units 25 and 28 as well to the apparatus (not shown), boxes 26 must collect power from electrical contacts 17. For this pur-

pose, a plurality of electrical contacting fingers 19 are provided which in turn have at their upper ends a rotatably electrical-contacting head 18 the purpose of which is to move along the selected electrical contact 17 and remaining electrically engaged with contacts 17 in spite of carrier 2 moving along holder 3. Head 18 may slide over any kind of conducting material 17 which may comprise a flexible plate, a metallic bar, etc. Head 18 may exert pressure against contacts 17 by means of springs, etc.

Electrical conducting wires 27 or any other conductor members carry the necessary electricity to feed units 25 and 28. Electrical conducting member 30 such as a wire, carry the necessary power for the rotatable electrical connectors 29 which collect the electricity and transmit it to the carried apparatus which, in turn, is connected to carrier 2 by means of an apparatus hanger member 31 that comprises a retaining member such as threaded sleeves with electrical connectors, washers and the like. Connectors 29 may comprise any rotating connectors of the conventional type which are capable of rotating while collecting electricity from wire 30 and transmitting it to the carried apparatus (not shown). Hanger member 31 is also capable of retaining the apparatus (not shown), moving it and transmitting to it the necessary electrical power.

In operation, the movement of carrier 2 may be started by switching on a wall embedded switch capable of starting driving motor unit 25 to move carrier 2 along holder 3. With a different switch, unit 28 may be operated to rotate for example a spotlight once the carrier has been moved to the desired location. Obviously, the movement of carrier 2 as well as the movement of the spotlight may be done simultaneously.

The quantity of movements to which the apparatus is subjected will depend of the needs. It is also possible to have a remote control circuit that allows the user to move the carrier and the spotlight with a remote control unit. Although the circuitry is not illustrated, this kind of remote control systems are well known in the art and we feel not necessary the description thereof.

Referring now to Figs. 5 to 8 a second embodiment of the present invention is shown. All those parts that correspond to the same already described in the first embodiment of Figs. 1 to 4 will have the same reference number.

The embodiment of Figs. 5 to 8 defers from the first described embodiment in that the outer wings 5 are, in this embodiment, not integral with holder 3. In fact, wings 5 comprise a flange profile that is slidably and/or removably connected to holder 3 by a plurality of flanges 39. By this construction it is possible to add a plurality of parallelly arranged wings 5 which enable the system to have a higher number of electrical contacts 17. More than one or two wings 5 may be assembled to the system as it is shown in phantom lines at

the upper right corner of Fig. 5. Wings may be connected to holder 3 by any kind of retaining means such as screws, fasteners, clamps, etc. Contacts 17 may also be arranged in groups in horizontal or vertical patterns.

In order to select the different electrical contacts 17 from the different parallelly arranged wings 5 a finger actuating unit 38 is provided in carrier 2. Unit 38 comprises a slide-rail or cursor along which the contacting fingers 19 slide to keep and electrical engagement with the corresponding contacts 17 of any of wings 5.

For the remaining parts of the system, this embodiment is the same like the first embodiment described in connection with Figs. 1 to 4.

Referring now to Figs. 9 to 11, a third embodiment according to the present invention is illustrated. This embodiment defers from the first described embodiment of Figs. 1 to 4 and 5 to 8 in that no electrical-feeding system is provided like in those embodiments. In the present embodiment the electrical power for units 25 and 28 or any other unit involved in the operation of the system, as well as for the carried apparatus, is provided by batteries 40. These batteries supply the power through conducting members, such as wires 41 as it is clearly shown in Figs. 9 to 11. The switches for operating the system of this embodiment or for acting on batteries 40 may be either provided on the exterior of carrier 2 or a remote control may be provided.

Batteries 40 would also be used in those embodiments of Figs. 1 to 8 by adapting the involved parts, as well as other parts used in such embodiments may be employed in the present one.

Another difference of the present embodiment with the first two described embodiments resides in that the stabilizing hanging mechanism of this embodiment comprises only one hanger bar that is central hanger bar 10 having at its upper end a guide wheel 7 like the other embodiments. However, bar 10 is pivotally connected to inner ends of a plurality of radially arranged arms 45 which at the respective outer ends includes respective supporting wheels 43 capable of running on tracks 15 of holder 3. These tracks may be horizontal, vertical or inclined tracks. Wheels 43 defer from wheels 8 of the first two described embodiments in that wheels 43 comprise ball-type wheels.

The fact that the supporting wheels in this embodiment comprise ball-type wheels acting to both sides, that is under the upper and lower sides of flange 15, causes the hanger mechanism to transmit the loads from carrier 2 and apparatus in a more uniform and stabilized manner to the holder 3. Figs. 12 and 13 show the joint between two sections of holder 3, that is a curved section 44 and a straight section 46, both coupled by a coupling 47. Coupling 47 provides for a mechanical coupling between section 44 and 46 as well as for the electrical coupling to the electrical con-

nector 17. If sections 44-46 are both straight some changes could be done on the carrier. For example, the guiding mechanism will be not articulated with the axis of the supporting wheels. As it is clearly shown in Fig. 13, wings 5 are very similar to those illustrated in the embodiment of Figs. 5 to 8. These wings being of the type that may be removably assembled to holder 3. This coupling may be used in any of the above described embodiments and it is not limited to any of them.

Although electrical contacts 17 may be connected to the power line of the housing at an end of the path defined by the system of the invention, the power may be taken at the middle part of this path, for example, by coupling 47 and by means of electrical connectors 48. This array is also useful for all embodiments and makes it possible to have endless electrical circuit.

For clarity purposes the stabilizing hanger mechanism 6 has not been illustrated in Fig. 13 and also because its mechanism may be the same or similar to those illustrated in the three already described embodiments.

Referring to Figs. 14A, 14B and 15A, 15B a third and fourth embodiments of the stabilizing guiding mechanism 6 according to the present invention are respectively illustrated. The embodiment of Figs. 14A and 14B defers from the embodiment described in Fig. 3 in that the hinged arms 34 are, in this case, two pairs of flexible strips 50-51, each jointed to a ball-bearing 52 rotatably mounted on the hanger bar 10. Said ball-bearing 52 allows stabilizing mechanism to easily rotate around bar 10. The upper ends 50'-51' of said strips 50-51 include guiding and stabilizing wheels 53 and 54 corresponding to wheels 7, 8 and 36 of the embodiment of Fig. 3. In this case the flexible strips will damper offset or centered forces particularly appearing during movement of the carrier. Said forces may be produced by the movement about the bar 10 with respect to the carried apparatus, by the inertia of said apparatus during movement and or stopping; or by the reciprocating movement of said apparatus.

Figs. 15A and 15B show another embodiment wherein the flexible strips 50-51 are replaced by dumpers 55 mounted between guiding and stabilizing wheels 53 and 54 while hinged arms 34 are mounted on wheels 52 and include, at their free ends 34', said stabilizing wheels 54.

Finally, Figs. 16A and 16B show another embodiment wherein the balls 43 of the guiding stabilizing mechanism of Fig. 10 are replaced by wheels 62 which run over tracks 63. Said wheels 62 are bonded to faced plates 60-61 jointed by an elastic mean such as a spring 64.

Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from

the spirit and scope of the invention.

Claims

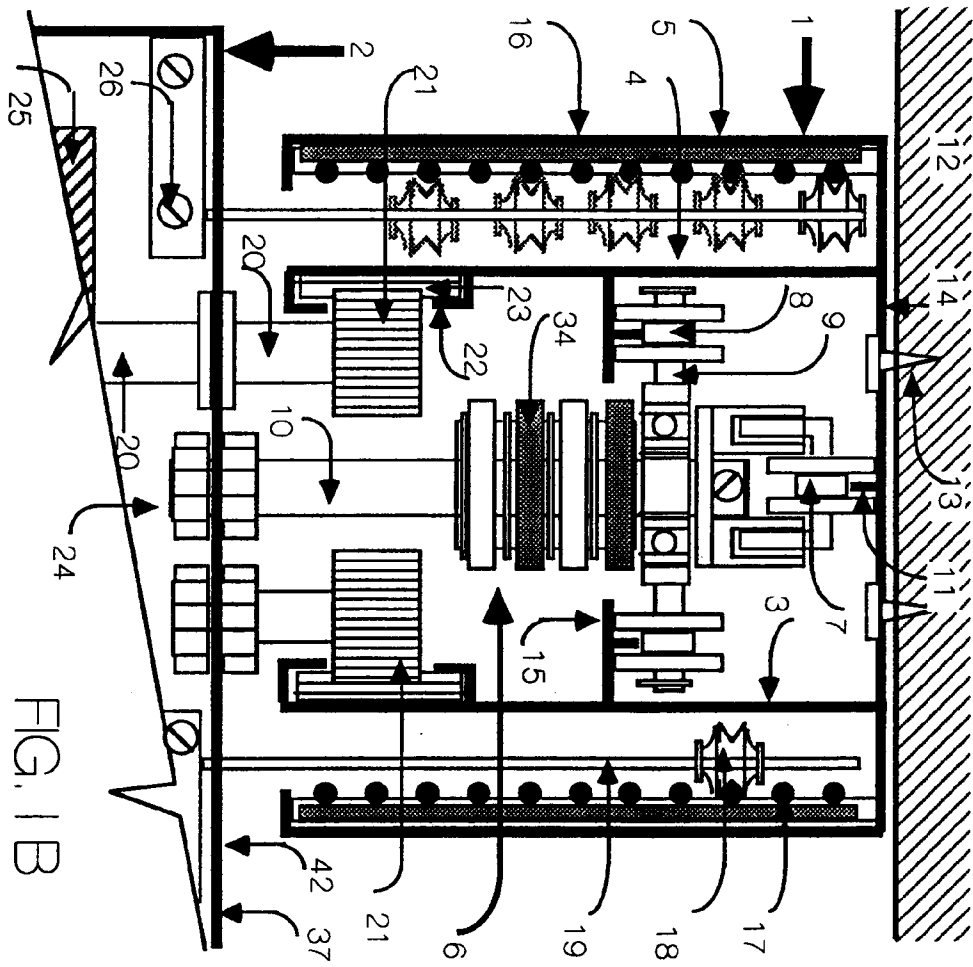
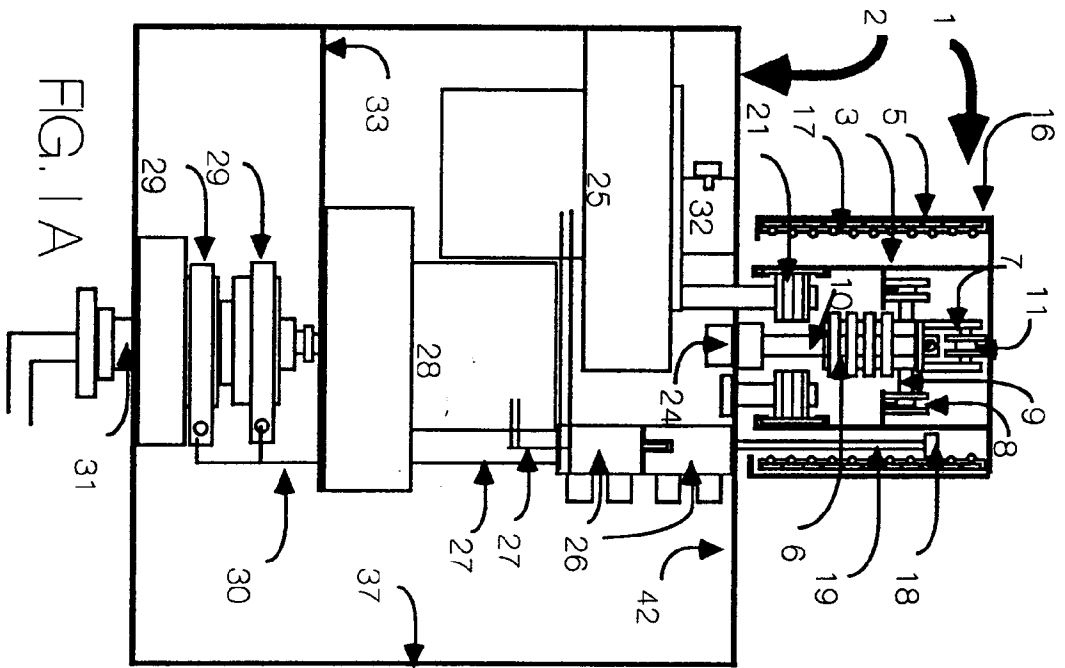
1. A rail-guided apparatus-carrying system for moving apparatuses such as electrical appliances like spotlights, loudspeakers, tools and the like along a predetermined path in a wall roof characterized in that a rail-like holding assembly (1) to be fixed in the wall roof of a housing; a movable carrier (2) coupled to and pending from the holding assembly (1) by means of a stabilizing guiding mechanism (6), the carrier including a driving motor unit (25) for moving the carrier (2) along the holding assembly (1), and an apparatus-hanging member (10) for connecting said apparatus to said carrier (2), an electrical-feeding system (16) being provided to supply electrical power at least to the movable carrier (2) and to the carried apparatus.
2. The system of claim 1, characterized in that the movable carrier includes an apparatus actuating unit (28) for moving the carrier apparatus relative to the carrier (2).
3. The system of claim 2, wherein the holding assembly comprises a U-shape holder (3) characterized in that a base (14) connectable to the roof (12) and two parallel pending inner wings (4) and two parallel pending outer wings (5), the inner wing having inner faces facing to each other and including at least one vertical track and a least one horizontal flange (15) defining a horizontal track and at least one horizontal flange (15) defining a horizontal track, the base (14) having a vertical pending central rib (11), the outer wings (4) including electrical contacts (17) capable of being fed by the house power line, the outer wing and the electrical contacts being part of the electrical feeding system.
4. The system of claim 3, characterized in that the stabilizing guiding mechanism (6) comprises a central hanger bar (10) connected at a lower end thereof to the carrier (2) and having at an upper end thereof at least one guide wheel running over the rib of the holder (3), the hanger bar (10) also including at least one pair of stabilizing wheel assemblies running over a pair of said horizontal track, at least one pair of pivoting arms respectively connecting said stabilizing wheel assemblies to the central hanger bar (10), and at least one supporting wheel (8).
5. The system of claim 3, wherein the stabilizing guiding mechanism (6) comprises a hanger bar (10) connected at a lower end to the carrier (2) and having at an upper end at least one guide wheel (7) running over said rib 11 of the holder (3), the hanger bar also including at least one supporting wheel (8) running over said horizontal track, at least one hinge arm (34) being pivotally connected, at one end thereof, to the hanger bar (10) and, at the other end thereof, to an directional hanging bar (35), the hanging bar also including, at its upper end, at least one guide wheel running over said rib, and, at its middle part, at least one stabilizing wheel running over said horizontal track, said additional sliding bar (35) having, at its lower end, at least one pair of sliding wheels (36) acting against an upper wall of a carrier box of the movable carrier.
6. The system of claim 5, wherein the driving motor unit (25) comprises an electrical motor capable of actuating at least one driving shaft (20) that includes at an end thereof a driving wheel (21) actuating on at least one of said tracks of the holder to move the movable carrier (2) along the holder (3).
7. The system of claim 6, wherein the driving wheel (21), is a toothed wheel and said vertical track is a toothed track (23).
8. The system of claim 6, wherein the movable carrier (2) also includes connector boxes (26) electrically connected to said driving motor unit, (25) to said apparatus actuating unit and to rotatable electrical connectors capable of collecting power from the connector boxes (26) and supplying it to the carrier apparatus, the connector boxes (26) collecting power from the electrical connectors located in the outer wings of the holder 3 through at least two electrical connecting finger (19) having an electrical connecting head (18) that is in contact with said electrical connectors carrying electricity.
9. The system of claim 7, wherein, the pressure of the driving wheels exerted against the vertical tracks of the inner wings of the holder are controlled by a pressure regulator (32).
10. The system of claim 5, wherein the base, and the wings form an integral holder.
11. The system of claim 3 wherein the outer electric conducting wings (5) are removably connected to the holder (3).
12. The system of claim 11, wherein there is provided a plurality of parallel arranged outer wings (5).
13. The system of claim 12, wherein a finger actuat-

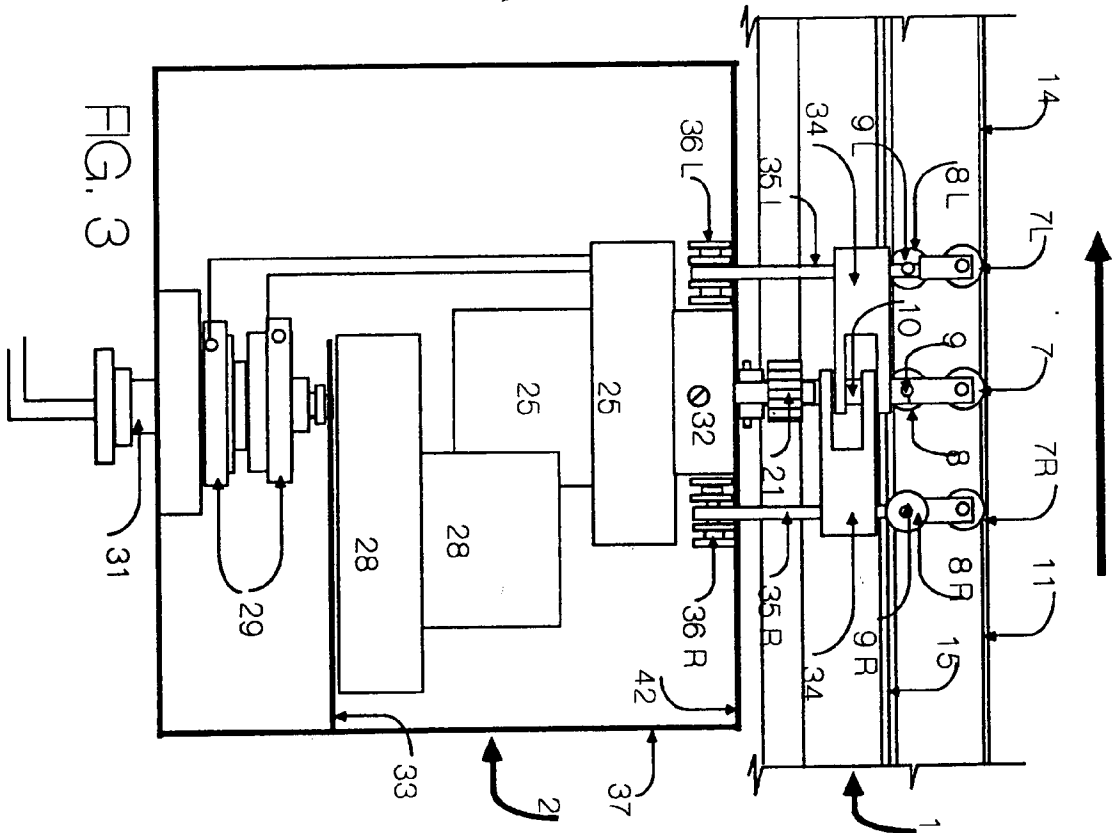
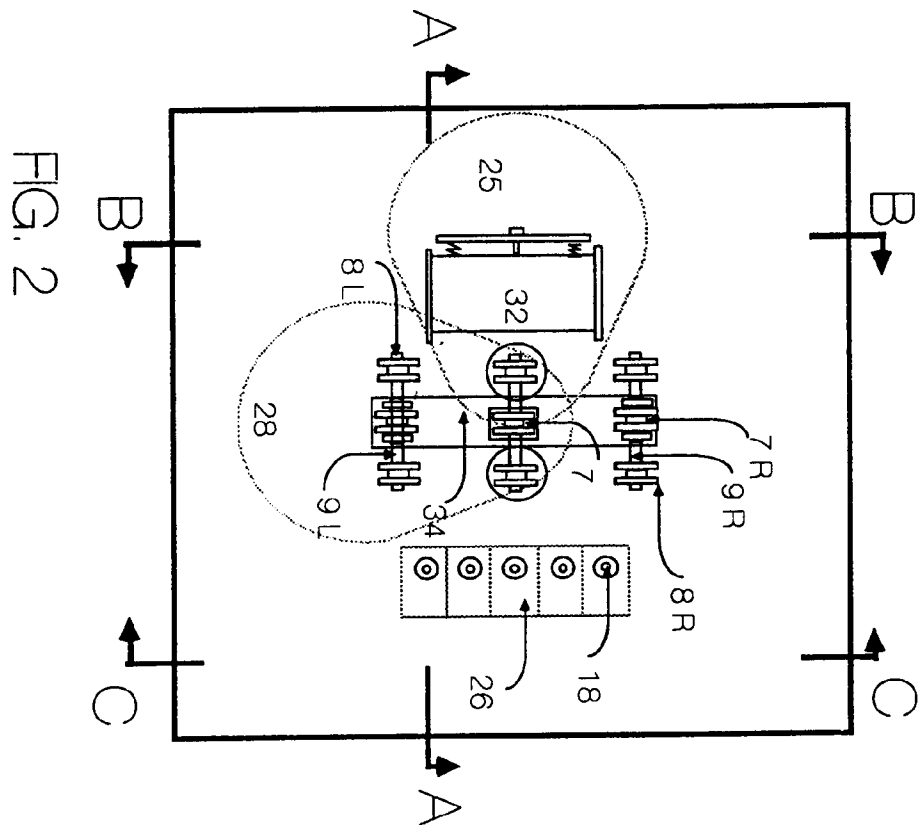
ing unit (38) is provided for selecting the outer wings (5) carrying the electrical contacts.

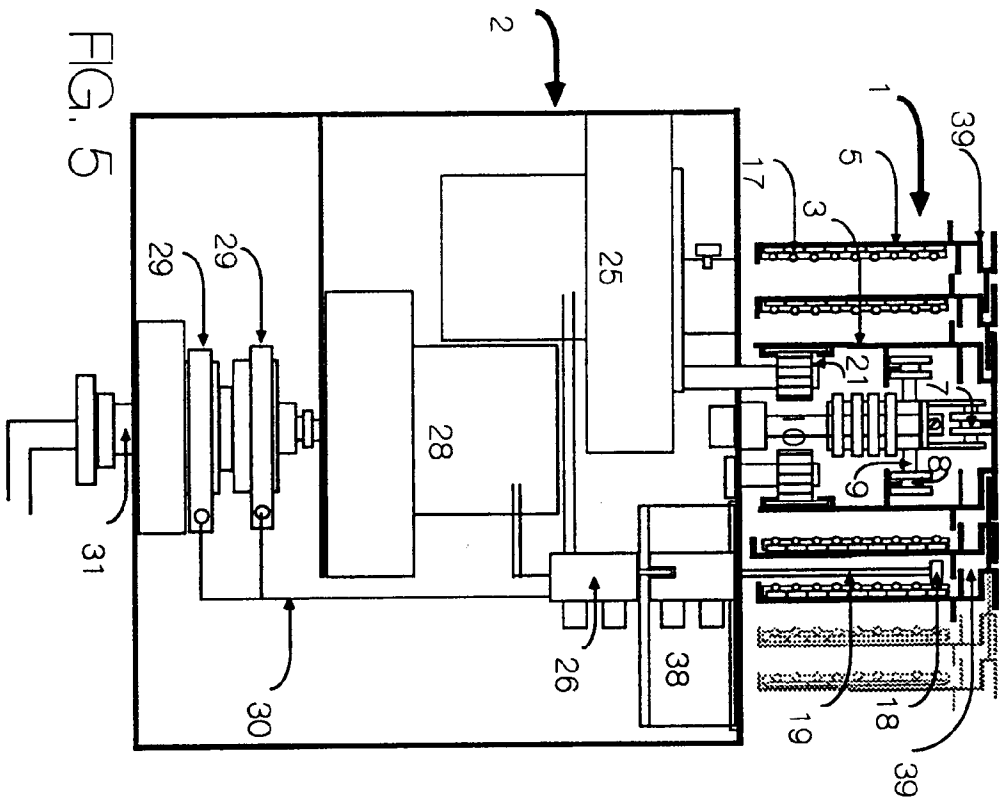
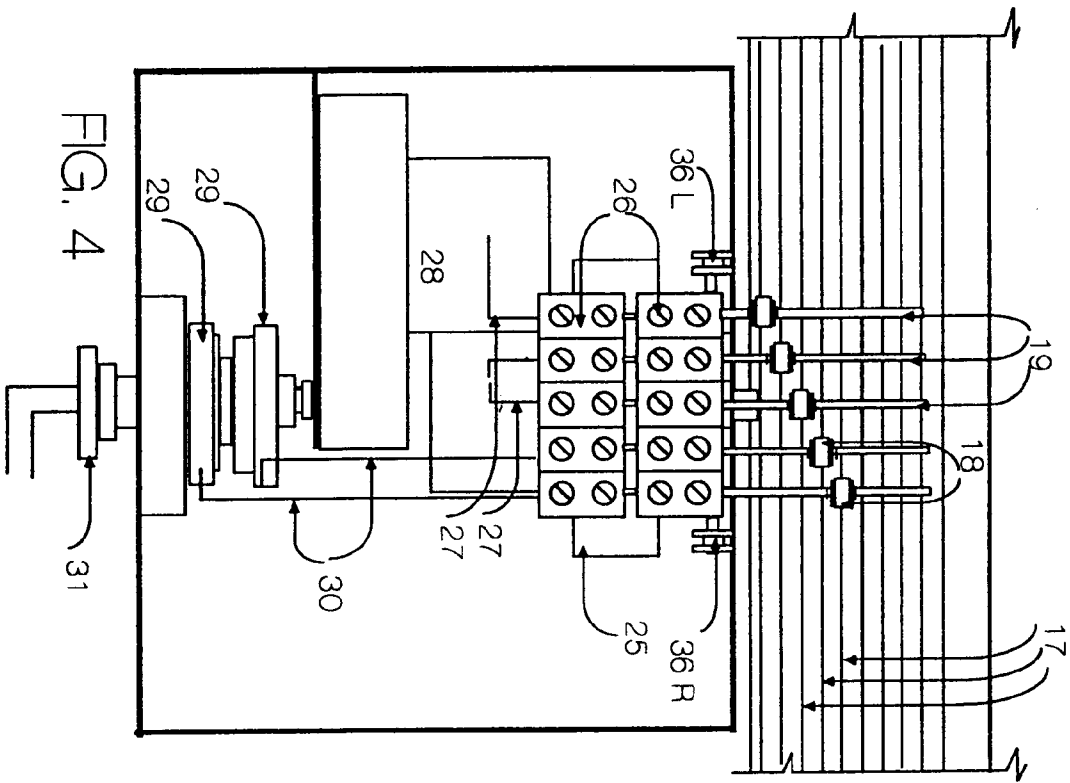
14. A rail-guided apparatus-carrying moving apparatuses such as electrical appliances like spotlights, loudspeakers, tools and the like, along a predetermined path in a wall or a roof comprising a rail-like holding assembly (1) to be fixed in the wall or roof of a housing; a movable carrier (2) coupled to and pending from the holding from the holding assembly (1) by means of a stabilizing hanger mechanism (6); the carrier (2) including a driving motor unit (25) for moving the carrier (2) along the holding assembly (1), and an apparatus hanging member (10) for connecting said apparatus to said carrier; the carrier also including electrical batteries (40) for supplying electrical power to the movable carrier (2) and to the carried apparatus.
15. The system of claim 14, wherein the holding assembly (1) comprises a U-shape holder (3) having a base (14) connectable to the roof (12) and two parallel pending wings (4) having inner faces facing to each other, these faces including two opposite horizontal flanges laying in the same plane and defining respective horizontal tracks and two opposite vertical tracks, the base having a vertical pending central guide rib (11).
16. The system of claim 15, wherein the stabilizing hanger mechanism (6) comprises a central hanger bar (10) connected at a lower end thereof to the carrier (2) and having at an upper and thereof at least one guide wheel (7) running over said rib (11) of the holder (3), the hanger bar (10) bar also including at least one pair of supporting and stabilizing wheel assemblies running over said horizontal tracks, at least one pair of pivoting arms (34) respectively connecting said supporting and stabilizing wheel assemblies to the central hanger bar (10).
17. The system of claim 16, wherein the driving motor unit (25) comprises an electrical motor capable of actuating at least one driving shaft (20) that includes at an end thereof at least one driving wheel (21) actuating on at least one of said tracks of the holder (3) to move the movable carrier (2) along the holder (3).
18. The system of claim 17, wherein the driving wheel (21) is a toothed wheel and said vertical tracks is a toothed track (23).
19. The system of claim 17, wherein the batteries (40) are connected in power-supplying relationship to the driving motor unit (25), to the apparatus

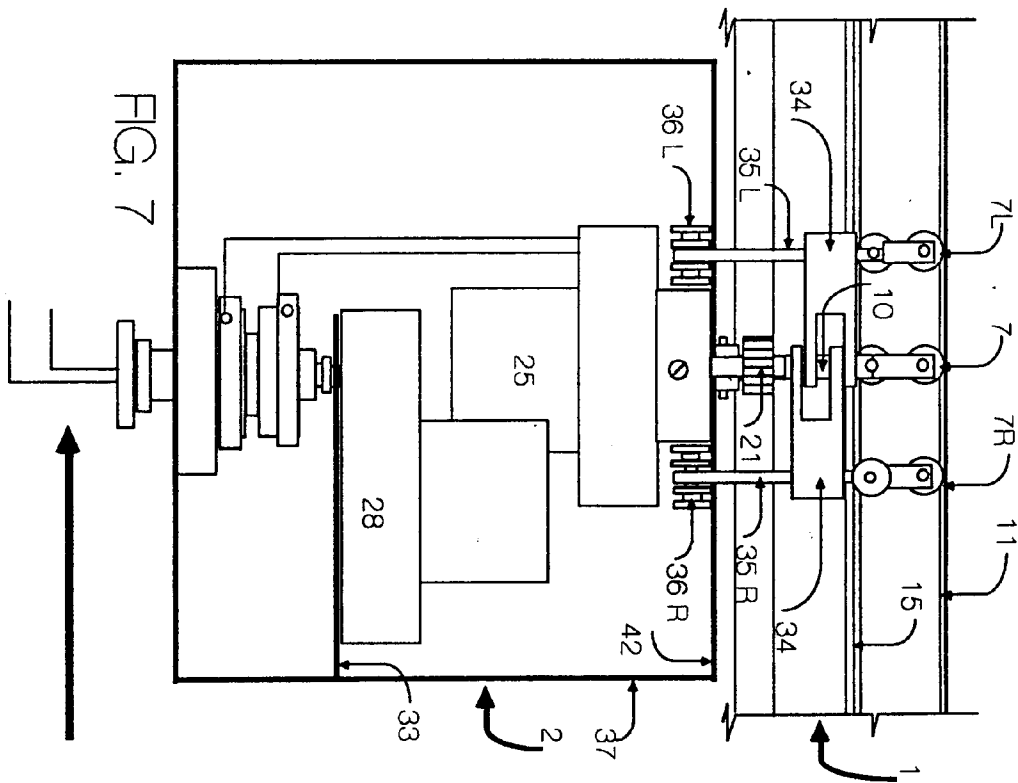
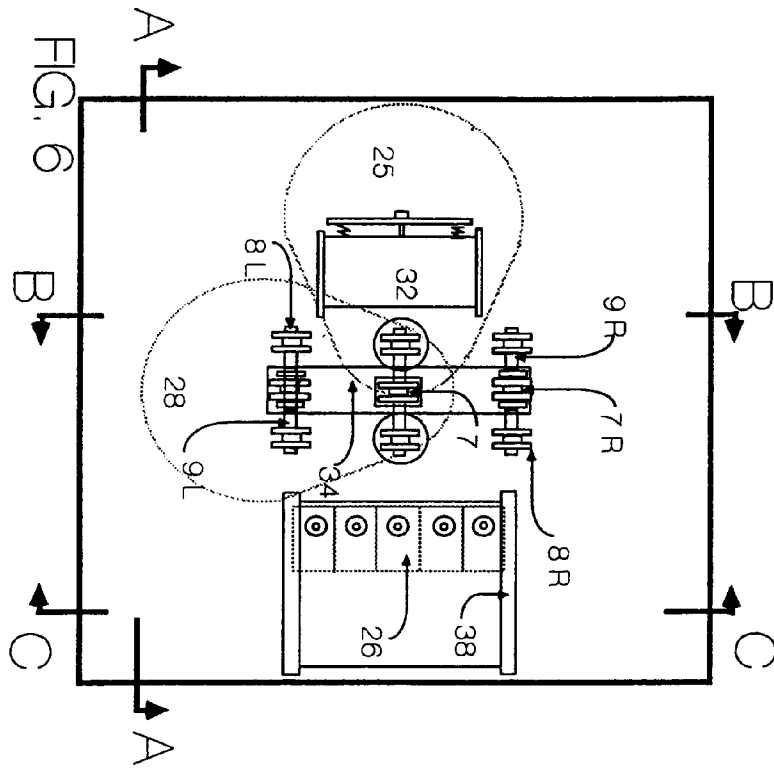
actuating unit 28 and to a rotatable electrical connector capable of collecting power from the batteries (40) and supplying it to the carried apparatus.

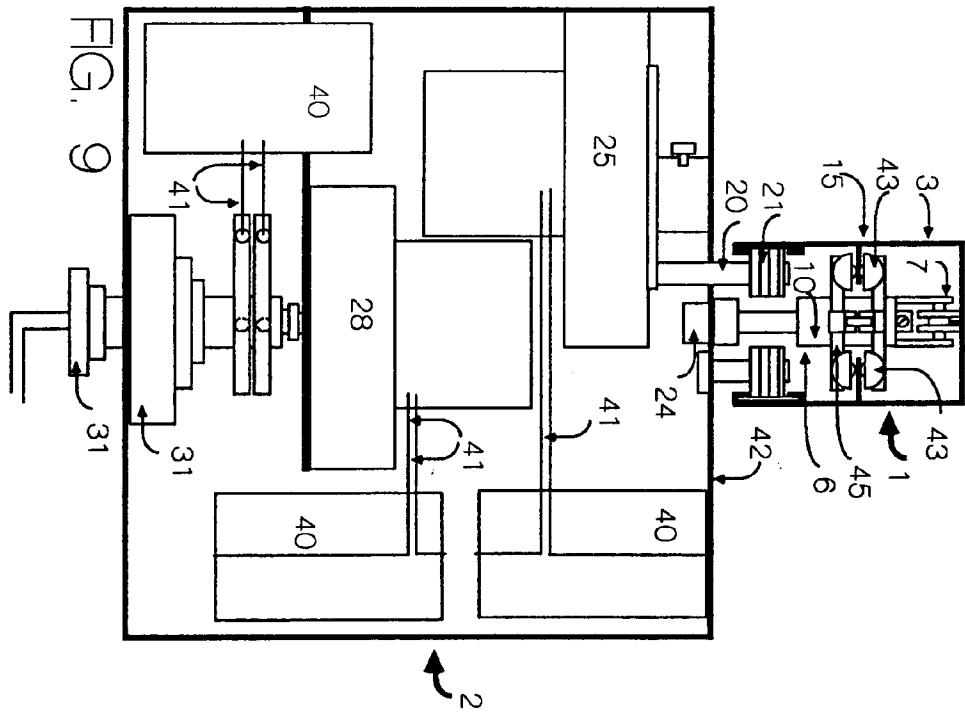
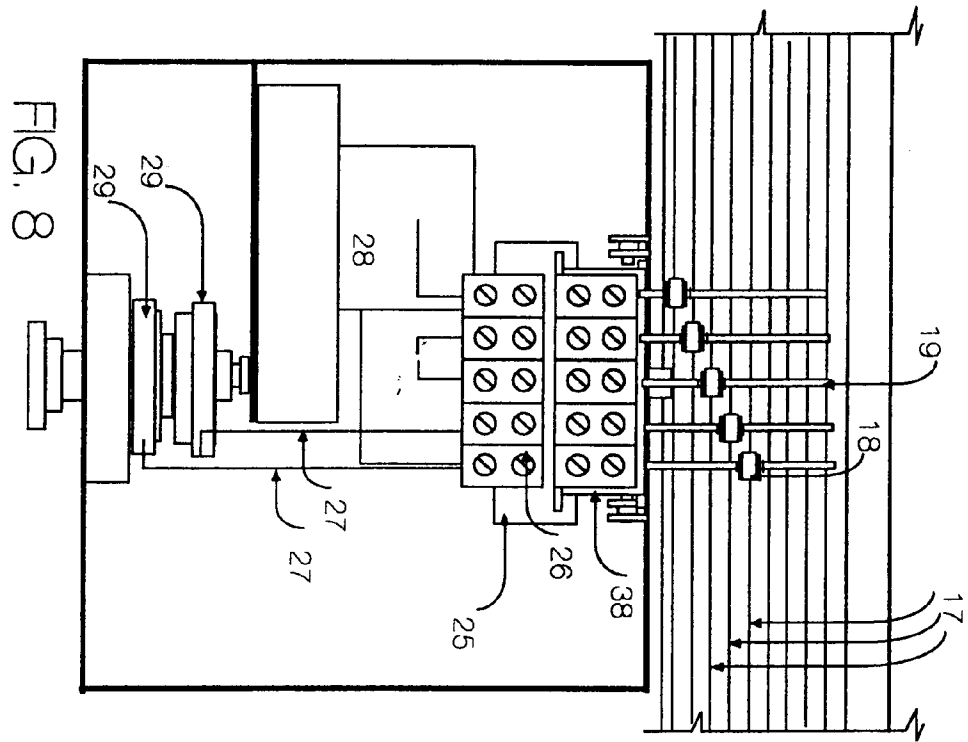
20. The system of claim 18, wherein the pressure exerted by the driving wheels against the tracks of the parallel pending wings (5) of the holder (3) are controlled by a pressure regulator (32).
21. The system of claim 20, wherein it is a remote control-operated system.
22. The system of claim 1, wherein it is a remote control-operated system.
23. The system of claim 3, wherein the holding assembly comprise curved (44) and straight (46) sections, coupled by a coupling providing for a mechanical coupling between said sections as well as for an electrical coupling for said electrical contacts.
24. The system of claim 14, wherein the carrier includes an apparatus actuating unit (25) for moving the carrier apparatus relative to the carrier (2).
25. The system of claim 3, wherein the stabilizing mechanism (6) comprise two pair of flexible strips (50-51) each jointed to a ball bearing (52) rotatably mounted on the hanger bar (10), and the ends of said strips include guiding and stabilizing wheels (52-54) running over corresponding tracks.
26. The system of claim 3, wherein the stabilizing mechanism (6) includes dumpers (55) mounted between guiding and stabilizing wheels (53-54) while hinged arms (34) are mounted on wheels (52) and include, at their free ends said stabilizing wheels (54).
27. The system of claim 3, wherein the stabilizing mechanism (6) includes wheels (62) running over corresponding tracks, said wheels are bonded to faced plates (60-61) jointed by an elastic mean (64).

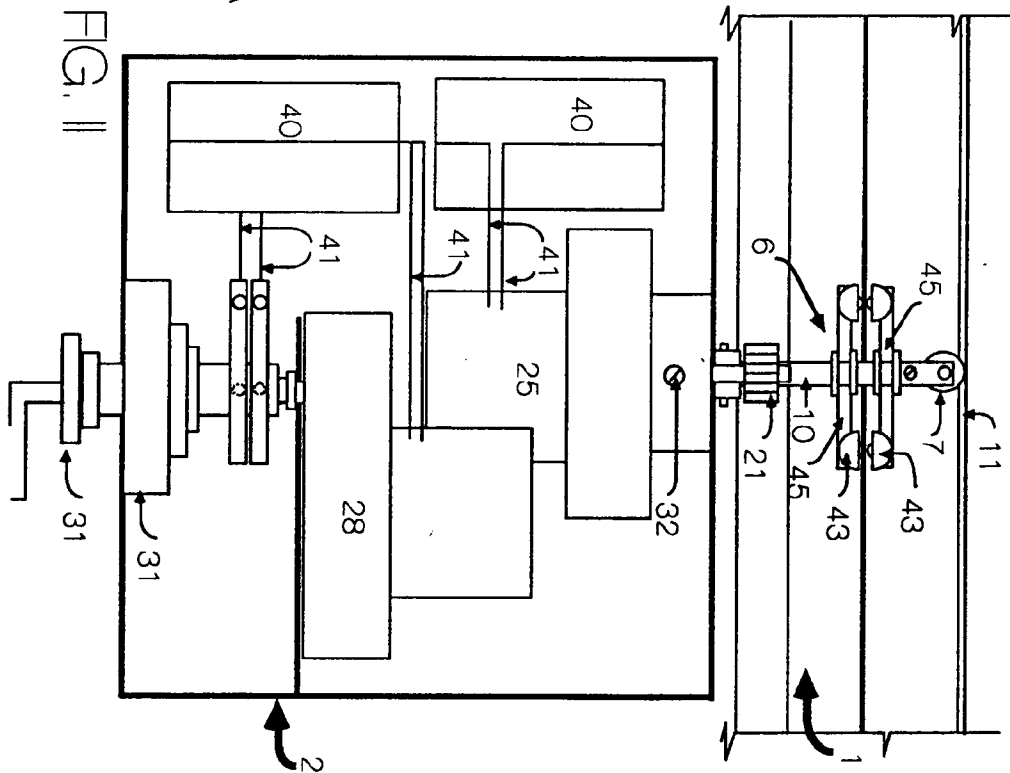
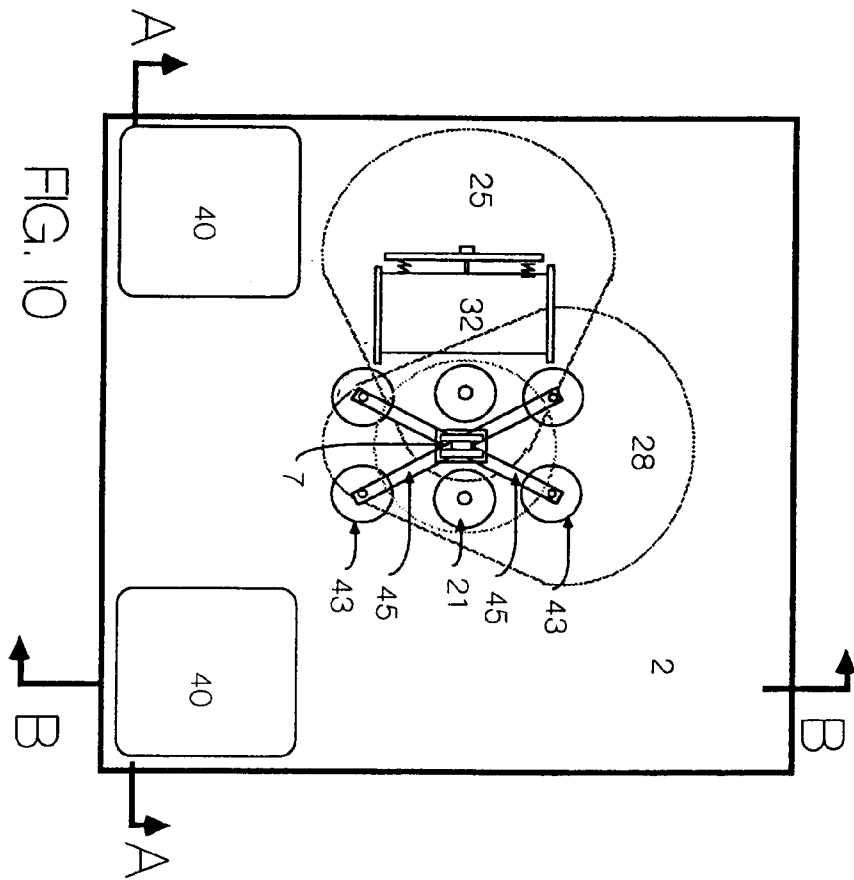












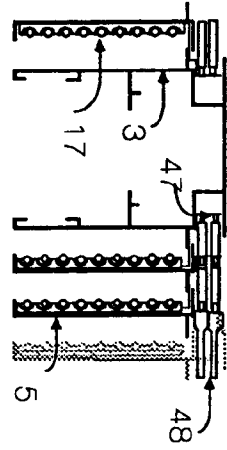


FIG. 12

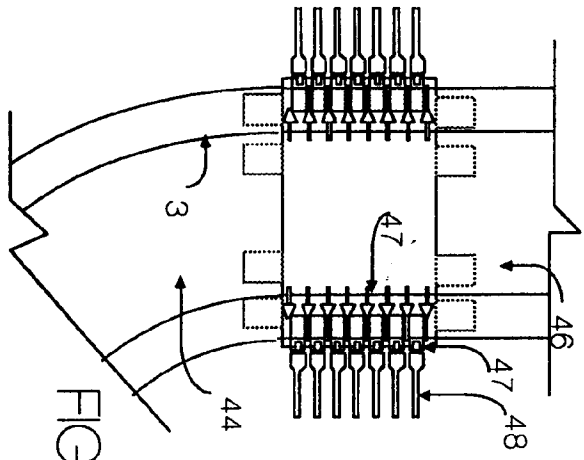


FIG. 13

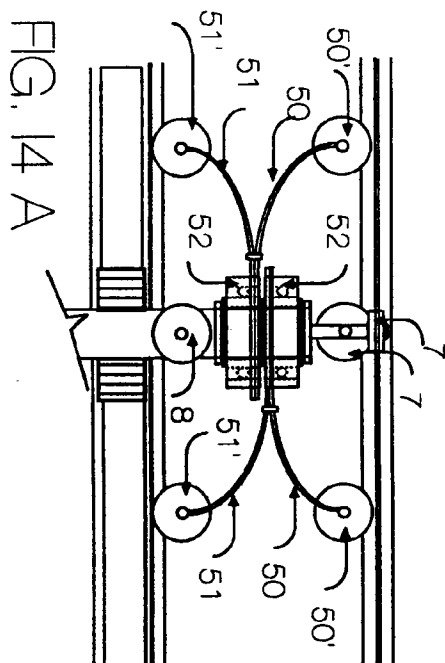


FIG. 14 A

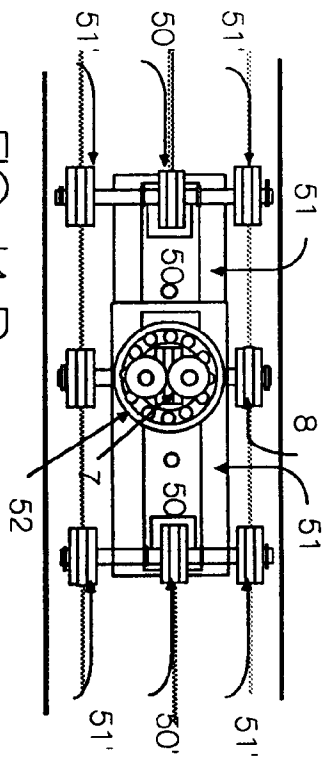


FIG. 14 B

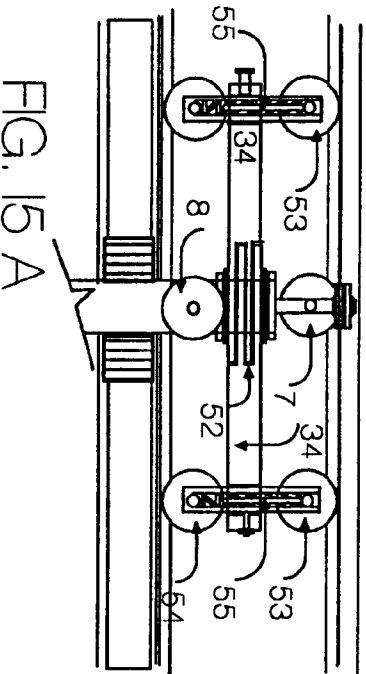


FIG. 15 A

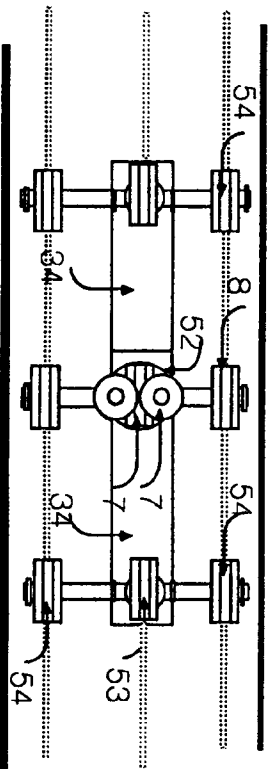


FIG. 15 B

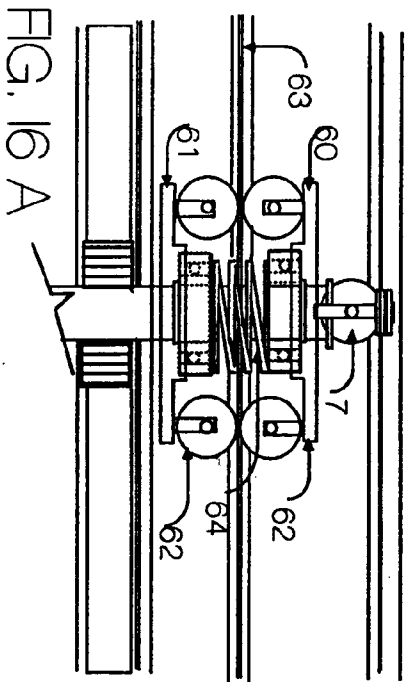


FIG. 16 A

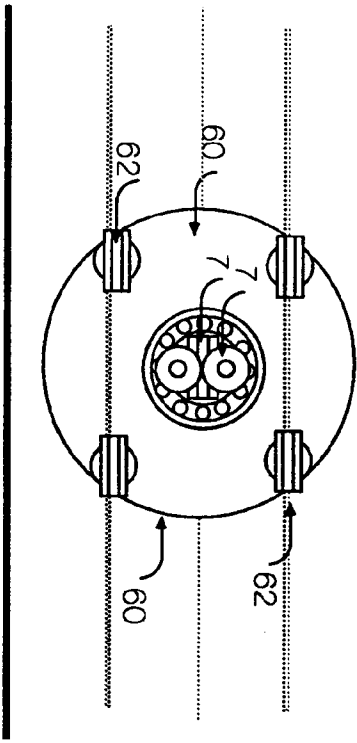


FIG. 16 B