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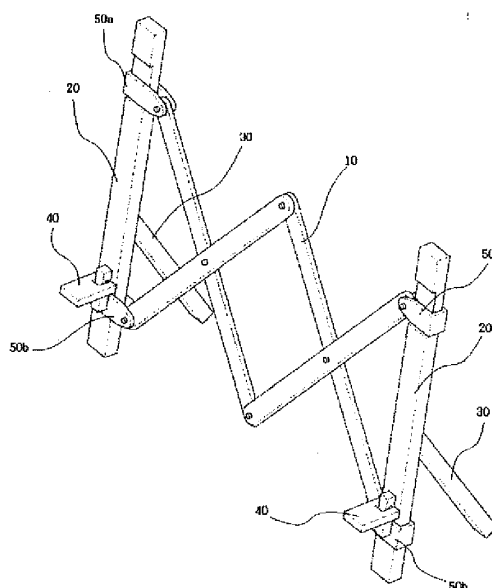
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(54) **FOLDABLE BOOKSTAND**

(57) The present invention relates to a foldable bookstand, and more particularly, to a foldable bookstand formed by a support frame having an extensible module as a basic unit and in which the centers of crossed rods are hinged together such that the rods can be opened

into an X-shaped and folded into the shape of an straight line. The extensible modules are coupled together in a horizontal direction so as to form an extensible frame. The support frame can be opened when a user uses the bookstand, and folded so as to be conveniently stored and carried after use.

[Fig. 1]



Description

[Technical Field]

[0001] The present invention relates to a foldable bookstand, particularly a foldable bookstand that can be easily kept and carried by a book support frame that is an extensible frame.

[Background Art]

[0002] Bookstands, book support shelf used for placing a book thereon for reading, are objects, which students or students preparing themselves for various examines usually use, and have the effect of considerably reducing fatigue on the neck by ensuring an appropriate inclination when they read a book. Further, using the bookstands maintains a correct position in reading. Accordingly, the bookstands have a medically good effect of preventing disc diseases or scoliosis.

[0003] However, since most of the bookstands are manufactured with a board having considerable size and volume as the book support shelf, they reduce the spatial availability on a desk, except for when they are used, and are inconvenient to carry and use anywhere such as a classroom or a library in a school, or a reading room.

[0004] Accordingly, the applicant(s) has invented a foldable system structure in Korean Patent Application No. 10-2012-0054341 and a foldable system structure board and a manufacturing method of a foldable product using the same in Korean Patent Application No. 10-2012-0012265, which are the background of the present invention. The inventions provide a foldable system structure in which frames overlap in X-shapes and are connected at the centers by hinges to be foldable such that the board can also be foldable and extensible. By manufacturing a product, using the technology of the foldable system structure board, it is possible to achieve foldable products that can be carried and used anywhere with high spatial availability. According to the technology of the foldable system structure board, it is possible to achieve a new foldable product that can be easily kept and carried with new products entirely foldable, by manufacturing products by further connecting a foldable system structure board to the foldable system structure board, or by adding the components of an object to be manufactured such as legs or wheels to the foldable system structure board to implement a foldable system structure board and a shape fitting to the features of the products.

[0005] As the background of the present invention, there are a foldable chair in Korean Patent Application No. 10-2011-0047478 and a portable foldable chair in Korean Patent Application No. 10-2012-0024673, which are made using the technology of the foldable system structure. The foldable chairs are foldable chairs that can be entirely folded and carried and used anywhere by making the back and the seat by connecting two foldable

system structure boards with hinges, which are the background of the art, and connecting four legs to the seat with hinges.

[0006] The present invention is a bookstand manufactured by the technology of the foldable system structure board that is the background art in the patents by the applicant(s), based on the foldable bookstand disclosed in Korean Utility Model Registration No. 20-0453664, a multipurpose foldable bookstand disclosed in Korean Utility Model Application No. 20-2012-0004833, a foldable book support shelf disclosed in Korean Utility Model Application No. 20-2011-0006590, and a portable foldable bookstand disclosed in Korean Utility Model Application No. 20-2011-0010113. The present invention provides a foldable bookstand by can be carried and used anywhere by connecting a book support shelf to a foldable system structure board with hinges, with the foldable system structure board of the background art as a disc of the bookstand.

[Disclosure]

[Technical Problem]

[0007] The present invention has been made in an effort to overcome the inconvenience in keeping and carrying and insufficient spatial availability, which are the defects of common bookstands with a disc supporting a book and an object of the present invention is to provide a foldable bookstand that can be simply kept or carried by unfolding the book support frame of the bookstand when used by a user and folding them after using to reduce the volume.

[Technical Solution]

[0008] In order to achieve the object, a foldable bookstand of the present invention includes: a book support frame having an extensible module as a basic component, which constitutes an extensible frame at the left and right sides such that two overlapping rods are unfolded in an X-shape and folded in a straight line, with the centers of rods hinged or not; fixing posts connected to the left and right ends of the book support frame; supports hinged to the rear sides of the fixing posts, and supporting the bookstand while ensuring an inclination in use of the bookstand; book support shelves hinged to the front lower ends of the fixing posts and supporting a book when the bookstand is used; upper connecting portions coupled to steps formed at the upper ends or hooked in grooves formed at centers of the fixing posts, hinged to the book support frame to connect the book support frame with the fixing posts, and moving up/down at the steps at the upper ends or the hooks in the grooves at the centers of the fixing posts, as the book support frame is folded and unfolded; and lower connecting portions hinged and fixed to the book support frame such that the book support frame and the fixing post are con-

nected to steps or grooves formed at the lower ends of the fixing posts.

[0009] Further, the foldable bookstand of the present invention further includes book fixing frames hinged to the book support shelves to be able to fix a book on the bookstand, without the leaves of the book turned over.

[0010] Further, the foldable bookstand further includes inclination adjusting parts each of which has: two or more fixing grooves formed at the supports such that the inclination can be adjusted when the foldable bookstand is used; and an inclination adjusting frame hinged to a groove formed at the lower end of the fixing post or a fixing block connected to the lower end of the fixing post, and having a protrusion that can be fitted into the fixing groove at one end.

[0011] Further, the foldable bookstand of the present invention further include a hanger connecting portion that has: a hanger hinged to the rear side of any one of the center hinged portions of the extensible modules of the book support frame so that the bookstand can be more stably fixed, when the book support frame extensible modules are unfolded in an X-shape in use; and a hanger coupling portion formed on the rear side of the center hinged portions of the extensible module where the hanger is not formed.

[Advantageous Effects]

[0012] According to the present invention, since the book support frame of a bookstand is implemented by an extensible frame, it is possible to unfold the book support frame when a user uses the bookstand, and to keep or carry the bookstand with the book support frame folded, after using. Accordingly, a user can simply keep or carry the bookstand in comparison to the existing bookstands, fully provided with the function of the bookstand.

[0013] Further, the bookstand can be used, other than a bookstand used for placing a book thereon, as an electronic device cradle used for placing a tablet PC, a notebook, or an electronic calculator thereon, an exhibition product bed used for placing a photograph frame or a picture frame thereon, or a multipurpose life product bed for placing documents or papers in wording, in a interview, in a lecture, and in other conferences and lectures, such that the availability is improved, as compared with the existing bookstands.

[Brief Description of Drawings]

Representative figure

FIG. 1

[0014]

FIG. 1 is a front perspective view of an embodiment when a foldable bookstand according to the present invention is unfolded.

FIG. 2 is a rear perspective view of an embodiment when the foldable bookstand according to the present invention is unfolded.

FIG. 3 is a perspective view of an embodiment when the book supports and a book support shelf are folded with the foldable bookstand according to the present invention unfolded.

FIG. 4 is a front view of an embodiment when the foldable bookstand according to the present invention is unfolded.

FIG. 5 is a side view of an embodiment when the foldable bookstand according to the present invention is folded.

FIG. 6 is a perspective view of an embodiment when the parts of the foldable bookstand according to the present invention are separated.

FIG. 7 is a front perspective view of an embodiment further including book fixing frames with the foldable bookstand according to the present invention unfolded.

FIG. 8 is a rear perspective view of an embodiment further including an inclination adjusting part with the foldable bookstand according to the present invention unfolded.

FIG. 9 is a front perspective view of an embodiment when the foldable bookstand is unfolded, with the book support frame, which is the necessary component of the foldable bookstand according to the present invention, modified and changed without departing from an X-shaped extensible structure.

FIG. 10 is a rear perspective view of an embodiment when the foldable bookstand is unfolded, with the book support frame, which is the necessary component of the foldable bookstand according to the present invention, modified and changed without departing from an X-shaped extensible structure.

<Reference Numerals>

[0015]

- 10: book support frame
- 20: fixing post
- 30: support
- 40: book support shelf
- 50a: upper connecting portion
- 50b: lower connecting portion
- 60: book fixing frame
- 70: inclination adjusting part
- 80: hanger connecting portion

[Best Mode]

[0016] A foldable bookstand of the present invention includes: a book support frame 10 having an extensible module as a basic component, which constitutes an extensible frame at the left and right sides such that two overlapping rods are unfolded in an X-shape and folded

in a straight line, with the centers of rods hinged or not; fixing posts 20 connected to the left and right ends of the book support frame; supports 30 hinged to the rear sides of the fixing posts, and supporting the bookstand while ensuring an inclination in use of the bookstand; book support shelves 40 hinged to the front lower ends of the fixing posts and supporting a book when the bookstand is used; upper connecting portions 50a coupled to steps formed at the upper ends or hooked in grooves formed at centers of the fixing posts, hinged to the book support frame to connect the book support frame with the fixing posts, and moving up/down at the steps at the upper ends or the hooks in the grooves at the centers of the fixing posts, as the book support frame is folded and unfolded; and lower connecting portions 50b coupled to grooves formed at the lower ends of the fixing posts or steps formed at the lower ends of the fixing shaft, and hinged and fixed to the book support frame such that the book support frame and the fixing post are connected.

[0017] Further, the foldable bookstand further includes book fixing portions 60 hinged to the book supports to prevent the leaves of a book from being turned over when using the bookstand, additionally further includes inclination adjusting parts 70 having: two or more fixing grooves formed at the supports; and an inclination adjusting portion hinged to a fixing block at the lower end of the fixing post or a groove formed at the lower end of the fixing post and having a protrusion that can be fitted into the fixing groove at one, and further includes a hanger connecting portion 80 having: a hanger hinged to the rear side of any one of the center hinged portions of the extensible modules of the book support frame; and a hanger coupling portion formed on the rear side of the center hinged portion of the extensible module where the hanger is not coupled, in the best mode of embodiments of the present invention.

[Mode for Invention]

[0018] The present invention relates to a foldable bookstand that can be kept and folded by unfolding book support frame 10 for use in reading and folding the book support frame 10 after using.

[0019] Hereinafter, detailed embodiments will be described with reference to the accompanying drawings.

[0020] FIG. 1 is a front perspective view of an embodiment when the foldable bookstand according to the present invention is unfolded.

[0021] A book support frame 10 includes extensible frames composed of extensible modules at the left and right sides, which are basic components implemented by two overlapping rods hinged at the centers to be unfolded in an X-shape, as in FIG. 1, or not hinged, though not shown in the figure, and to be folded in a straight line shape. The book support frame 10 supports a book when unfolded. Two or more extensible modules may be combined and the width of the dense degree when the book support frame 10 is unfolded may be adjusted in accord-

ance with the number of the extensible modules. The book support frame 10 is unfolded, when the foldable bookstand according to the present invention is kept or carried. The point of the present invention is a foldable bookstand that can be folded and unfolded, including the book support frame 10 having the X-shaped extensible structure.

[0022] A fixing post 20 is connected to the left and right ends of the book support frame 10 and function as both axes for folding/unfolding the book support frame 10. They divisionally support the weight of a book applied to the book support frame 10, when the bookstand is used. The entire design of the present invention depends on the shape of the fixing posts 20. For example, the entire shape may be modified in various ways, including a rectangle and a circle by making the fixing bars 20 in a semicircular shape. For example, FIG. 5 is a side view of an embodiment when the foldable bookstand according to the present invention is folded and FIG. 9 is a front perspective view of an embodiment of a foldable bookstand unfolded with the fixing posts 20 changed and modified by hinging two frames, not one frame, without the book support frame 10, which is the point of the foldable bookstand according to the present invention, departing from the X-shaped extensible structure, and from which it can be seen that the entire design of the present invention also depends on the shape of the shape of the fixing posts 20, for example it becomes one frame in the size of one book, depending on the shape of the fixing post 20. Accordingly, the fixing post 20 may be implemented by one bar or by hinging two bars, as in FIG. 9, and may be formed in various shapes and designs.

[0023] A support 30 is hinged to the rear side of the fixing post 20 and supports the bookstand while ensuring the inclination when the bookstand is used. FIG. 2 is a rear perspective view of an embodiment when the foldable bookstand according to the present invention is unfolded, and from which the way of combining the supports 30 can be seen. A fixing block protrudes from the rear side of the fixing post 20 or a groove is formed on the fixing post 20, as in FIGS. 3 to 6, to combine the support 30. A U-shaped coupling portion and a groove for coupling a fixing pin may be formed on the support 30 to be coupled by the fixing pin while surrounding the fixing block, as in FIG. 2, or as in FIGS. 3 to 6, the support 30 may be combined in various ways within the scope of the present invention by forming a groove on the fixing post 20 and hinging the support 30 or forming a fixing block on the support and forming a groove on the fixing post 20 in accordance with the embodiment.

[0024] A book support shelf 40 may be hinged to the fixing block by a fixing pin, at the front lower end of the fixing post 20, as in FIG. 1, or hinged to a groove at the front lower end of the fixing post, as in FIGS. 3 to 6, and supports a book when the bookstand is used. The combination may be implemented in various ways by forming a groove and coupling it, in the same way as described for the support 30, or forming it as a protruding fixing

block, which can be seen from the accompanying drawings.

[0025] An upper connecting portion 50a may be a step formed at the upper end of the fixing post 20, as in FIGS. 1 and 2, or may be fitted in a groove at the center, as in FIGS. 3 to 6, is hinged to the book support frame 10 to connect the book support frame 10 with the fixing post 20, and moves in the step or the groove at the upper end of the fixing post 20 when the book support frame 10 is folded and unfolded. As the book support frame 10 is unfolded, the upper connecting portion 50a moves down and is locked to the step or the groove at the upper end. Further, as the book support frame 10 is folded, the upper connecting portion 50a moves up and is locked to the step or the groove at the upper end, which can be seen from the accompanying drawings.

[0026] A lower connecting portion 50b may be a step formed at the lower end of the fixing post 20, as in FIGS. 1 and 2, or may be fitted in a groove, as in FIGS. 3 to 6, and is hinged and fixed to the book support frame 10 to connect the book support frame 10 with the fixing post 20. The lower connecting portion 50b does not move while the book support frame 10 is unfolded and folded. Accordingly, the lower connecting portion 50b is locked to the upper portion and the lower portion of the step at the lower end or the book support frame 10 is fitted in the groove on the fixing post 20 and fixed therein by a hinge.

[0027] The largest effect provided by the foldable bookstand according to the present invention is simplicity in keeping and carrying. FIG. 3 is a perspective view of an embodiment when the book support 30 and the book support shelf 40 are folded, with the foldable bookstand according to the present invention folded, FIG. 4 is a front view of an embodiment when the foldable bookstand according to the present invention is unfolded, FIG. 5 is a side view of an embodiment when the foldable bookstand according to the present invention is folded, and FIG. 6 is a perspective view of an embodiment with the parts of the foldable bookstand according to the present invention separated. Referring to the figures, it can be seen the book support frame 10, the supports 30, and the book support shelves 40 can be independently folded and unfolded, in the foldable bookstand according to the present invention. As the parts are folded and unfolded, the bookstand can be changed in the size of a small book or the size that can be carried by a hand in a frame shape, such that the object described above is achieved and simplicity in keeping and carrying can be accomplished.

[0028] Further, the foldable bookstand according to the present invention further includes book fixing frames 60. FIG. 7 is a front perspective view of an embodiment further including the book fixing frames 60, when the foldable bookstand according to the present invention is unfolded. The book fixing frame 60 is additionally hinged to the book support shelf 40 in order to prevent the leaves of a book from being turned over, when a user uses the book on the book support shelves 40.

[0029] Meanwhile, the foldable bookstand according to the present invention further includes inclination adjusting parts 70 and FIG. 8 is a rear perspective view of an embodiment further including the inclination adjusting parts 70 when the foldable bookstand according to the present invention is unfolded. As in the embodiment of FIG. 8, the foldable bookstand according to the present invention can be implemented such that the inclination of the bookstand can be adjusted in accordance with the use environment or the preference of the user. In detail, the bookstand further includes two or more fixing grooves formed on the supports 30 and inclination adjusting frames that is hinged to the fixing block and the fixing pin at the lower end of the fixing post 20 or the groove at the lower end of the fixing post 20 and has a protrusion that can be fitted in the fixing groove, at one end, such that the inclination of the bookstand can be increased/decreased in accordance with which one of the fixing grooves of the supports 30 the inclination adjusting frame is fitted in, and accordingly, the bookstand is implemented such that the inclination can be adjusted.

[0030] Further, the foldable bookstand according to the present invention may further include hanger connecting portions 80 with a hanger and a hanger coupling portion, FIG. 9 is a front perspective view of an embodiment when a foldable bookstand with fixing posts changed and modified by connecting two frames with a hinge is unfolded, without the book support frame, which is the point of the foldable bookstand according to the present invention, departing from the X-shaped extensible structure, FIG. 10 is a rear perspective view of an embodiment when a foldable bookstand with fixing posts changed and modified by connecting two frames with a hinge is unfolded, without the book support frame, which is the point of the foldable bookstand according to the present invention, departing from the X-shaped extensible structure, and it can be seen from FIGS. 9 and 10 that the structure further including the hanger and the hanger coupling portion is implemented by adding the hanger connecting portion 80. This configuration, in detail, includes the hanger hinged to the rear of any one of the center hinged portions of the extensible module of the book support frame 10 and the hanger connecting portion with the hanger coupling portion formed on the rear side of the center hinged portion of the extensible module where the hanger is not coupled. When the extensible module is unfolded in an X-shape, the hanger is coupled to the hanger coupling portion and can keep the extensible module stably unfolded. Stably fixing the unfolded book support frame with the hanger and the hanger coupling portion may be added when the bookstand according to the present invention is made of a material with durability poorer than that of steel or wood, such as plastic, and may be selectively added to the bookstands with a straight fixing post 20, as in FIGS. 1 to 8, is preferably necessarily applied to the configuration of connecting two frames with a hinge, as in FIGS. 9 and 10.

[0031] FIG. 6 is a perspective view of an embodiment

with the parts of the foldable bookstand according to the present invention separated, and from which it can be seen that the entire combination relationship of the present invention.

[0032] FIGS. 9 and 10 shows a foldable bookstand with the book support frame 10, which is the point of the present invention, changed and modified within the X-shaped extensible structure, which is the point of the invention, in which the shape of the fixing posts is different from those of FIGS. 1 to 8 and the hanger connecting portions 80 are necessary. Claims of the present invention include all of embodiments having the foldable bookstand with the book support frame in an X-shape as a basic shape, as in FIGS. 9 and 10, and may be modified and changed without departing from the point that the present invention is a foldable bookstand having a book support frame that is an X-shaped frame that can be folded and unfolded.

[0033] The present invention was described above with reference to the accompanying drawings. However, the present invention may be changed and modified within the point of the invention, other than the embodiments shown in the figures, for example, by putting a packing in the joints between the parts and the frames to making the folding smooth or increase the fixing ability, by designing a character at any part, by adding the function of measuring a length by drawing a scale on any one of the fixing posts or the supports, by forming a space at a portion of each of the fixing posts 20 to store a pencil case or the like, or by further providing rubber or an elastic material at the lower ends of the fixing posts 20 and the supports 30 to prevent the foldable bookstand according to the present invention from being pushed when a heavy book is placed thereon in use so that the stability in use is improved, and those configurations are included in the present invention, even if they are not included in claims. Therefore, claims of the present invention include changes and modifications that are included in the scope of the present invention.

[Industrial Applicability]

[0034] According to the background of the present invention, a product including a foldable system structure board is a foldable product that can be unfolded in use and can be simply kept and carried by folding after using. The technology of foldable system structure board can be applied, changed, and modified in various ways, such that it has the effect of being able to design many new foldable products, and accordingly, it can be very available for life products, furniture, leisure products, and buildings.

[0035] The industrial applicability of the foldable bookstand of the present invention is very high and as follows.

1. A product for studying as a bookstand used for placing a book thereon.
2. Peripheral equipment for electronic devices as a

cradle for electronic devices using electronic devices such as tablet PC, a notebook, or an electronic calculator.

3. A life product as a life product base using a photograph frame, a calendar, and a picture frame.

4. A religious product using the Bible, the Koran, the Buddhist scriptures, and a portrait.

5. A lecture product used for placing documents or papers prepared for a speech, a sermon, and a lecture thereon.

6. An office product, a fancy stationery product, or others as a document stand or a canterbury using documents or papers in wording, a resume in interviewing, documents in a conference, and a music in a concert.

Claims

1. A foldable bookstand comprising:

a book support frame having an extensible module as a basic component, which constitutes an extensible frame at the left and right sides such that two overlapping rods are unfolded in an X-shape and folded in a straight line;
fixing posts connected to the left and right ends of the book support frame;
supports hinged to the rear sides of the fixing posts to be folded and unfolded, and supporting the bookstand while ensuring an inclination in use of the bookstand;
book support shelves hinged to the front lower ends of the fixing posts to be folded and unfolded and supporting a book when the bookstand is used;
upper connecting portions coupled to steps or grooves formed at the upper ends of the fixing posts, hinged to the book support frame to connect the book support frame with the fixing posts, and moving up/down at the steps or the grooves at the upper ends of the fixing posts, as the book support frame is folded and unfolded; and
lower connecting portions coupled to steps or grooves formed at the lower ends of the fixing posts and hinged and fixed to the book support frame to connect the book support frame with the fixing posts.

2. The foldable bookstand of claim 1, further comprising book fixing frames hinged to the book shelves to be folded and unfolded, wherein the book fixing frames prevent the leaves of a book from being turned over or sliding on the book support shelves, when the bookstand is used with a book thereon.

3. The foldable bookstand of claim 1 or 2, further com-

prising an inclination adjusting part including:

two or more fixing grooves formed at the supports; and
a inclination adjusting portion hinged to a fixing block, a fixing pin, or a groove formed at the lower end of the fixing post, and having a protrusion that is fitted into the fixing groove at one end,
wherein the inclination is adjustable, when the bookstand is used.

4. The foldable bookstand of claim 1, 2, or 3, further comprising a hanger connecting portion including:

a hanger hinged to the rear side of any one of the center hinged portions of the extensile modules of the book support frame; and
a hanger coupling portion formed on the rear side of the center hinged portions of the extensile module where the hanger is not formed,
wherein the hanger is coupled to the hanger coupling portion when the extensile module is unfolded in an X-shape, such that the extensile module is stably kept.

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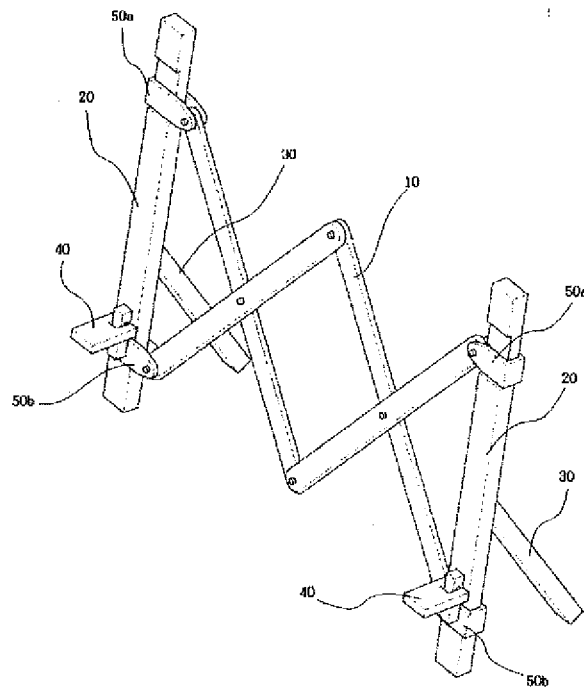
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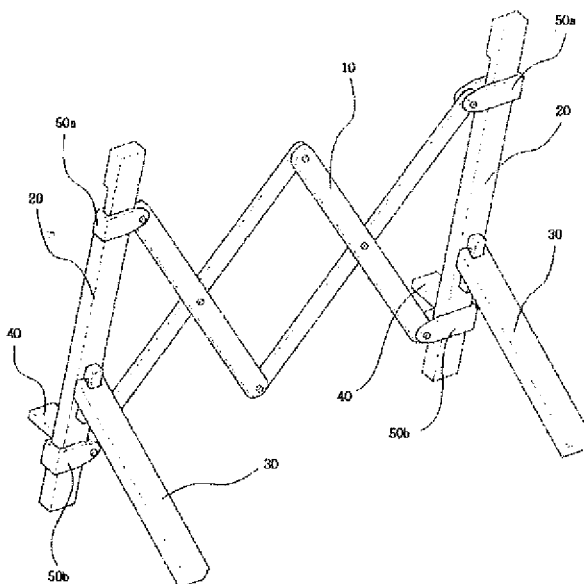
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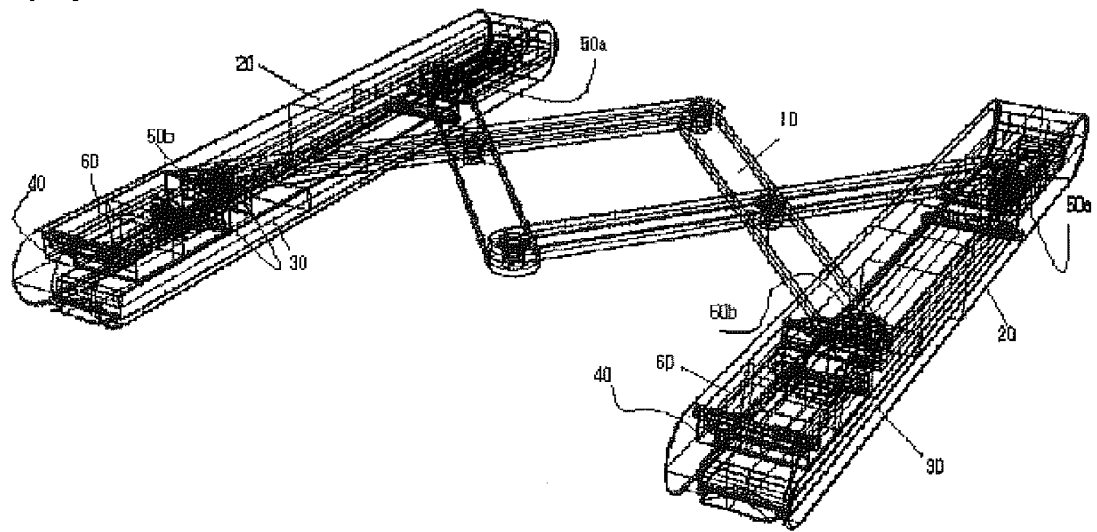
[Fig. 1]



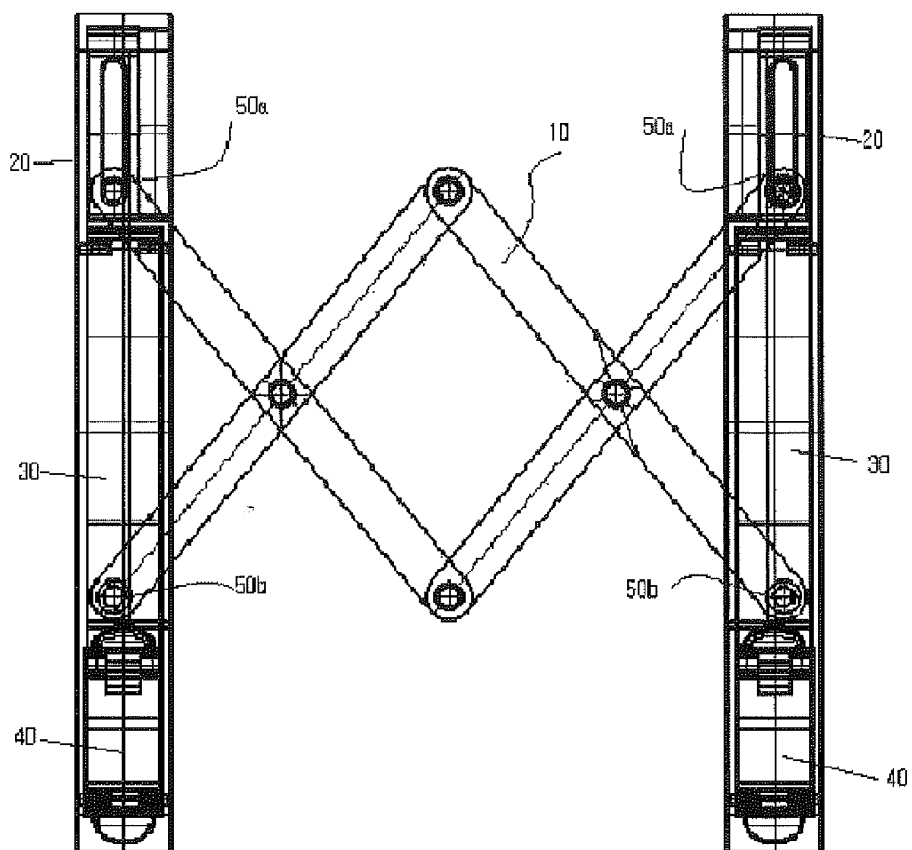
[Fig. 2]



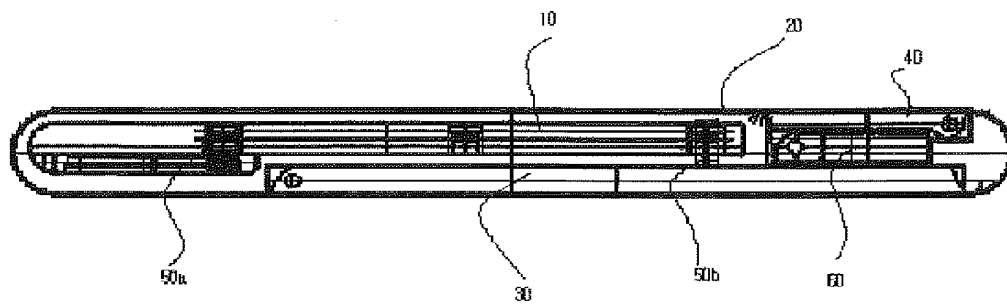
[Fig. 3]



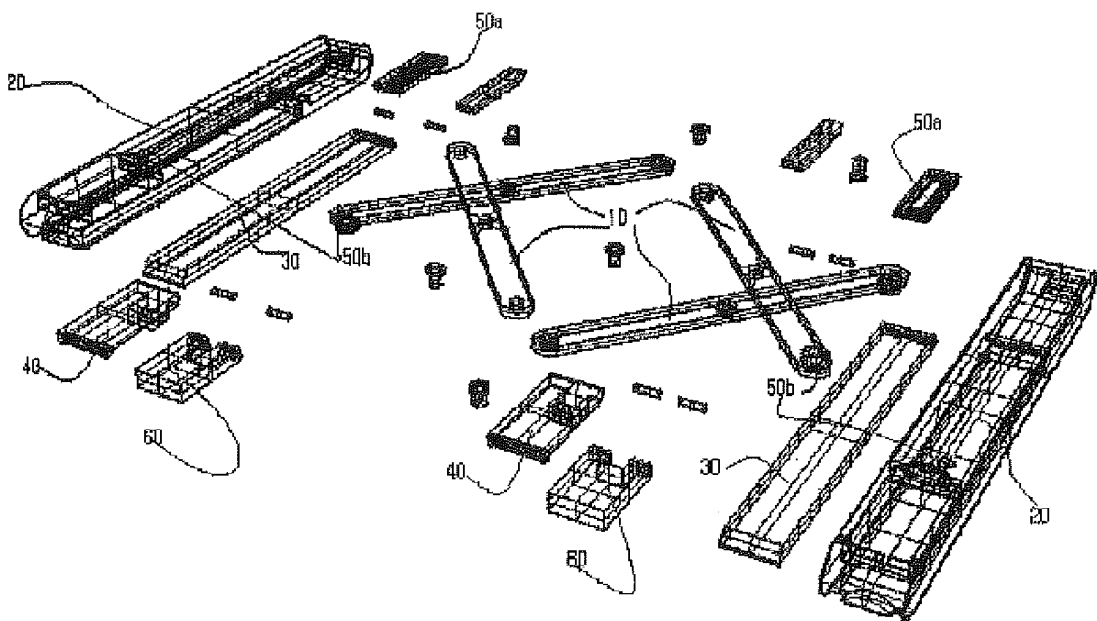
[Fig. 4]



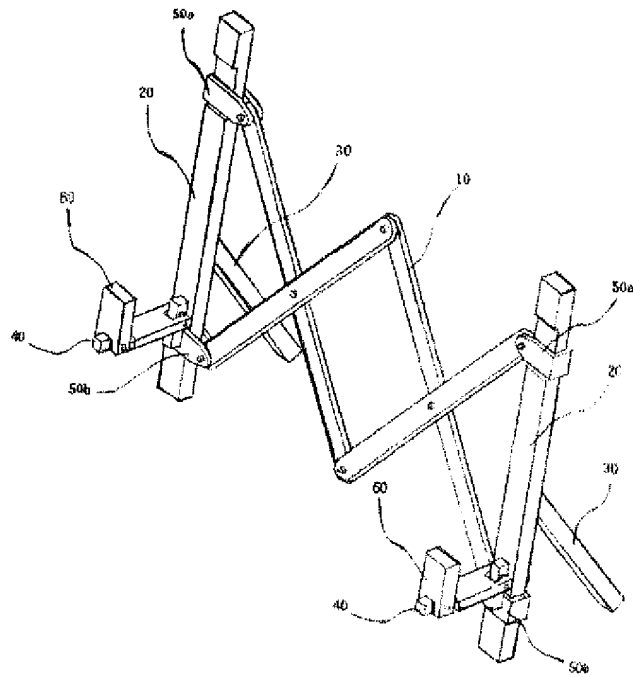
[Fig. 5]



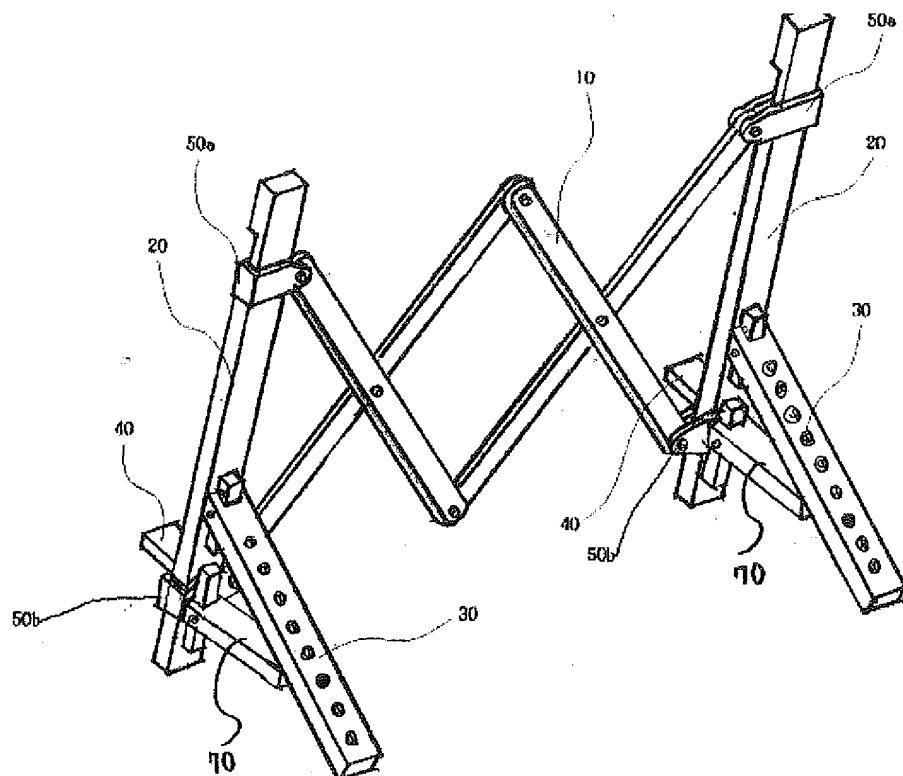
[Fig. 6]



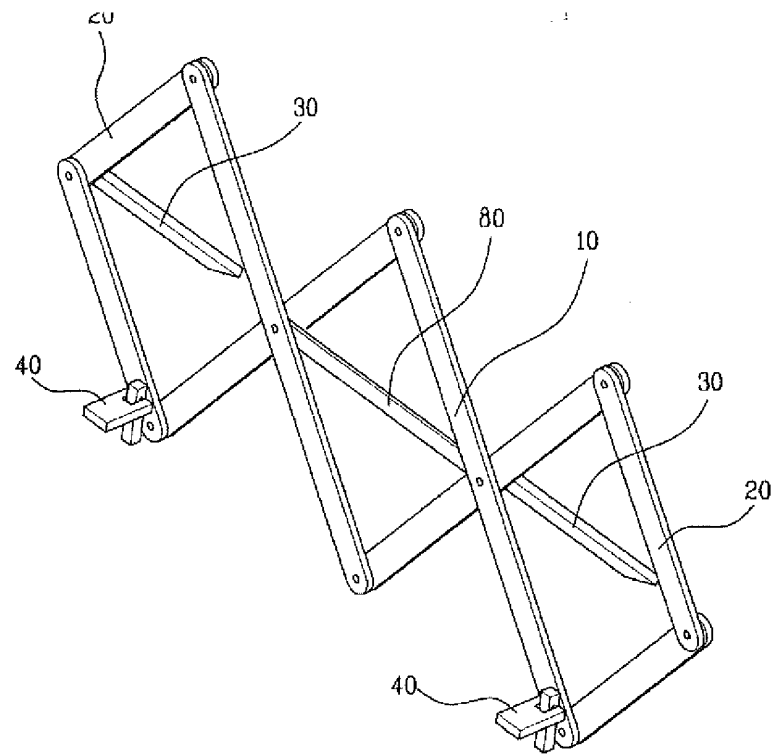
[Fig. 7]



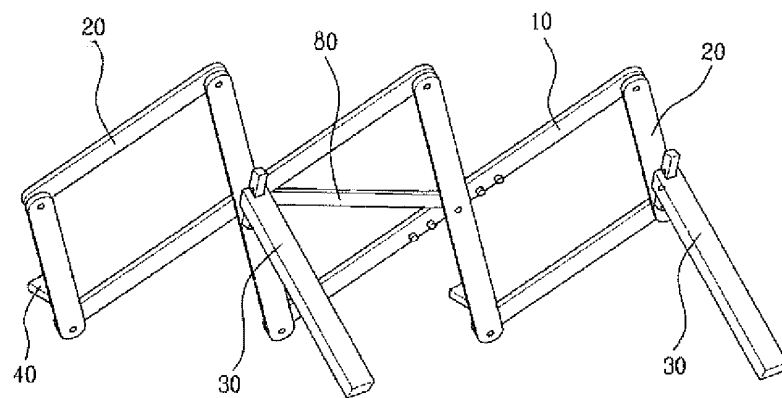
[Fig. 8]



[Fig. 9]



[Fig. 10]



REFERENCES CITED IN THE DESCRIPTION

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