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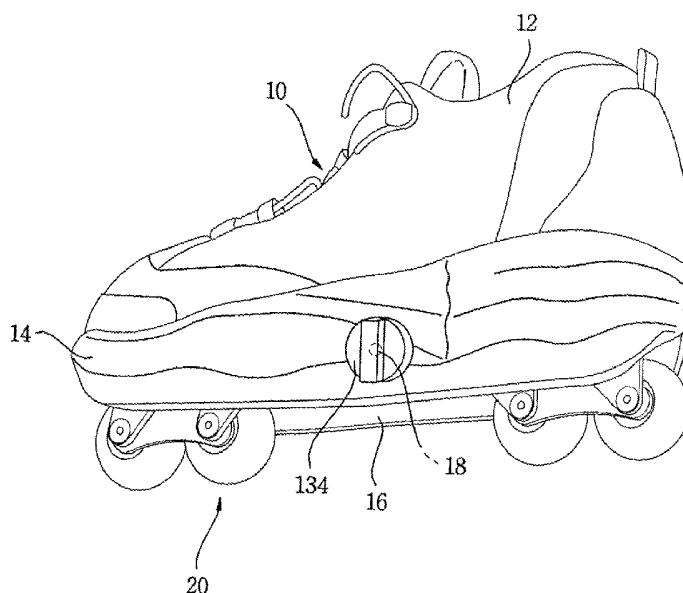
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(54) Title: SHOES WITH ROLLER DEVICE



(57) Abstract: There is provided a shoes with a roller device suitable for the use of walking as an ordinary shoes and for the use of skating as a roller blade, and comprising a body including a body part and an sole the body part and having a receiving groove, a roller device including a housing, a stopper provided in the housing, a first wheel assembly movably fixed to the housing and fixed to maintain the state an ordinary shoes or the use of an in-line skate, and a second wheel assembly provided on the housing, movably fixed in the direction confronting with the moving direction of the first wheel assembly, and fixed to maintain the state for the use of shoes or the use of a skate, and a switch to control the movement of the stopper of the roller device.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## **SHOES WITH ROLLER DEVICE**

### **Technical Field**

The present invention relates to a shoe with a roller device, and more  
5 particularly, to a shoe with a roller device in which a wheel assembly is possibly  
protruded out of the shoe toward the ground for in-line skating or roller blading as  
needed while normally used as an ordinary shoe in ordinary times.

### **Background Arts**

10 An in-line skate, which is generally called a roller blade is widely being used  
by various ages of people as well as children for sports or recreation, etc. The  
roller blade as shown in Fig. 1 includes a boot type shoes 1 which a user wears, and  
a wheel blade assembly 2 fixably installed on the bottom of the shoes 1. The  
wheel blade assembly 2 includes a runner or a blade 3 fixably installed in the boot 1,  
15 and four or five of rollers or wheels 5 rotatably fixed to the blade 3 by a shaft 4 with  
uniformly distanced each other. According to the structure as above, a user who  
wears the boot 1 can play roller blading or in-line skating just like the way same as  
ice skating.

However, skating by the way described as above results in many  
20 inconveniences and problems. First, as a condition of the ground to skate, a user  
can normally enjoy skating on the rigid and flat paved ground such as asphalt or  
concrete, etc. Next, as inconvenience of carrying, a user should always carry a

roller blade separately, and thus, after playing skating or when passing through a non-flat area, he or she takes off his or her shoes and changes into an ordinary shoes. That is, the user should change his or her shoes according to the cases of wearing either a roller blade or an ordinary shoes, and thus, the user should always carry the  
5 other one which is not used separately, which results in causing inconveniences and extra expenses to purchase two shoes separately.

The U.S. Patent No. 6,042,125 discloses a boot in which a roller device is equipped when necessary and which can be also used as an in-line skate as one example of a conventional art. The in-line skate has a roller device detachably  
10 installed therein. However, the in-line skate is not easy for a user to handle, and its outer look is not compact so that the wearing of the skate as an ordinary shoes brings difficult problems.

### **Disclosure of the Invention**

15 Accordingly, the present invention is directed to a shoe with a roller device that substantially obviates one or more problems due to limitations and disadvantages of the related art.

An object of the present invention is to provide a shoe with a roller device which can be used as an ordinary shoe in the case of walking, and as a roller blade  
20 in the case of in-line skating.

Another object of the present invention is to provide a shoe with a roller device which can be rapidly changed to the function of either an ordinary shoes or a

roller blade.

A further object of the present invention is to provide a shoe with a roller device which is light in weight and stable.

Additional advantages, objects, and features of the invention will be set forth  
5 in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

10 To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a shoe with a roller device include a main body including a body part to receive the feet of a user and an sole integrally formed with the bottom of the body part and having a receiving groove in the vertical direction. In addition, the shoes may include a  
15 roller device, and the roller device includes a housing placed inside the sole, a stopper provided in the housing to movably reciprocate back and forth, a first wheel assembly movably fixed to the front of the housing and fixed to maintain the state for the use of an ordinary shoes or the use of an in-line skate by the stopper, and a second wheel assembly provided on the back of the housing, movably fixed in the  
20 direction confronting with the moving direction of the first wheel assembly, and fixed to maintain the state for the use of an ordinary shoes or the use of a skate by the stopper. In addition, the shoes includes controller for controlling the

movement of the stopper of the roller device.

It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as  
5 claimed.

### **Brief Description of the Drawings**

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this  
10 application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

FIG. 1 is a side view of a conventional general in-line skate;

FIG. 2 is a perspective view of a shoes with a roller device of the present invention showing the state that a wheel assembly of the shoes is protruded;

15 FIG. 3 is an exploded perspective view of a roller device employed in the shoes of FIG. 2;

FIG. 4 is a detailed perspective view of a stopper of the roller device of FIG. 3;

20 FIG. 5 is a front perspective view of a first link of each wheel assembly of the roller device of FIG. 3;

FIG. 6 is a back perspective view of the first link of FIG. 5;

FIG. 7 is a perspective view showing the structure of a side part of a second

link of each wheel assembly of the roller device of FIG. 3;

FIG. 8 is an exploded perspective view of a switch employed in the roller device of FIG. 3;

FIG. 9 is a perspective view of a brake employed in the main body;

5 FIG. 10 a side view of the state of the roller device when the shoes is used as an ordinary shoes;

FIG. 11 is a side view of the moving state of the stopper when the shoes is changed from an ordinary shoes to a skate;

FIG. 12 is a side view of the state of the roller device for the use of skating;

10 FIG. 13 is a perspective view of the installed state of the brake for the use of skating;

FIG. 14 is an exploded perspective view of the roller device employed in the shoes according to another embodiment of the present invention;

15 FIG. 15 is a detailed perspective view of the stopper of the roller device of FIG. 14;

FIG. 16 is a side view of the state of the roller device for the use of an ordinary shoes;

FIG. 17 is a side view of the moving state of the stopper when the shoes is changed from an ordinary shoes to a skate;

20 FIG. 18 is a side view of the state of the roller device for the use of skating;  
and

FIG. 19 is a perspective view of the state that the wheel is completely

protruded from the bottom of the shoes for the use of skating.

### **Best Mode for Carrying Out the Invention**

Reference will now be made in detail to the preferred embodiments of the  
5 present invention, examples of which are illustrated in the accompanying drawings.

First, referring to Figs. 2 and 4, a shoes provided with a roller device of the  
present invention includes a main body 10 which the feet of a user is put into when  
he or she wears the shoes. The main body 10 includes a body part 12 in which the  
feet of the user is placed in the shoes, and a bottom or an sole 14 which is integrally  
10 formed with the lower side of the body part 12. In particular, the sole 14 includes  
a receiving groove 16 for receiving the roller device which is described later in  
detail, and an installation hole 18 into which a switch operation in combination with  
the roller device is inserted to control the roller device.

Particularly, a roller device 20 is inserted into the receiving groove 16 formed  
15 on the sole 14 of the main body 10. The roller device 20 is provided with a  
housing 22 fixed and inserted into the main body 10. The housing 22 is generally  
formed in the form of a cubical rectangular, and its bottom is completely opened.  
In the both sides of the housing 22, there are provided a plurality of installation  
holes 24,26,28,30 symmetrically from each other to install each of the links forming  
20 a wheel assembly which is described later. In particular, it is preferable to form a  
fixing groove 24a, 28a on the installation holes 24, 28 to elastically install a coil  
spring provided in the link which is described later in detail. An installation hole 32



is formed penetratingly at the center of one of the both sides to install a handle. The installation hole 32 communicates with an installation hole 18 of the sole. In addition, it is preferable to install a reinforcing member 34 at the center of the both sides of the housing 22 so that its two ends are fixed to the both sides of the housing  
5 22.

On the front sidewall of the housing 22, there is provided an opening 36 so that the front end of the stopper of the roller device can enter, and on the back sidewall of the housing 22, there is provided another opening 38 so that the switch in the stopper is inserted reciprocatably. In addition, on the inner both sidewalls of  
10 the housing 22, there are provided three pin fixing grooves 40, 42, 44 formed in the form of a pair confronting each other. Pins 46,48,50 are respectively inserted and fixed to the pin fixing grooves 40, 42, 44 formed in the form of a pair.

A stopper 52 is reciprocatably inserted into the housing 22 within a predetermined range. Fixing plates 54, 56 are equipped on the bottom of the both  
15 ends of the stopper 52 respectively. The front end of the stopper 52 can be inserted into one opening 36 of the housing 22 when the stopper 52 moves forwardly, and the back end can be inserted into the other opening 38 when the stopper 52 moves backwardly. Accordingly, the stopper 52 can be reciprocatably inserted into the housing 22.

20 At the center of the housing 22, there is provided a sliding part 62 integrally formed with a predetermined size. The sliding part 62 has a plurality of grooves 60 formed at a constant interval. A spring fixing piece 64 is integrally protruded at a

selected location of one side of the housing 22. To the spring fixing piece 64 is fixed one side of the spring 66 while the other side of the spring 66 is fixed to one of the pins 46 provided in the housing 22. Structured as above, the housing 22 and the stopper 52 are elastically connected by the spring 66.

5 In addition, two fixing pieces 68, 70 as a pair are protruded downwardly and toward the lateral side at both sides apart by a certain distance from the both sides of the stopper 52 to stably fix each of the links which will be described.

A first wheel assembly 72 is provided on the inner front of the housing 22 under the stopper 52 to be able to protrude. The first wheel assembly 72 has a first  
10 link 74 to be movably fixed to the housing 22. As shown in Figs. 5 and 6, it is preferable that the first link 74 is elastically and movably fixed to the installation hole 24 formed on the both sides of the housing 22 by a fixing rod 76 and the coil spring 78 provided on the both ends of the fixing rod 76. Here, the both ends 78a of the coil spring 78 is fixed to the fixing grove 24a of the installation hole 24 to  
15 provide the elastic force to the fixing rod. In particular, a first contact part 80 is formed on the generally upper both sides of the first link 74, and the first contact part 80 contacts the fixing plate 54 formed on the front end of the stopper 52 when a user uses the shoes of the present invention as an ordinary shoes. On the other side, there is provided a second contact part 82 on which the fixing plate 54 of the  
20 stopper 52 is mounted to stably support a link when a user tries to protrude the roller assembly to play in-line skating or roller blading. In addition, on one end of the first link 74 is rotatably fixed a wheel or roller 84 to be actually driven to roll on the

ground by a fixing bolt 86 and a nut 88.

The first wheel assembly 72 has a second link 90 to be actively connected to the first link 74. As shown in Fig. 7, a fixing piece 92 is integrally formed on the upper side of the second link 90 to be movably fixed to another installation hole 26  
5 formed on the both sides of the housing 22. In particular, on one upper side of the second link 90 is provided a contact part 94 to contact one fixing piece 68 formed on the front side of the stopper 52 when a user tries to use the shoes of the present invention as an ordinary shoes. On one end of the second link 90 is rollably fixed a roller or a wheel 96 by a fixing bolt 98 and a nut 100.

10 In particular, the first link 74 and the second link 90 are preferably connected each other to be mutually and simultaneously used and driven.

In addition, on the back of the housing 22 is provided a second wheel assembly 104 which has the same structure as that of the first wheel assembly 72 but is placed on the opposite. The second wheel assembly 104 has a first link 106 to  
15 be rotatably fixed to the housing 22. The first link 106 is preferably fixed elastically and rotatably to the installation hole 28 formed on the both side of the housing 22 by the fixing rod 108 and the coil spring 110 provided on the both ends of the fixing rod 108. Here, the both ends 110a of the coil spring 110 are fixed to the fixing groove 28a of the installation hole 28, thereby providing elastic force to the  
20 fixing rod 108. Especially as shown in Figs. 5 and 6, on one upper side of the first link 106 is provided a first contact part 112 to contact the other fixing plate 56 formed on the back end of the stopper 52 when a user tries to use the shoes of the

present invention as an ordinary shoes, and on the opposite side is provided a second contact part 114 on which the fixing plate 56 of the stopper 52 is installed to stably support the link when the user tries to protrude the roller assembly to play in-line skating or roller blading. In addition, on one end of the first link 106 is  
5 fixed a wheel or a roller 116 to be actually driven to roll on the ground by a fixing bolt 118 and a nut 120.

The second wheel assembly 104 has a second link 122 to be actively connected to the first link 106. On the upper both sides of the second link 122 is integrally fixed a fixing piece 124 to be movably fixed on another installation hole  
10 30 formed on the both sides of the housing 22. Especially, on one upper side of the second link 122 is provided a contact part 126 to contact another fixing piece 70 formed on the back side of the stopper 52 when a user tries to use the shoes as an ordinary shoes. On one end of the second link 122 is rollably fixed a wheel or a roller 128 by a fixing bolt 130 and a fixing nut 132.

15 In particular, the first link 106 and the second link 122 are preferably connected each other by a guide 134 to be mutually and simultaneously used and driven.

On one side of the housing 22 is provided a switch 136 to control the stopper 52 so that each roll is protruded or withdrawn by driving or moving the wheel  
20 assembly 72, 104. As shown in Fig. 8, the switch 136 preferably includes a handle 138 which a user can hold and rotate, and a rod 144 inserted into an installation hole 18, 32 provided on each of one side of the sole 14 of the main body 10, and the one

end of the rod is fixed on the handle 138 by a bolt 140, and the other end of the rod includes a gear 142 to fit to each of the groove 60 provided on the contact part 62 of the stopper 52. As constructed above, the stopper 52 can move back and forth in accordance with the rotation direction of the handle 138.

5 As shown in Figs. 10 to 12, the first wheel assembly 72 and the second wheel assembly 104 are connected each other by a driving device 146 to be driven simultaneously and mutually. The driving device 146 is preferably comprised of two wires, e.g., a first wire 148 and a second wire 150. In detail, one end of the first wire 148 is fixed to a fixing piece 90a provided at the center of one side of the  
10 second link 90 of the first wheel assembly 72, and the other end of the first wire 148 is fixed to a fixing piece 122b provided at the upper side of one side of the second link 122 of the second wheel assembly 104. One end of the second wire 150 is fixed to a fixing piece 90b provided on the upper side of the other side of the second link 90 of the first wheel assembly 72, and the other end of the second wire 150 is  
15 fixed to a fixing piece 122a provided at the center of the other side of the second link 122 of the second wheel assembly 104. As constructed above, the wires 148, 150 maintain crossed each other. The reason is to make them easily driven in the mutually confronting state when changing to the states of either an ordinary shoes or a shoes for skating or blading. In other words, the second links 90, 122 of the  
20 wheel assembly 72, 104 is operated mutually as a seesaw or a lever so that they are driven in the opposite directions from each other or confronting direction.

Alternatively, in the shoes with a roller device of the present invention, as

shown in Fig. 9, a brake 152 is preferably provided detachably. The brake 152 includes a body part 156 having a support groove 154 contacted with the bottom of the sole 14, that is, a bottom of the shoes when installed. On the front of the support groove 154 of the body 156 is provided a fixing member 158 inserted  
5 between the back end of the housing 22 and the second link 122 of the second wheel assembly 104, and connected thereto with protruded. On the front both sides is integrally formed a protrusion piece 160 to prevent the entire brake 152 from shaking right and left or moving. On the bottom of the body part 156 is provided a stopper 162 to generate a braking force by abrasion with actually contacted to the  
10 ground. The stopper 162 is preferably comprised of a rubber or synthetic resins to provide an abrasive force and some elastic force, and is also preferably detachably fixed to the body 156 to exchange when it wears out by excessive abrasion due to the frequent use.

As shown in Figs. 14 to 18, the shoes with a roller device according to  
15 another embodiment of the present invention has a button 58 provided at the back side of the stopper with integrally formed with to operate the stopper in the back of the body part. The button 58 is inserted into another opening 38 provided on the back of the housing 22 to be movable back and forth.

As constructed above, since the button 58 is provided on the back of the  
20 stopper 52 to control the movement of the stopper, the sliding part provided on one side of the stopper 52 of the first embodiment can be omitted. In addition, because the sliding part of the stopper is omitted, a switch to fit the groove of the sliding part

to control the stopper can be also omitted.

Hereinafter, the manner of using the shoes with a wheel blade device as structured above, and its driving mode are described.

First, when a user uses the shoes as an ordinary shoes as shown in Fig. 10,  
5 each wheel assembly 72, 104 is inserted into the groove 16 provided on the sole 14  
of the body 10 to maintain the state that the bottom of the sole 14 contacts the  
ground. In the state, a first contact part 80, 112 of a first link 74, 106 of each  
wheel assembly 72, 104 is contacted with the fixing plate 54, 56 provided on the  
bottom of the both side ends of the stopper 52 and is fixed with laid. In addition, a  
10 fixing piece 68, 70 formed with protruded on each of the both sides of the stopper  
52 is contacted and fixed to the contact part 94, 126 of the second link 90, 122 of  
each of the wheel assembly 72, 104. In this state, the stopper 52 generally  
maintains to be fixed at the center. The gear 142 of the switch 136 to control the  
stopper 52 maintains a state to fit each groove 60 provided at the center of the  
15 sliding part 62.

In the normal state as above, a user, who enjoys skating or blading, drives  
each wheel assembly 72, 104 to make each of the rolls 84, 96, 116, 128 provided  
therein protruded out of the receiving groove 16 of the sole 14 to be rollable and to  
contact them with the ground. In more detail, if a user holds the handle 138 of the  
20 switch 136 provided on the side of the sole 14 with protruded, and turns it in the A1  
direction as shown in Fig. 11, a stopper 52 moves forward in the A2 direction by a  
gear 142 connectively installed to the handle. As such, if the stopper 52 moves

forward, each of the fixing plates 54, 56 of the stopper 52 is removed from the first contact part 80, 112 of the first link 74, 106 of the wheel assembly 72, 104, and in addition, the contact part 94, 126 of the second link 90, 122 of each of the wheel assembly 72, 104 is removed from the fixing piece 68, 70 protruded on the both  
5 sides of the stopper 52.

As such, if the stopper is moved and each link is removed therefrom, each of the fixing rod 76, 108 to support the each of the first link 74, 106 rotates by the elastic force of the coil spring 78, 110, and at the same time, each of the first link 74, 106 fixed to the fixing rod is driven in the A3 and A4 directions. Together with  
10 this, the second link 90, 122 connected to the first link 74, 106 by each guide 102, 134 is driven in the same direction. Each of the second link 90, 122 is rotated by way of a mutual cross of the first wire 148 and the second wire 150 forming a driving device 146 and by a seesaw type so that the rotation force is symmetrically and uniformly applied and it is driven exactly and easily.

As such, if each of the wheel assembly 72, 104 is rotated and each of roll 84, 96, 116, 128 is completely protruded as shown in Fig. 12, the stopper 52 is moved backwardly, that is, in the A5 direction by an elastic spring 66. If the stopper 52 is completely moved backwardly, each of fixing plate 54, 56 provided on the front and the back of the stopper 52 contacts the second contact part 82, 114 of the first link  
15 74, 106 of each of the wheel assembly 72, 104. The switch 136 is driven along  
20 with the movement of the stopper 52, and is automatically rotated in the arrow direction as shown in Fig. 12. Selectively or abnormally, in case that the elastic



force of the elastic spring 66 is decreased, and the stopper 52 cannot move backwardly easily or completely, the stopper 52 can be forcibly moved by using the lever 138 of the switch 136. In this state, a user plays skating or blading stably.

Alternatively, to enjoy more stable skating, the user installs a brake 152 at the  
5 back of the sole 14. In case of installing the brake 152, it should be installed at the back end of the sole 14 before driving the wheel assembly and protruding the roll as described above. That is, if a user holds the body part 156 of the brake 152, and inserts the support groove 14 into the back end of the receiving groove 14 of the sole 14, and drives the wheel assembly described above, the fixing member 158 is  
10 inserted between the back end of the housing 22 and the second link 122 of the second wheel assembly, and fixed. In addition, the brake 152 is prevented from shaking right and left or from moving by the protrusion piece 160, of the brake can be more stably installed. As described above, if the brake 152 is installed, the braking force by the abrasion is provided and the stopper 162 can be contacted with  
15 the ground in an emergency or in reducing speed to enable the user to play skating or blading more stably.

On the contrary, after playing skating, the shoes with a roller device as above can be also used as an ordinary shoes. In this case, if a user holds the handle 138 of the switch 136 and rotates in the A1 direction as shown in Fig. 11, the stopper 52  
20 moves forwardly in the A2 direction by the gear 142 connectively installed on the handle. As such, if the stopper 52 moves forwardly, each of the fixing plate 54, 56 of the stopper 52 is removed from the second contact part 82, 114 of the first link 74,

106 of the wheel assembly 72, 106. In the state that the first link 74, 106 is removed from the stopper 52, if each of the wheel 84, 96, 116, 128 is suppressed, each of the first link 74, 106 and the second link 90, 122 connected to the first link 74, 106 by the guide 102, 134 are moved in the A6 and A7 direction, and back to the original location. In this state, each of the second link 90, 122 can be driven easily and exactly by the rotation force of the first wire 148 and the second wire 150 of the driving device 146 which is symmetrically and uniformly applied.

After that, if the user puts down the handle 138 of the switch 136, the stopper 52 moves back to the original location by the elastic spring 66. If the stopper 52 moves back to the original location, as shown in Fig. 10, each of the wheel assembly 72, 104 is completely inserted into the receiving groove 16 so that the first contact part 78, 110 of each of the first link 74, 106 is contacted with the fixing plate 54, 56 provided under the both sides of the stopper 52, and the contact part 94, 126 of the second link 90, 122 of each of the wheel assembly 72, 104 is also contacted with the fixing piece 68, 70 provided on the both sides of the stopper 52 with protruded so as to maintain its fixing state with each link laid and enable the user to put in the shoes. If the brake 152 is installed, it is better to use as an ordinary shoes after the brake 152 is separated from the sole 14.

In a shoes with a roller device of another embodiment of the present invention, a user can directly operate the stopper by using a button integrally formed with the stopper to use as an ordinary shoes or an in-line skate. That is, in case that a user uses as an ordinary shoes, each of the wheel assembly 72, 104 is

completely inserted into the groove 16 provided on the sole 14 of the body 10 as shown in Fig. 16, and the bottom of the sole 14 is maintained to contact the ground. In this state, a first contact part 80, 112 of the first link 74, 106 of each of the wheel assembly 72, 104 is fixed and laid with contacted to the fixing plate 54, 56 provided  
5 under the both sides of the stopper 52. In addition, the contact part 94, 126 of the second link 90, 122 of each of the wheel assembly 72, 104 is contacted with the fixing piece 68, 70 with protrudably formed on the both sides of the stopper 52, and maintains its fixing state. In this state, the stopper 52 is fixed at the center of the stopper 52. The button 58 to control the stopper 52 is provided inside the opening  
10 38 on the back side of the housing 22.

If a user tries to play skating or blading, each wheel assembly 72, 104 should be driven, and each roll 84, 96, 116, 128 provided in the wheel assembly 72, 104 should be protruded out of the receiving groove 16 of the sole 14 to be contactable with the ground and rollable. To realize this, if a user pushes the button 58  
15 integrally formed with the back end of the stopper 52 in the A1 direction as shown in Fig. 17, the stopper 52 can move forwardly in the A2 direction. Therefore, each fixing plate 54, 56 of the stopper 52 is removed from the first contact part 80, 112 of the first link 74, 106 of the wheel assembly 72, 104, and the contact part 94, 126 of the second link 90, 122 of each of the wheel assembly 72, 104 is removed from the  
20 fixing piece 68, 70 protruded from the both sides of the stopper 52 respectively.

As described above, if the stopper is moved and removed from each of the links, each of the fixing rod 76, 108 to support each of the first link 74, 106 is

rotated by the elastic force of the coil spring 78, 110, and each of the first link 74; 106 fixed to the fixing rod is driven in the A3 and A4 directions. Also, a second link 90, 122 connected to the first link 74, 106 by a guide 102, 134 can be driven in the same direction. Each of the second link 90, 122 is rotated in the manner of the mutual cross of the first wire 148 and the second wire 150 forming a mutual driving device 146 or by a seesaw type so that the rotation force is symmetrically and uniformly applied to be exactly and easily driven.

As such, if each of the wheel assembly 72, 104 is driven and each roll 84, 96, 116, 128 is completely protruded as shown in Fig. 12, the stopper 52 moves backwardly, that is, in the A5 direction by the elastic spring 66. If the stopper 52 moves backwardly completely, each of the fixing plate 54, 56 provided on the front and back side of the stopper 52 is contacted to the second contact part 82, 114 of the first link 74, 106 of each of the wheel assembly 72, 104. In this case, the button 58 moves in the A8 direction driven along with the movement of the stopper 52. In case that the elastic force of the elastic spring 66 is decreased selectively or abnormally, and the stopper 52 cannot move backwardly easily and completely, the stopper 52 can be forced to move by using the button 58. As such, a user can play skating or blading as shown in Fig. 19.

To enjoy the more stable skating, the brake 152 can be installed on the back side of the sole 14 as described above.

After finishing skating, a user can use the shoes as an ordinary shoes by the contrary ways. If a user pushes the button 58 in the A1 direction as shown in Fig.

17, the stopper 52 moves forwardly in the A2 direction. As such, if the stopper 52 moves forwardly, each of the fixing plates 54, 56 of the stopper 52 is removed from the second contact part 82, 114 of the first link 74, 106 of the wheel assembly 74, 104. In the state that the first link 74, 106 is removed from the stopper 52, and if  
5 each of the wheel 84, 96, 116, 128 is suppressed, each of the first link 74, 106 and the second link 90, 122 connected to the first link 74, 106 by the guide 102, 134 move in the A6 and A7 directions to go back to the original location. In this case, each of the second link 90, 122 is easily and exactly driven by the symmetrically and uniformly applied rotation force by the first wire 148 and the second wire 150  
10 of the driving device 146.

After that, if a user puts down the button 58, the stopper 52 moves back to the original location by the elastic spring 66. If the stopper 52 moves back to the original location, each of the wheel assembly 72, 104 is completely inserted into the receiving groove 16 so that the first contact part 78, 110 of each of the first link 74, 106 is contacted with the fixing plate 54, 56 provided under the both side ends of  
15 the stopper 52, and the contact part 94, 126 of the second link 90, 122 of each of the wheel assembly 72, 104 is contacted with the fixing piece 68, 70 protruded on the both sides of the stopper 52 to maintain a stable fixing state with each link laid, and the user can wear the shoes in this state. In case that the brake 152 is installed, it is  
20 better to use the shoes after the brake 152 is separated from the sole 14.

A user can control the roller device to make the wheel protruded or withdrawn back to the original location when necessary, and he or she can play the

skating or roller blading, or can use as an ordinary shoes.

According to the shoes with a roller device of the present invention, the shoes can be used as an ordinary shoes at usual walking, and used as a stable roller blade at skating so that the convenience and the amusement can be increased.

5 In addition, as the wheel of the wheel assembly can be protruded or withdrawn back to the original location stably and with balance, the functions of the shoes and the roller blade can be quickly and easily exchanged each other to improve its commercial value.

10 It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

### Claims

1. A shoe with a roller device comprising:

5 a main body including a body part to receive the feet of a user and an sole integrally formed with the bottom of the body part and having a receiving groove in the vertical direction;

a roller device including a housing placed inside the sole, a stopper provided in the housing to movably reciprocate back and forth, a first wheel assembly movably fixed to the front of the housing and fixed to maintain the state for the use of an ordinary shoes or the use of an in-line skate by the stopper, and a second  
10 wheel assembly provided on the back of the housing, movably fixed in the direction confronting with the moving direction of the first wheel assembly, and fixed to maintain the state for the use of an ordinary shoes or the use of a skate by the stopper; and

15 a manipulating means for controlling the movement of the stopper of the roller device.

2. The shoe of claim 1, wherein the housing of the roller device is formed as a three dimensional rectangular shape with its bottom open, and has a plurality of  
20 installation holes penetrated on the both sides of the housing mutually symmetrically to movably fix each of the wheel assembly, and has an installation hole on one of the both sides of the housing on which the manipulating means is

installed with connected.

3. The shoe of claim 2, wherein the housing has a reinforcing member, both ends of which are integrally fixed to the inner both sides of the housing.

5

4. The shoe of claim 1, wherein a fixing plate is integrally formed on the lower side of the both ends of the stopper of the roller device with selectively contacted with the wheel assembly.

10

5. The shoe of claim 1, wherein a folding part having a plurality of grooves is provided at the center of the stopper with the grooves uniformly distanced away from each other to be driven along with the manipulating means.

15

6. The shoe of claim 1, wherein the housing and the stopper are elastically connected each other by an elastic spring.

20

7. The shoe of claim 1, wherein the first wheel assembly of the roller device comprises: a first link having a rotatably fixed wheel; a fixing rod for movably fixing the first link to the housing; a second link having a rotatably fixed wheel and movably fixed to the housing; and a guide for connecting the first link and the second link to operate in combination with each other.



8. The shoe of claim 7, wherein a coil spring is installed on the end of the fixing rod so that the fixing rod is elastically fixed to the housing.

5 9. The shoe of claim 7, wherein the upper side of the first link comprises a first contact part contacted with the fixing plate provided on the front end of the stopper when used as an ordinary shoes, and a second contact part contacted with the fixing plate of the stopper when the wheel assembly is protruded to be used as an in-line skate.

10 10. The shoe of claim 7, wherein one upper side of the second link comprises a contact part contacted with one fixing piece provided on the front side of the stopper when used as an ordinary shoes.

15 11. The shoe of claim 1, wherein the second wheel assembly of the roller device comprises a first link having a rotatably fixed wheel, a fixing rod to movably fix the first link to the housing, a second link having a rotatably fixed wheel and movably fixed to the housing, and a guide to connect the first link and the second link to be mutually driven by the linkage basis.

20 12. The shoe of claim 11, wherein the end of the fixing rod has a coil spring installed so that the fixing rod is elastically fixed to the housing.

13. The shoe of claim 11, wherein the upper side of the first link comprises a first contact part contacted with the fixing plate provided on the front end of the stopper when used as an ordinary shoes, and a second contact part contacted with the fixing plate of the stopper when the wheel assembly is protruded to be used as an in-line skate.

14. The shoe of claim 11, wherein one upper side of the second link comprises a contact part contacted with one fixing piece provided on the front side of the stopper when used as an ordinary shoes.

15. The shoe of claim 1, wherein the manipulating means comprises a switch comprised of a handle to be held and turn by a user, and a load inserted into an installation hole provided on one side of the housing, one end of which is fixed to the handle by a bolt, and the other end of which has a gear fit to each groove provided on the folding part of the stopper.

16. The shoe of claim 1, further comprising a linkage device to drive to move the second link of the first wheel assembly and the second link of the second wheel assembly on the simultaneous and corresponding basis.

17. The shoe of claim 16, wherein the linkage device comprises a first wire, one end of which is fixed generally at the center of the second link of the first wheel

assembly, and the other end of which is fixed to the upper side of the second link of the second wheel assembly; and a second wire, one of which is fixed to the upper side of the second link of the first wheel assembly, and the other end of which is fixed generally at the center of the second link of the second wheel assembly.

5

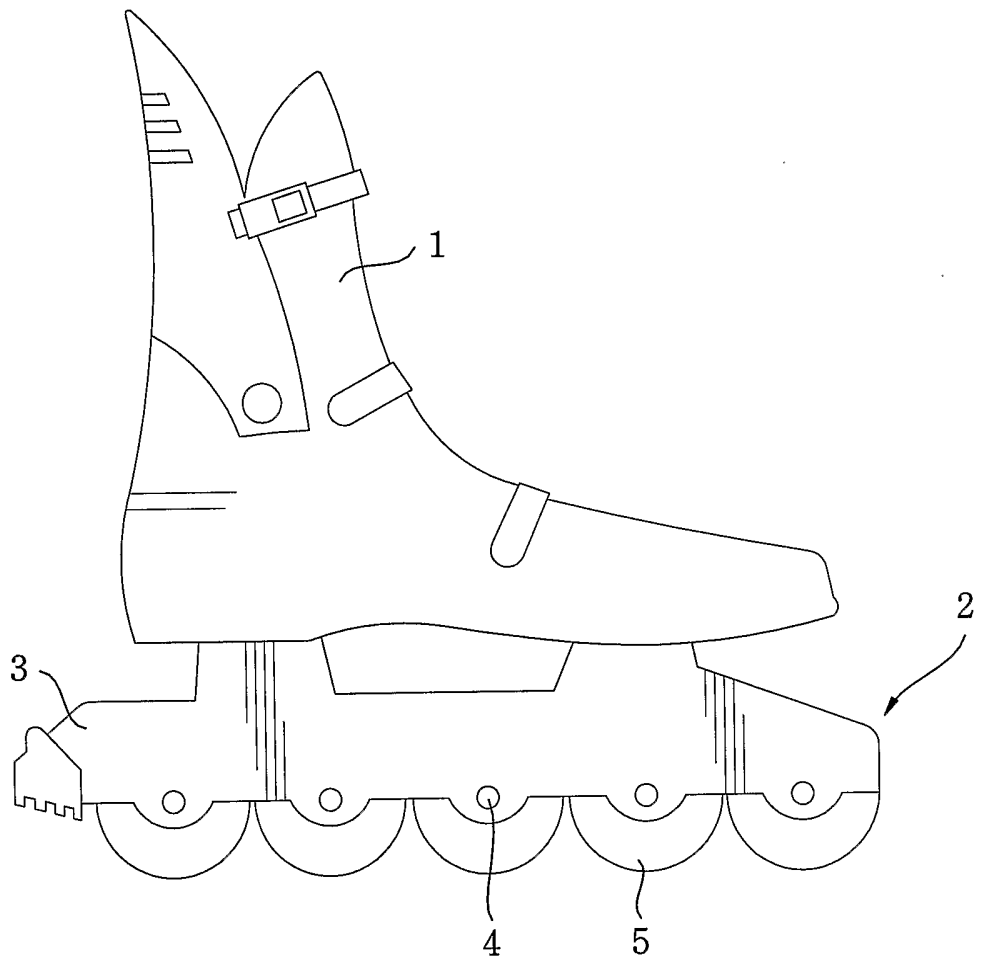
18. The shoe of claim 1, further comprising a brake detachably installed in the body to reduce the speed or to stop when used as a skate shoes.

19. The shoe of claim 18, wherein the brake comprises a body having a support groove contacted with the back end of the sole of the body of the shoes, a fixing member provided on the front of the support groove of the body and inserted between the back end of the housing and the second link of the second wheel assembly with connectively contacted, a protrusion piece provided on the front of the both sides of the fixing member to prevent a right and left shake, and a stopper detachably provided on the body and generating a stopping force by the abrasion from the contact with the ground.

20. The shoe of claim 1, wherein the manipulating means comprises a button integrally formed on the back of the stopper with protruded, and being able to reciprocate through the opening of the back of the housing.

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FIG. 1



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FIG. 2

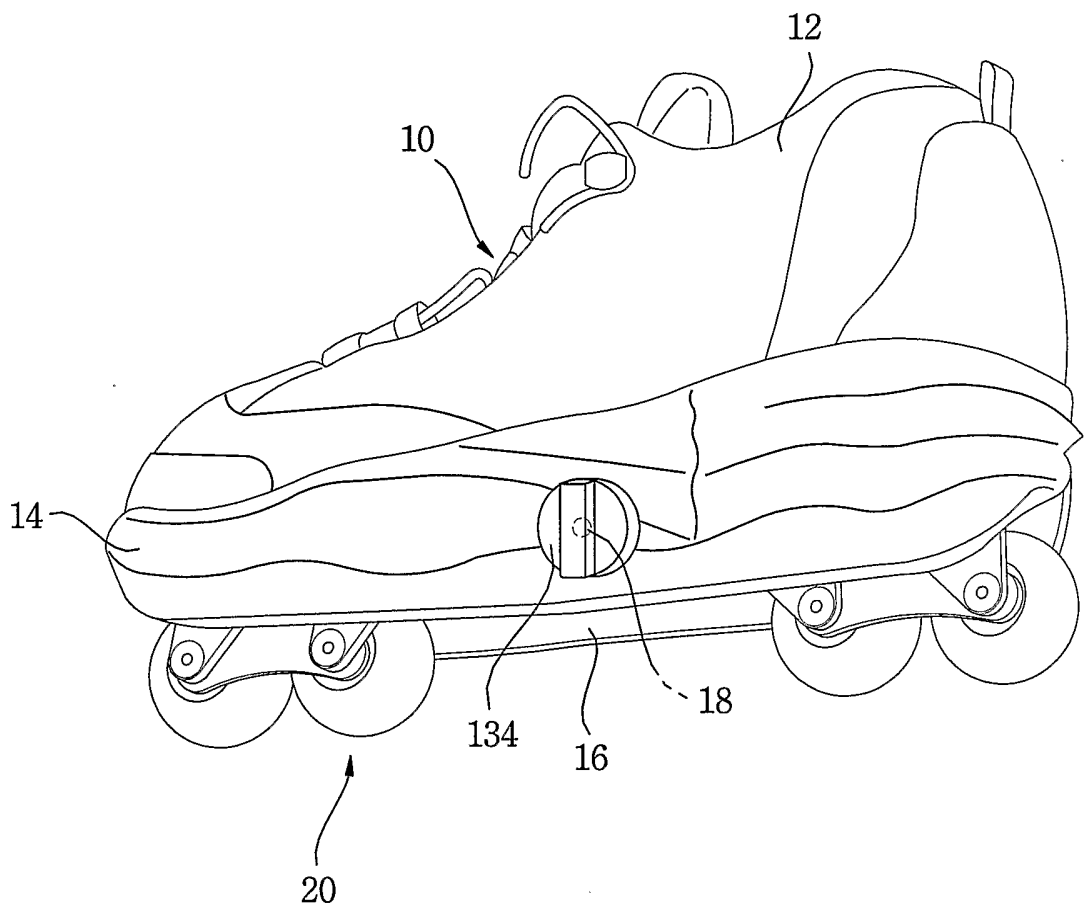


FIG. 3

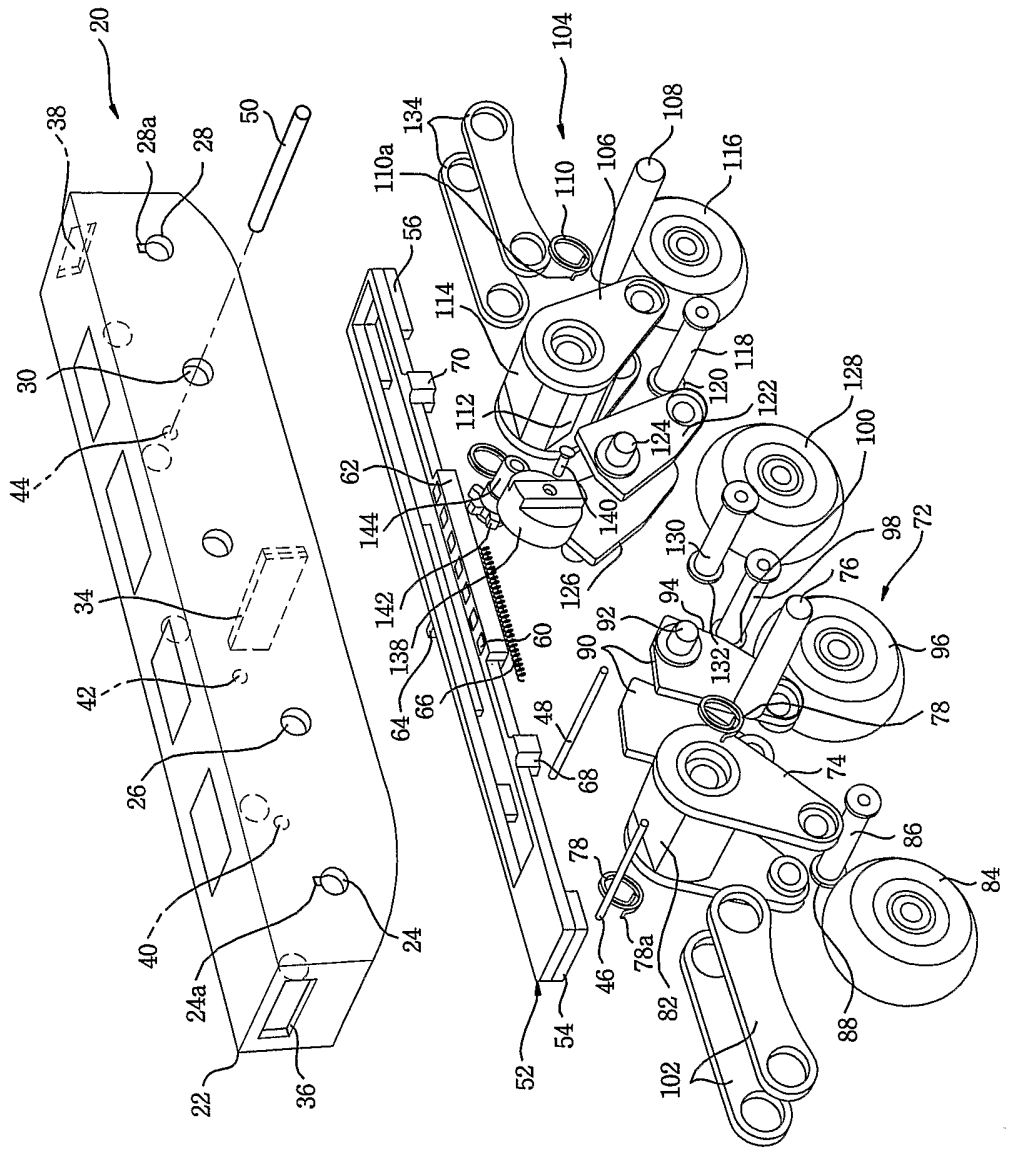
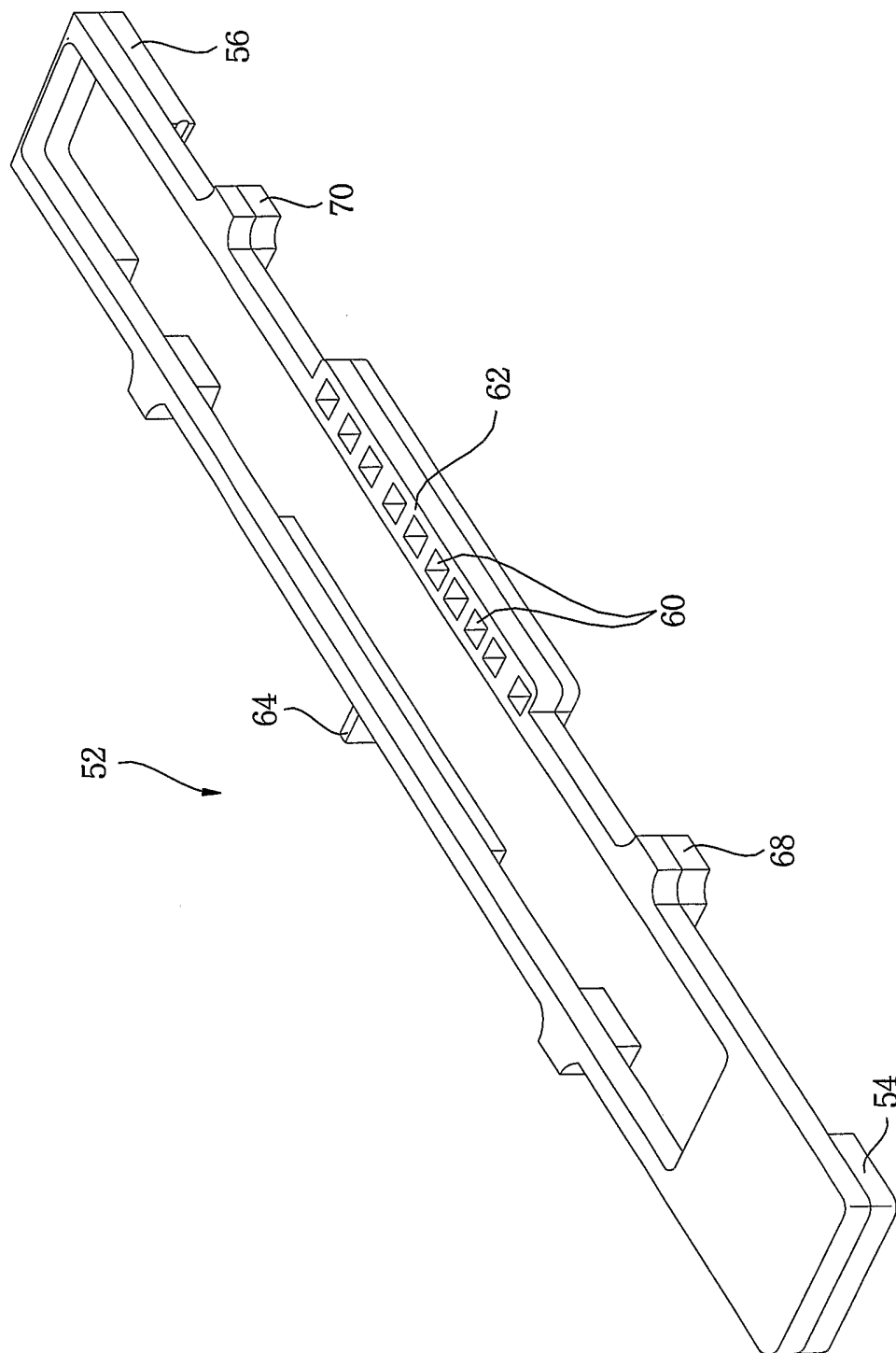


FIG. 4



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FIG. 5

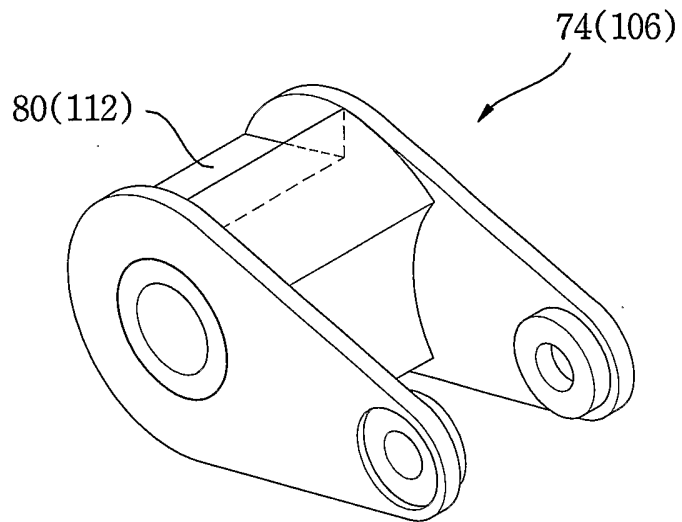
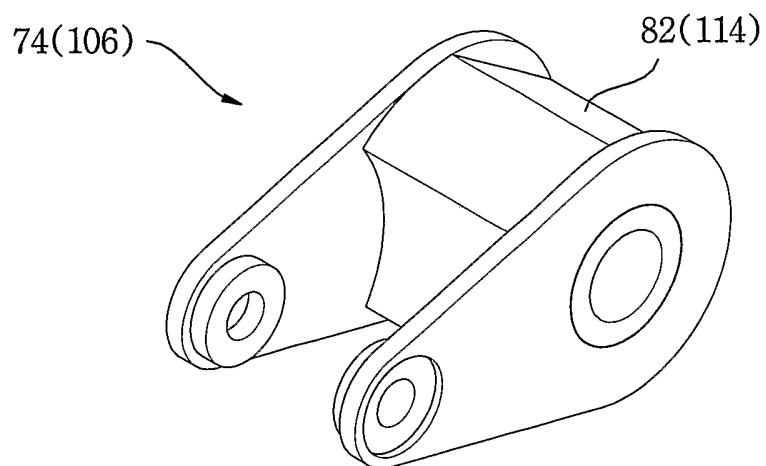


FIG. 6





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FIG. 7

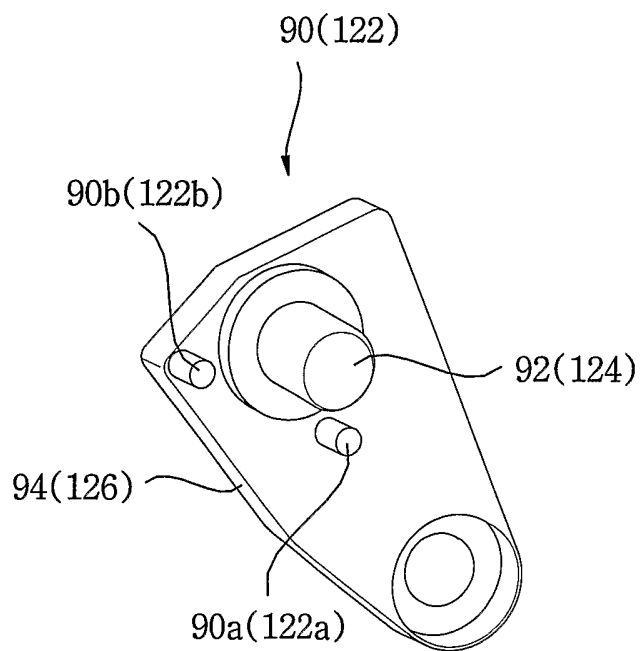
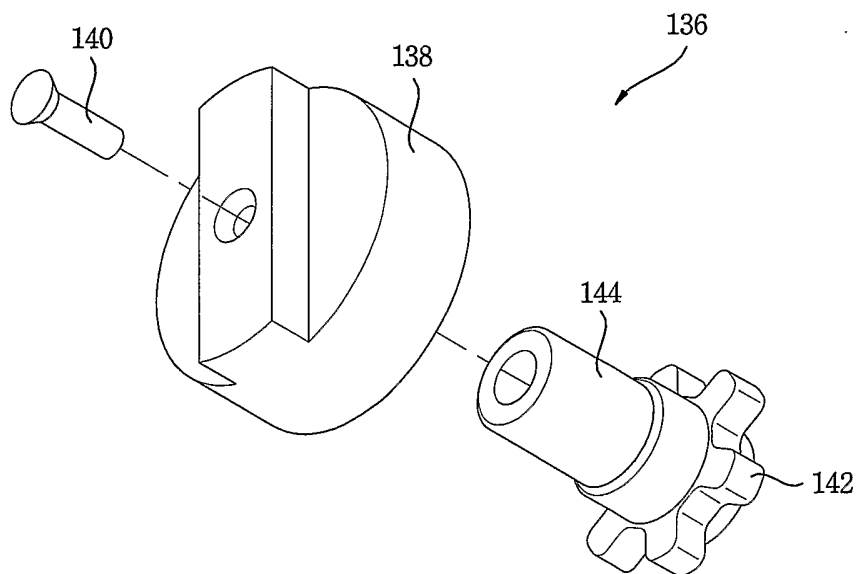


FIG. 8



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FIG. 9

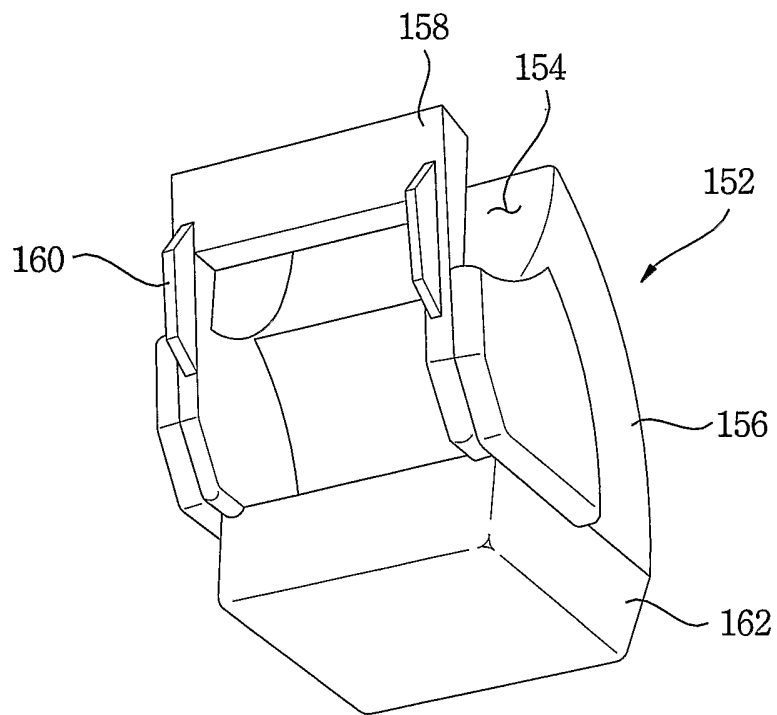


FIG. 10

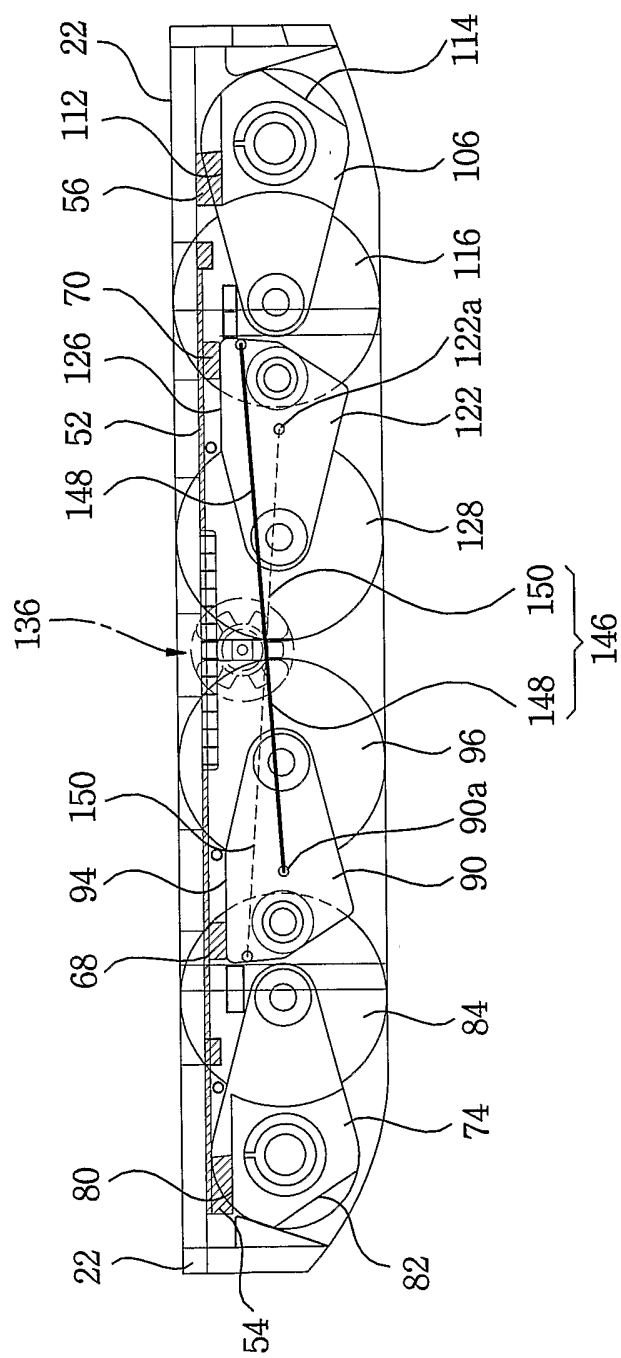
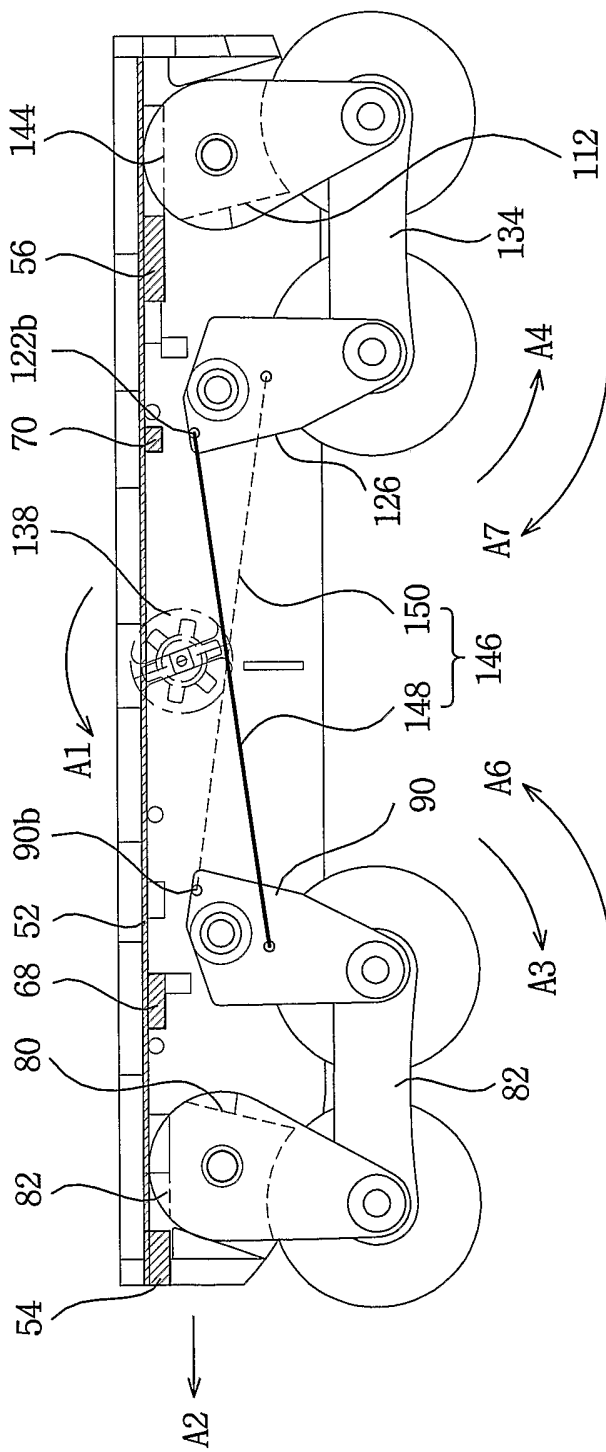


FIG. 11





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FIG. 13

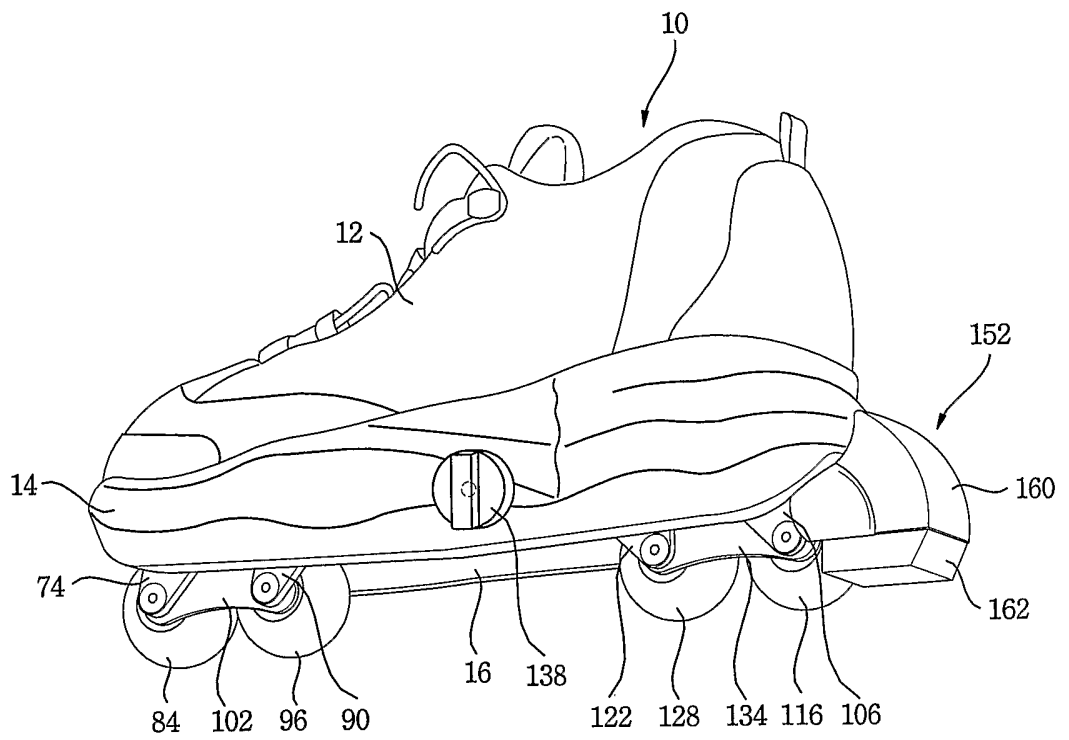


FIG. 14

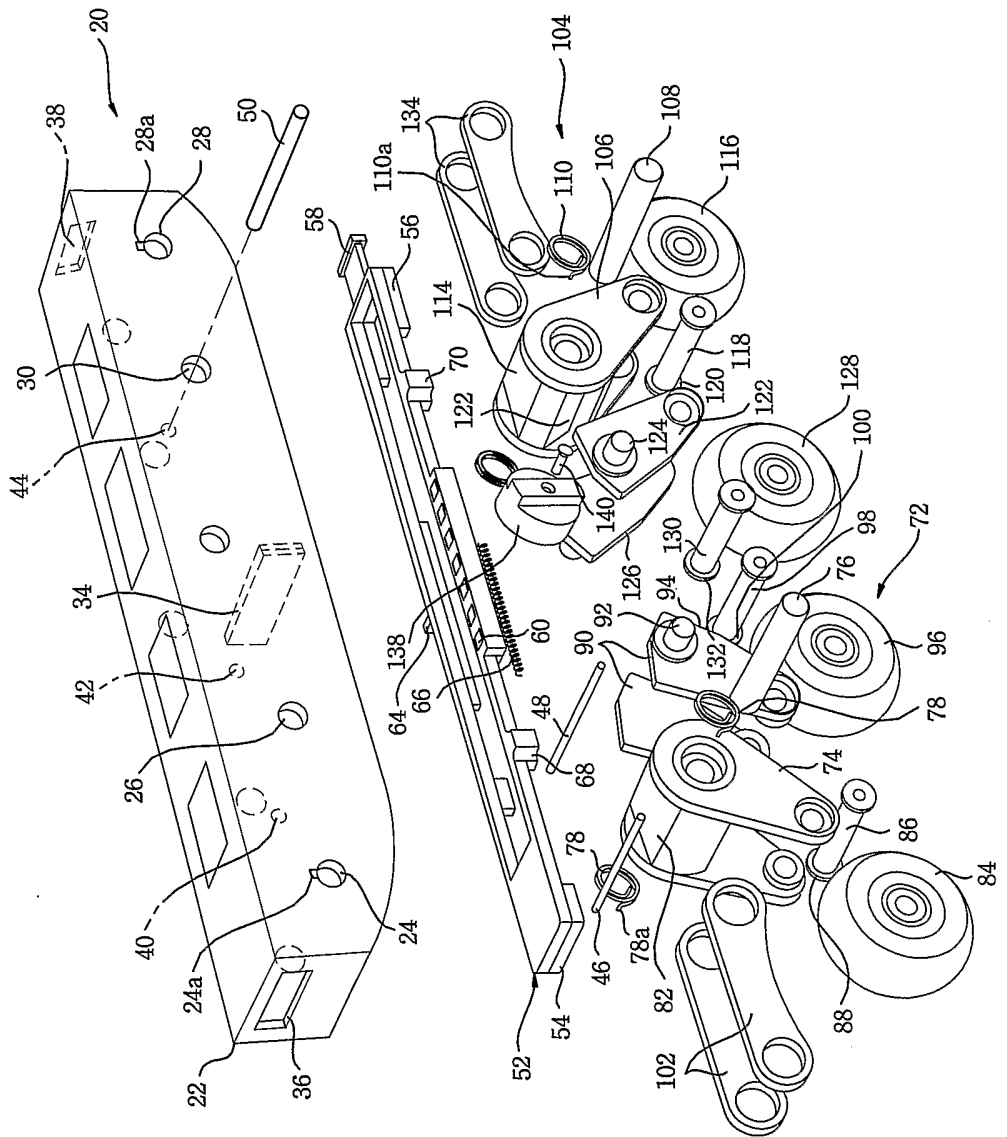


FIG. 15

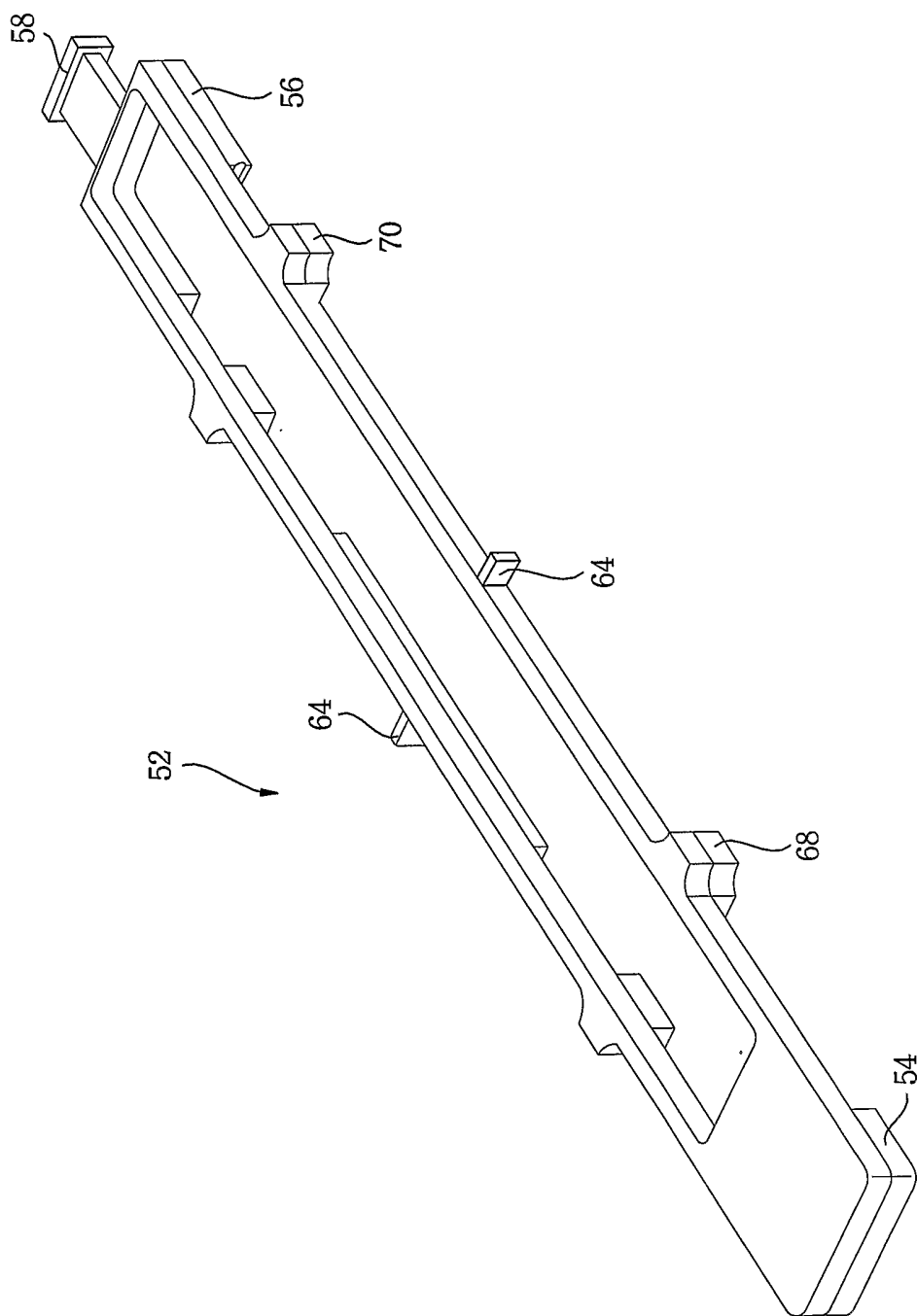




FIG. 16

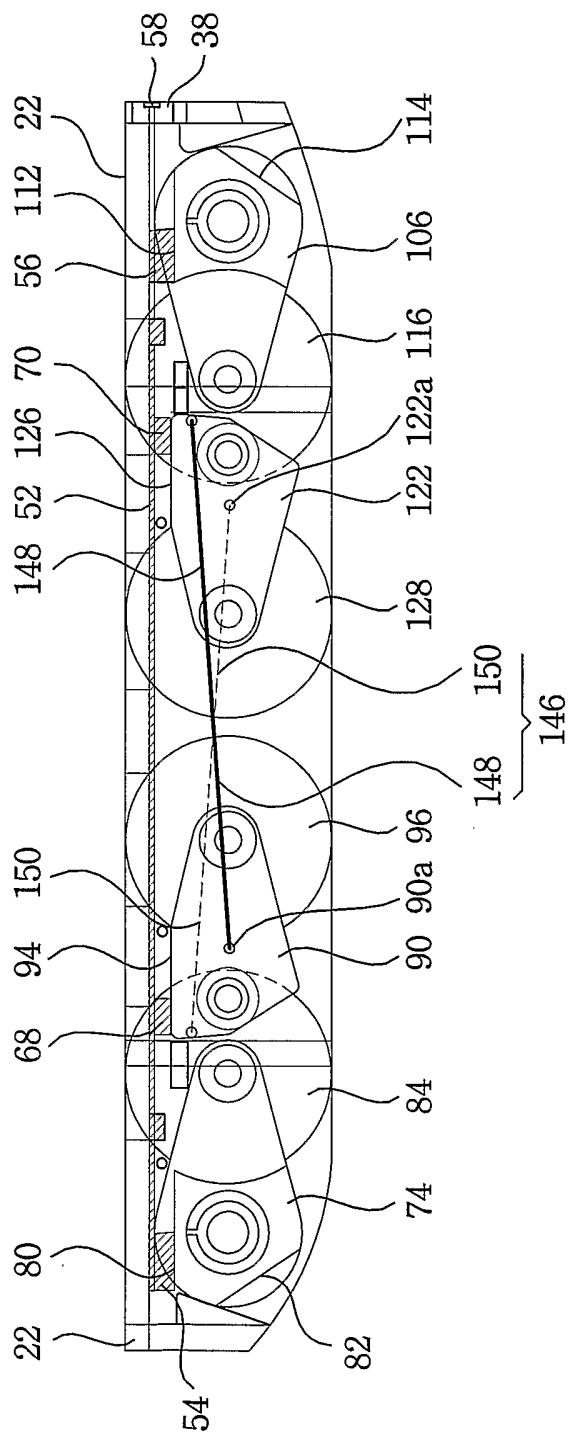


FIG. 17

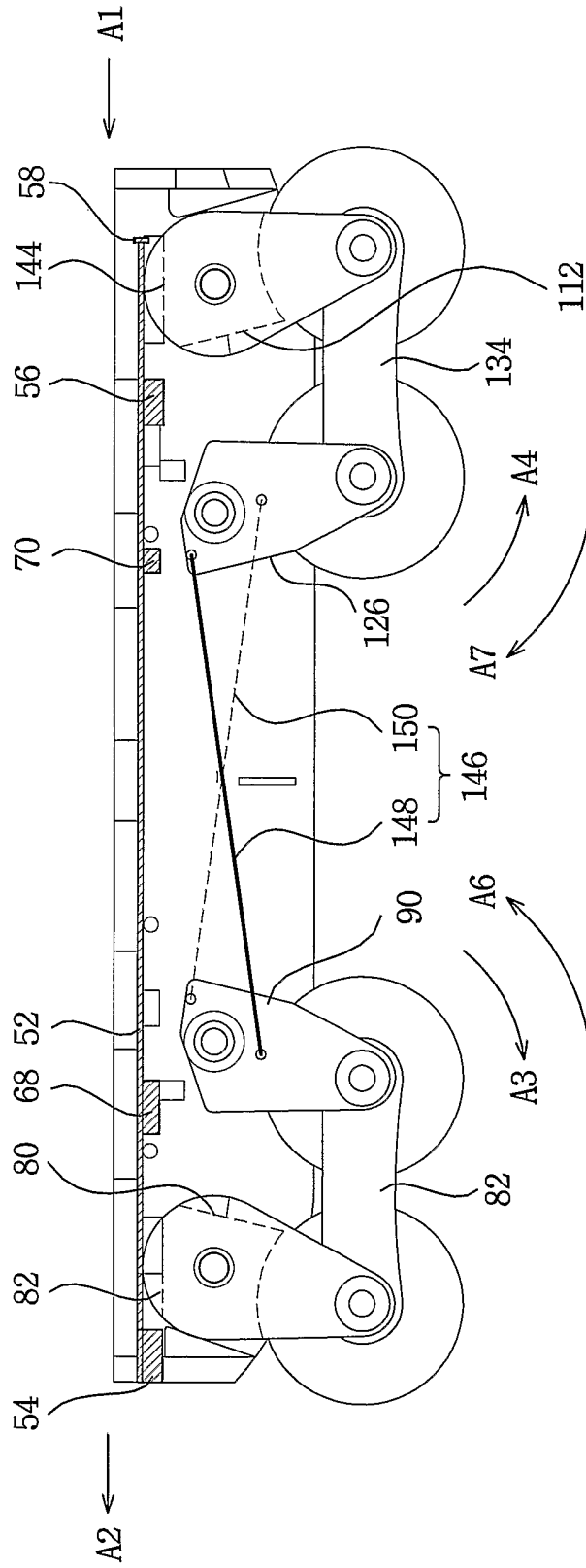
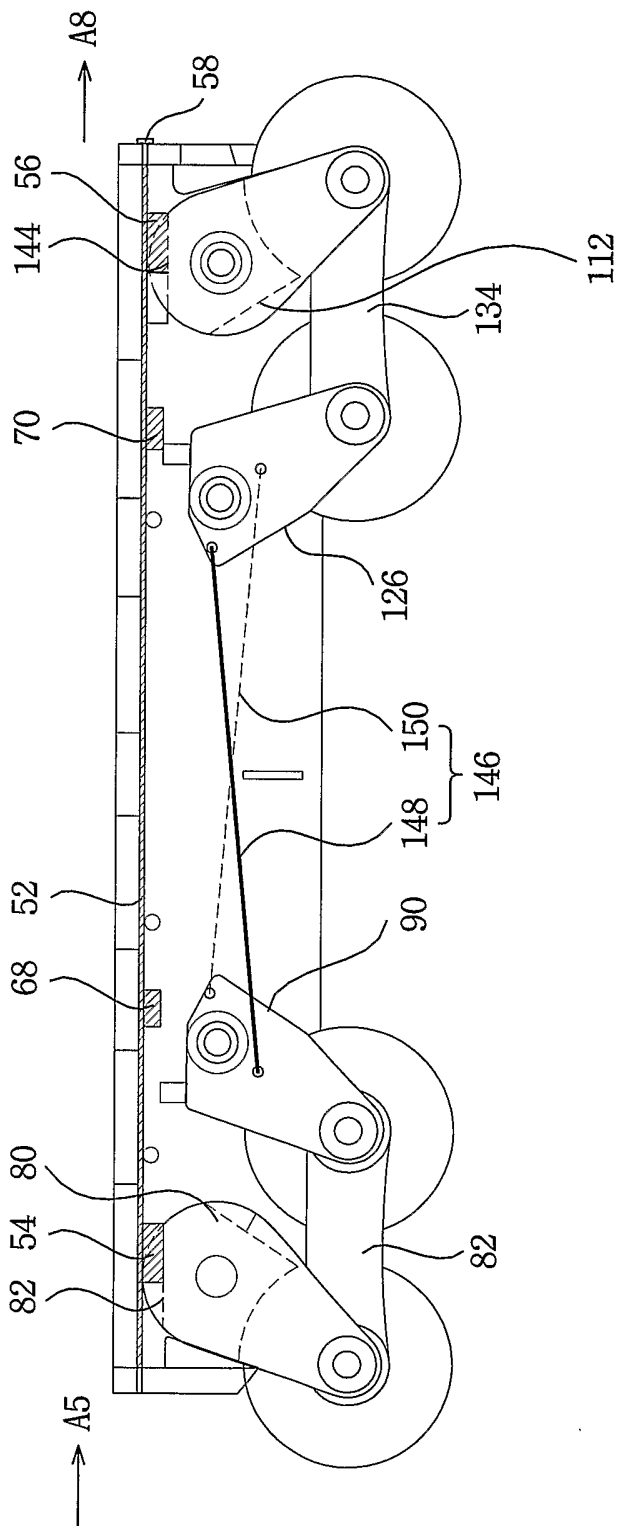
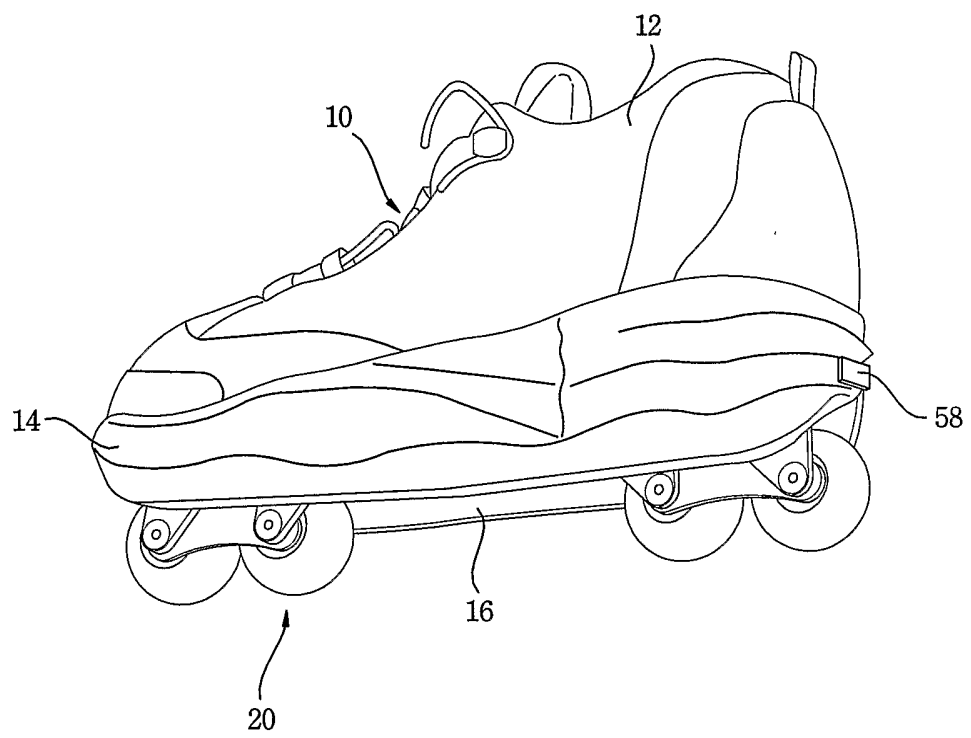


FIG. 18



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FIG. 19



INTERNATIONAL SEARCH REPORT

International application No.  
PCT/KR02/02091

**A. CLASSIFICATION OF SUBJECT MATTER**  
**IPC7 A43B 5/00**  
According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**  
Minimum documentation searched (classification system followed by classification symbols)  
IPC7 A43B, A63C  
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
KR, JP : classes as above  
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3884485 A (Frespa AG) 20 May 1975 * See the whole document.*	1-20
A	US 4333249 A (Hans-Joachim Schaefer) 8 June 1982 * See the whole document.*	1-20
A	US 5797609 A (Claude Allouche; Daniel Amar; Frederic Fichepain) 25 August 1998 * See the whole document.*	1-20
A	US 6120039 A (Fred Clementi) 19 September 2000 * See the whole document.*	1-20
A	US 5785327 A (Raymond J. Gallant) 28 July 1998 * See the whole document.*	1-20
A	US 3983643 A (Walter Schreyer; Leo Gumbiller) 5 October 1976 * See the whole document.*	1-20
A	US 6042125 A (Elbert Hsin En Wu) 28 March 2000 * See the whole document.*	1-20

Further documents are listed in the continuation of Box C.  See patent family annex.

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 "P" document published prior to the international filing date but later than the priority date claimed  
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 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
 "&" document member of the same patent family

Date of the actual completion of the international search: 11 MARCH 2003 (11.03.2003)  
 Date of mailing of the international search report: 11 MARCH 2003 (11.03.2003)

Name and mailing address of the ISA/KR: Korean Intellectual Property Office, 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea. Facsimile No. 82-42-472-7140  
 Authorized officer: SHIN, Gun Il. Telephone No. 82-42-481-5543



## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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US 6120039 A	19 September 2000	WO 200112277 A AU 6024899 A	22-02-2001 13-03-2001
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US 5785327 A	28 July 1998	None	
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US 3983643 A	5 October 1976	DE 2550211 C	13-01-1983
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