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(54) **SIT-UP BOARD**

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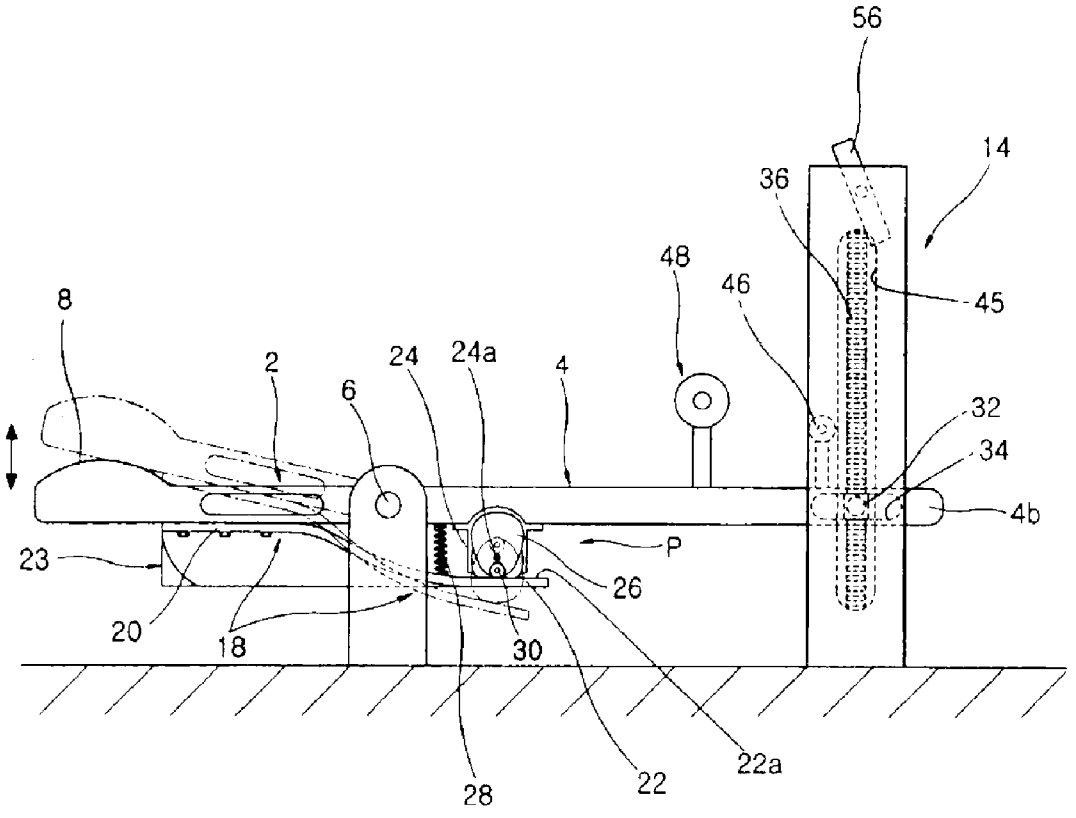
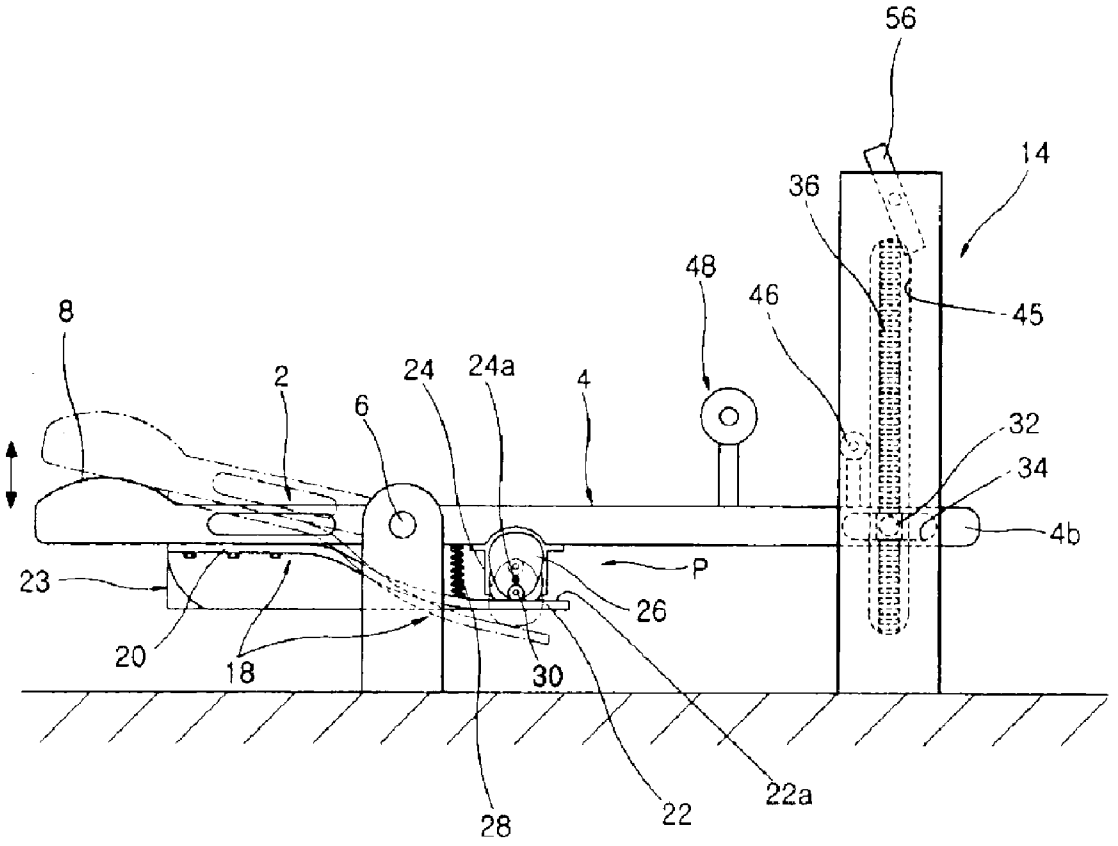
(57) **ABSTRACT**

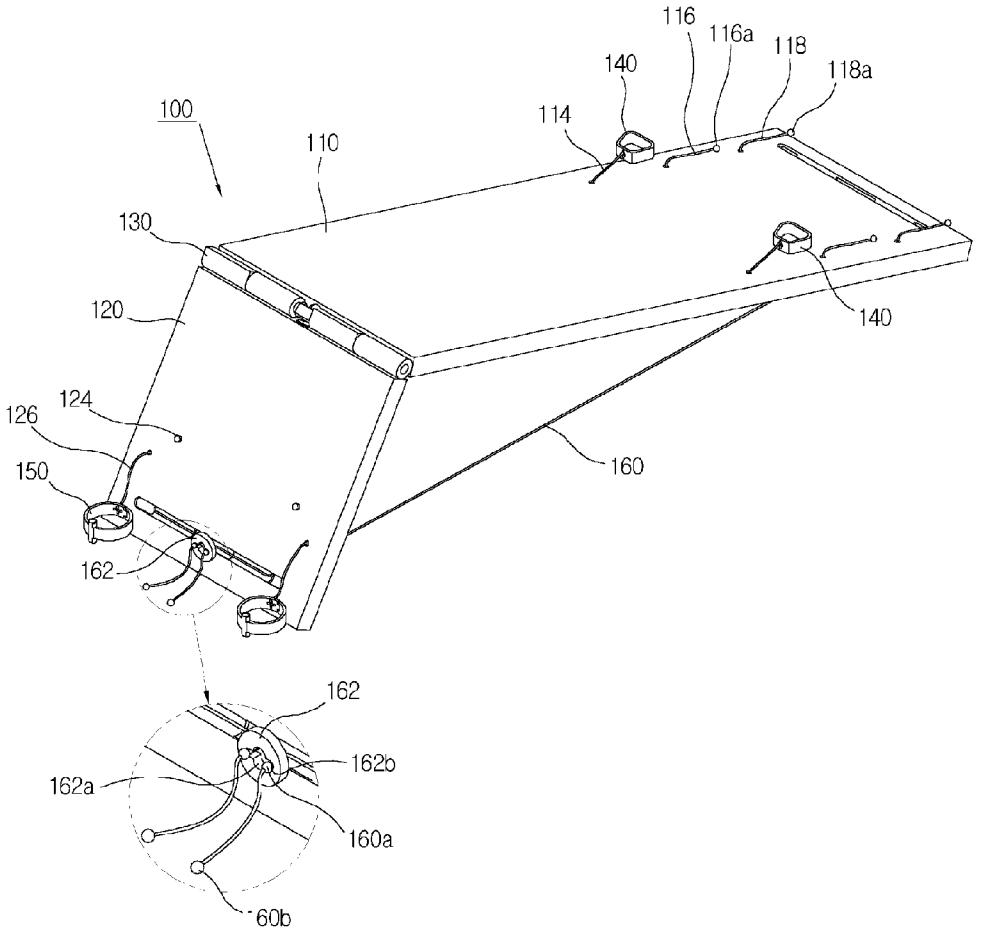
Disclosed herein is a sit-up board. The sit-up board includes a first board (**110**), a second board (**120**), and a guy cable (**160**). At least one tension spring is provided on a lower surface of the first board. At least one extension cable, which is coupled to an end of the tension spring and extends the tension spring, is drawn to the upper surface of the first board along a plurality of guide units provided on the lower surface of the first board. The second board is coupled to the first board via a hinge unit in such a way as to rotate downwards, with a foot support being detachably mounted to the second board. The guy cable passes through ends of the first and second boards, and supports the first and second boards at a predetermined angle. This invention facilitates a wide variety of exercises.



[Fig. 1]



[Fig. 2]


116
116a
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118a
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162
162b
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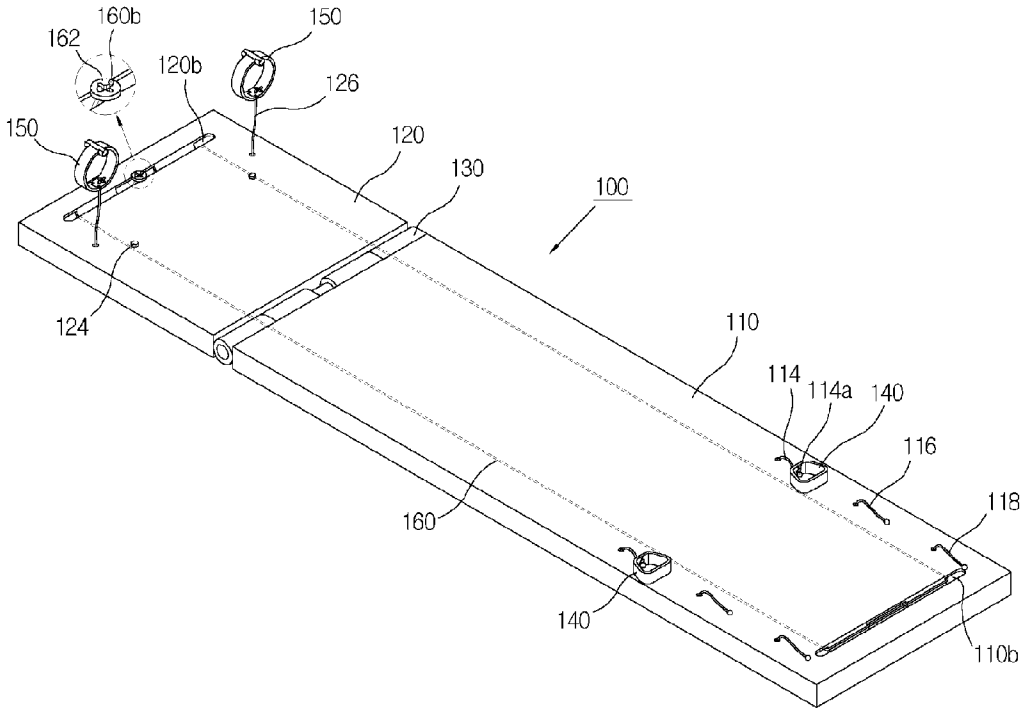
60b

[Fig. 3]


160b
162
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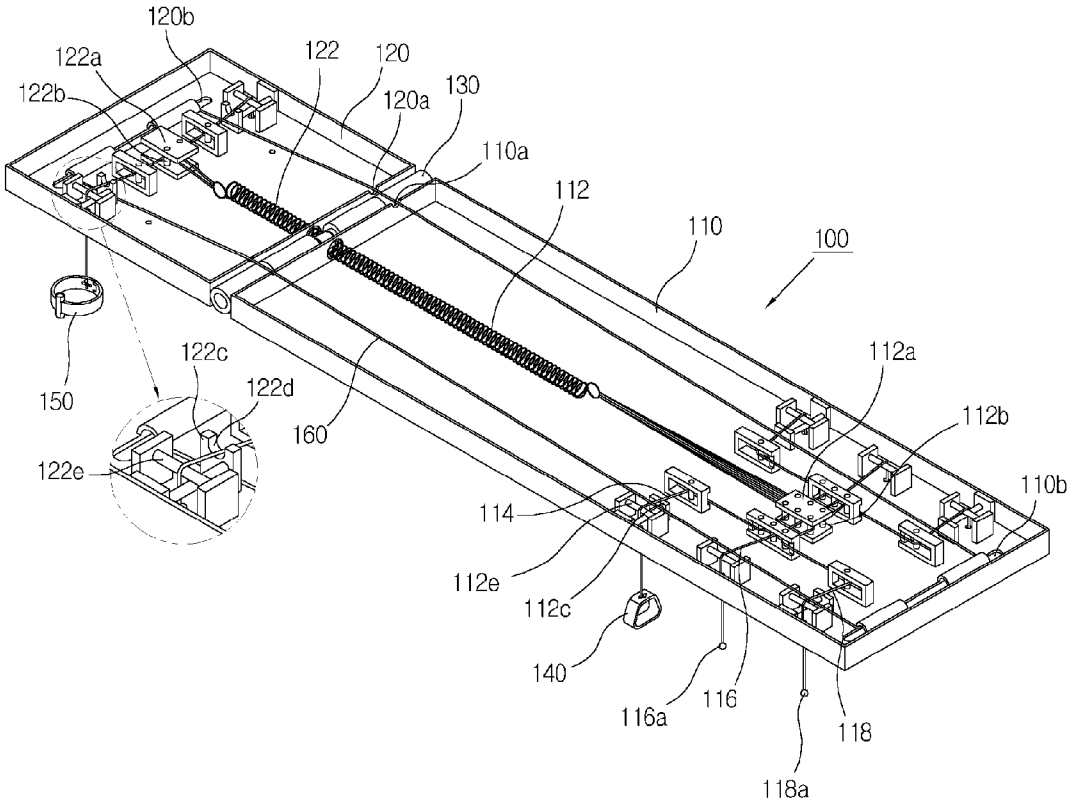
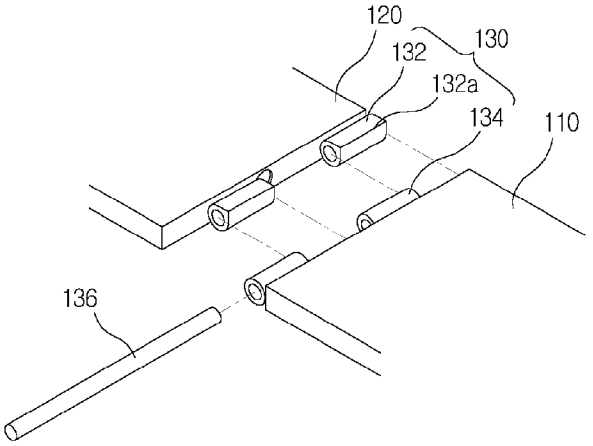
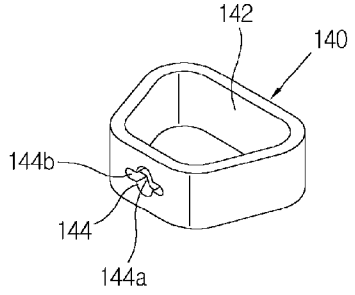
[Fig. 4]



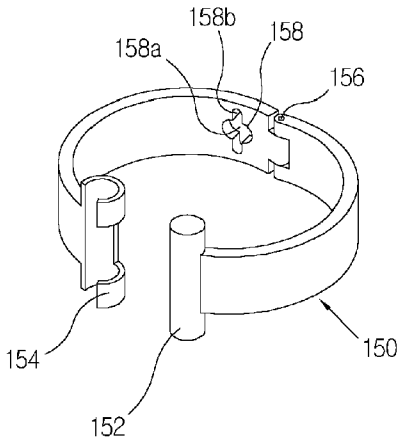
[Fig. 5]



[Fig. 6]



[Fig. 7]


158b
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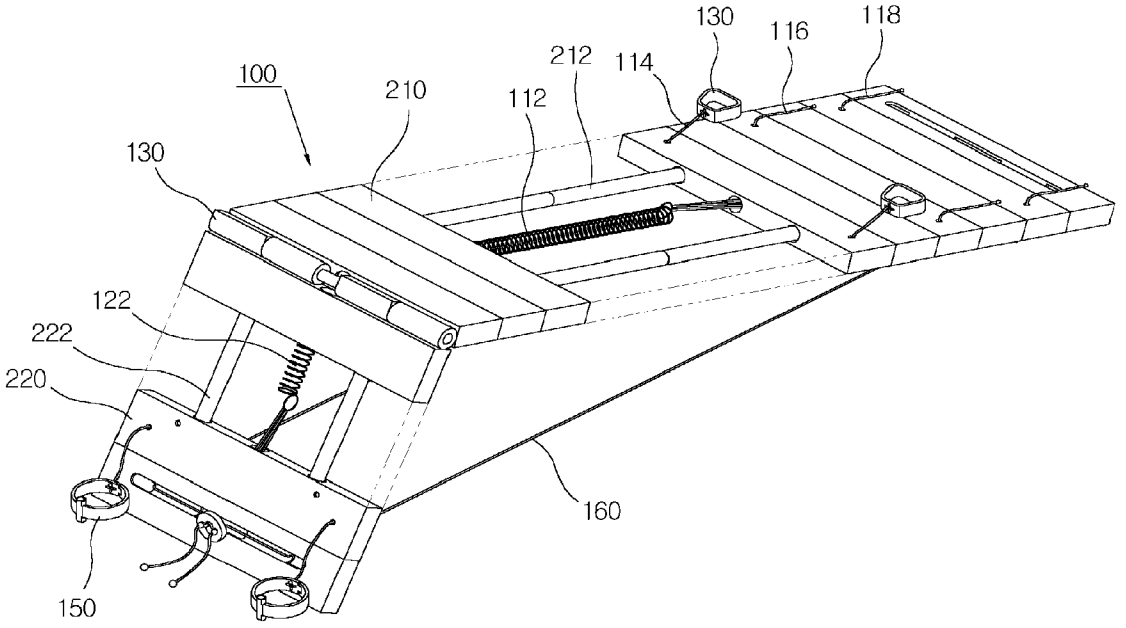
150
152

[Fig. 8]


130
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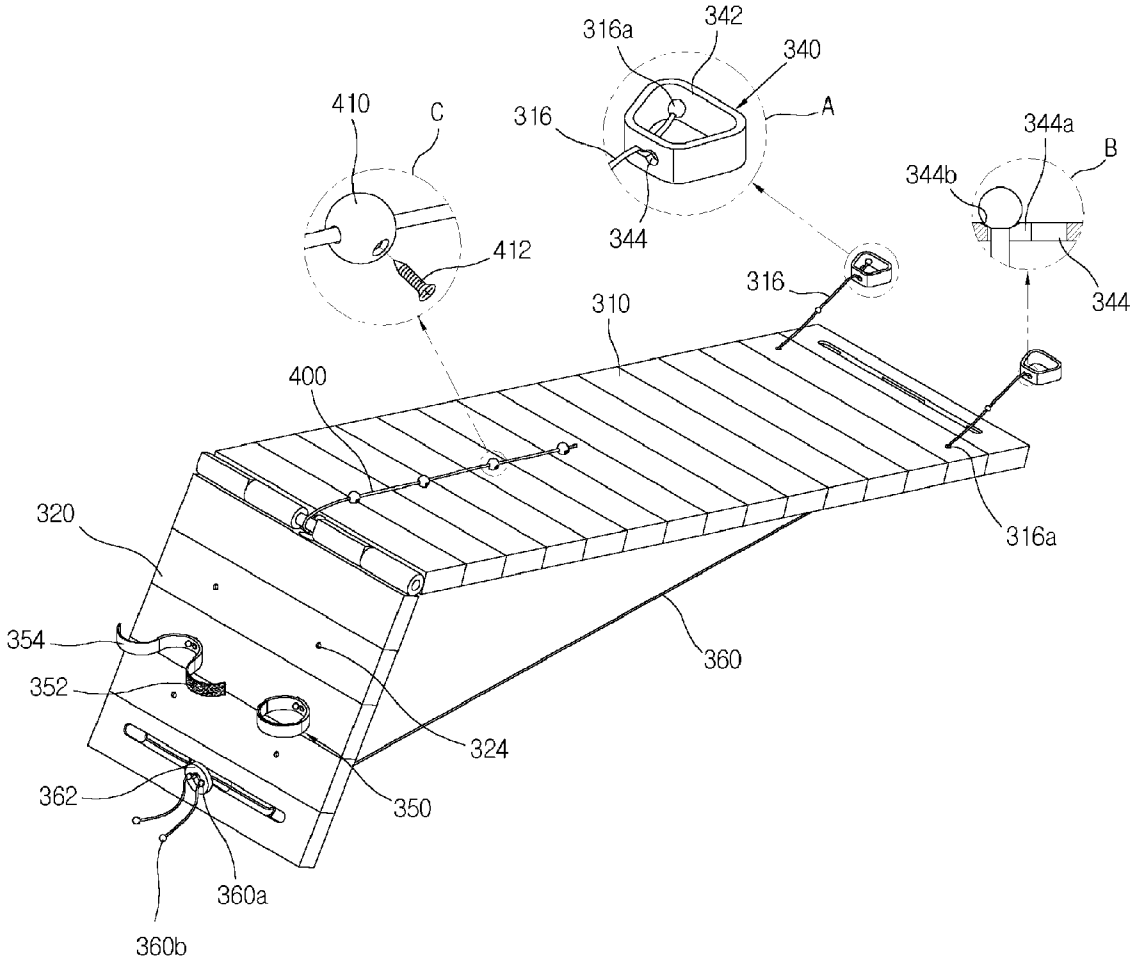
[Fig. 9]


316a
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340
410
C
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A
344a
B
344b
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316a
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352
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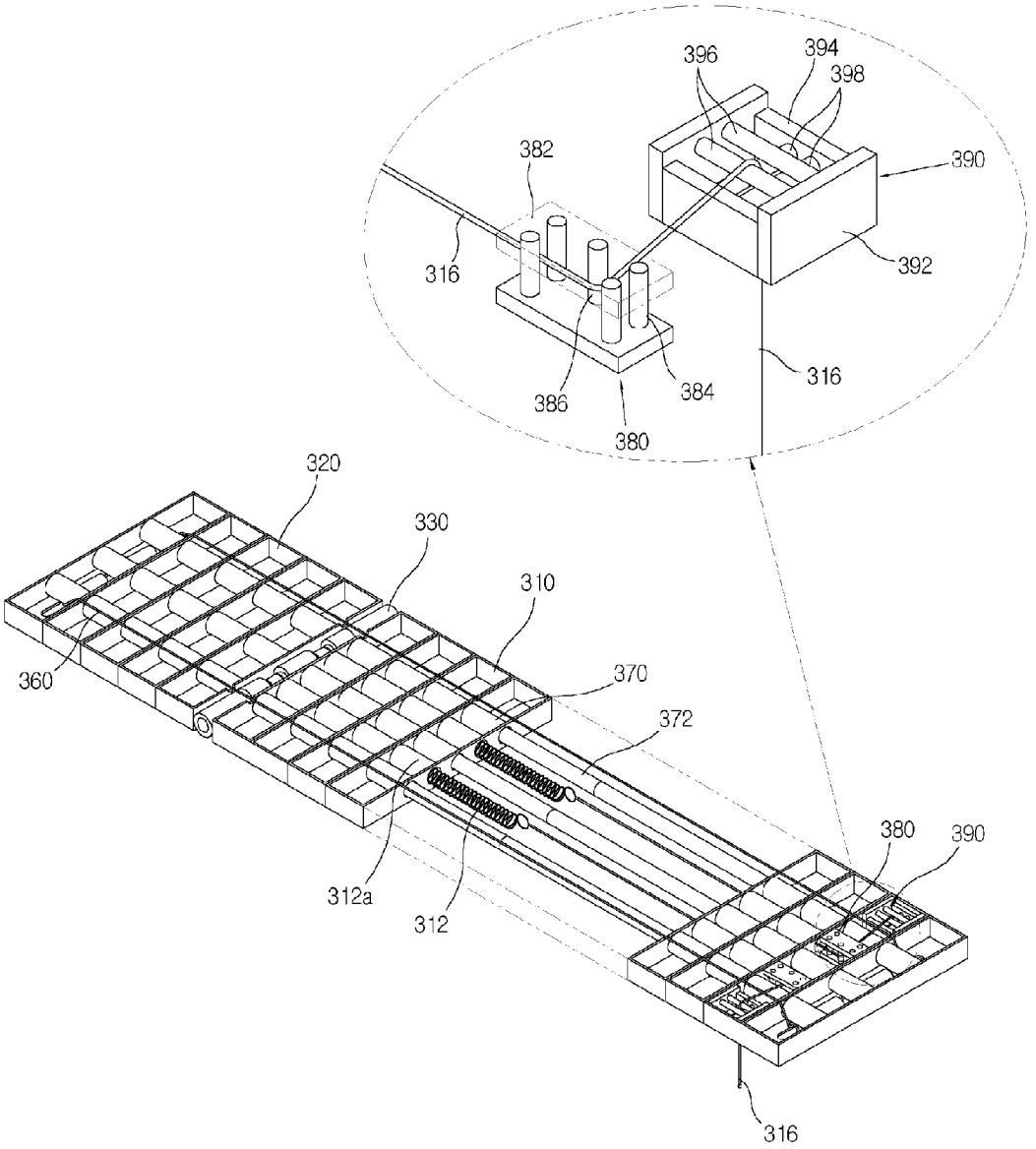
360a
360b

[Fig. 10]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312a
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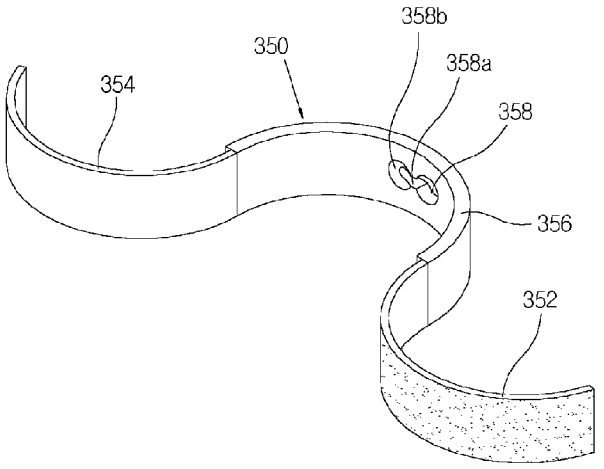
[Fig. 11]


358b
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358a
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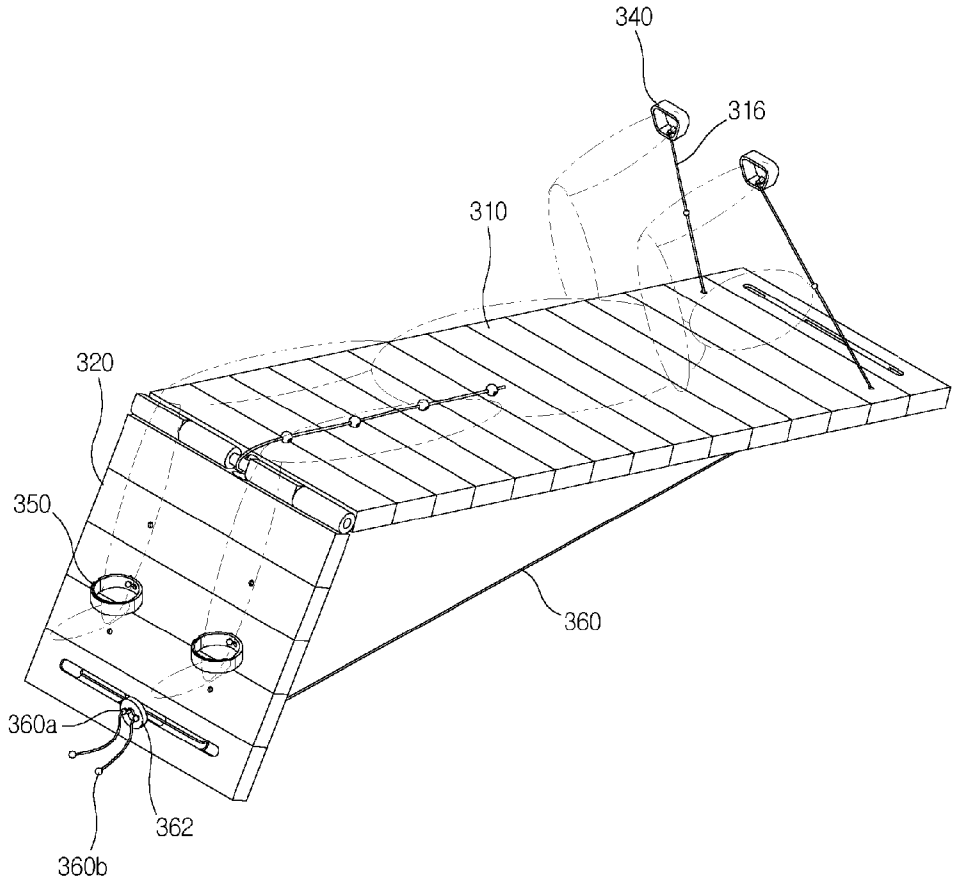
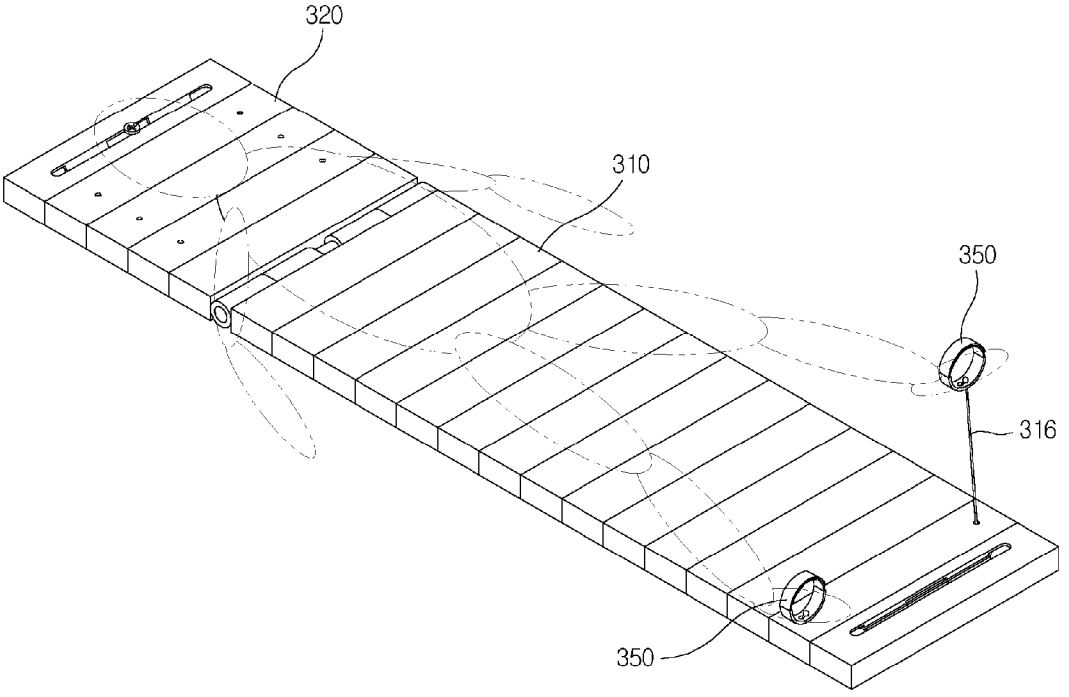
352

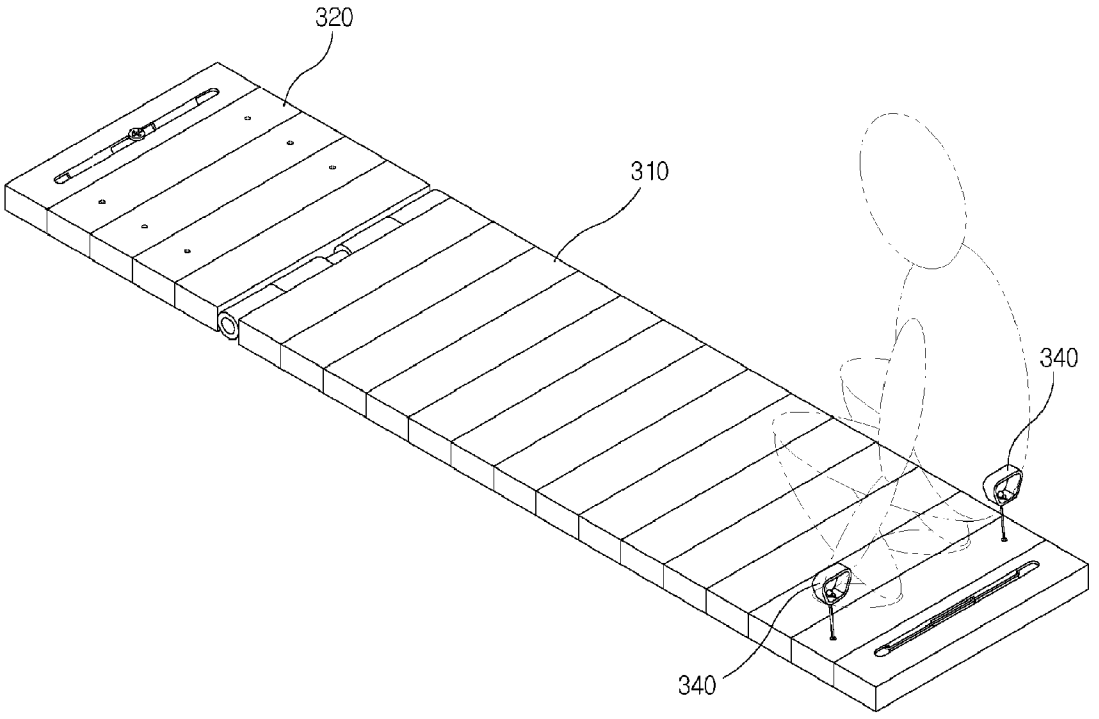
[Fig. 12]



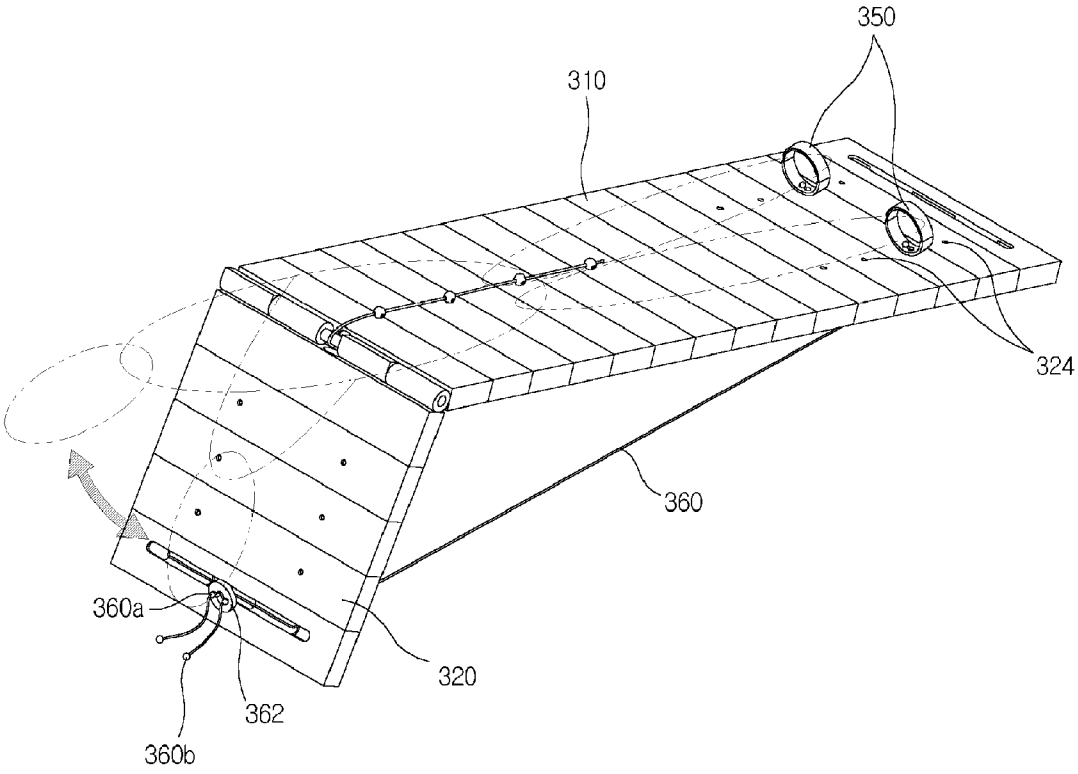
[Fig. 13]



[Fig. 14]



[Fig. 15]



SIT-UP BOARD

TECHNICAL FIELD

[0001] The present invention relates, in general, to a sit-up board and, more particularly, to a sit-up board, which facilitates a wide variety of exercises and has a simple structure.

BACKGROUND ART

[0002] Modern people who sit for a long time and do not exercise regularly face an increased risk of ruptured disks or abdominal obesity. In order to solve the problem, various kinds of exercise equipment for treating the spine or strengthening abdominal muscles have been developed.

[0003] A handstand machine and a sit-up board are representative of exercise equipment for treating the spine or strengthening abdominal muscle.

[0004] The handstand machine is configured to hold a user's ankles and allow the user to do a handstand. The handstand machine is useful to treat the spine and promote blood circulation. However, the handstand machine is problematic in that it is impossible to exercise other body parts. Further, since the volume of the handstand machine is large, it is difficult to store and move. Furthermore, the handstand machine is expensive.

[0005] Meanwhile, the sit-up board is exercise equipment which holds two feet so that a user may lie down on the board and do sit-ups without help from others, thus building abdominal muscles. For example, a sit-up board has been proposed in Korean U.M. Registration No. 0308209.

[0006] The sit-up board includes a first board **2** and a second board **4**. An end of the first board **2** and an end of the second board **4** are hinged to a support shaft **6** which is horizontally disposed at a predetermined height, so that the first and second boards **2** and **4** are linearly coupled to each other. A first support post is provided at a predetermined position on the sit-up board to maintain the support shaft **6** at the predetermined height. The sit-up board also includes a second support post **14** that functions to support a free end of the second board **4** which is not coupled to the first board **2**. A first board pushing up part **18** is provided at a predetermined position on the sit-up board, and causes the first board **2** to rotate about the support shaft **6** relative to the second board **4**, thus pushing up the first board **2** at a predetermined angle, therefore helping a user to do sit-ups. Further, a foot support **46** is installed at a predetermined position on the second support post **14**, and serves to support a user's feet while the user does sit-ups (see, FIG. **1**).

[0007] The sit-up board constructed as described above is advantageous in that the first board pushing up part **18** lessens the burden on the waist, when a user exercises to strengthen abdominal muscles. However, the conventional sit-up board is disadvantageous in that it is impossible to exercise the abdominal region, the arms, the legs, etc. other than the upper part of the belly.

DISCLOSURE OF INVENTION

[0008] 1. Technical Problem

[0009] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a sit-up board, capable of treating the spine, strengthening the upper part of the belly or the abdominal region, and exercising the arms, the legs, etc.

[0010] Another object of the present invention is to provide a sit-up board, which is foldable and is lightweight, thus being easy to store and move.

[0011] 2. Technical Solution

[0012] In order to accomplish the above objects, the present invention provides a sit-up board, including a first board having at least one elastic member provided on a lower surface of the first board, at least one extension cable coupled to an end of the elastic member and extending the elastic member, and a plurality of guide units provided on the lower surface of the first board, so that the extension cable is drawn to an upper surface of the first board along the guide units; a second board coupled to the first board via a hinge unit in such a way as to rotate downwards, with a foot support being detachably mounted to the second board; and a guy cable passing through ends of the first and second boards, and supporting the first and second boards at a predetermined angle.

[0013] Such a construction allows spine treatment or the stretching of the waist. Further, this construction allows a user to do sit-ups without help from others, thus strengthening the muscles in the upper part of the belly. By pulling the extension cable, the arm and shoulder muscles can be built.

[0014] Both ends of the guy cable are held by a fastening button, and an insertion hole is formed in a central portion of the fastening button so that a stop protrusion provided at each of the ends of the guy cable is inserted into the insertion hole, the insertion hole having a cross shape and being formed such that a central portion of the insertion hole is wide to allow the stop protrusion to be easily inserted into the insertion hole, and a side portion of the insertion hole is narrow to secure the inserted stop protrusion therein, the stop protrusion being provided at two or more places on each of the ends of the guy cable.

[0015] Such a construction is capable of lengthening the guy cable held by the fastening button, thus allowing the first and second boards to be laid flat.

[0016] The second board includes at least one tension spring provided on a lower surface of the second board, an extension cable coupled to a lower end of the tension spring, and extending the tension spring, and a plurality of guide units provided on the lower surface of the second board, so that the extension cable is drawn to an upper surface of the second board along the guide units, and is fastened to the foot support.

[0017] Such a construction allows the extension cable secured to the ankles to be pulled, thus building the abdominal region or leg muscle.

[0018] The guide units includes a first guide part installed to be aligned with the elastic member, and a second guide part provided outside the first guide part, and perpendicularly changing a direction of the extension cable coupled to the lower end of the elastic member. In this case, the first guide part includes guide plates supported by at least one support post, and a guide rod rotatably installed between the

guide plates, and guiding the extension cable, and the second guide part includes a pair of first guide rods rotatably installed between left and right guide plates, and a pair of second guide rods rotatably installed between front and rear guide plates, and arranged to be perpendicular to the first guide rods.

[0019] According to this construction, the extension cable can be easily drawn to the upper surface of the first board, regardless of the direction in which the extension cable is pulled, thus allowing a user to exercise in various directions.

[0020] The extension cable of the first board is provided with at least one stop protrusion such that a handle is detachably coupled to the extension cable, and an insertion hole is formed at a predetermined position on the handle such that the stop protrusion is inserted into the insertion hole. Further, a seat is provided at a predetermined position in the insertion hole such that the inserted stop protrusion is seated in and locked to the seat.

[0021] According to this invention, the handle is easily detachably mounted to the extension cable, so that it is possible to couple the handle to a desired position of the extension cable, as necessary.

[0022] The foot support has a circular shape, and includes a first fastening part jointed by a hinge shaft, and a second fastening part having a rod-shaped locking lug, and a lug holder to prevent upward movement of the locking lug when the locking lug has been seated in the lug holder. In this case, an insertion hole is provided at a predetermined position on the first fastening part such that a head of a fastening bolt of the second board or the stop protrusion provided on each of the ends of the extension cable of the second board is inserted into the insertion hole, the insertion hole having a cross shape and being formed such that a central portion thereof is wide to allow the head of the fastening bolt or the stop protrusion to be easily inserted into the insertion hole, and a side portion is narrow to allow the inserted head of the fastening bolt or the inserted stop protrusion to be seated in or locked to the insertion hole.

[0023] According to another embodiment of this invention, each of the first and second boards may comprise a plurality of parts, and the parts may be coupled to each other via coupling rods. Such a construction allows all components to be separated from each other, thus minimizing the volume of the sit-up board when it is stored, moved, or sold.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] FIG. **1** is a side view showing the construction of a conventional sit-up board;

[0025] FIG. **2** is a perspective view of a sit-up board, according to the first embodiment of the present invention;

[0026] FIG. **3** is a perspective view of the sit-up board of FIG. **2**, when the sit-up board is unfolded;

[0027] FIG. **4** is a bottom perspective view of the sit-up board of FIG. **3**;

[0028] FIG. **5** is an exploded perspective view showing a hinge unit, according to this invention;

[0029] FIG. **6** is a perspective view showing a handle, according to this invention;

[0030] FIG. **7** is a perspective view showing a foot support, according to this invention;

[0031] FIG. **8** is a partially exploded perspective view of a sit-up board, according to the second embodiment of the present invention;

[0032] FIG. **9** is a perspective view of a sit-up board, according to the third embodiment of the present invention;

[0033] FIG. **10** is a bottom perspective view of the sit-up board of FIG. **9**, when the sit-up board is unfolded;

[0034] FIG. **11** is a perspective view showing a foot support, according to another modification of this invention; and

[0035] FIGS. **12** to **15** are views showing the use of the sit-up board, according to the third embodiment of this invention.

BEST MODE FOR CARRYING OUT THE INVENTION

[0036] Hereinafter, the preferred embodiments of the present invention will be described with reference to the accompanying drawings.

[0037] FIG. **2** is a perspective view of a sit-up board, according to the first embodiment of the present invention, FIG. **3** is a perspective view of the sit-up board of FIG. **2**, when the sit-up board is unfolded, and FIG. **4** is a bottom perspective view of the sit-up board of FIG. **3**.

[0038] As shown in the drawings, the sit-up board **100** of this invention includes a first board **110**, a second board **120**, and a guy cable **160**. The first board **110** has the shape of a rectangular plate, and a user's torso rests on the first board **110**. The second board **120** is coupled to the first board **110** via a hinge unit **130** to rotate downwards, with the lower part of the body resting on the second board **120**. Further, the guy cable **160** penetrates an end of each of the first and second boards **110** and **120**, and supports the first and second boards **110** and **120** at a predetermined angle.

[0039] A tension spring **112**, which is an elastic member, is longitudinally provided along a central portion in the first board **110**. Further, three pairs of extension cables **114**, **116**, and **118** are drawn from left and right sides of the lower surface of the first board **110** to the upper surface thereof, and are spaced apart from each other by a predetermined interval. The extension cables **114**, **116**, and **118** are coupled to a lower end of the tension spring **112** to extend the tension spring **112**. Handles **140** are detachably coupled to ends of the extension cables **114**.

[0040] As shown in FIG. **4**, the extension cables **114**, **116**, and **118** are drawn along a plurality of guide units, provided on the lower surface of the first board **110**, to the upper surface thereof. The guide units include guide plates **112***a*, and guide rods **112***b* which are rotatably installed between the guide plates **112***a*. The guide units are installed at one place at the center, six places on the left side, and six places on the right side of the first board **110**, so that the upper, middle, and lower extension cables **114**, **116**, and **118** are drawn to the upper surface of the first board **110** at regular intervals. Especially, guide bars **112***c* each having a guide groove may be additionally provided at moving courses of the upper and lower extension cables **114** and **118**.

[0041] Likewise, a tension spring **122** is longitudinally provided along a central portion in the second board **120**. A pair of extension cables **126** is drawn to the upper surface of the left and right sides of the second board **120**. The extension cables **126** are coupled to a lower end of the tension spring **122** and extend the tension spring **122**. Foot supports **150** are easily detachably coupled to ends of the extension cables **126**. Reference numeral **124** denotes fastening bolts that detachably fasten the foot supports **150** to the second board **120**, when a user does sit-ups without help from others.

[0042] Similarly to the extension cables of the first board **120**, the extension cables **126** of the second board **120** are guided in predetermined courses by guide units. The guide units include guide plates **122***a*, and guide rods **122***b* that are rotatably installed between the guide plates **122***a*. The guide units are provided at one place at the center, two places on the left side, and two places on the right side of the second board **120**. Further, guide bars **122***c* each having a guide groove **122***d* may be additionally provided at moving courses of the extension cables **126**.

[0043] Cable holes **110***b* and **120***b* are formed in the ends of the first and second boards **110** and **120**, with the guy cable **160** passing through the cable holes **110***b* and **120***b*. Both ends of the guy cable **160** are held by a fastening button **162**. An insertion hole **162***a* is formed at a central portion in the fastening button **162** so that stop protrusions **160***a* and **160***b* provided on both ends of the guy cable **160** pass through the insertion hole **162***a*.

[0044] The shape of the insertion hole **162***a* is similar to a cross shape. Shown in FIG. **2**, the central portion of the insertion hole **162***a* is wide to allow the stop protrusions **160***a* and **160***b* to be easily inserted into the insertion hole **162***a*, while side portions **162***b* of the insertion hole **162***a* are narrow to prevent the inserted stop protrusions **160***a* and **160***b* from being removed from the insertion hole **162***a*. Further, a seat may be provided on each side portion **162***b* of the insertion hole **162***a*.

[0045] Since the stop protrusions **160***a*, **160***b* are provided on two places of each end of the guy cable **160**, the length of the guy cable **160** may be appropriately adjusted to correspond to the case where the sit-up board **100** is set up at an angle to the ground surface (see, FIG. **2**) or the case where the sit-up board **100** is laid flat (see, FIG. **3**). Further, cable guide slots **110***a* and **120***a* are formed in four places on the first and second boards **110** and **120** to guide the guy cable **160** (see, FIG. **4**). Such a construction allows the first and second boards **110** and **120** to be stably in close contact with the ground surface, when the sit-up board **100** is unfolded, as shown in FIG. **3**.

[0046] FIG. **5** is an exploded perspective view showing the hinge unit **130** coupling the first and second boards **110** and **120** to each other. As shown in the drawing, hinge brackets **132** and **134** are provided on respective ends of the first and second boards **110** and **120**, and a hinge shaft **136** is inserted into the hinge brackets **132** and **134** so that the first board **110** is hinged to the second board **120**. Further, an interference edge **132***a* is provided on a side of each of the hinge brackets **132**, thus preventing the first and second boards **110** and **120** from rotating upwards.

[0047] FIG. **6** is a perspective view showing the handle **140**, according to this invention. As shown in the drawing, the shape of the handle **140** is similar to a circular shape. A grip **142** is provided at a position in the handle **140**. Further, an insertion hole **144** is provided at another position in the handle **140** such that a stop protrusion **114***a*, **116***a*, **118***a* provided on an end of the extension cable **114**, **116**, **118** is inserted into the insertion hole **144**.

[0048] The shape of the insertion hole **144** is similar to a cross shape. When shown from FIG. **6**, a central portion **144***a* of the insertion hole **144** is wide to allow the stop protrusion **114***a*, **116***a*, **118***a* to be easily inserted into the insertion hole **144**. Conversely, when shown from FIG. **6**, side portions **144***b* of the insertion hole **144** are narrow to prevent the inserted stop protrusion **114***a*, **116***a*, **118***a* from being undesirably removed from the insertion hole **144**. Such an insertion hole **144** of the handle **140** allows the handle **140** to be easily detached from an end of the extension cable **114**, **116**, **118**. Thus, it is possible to detachably couple one handle to a desired one among several extension cables **114**, **116**, and **118**.

[0049] FIG. **7** is a perspective view showing the foot support **150**, according to this invention. As shown in the drawing, the foot support **150** has a fastening structure like a handcuff or the like. In a detailed description, the foot support **150** includes first and second fastening parts. The first fastening part is jointed by a hinge shaft **156**. The second fastening part includes a rod-shaped locking lug **152** and a lug holder **154**. After the locking lug **152** is seated in the lug holder **154**, the lug holder **154** prevents upward movement of the locking lug **152**. In this case, the circular foot support **150** itself has elasticity, so that it is easy to open or close the foot support **150** when necessary. However, once the locking lug **152** has been seated in the lug holder **154**, the foot support **150** does not open, even if a force is applied in a direction from an inside to an outside of the second fastening part.

[0050] Further, an insertion hole **158** is formed at a predetermined position on the first fastening part, so that a stop protrusion provided on an end of each extension cable **126** is inserted into the insertion hole **158**. The shape of the insertion hole **158** is similar to a cross shape. A central portion **158***a* of the insertion hole **158** is wide to allow the stop protrusion to be easily inserted into the insertion hole **158**. Conversely, side portions **158***b* of the insertion hole **158** are narrow to prevent the inserted stop protrusion from being undesirably removed from the insertion hole **158**. Since the insertion hole **158** has the same construction as the insertion hole **144** of the handle **140**, the insertion hole **158** will not be described in detail herein.

[0051] FIG. **8** is a partially exploded perspective view of a sit-up board, according to the second embodiment of the present invention. Those elements common to both the first embodiment and the second embodiment will carry the same reference numerals. The sit-up board of the second embodiment is characterized in that each of first and second boards **210** and **220** comprises a plurality of parts that are coupled to each other via coupling rods **212**, **222**. In this case, each of the coupling rods **212** and **222** may have an assemblable structure. If the sit-up board is manufactured in this way, it is possible to minimize the volume of the sit-up board during the storage or sale of the sit-up board.

[0052] Rod passing pipes (not shown) may be additionally provided in the first and second boards **210** and **220** so that

the coupling rods **212** and **222** pass through the rod passing pipes. Further, lower ends of the coupling rods **212** and **222** passing through the rod passing pipes are supported by closed end members of the first and second boards **210** and **220**, so that the undesirable removal of the coupling rods **212** and **222** is prevented.

[**0053**] Meanwhile, when the guy cable **160** is lengthened to arrange the first and second boards **210** and **220** levelly, the removal of the coupling rods **212** and **222** is prevented by the guy cable **160**.

[**0054**] When the first and second boards **210** and **220** are manufactured through plastic injection molding, manufacturing costs are reduced, and the weight of the sit-up board is reduced, so that it is easy to move the sit-up board to another place. Further, when each of the first and second boards **210** and **220** comprises several parts, the strength of the sit-up board is greater than that of the sit-up board having the first and second boards **210** and **220** that are integrated with each other.

[**0055**] The operation of this invention constructed as described above will be described below.

[**0056**] First, when a user desires to do sit-ups for strengthening the upper part of the belly or to exercise the upper body, including the arms and the shoulders, the operation of the sit-up board will be described with reference to FIGS. **2** to **4**. To this end, the hinge unit **130** is adjusted to locate the first and second boards **110** and **120** at a pre-determined angle. In order to maintain this state, the guy cable **160** is fastened to the fastening button **162**. At this time, the first stop protrusions **160***a* provided at ends of the guy cable **160** are inserted into the insertion hole **162***a* of the fastening button **162**. Thereafter, the first stop protrusions **160***a* are seated in the side portions **162***b* so as to prevent the first stop protrusions **160***a* from being removed from the insertion hole **162***a*.

[**0057**] Next, the head of each fastening bolt **124** of the second board **120** is inserted into the central portion **158***a* of the insertion hole **158** of each foot support **150** shown in FIG. **7**, and is seated in the side portion **158***b*, prior to the fastening bolt **124** being secured by a nut provided on a lower surface of the second board **120**. After both ankles are inserted into the corresponding foot supports **150**, each locking lug **152** is elastically fastened to an associated lug holder **154**. Once each locking lug **152** has been seated in the lug holder **154**, each foot support **150** is not opened even if a force is applied in a direction from the inside to the outside of the fastened part, that is, a user lifts up his or her feet, because each lug holder **154** prevents the upward movement of the locking lug **152**.

[**0058**] As such, after both ankles have been secured into the foot supports **150**, a user's torso rests on the first board **110**. In such a state, the user may repeatedly raise his or her torso. Thus, the user can do sit-ups easily without help from others, and thereby build muscles in the upper part of the belly.

[**0059**] Moreover, when the torso rests on the first board **110**, and the handles **140** are pulled, the tension spring **112** is extended, in conjunction with the extension cables **114** coupled to the handles **140**. Thereby, it is possible to exercise the arm and shoulder muscles. The extension cables **114** are drawn to the upper surface of the first board **110** along the guide units that are provided in the central portion and on left and right sides of the lower surface of the first board **110**. Such a construction is advantageous in that it is possible to exercise the arms and the shoulders in various directions, according to the positions of the pulled extension cables **114**, **116**, and **118**.

[**0060**] Since the handles **140** are easily detachably coupled to ends of the extension cables **114**, **116**, and **118**, it is possible to easily couple the handles **140** to desired extension cables **114**, **116**, **118**. Thus, only one pair of handle **140** is required, thus reducing manufacturing costs, and affording convenience to a user when the sit-up board is moved or stored.

[**0061**] The sit-up board operated as described above is helpful in treating the spine, stretching the waist, and promoting blood circulation. Further, the sit-up board of this invention facilitates exercises for building muscles in the upper part of the belly through sit-ups and exercises for the arms and the shoulder in various directions.

[**0062**] Meanwhile, when a user desires to build the abdominal region or leg muscle by lifting the legs, the first stop protrusions **160***a* of the guy cable **160** are unfastened from the fastening button **162**. The second stop protrusions **160***b* of the guy cable **160** are fastened to the fastening button **162**, so that the first and second boards **110** and **120** are laid flat, as shown in FIG. **3**. At this time, the interference edges **132***a* are formed on the hinge brackets **132** provided on a side of the hinge unit **130**, thus preventing the first and second boards **110** and **120** from rotating upwards.

[**0063**] In such a state, both feet are inserted into the corresponding foot supports **150**. Next, after a user sits on the sit-up board, lies on his/her back or lies face down, the user lifts his or her legs. At this time, the tension spring **122** is extended, in conjunction with the extension cables **126** coupled to the foot supports **150**. Thereby, it is possible to build abdominal muscles or various leg muscles. In this case, the extension cables **126** are drawn to the upper surface of the second board **120** along the guide units which are provided in the central portion and on left and right sides on the lower surface of the second board **120**. The sit-up board constructed as described above is advantageous in that it is possible to do exercises to strengthen abdominal and leg muscles.

[**0064**] When a user finishes exercising and desires to store or move the sit-up board, the second board **120** rotates about the hinge unit **130** relative to the first board **110**. Thus, the sit-up board is advantageous in that it occupies a small space during storage, and is easy to move.

[**0065**] Particularly, according to the second embodiment shown in FIG. **8**, each of the first and second boards **210** and **220** comprises a plurality of parts that are coupled to each other via the coupling rods **212** and **222**. Such a construction allows all components to be separated from each other, thus minimizing the volume of the sit-up board when it is stored, moved, or sold.

[**0066**] Hereinafter, the third embodiment of the present invention will be described with reference to FIGS. **9** and **10**. FIG. **9** is a perspective view of a sit-up board, according to the third embodiment of this invention, and FIG. **10** is a bottom perspective view of the sit-up board shown in FIG. **9**, when the sit-up board is unfolded.

[0067] As compared to other embodiments of this invention, the sit-up board of the third embodiment is characterized in that tensions springs **312** are installed on both left and right sides on the lower surface of a first board **310**. Such a construction affords a firm structure, in comparison with the sit-up board having one tension spring, and in addition, allows the left and right parts of the body to be separately exercised.

[0068] Further, the sit-up board of this embodiment is provided with a pair of extension cables **316** that function to extend the tension springs **312**, and a second board **320** is not provided with a tension spring. This simplifies the construction of the sit-up board, thus simplifying a manufacturing process and reducing manufacturing costs.

[0069] Reference numeral **400** of FIG. **9** denotes a pulling strap which is held by a user, when the spine is treated, sit-ups are done, or the torso is raised. Support balls **410** are provided at several places on the pulling strap **400**. In order to secure the support balls **410** to the pulling strap **400** at regular intervals, a screw hole is formed at a pre-determined position on each support ball **410**, so that a screw **412** is tightened into the corresponding screw hole (see, partially enlarged portion C of FIG. **9**).

[0070] Referring to FIG. **9**, the sit-up board includes handles **340**. A grip **342** is provided at a position on each handle **340**. Further, an insertion hole **344** is provided at another position on each handle **340** such that a stop protrusion **316***a* provided on an end of each extension cable **316** is inserted into the insertion hole **344** (see, partially enlarged portion A of FIG. **9**).

[0071] The insertion hole **344** has a size and a shape allowing each stop protrusion **316***a* to be easily inserted therein. Further, a semi-elliptical part **344***a* is provided at a position in the insertion hole **344**. The size and the shape of the semi-elliptical part **344***a* are determined so that the semi-elliptical part **344***a* holds the stop protrusion **316***a* without preventing the undesirable removal of the inserted stop protrusion **316***a*. A seat **344***b* is provided at an upper position of the semi-elliptical part **344***a* (see, partially enlarged portion B of FIG. **9**). The insertion hole **344** of each handle **340** allows the handle **340** to be easily detached from one end of the extension cable **316**, thus allowing one handle to be coupled to a desired position of each extension cable **316**.

[0072] Meanwhile, a plurality of stop protrusions **316***a* may be provided on each extension cable **316**, thus permitting various exercises. That is, a stop protrusion **316***a*, which is provided at the first position on the upper surface of the first board **310**, serves to prevent the extension cable **316** from being inserted into the first board **310**. Further, each foot support **350** is held by the first stop protrusion **316***a* of the extension cable **316**, thus allowing a user to exercise the legs (see, FIG. **13**). Furthermore, stop protrusions **316***a*, which are provided at the second and third positions on the upper surface of the first board **310**, may be used according to a user's position or height (see, FIGS. **12** and **14**). Meanwhile, the method of coupling the stop protrusions **316***a* to the extension cables **316** may adopt the method of coupling the support balls **410** to the pulling strap **400**.

[0073] Referring to FIG. **10**, coupling rods **372** and the tension springs **312**, which are accommodated in passing pipes **370** and **312***a*, respectively, are provided on the lower surface of the first board **310** comprising a plurality of parts, thus enhancing the durability of the product and providing a good appearance. Further, paper tubes may be provided in the passing pipes **312***a* accommodating the tension springs **312** therein, thus minimizing noise generated when the tension springs **312** are extended.

[0074] The portion encircled in FIG. **10** is a partially enlarged view of a guide unit. Referring to the drawing, the guide unit includes first guide parts **380** and second guide parts **390**. The first guide parts **380** are installed to be aligned with the corresponding tension springs **312**. The second guide parts **390** are provided outside the corresponding first guide parts **380**, thus perpendicularly changing the direction of the extension cables **316** coupled to ends of the tension springs **312**.

[0075] Each of the first guide parts **380** includes guide plates **382** supported by four support posts **384**. Further, a guide rod **386** is rotatably installed between the guide plates **382**, and guides each extension cable **316**.

[0076] After each extension cable **316** passes through an associated first guide part **380**, the direction of the extension cable **316** is perpendicularly changed such that the extension cable **316** is guided by each second guide part **390**, thus being drawn to the upper surface of the first board **310**. Each of the second guide parts **390** includes a pair of first guide rods **396** which are rotatably installed between left and right guide plates **392** when shown from FIG. **10**, and a pair of second guide rods **398** which are rotatably installed between front and rear guide plates **394** and are provided under the first guide rods **396**, when shown from FIG. **10**, to be perpendicular to the first guide rods **396**.

[0077] Each of the second guide parts **390** constructed as described above allows the extension cable **316** to be easily drawn to the upper surface of the first board **310**, regardless of the direction in which the extension cables **316** are drawn. Thus, it is possible to exercise in various directions.

[0078] FIG. **11** is a perspective view showing a foot support **350**, according to another modification of this invention. Referring to the drawing, the foot support **350** includes a body **356** having an insertion hole **358**. Hook and pile pieces **352** and **354** of a Velcro are provided at respective opposite ends of the body **356**.

[0079] Each fastening bolt **324** provided on the second board **320** of FIG. **9** is inserted into the insertion hole **358** of each foot support **350**. Since the construction of the insertion hole **358** is equal to that of the insertion hole **344** of the above-mentioned handle **340**, the insertion hole **358** will not be described in detail herein. Reference numeral **358***a* denotes a semi-elliptical part **358***a*, and reference numeral **358***b* denotes a seat.

[0080] The hook and pile pieces **352** and **354** serve to fasten the ankle to the body **356** of each foot support **350**. The Velcro is advantageous in that they may be used regardless of the size of the ankle.

[0081] Meanwhile, referring to FIG. **15**, the foot supports **350** may be installed on the first board **310**. To this end, one or more pairs of fastening bolts **324** may be detachably provided on the first board **310**. In order to use such a construction, a user fastens the user's feet to the correspond-

ing foot supports **350**, and lies face down. In this case, the user's torso rests on the second board **320**. In such a state, by lifting the torso up and down, the user can do a back-extension exercise. Further, as shown in FIG. **15**, when two or more pairs of fastening bolts **324** are provided at different positions, it is possible to install the foot supports **350** according to the user's height.

[**0082**] FIGS. **12** to **15** are views showing the use of the sit-up board, according to the third embodiment of this invention. Hereinafter, the features and operation of the sit-up board, according to the third embodiment, constructed as described above, will be described with reference to FIGS. **9** through **15**.

[**0083**] When a user intends to do sit-ups to build the upper part of the belly or exercise the torso including the arms and shoulder, the operation of the sit-up board will be described with reference to FIG. **12**. First, a hinge unit **330** is adjusted to locate the first and second boards **310** and **320** at a predetermined angle. In order to maintain such a state, a guy cable **360** is secured to a fastening button **362**.

[**0084**] In such a state, the head of each fastening bolt **324** secured by a nut (not shown) inside the second board **320** is inserted into the insertion hole **358** of each foot support **350** of FIG. **11**, prior to being seated in the seat **358***b*. Next, both ankles are inserted into the corresponding foot supports **350**. The foot supports **350** are adjusted using the hook and pile pieces **352** and **354** provided on the foot supports **350**, according to the size of the ankles.

[**0085**] After the ankles are secured to the foot supports **350**, the torso rests on the first board **310**. Afterwards, by repeatedly raising the torso, a user can easily do sit-ups without help from others and thereby build muscles in the upper part of the belly.

[**0086**] Further, when the torso rests on the first board **310** and the handles **340** are pulled, the tension springs **312** (see, FIG. **10**) are extended in conjunction with the extension cables **316** coupled to the corresponding handles **340**, thus exercising muscles in the arms and shoulder. The extension cables **316** are drawn to the upper surface of the first board **310** along the guide unit provided on the lower surface of the first board **310**. At this time, the second guide parts **390** constructed as described above allow a user to exercise in various directions.

[**0087**] The sit-up board of this invention operated as described above is helpful in treating the spine, stretching the waist, and promoting blood circulation. Further, the sit-up board is advantageous in that exercises for building muscles in the upper part of the belly through sit-ups or exercise for the arms or shoulders can be done in various directions.

[**0088**] Meanwhile, when one desires to build the abdominal region or leg muscles by lifting the legs, as shown in FIG. **12**, first stop protrusions **360***a* of the guy cable **360** are detached from the fastening button **362**, and thereafter, second stop protrusions **360***b* of the guy cable **360** are fastened to the fastening button **362**. Thereby, the first and second boards **310** and **320** are horizontally unfolded.

[**0089**] In such a state, as described above, the foot supports **350** are secured to the extension cables **316**. If necessary, it is possible to secure the foot supports **350** using the first or second stop protrusions which are positioned on the upper surface of the first board **310**. Next, both feet are fastened using the hook and pile pieces **352** and **354** (see, FIG. **11**). In such a state, a user sits down, lies face up or face down, and afterwards lifts up the user's legs.

[**0090**] At this time, the tension springs **312** (see, FIG. **10**) are extended in conjunction with the extension cables **316** coupled to the foot supports **350**, thus building muscles in the abdominal region or various leg muscles. In this case, the extension cables **316** are drawn along the guide unit provided on the lower surface of the first board **310** to the upper surface of the first board **310**.

[**0091**] Further, as shown in FIG. **14**, while a user stands on or repeatedly sits down on and stands up on an end of the first board **310**, he or she pulls the handles **340** coupled to the extension cable **316** in various directions, thus variously exercising.

[**0092**] The sit-up board constructed as described above is advantageous in that it has a simpler structure that those of the first and second embodiments, and allows a user to do exercises for building muscles in the abdominal region and leg muscles. Since other advantages and operation of the third embodiment are equal to or similar to those of the first and second embodiments, they will not be described herein in detail.

[**0093**] FIG. **15** shows the state where a user does a back-extension exercise using the sit-up board according to this invention. As shown in FIG. **15**, the foot supports **350** are fastened to the first board **310** using the fastening bolts **324**. A user's feet are secured to the foot supports **350**, prior to the user lying face down. At this time, the user's torso is positioned on the second board **320**. In such a state, by lifting the torso up and down, the user does the back-extension exercise. Such a back-extension exercise causes the lower part of the back and the abdominal muscles to be evenly strengthened, thus preventing back pain.

[**0094**] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims. For example, a tension spring is used as the elastic member herein, but various elastic members including rubber or the like may be used in place of the tension spring.

INDUSTRIAL APPLICABILITY

[**0095**] As described above, the present invention provides a sit-up board, which can be used for multiple purposes, for example, spine treatment, building the upper part of the belly or the abdominal region, and exercises for the back (back-extension), the arms, the legs, and other areas.

[**0096**] Further, the sit-up board of this invention is foldable and lightweight, so that it is easy to store and move to another position. Furthermore, the sit-up board of this invention is advantageous in that it has a simple structure, enables various exercises, and is inexpensive.

1. A sit-up board, comprising:

a first board, comprising: at least one elastic member provided on a lower surface of the first board; at least

one extension cable coupled to an end of the elastic member, and extending the elastic member; and a plurality of guide units provided on the lower surface of the first board, so that the extension cable is drawn to an upper surface of the first board along the guide units;

a second board coupled to the first board via a hinge unit in such a way as to rotate downwards, with a foot support being detachably mounted to the second board; and

a guy cable passing through ends of the first and second boards, and supporting the first and second boards at a predetermined angle.

2. The sit-up board according to claim 1, wherein the elastic member comprises a tension spring.

3. The sit-up board according to claim 1, wherein both ends of the guy cable are held by a fastening button, and an insertion hole is formed in a central portion of the fastening button so that a stop protrusion provided at each of the ends of the guy cable is inserted into the insertion hole, the insertion hole having a cross shape and being formed such that a central portion of the insertion hole is wide to allow the stop protrusion to be easily inserted into the insertion hole, and a side portion of the insertion hole is narrow to secure the inserted stop protrusion therein, the stop protrusion being provided at two or more places on each of the ends of the guy cable.

4. The sit-up board according to claim 1, wherein the extension cable of the first board is provided with at least one stop protrusion such that a handle is detachably coupled to the extension cable, and an insertion hole is formed at a predetermined position on the handle such that the stop protrusion is inserted into the insertion hole, with a seat being provided at a predetermined position on the insertion hole such that the stop protrusion is seated in and locked to the seat.

5. The sit-up board according to claim 1, wherein the second board comprises: at least one tension spring provided on a lower surface of the second board; an extension cable coupled to a lower end of the tension spring, and extending the tension spring; and a plurality of guide units provided on the lower surface of the second board, so that the extension cable is drawn to an upper surface of the second board along the guide units, and is fastened to the foot support.

6. The sit-up board according to claim 1, wherein the foot support has a circular shape, and comprises: a first fastening part jointed by a hinge shaft; and a second fastening part comprising: a rod-shaped locking lug; and a lug holder to prevent upward movement of the locking lug when the locking lug has been seated in the lug holder, wherein an insertion hole is provided at a predetermined position on the first fastening part such that a head of a fastening bolt of the second board or the stop protrusion provided on each of the ends of the extension cable of the second board is inserted into the insertion hole, the insertion hole having a cross shape and being formed such that a central portion thereof is wide to allow the head of the fastening bolt or the stop protrusion to be easily inserted into the insertion hole, and a side portion is narrow to allow the inserted head of the fastening bolt or the inserted stop protrusion to be seated in and locked to the insertion hole.

7. The sit-up board according to claim 1, wherein the foot support comprises: a body; and hook and pile pieces of a Velcro provided on opposite ends of the body, wherein an insertion hole is provided at a predetermined position on the body such that a head of a fastening bolt of the second board or the stop protrusion provided on each of the ends of the extension cable of the second board is inserted into the insertion hole, with a seat being provided at a predetermined position in the insertion hole such that the inserted stop protrusion is seated in and locked to the seat.

8. The sit-up board according to claim 1, wherein each of the first and second boards comprises a plurality of parts, the parts being coupled to each other via coupling rods.

9. The sit-up board according to claim 1, wherein the guide units comprise: a first guide part installed to be aligned with the elastic member; and a second guide part provided outside the first guide part, and perpendicularly changing a direction of the extension cable coupled to the lower end of the elastic member, wherein the first guide part comprises: guide plates supported by at least one support post; and a guide rod rotatably installed between the guide plates, and guiding the extension cable, and the second guide part comprises: a pair of first guide rods rotatably installed between left and right guide plates; and a pair of second guide rods rotatably installed between front and rear guide plates, and arranged to be perpendicular to the first guide rods.

10. The sit-up board according to claim 1, wherein the extension cable of the first board is provided with at least one stop protrusion such that a handle is detachably coupled to the extension cable, and an insertion hole is formed at a predetermined position on the handle such that the stop protrusion provided at each of the ends of the extension cable is inserted into the insertion hole, the insertion hole having a cross shape and being formed such that a central portion thereof is wide to allow the stop protrusion to be easily inserted into the insertion hole, and a side portion thereof is narrow to allow the inserted stop protrusion to be seated in and locked to the insertion hole.

11. The sit-up board according to claim 1, further comprising: one or more pairs of foot supports detachably secured to the first board.

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