



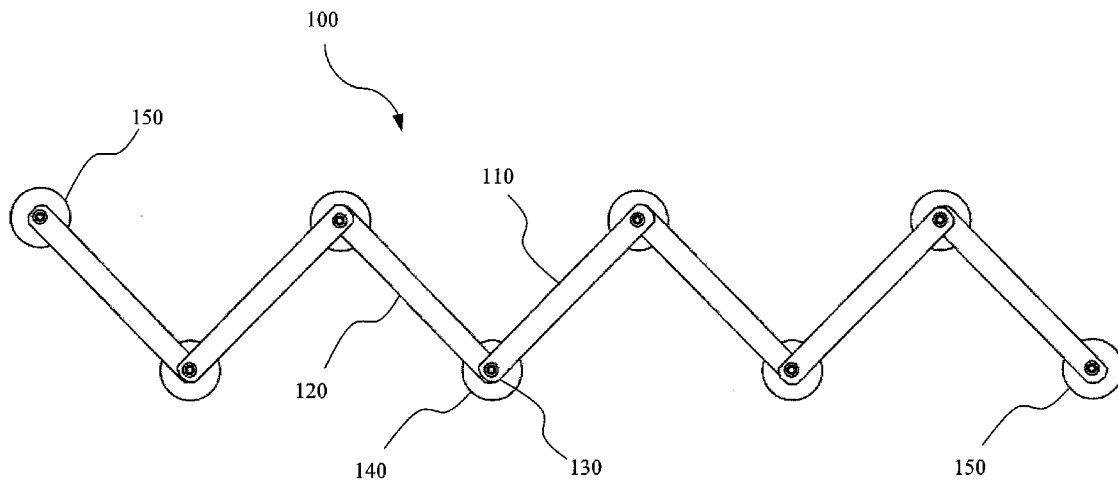
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(19) **United States**(12) **Patent Application Publication**
Pittorf(10) **Pub. No.: US 2008/0248902 A1**(43) **Pub. Date: Oct. 9, 2008**(54) **HOCKEY STICK-HANDLING DEVICE****Publication Classification**(76) Inventor: **Scott Douglas Pittorf**, Faribault,
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ST LOUIS, MO 63101 (US)(52) **U.S. Cl. 473/560**(21) Appl. No.: **12/059,287**(57) **ABSTRACT**(22) Filed: **Mar. 31, 2008**

A hockey stick-handling device comprises cross members and support columns. The support columns elevate the cross members from a training surface to allow an object for stick-handling to be passed underneath. The cross members are rotatable with respect to one another to allow the hockey stick-handling device to be arranged in various configurations for stick-handling as well as to be collapsed for storage. The hockey stick-handling device is modular in nature such that it can be lengthened or shortened to a desired length.

Related U.S. Application Data

(60) Provisional application No. 60/921,736, filed on Apr. 4, 2007.



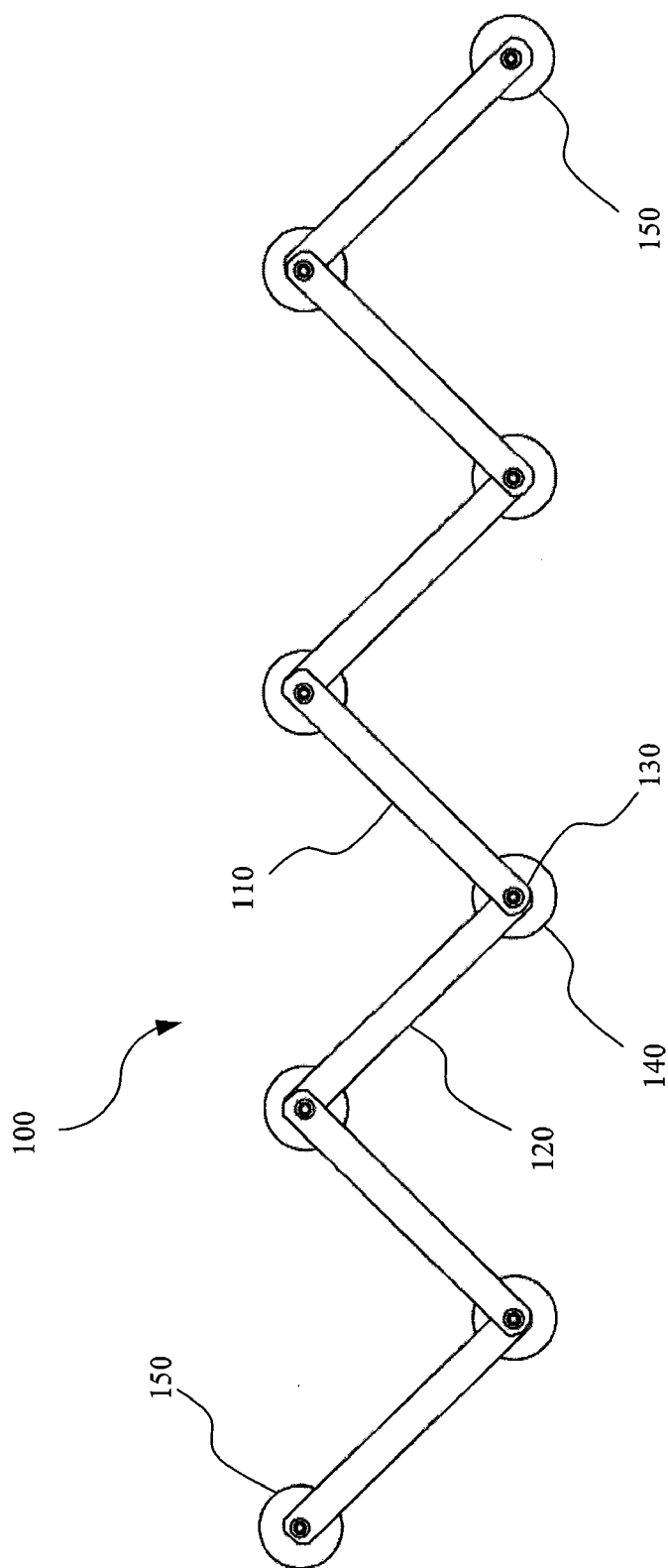


FIG. 1

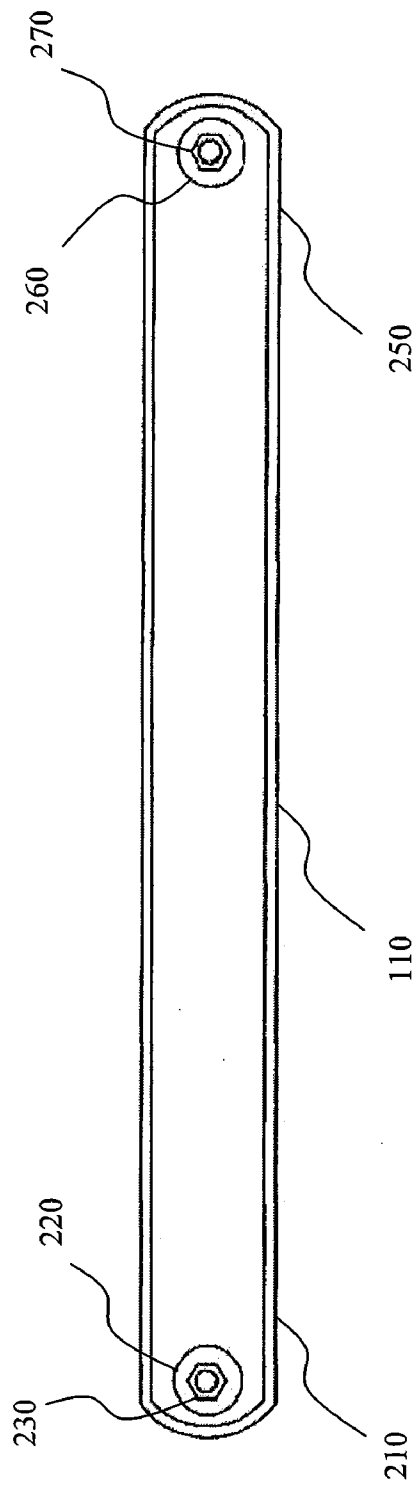


FIG. 2

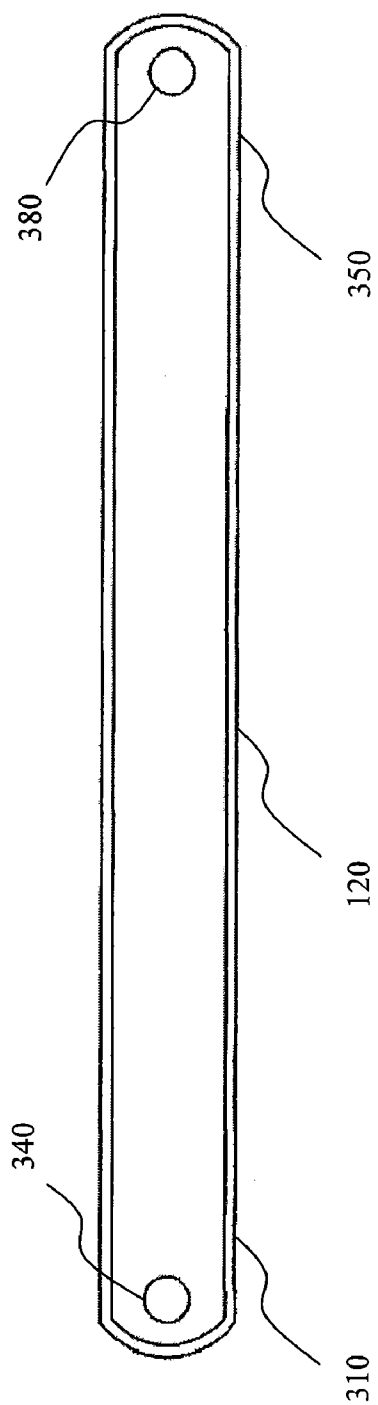


FIG. 3

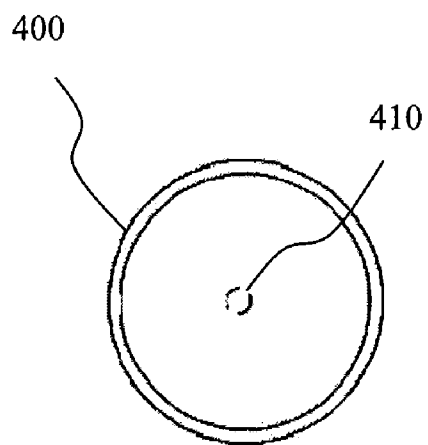


FIG. 4

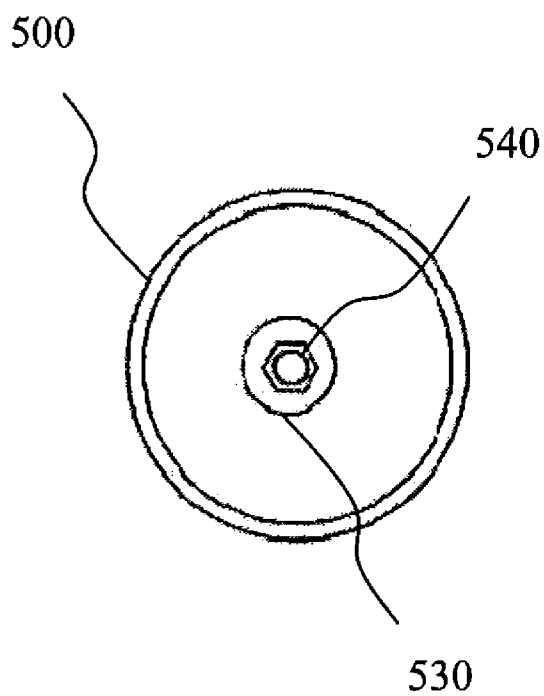


FIG. 5

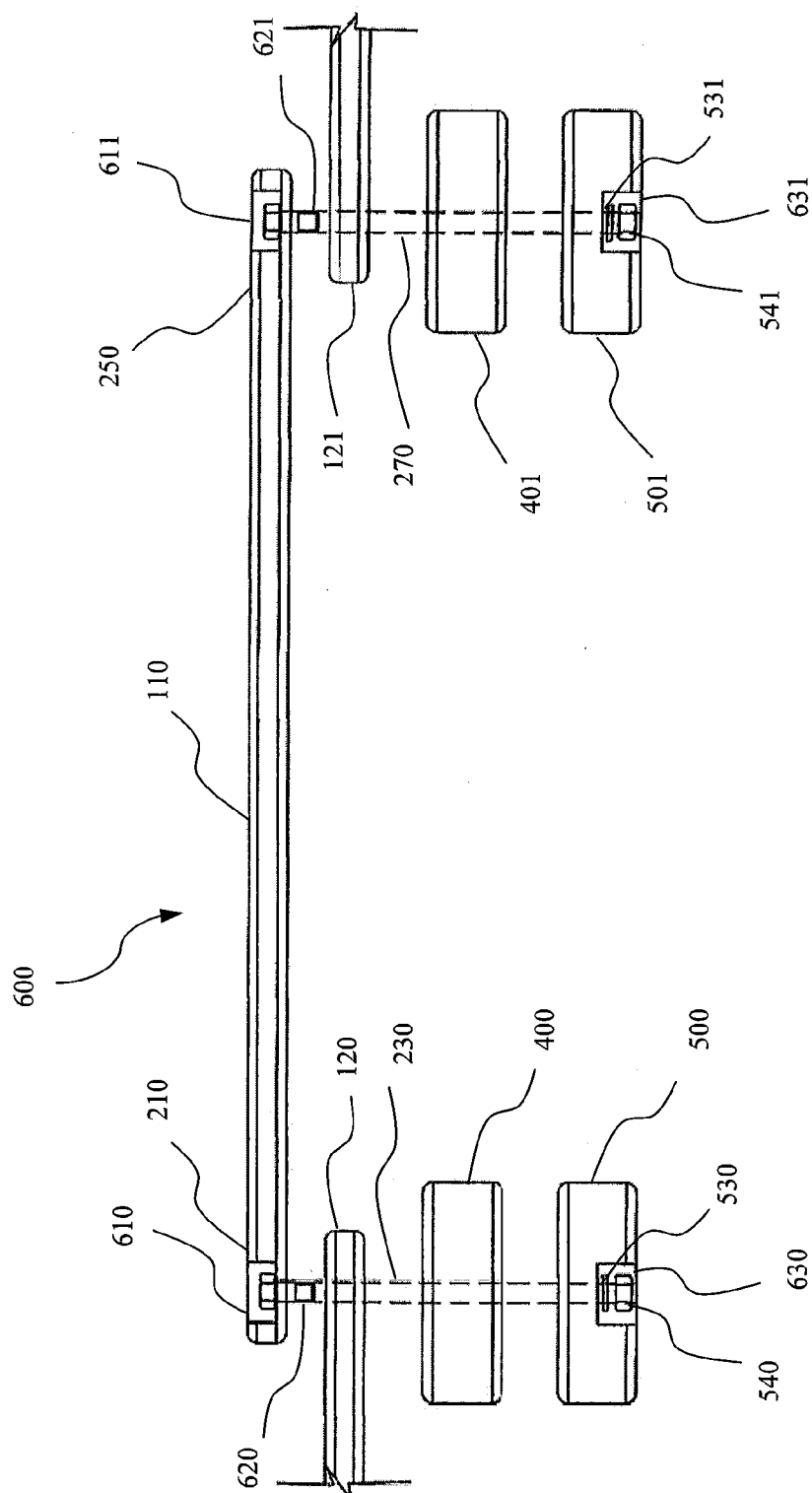


FIG. 6

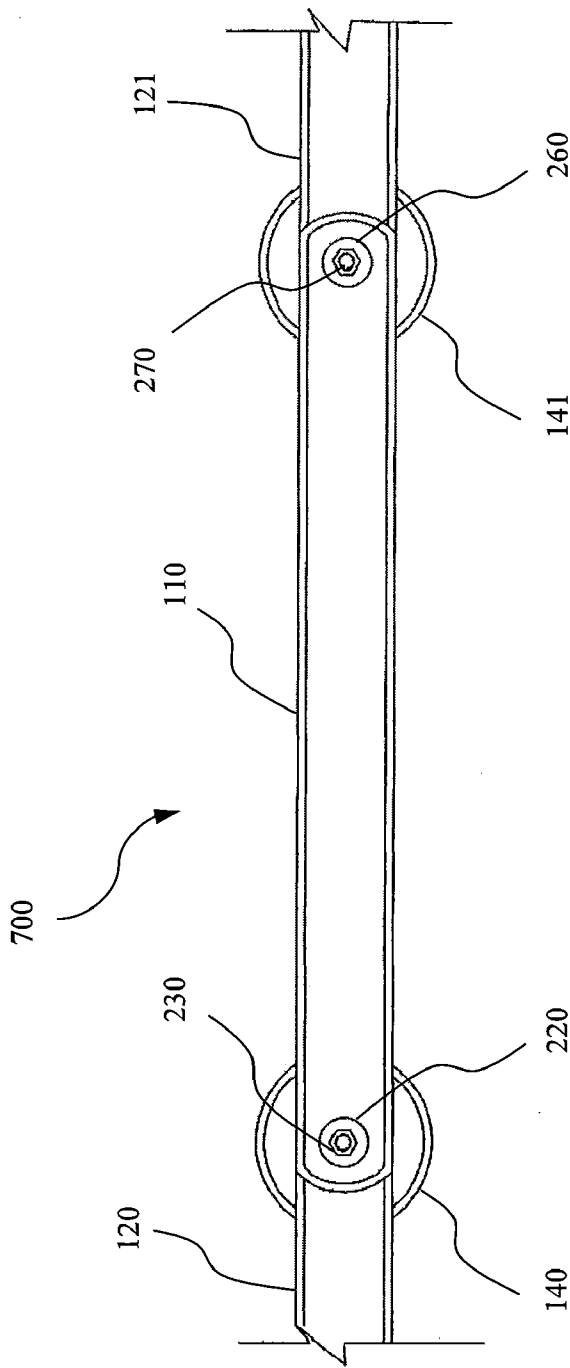


FIG. 7

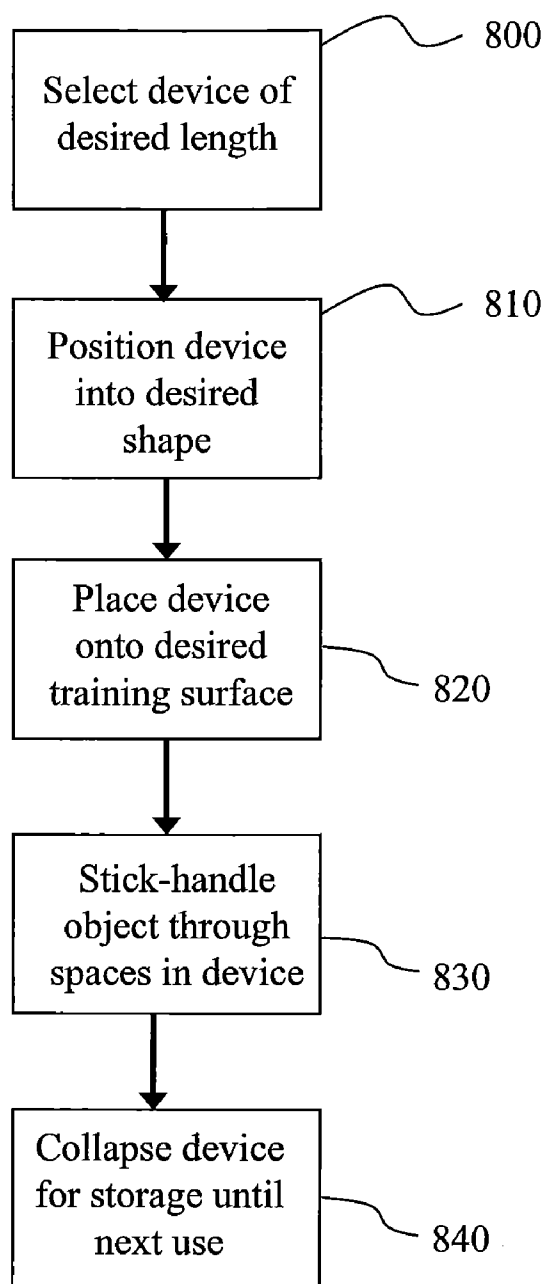


FIG. 8

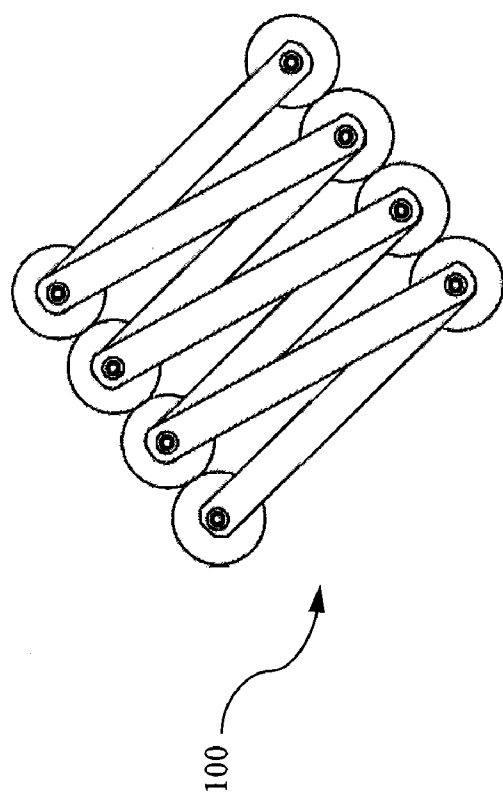


FIG. 9

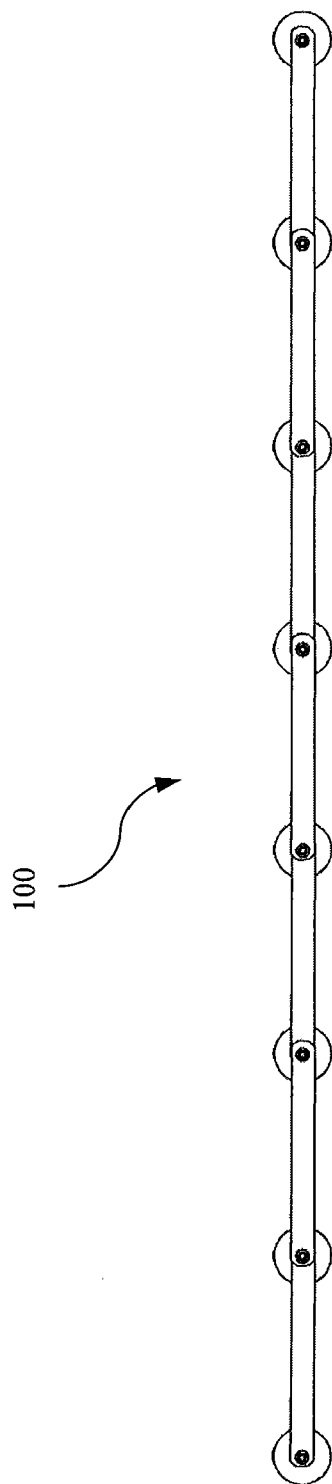


FIG. 10

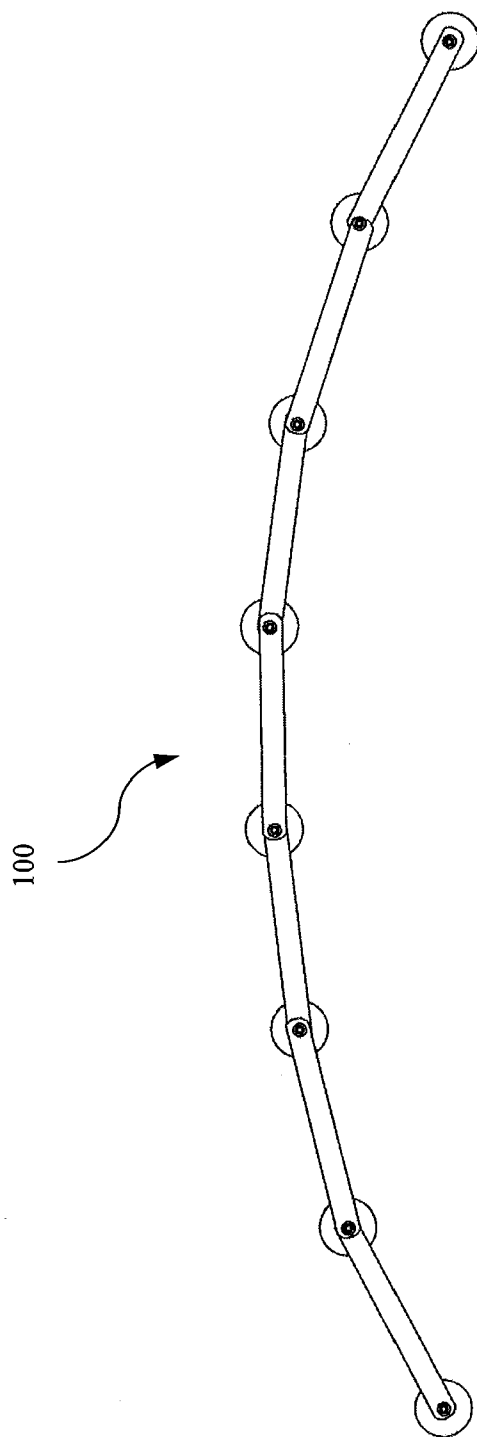


FIG. 11

HOCKEY STICK-HANDLING DEVICE

RELATED APPLICATIONS

[0001] This application claims priority from, and incorporates by reference, provisional U.S. Patent Application No. 60/921,736, filed Apr. 4, 2007.

BACKGROUND OF THE INVENTION

[0002] The present invention generally relates to a hockey training aid. More particularly, the present invention relates to a system and method for providing a hockey stick-handling device that is capable of multiple configurations and may be expanded and collapsed without repeated assembly.

[0003] A key skill in the sport of hockey is stick-handling. As a result, hockey players of all ages consistently strive to improve their stick-handling abilities, often through drills that utilize training aids. In most applications, it is desirable that the stick-handling training aid be durable, portable, easy to assemble, and adaptable to different drills, players, and surfaces.

[0004] Prior art stick-handling training aids present significant disadvantages for their users. Some training aids, such as the SweetHands Hockey Trainer produced by Sweet Hockey Products, L.L.C., are portable and capable of being expanded. However, the SweetHands device is capable of only one configuration (a straight line) and requires a multi-step take-down and reassembly process following each use of the device.

[0005] Thus, a need has long existed for an improved hockey stick-handling training aid that is capable of multiple configurations and may be expanded and collapsed without repeated assembly. The present invention overcomes the problems associated with prior art hockey stick-handling training aids by providing a versatile and convenient hockey stick-handling device that is durable, easy to assemble, and adaptable to a variety of drills, players, and surfaces.

BRIEF SUMMARY OF THE INVENTION

[0006] Certain embodiments of the present invention provide a hockey stick-handling device. The hockey stick-handling device includes cross members and support columns. The support columns elevate the cross members from a training surface to allow an object for stick-handling to be passed underneath. The cross members are rotatable with respect to one another to allow the hockey stick-handling device to be arranged in various configurations for stick-handling as well as to be collapsed for storage. The hockey stick-handling device is modular in nature such that it can be lengthened or shortened to a desired length.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

[0007] FIG. 1 illustrates a plan view of a hockey stick-handling device according to an embodiment of the present invention.

[0008] FIG. 2 illustrates a plan view of an upper cross member according to an embodiment of the present invention.

[0009] FIG. 3 illustrates a plan view of a lower cross member according to an embodiment of the present invention.

[0010] FIG. 4 illustrates a plan view of an upper support disc according to an embodiment of the present invention.

[0011] FIG. 5 illustrates a plan view of a lower support disc according to an embodiment of the present invention.

[0012] FIG. 6 illustrates an elevational view of a hockey stick-handling device segment according to an embodiment of the present invention.

[0013] FIG. 7 illustrates a plan view of a hockey stick-handling device portion according to an embodiment of the present invention.

[0014] FIG. 8 illustrates a flow chart of the process of using a hockey stick-handling device according to an embodiment of the present invention.

[0015] FIG. 9 illustrates a plan view of a hockey stick-handling device according to an embodiment of the present invention.

[0016] FIG. 10 illustrates a plan view of a hockey stick-handling device according to an embodiment of the present invention.

[0017] FIG. 11 illustrates a plan view of a hockey stick-handling device according to an embodiment of the present invention.

[0018] The foregoing summary, as well as the following detailed description of certain embodiments of the present invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, certain embodiments are shown in the drawings. It should be understood, however, that the present invention is not limited to the arrangements and instrumentality shown in the attached drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0019] FIG. 1 illustrates a plan view of a hockey stick-handling device **100** according to an embodiment of the present invention. The hockey stick-handling device **100** includes a plurality of upper cross members **110**, a plurality of lower cross members **120**, a plurality of rotatable connecting points **130**, a plurality of intermediary support columns **140**, and two terminal support columns **150**, one at each end of the device **100**. In operation, the support columns **140** and **150** support the cross members **110** and **120** such that the cross members **110** and **120** are elevated from a training surface by a height sufficient to allow an object for stick-handling (such as a hockey puck or ball) to pass underneath them.

[0020] When a plurality of cross members **110** and **120** and support columns **140** and **150** are connected in series, as shown in FIG. 1, an expandable hockey stick-handling device **100** is formed. The hockey stick-handling device **100** is modular such that it may be configured to a desired length by increasing or decreasing the number of cross members **110** and **120** and intermediary support columns **140**.

[0021] A first end of the upper cross member **110** is connected to a second end of the lower cross member **120** at rotatable connecting point **130**. For example, a screw bolt may be passed through an opening in the first end of the upper cross member **110** and through an opening in the second end of the lower cross member **120**. By doing so, the screw bolt connects the upper cross member **110** and the lower cross member **120** at rotatable connecting point **130** and creates a pivot around which the upper cross member **110** may be rotated in relation to the lower cross member **120**. The rotatable connecting points **130** are located above the intermediary support columns **140** only. There are no connecting points **130** above the terminal support columns **150**.

[0022] The rotatable connecting points **130** allow the hockey stick-handling device **100** to be positioned to form a

variety of working configurations or shapes, such as a zigzag configuration as shown in FIG. 1, a straight line configuration as shown in FIG. 10, and a curved configuration as shown in FIG. 11. Additionally, the rotatable connecting points 130 allow the hockey stick-handling device 100 to form a stowed configuration in which the cross members 110 and 120 are arranged substantially parallel to one another as shown in FIG. 9.

[0023] As explained further below, the shape of the hockey stick-handling device 100 can be adjusted by loosening the stop nut 540 of FIG. 5 and rotating the cross members 110 and 120 in relation to one another to a desired configuration and subsequently retightening the stop nut 540.

[0024] In alternative embodiments, the upper cross member 110 and the lower cross member 120 may be connected at rotatable connecting point 130 in a variety of ways. For example, the screw bolt used to connect the upper cross member 110 and the lower cross member 120 may be replaced by an unthreaded rod. In alternative embodiments, the upper cross member 110 and the lower cross member 120 may be connected with a hinge or a bearing at rotatable connecting point 130. In alternative embodiments, the upper cross member 110 of the hockey stick-handling device 100 may be configured to lock into one or more desired positions in relation to the lower cross member 120. For example, the upper cross member 110 may be locked into position at any of 30 degrees, 45 degrees, 60 degrees, 90 degrees, and 180 degrees in relation to the lengthwise direction of the lower cross member 120. This locking functionality may be accomplished by a variety of mechanisms or hardware, such as removable pins.

[0025] The support columns 140 and 150 are not required to be cylinder-shaped. For example, alternative embodiments may employ cube-shaped support columns.

[0026] In alternative embodiments, the hockey stick-handling device 100 may be made from a variety of different materials. For example, the cross members 110 and 120 and the support columns 140 and 150 may be created from high-density polyethylene, polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), acrylic, plastic, wood, or composite material. Additionally, hardware such as screw bolts or hinges used for rotatable connecting point 130 may be made from stainless steel or other metals, wood, plastic, or composite material.

[0027] FIG. 2 illustrates a plan view of an upper cross member 110 according to an embodiment of the present invention. The upper cross member 110 includes a first end 210, a first washer 220, a first screw bolt 230, a second end 250, a second washer 260, and a second screw bolt 270.

[0028] In operation, the first screw bolt 230 is passed through the first washer 220 and an opening in the first end 210 of the upper cross member 110. The second screw bolt 270 is passed through the second washer 260 and an opening in the second end 250 of the upper cross member 110. As described below with regard to FIG. 3, the first screw bolt 230 and the second screw bolt 270 are subsequently passed through openings in other cross members of the hockey stick-handling device 100 of FIG. 1.

[0029] The alternative material compositions and connection mechanisms described above with regard to FIG. 1 also apply to the embodiment of the present invention illustrated in FIG. 2.

[0030] FIG. 3 illustrates a plan view of a lower cross member 120 according to an embodiment of the present invention.

The lower cross member 120 includes a first end 310, a first opening 340, a second end 350, and a second opening 380.

[0031] In operation, as described above with regard to FIG. 1, the lower cross member 120 may be connected to the upper cross member 110 of FIG. 2. To create such a connection, the first screw bolt 230 of FIG. 2 is first passed through the first washer 220 of FIG. 2 and an opening at the first end 210 of the upper cross member 110. Next, the first screw bolt 230 is passed through the second opening 380 at the second end 350 of the lower cross member 120. Configuring the first screw bolt 230 in this fashion creates the rotatable connecting point 130 of FIG. 1.

[0032] If desired, an additional connection may be made between the lower cross member 120 and another upper cross member 110. To create this second connection, the second screw bolt 270 of the other upper cross member 110 is first passed through the second washer 260 and an opening at the second end 250 of the other upper cross member 110. Next, the second screw bolt 270 of the other upper cross member 110 is passed through the first opening 340 at the first end 310 of the lower cross member 120. In this fashion, additional connections between upper cross members 110 and lower cross members 120 may be made as desired.

[0033] The alternative material compositions and connection mechanisms described above with regard to FIGS. 1-2 also apply to the embodiment of the present invention illustrated in FIG. 3. Additionally, the hockey stick-handling device 100 may be configured such that there are no designated upper cross members 110 or lower cross members 120. More specifically, the hockey stick-handling device 100 may be configured such that, at one end, a given cross member is the first cross member to receive the bolt, and at the second end, that same cross member is connected below the first cross member to receive the bolt. Effectively, in this configuration, each cross member functions as an upper cross member at one end and a lower cross member at the other end.

[0034] FIG. 4 illustrates a plan view of an upper support disc 400 according to an embodiment of the present invention. The upper support disc 400 forms an upper portion of the support columns 140 and 150 of FIG. 1 in some embodiments of the present invention. The upper support disc 400 includes a support opening 410.

[0035] In operation, the first screw bolt 230 of FIG. 2 is first passed through the upper cross member 110 and the lower cross member 120 as described above with regard to FIGS. 1-3. After this has occurred, the first screw bolt 230 is passed through the support opening 410 of the upper support disc 410.

[0036] The upper support disc 400 may also comprise a non-circular shape, such as a cube.

[0037] The alternative material compositions and connection mechanisms described above with regard to FIGS. 1-3 also apply to the embodiment of the present invention illustrated in FIG. 4.

[0038] FIG. 5 illustrates a plan view of a lower support disc 500 according to an embodiment of the present invention. The lower support disc 500 forms a lower portion of the support columns 140 and 150 of FIG. 1 in some embodiments of the present invention. The lower support disc 500 includes a washer 530 and a stop nut 540.

[0039] In operation, the first screw bolt 230 of FIG. 2 is passed through an opening in the lower support disc 500 after the first screw bolt 230 is passed through the upper support disc 400 as described above with regard to FIG. 4. The first

screw bolt 230 is then passed through the washer 530. To secure the connection at the rotatable connecting point 130 of FIG. 1, the stop nut 540 is threaded onto the first screw bolt 230. In a preferred embodiment, the lower support disc 500 includes a recess at its bottom end. This recess prevents the first screw bolt 230, the washer 530, and the stop nut 540 from extending beyond the bottom edge of the lower support disc 500. This recess is described in further detail below with regard to FIG. 6.

[0040] In alternative embodiments, the lower support disc 500 may be configured in a variety of ways. For example, the lower support disc 500 may include a textured surface on at least one end in order to increase friction between the lower support disc and the surface upon which the hockey stick-handling device 100 is set. To accomplish this same objective, a spike, end cap, or other gripping feature may be added to one end of the lower support disc 500. In alternative embodiments, the bottom end of the lower support disc 500 may not include a recess. The lower support disc 500 may also comprise a non-circular shape, such as a cube.

[0041] In alternative embodiments, the upper support disc 400 may be removed from the hockey stick-handling device 100. In this configuration, the lower support disc 500 directly contacts the lower cross member 120 of FIG. 3. Additionally, the alternative material compositions and connection mechanisms described above with regard to FIGS. 1-4 also apply to the embodiment of the present invention illustrated in FIG. 5.

[0042] FIG. 6 illustrates an elevational view of a hockey stick-handling device segment 600 according to an embodiment of the present invention. The device segment 600 includes the upper cross member 110 of FIG. 2, the first end 210 of FIG. 2, the first screw bolt 230 of FIG. 2, the second end 250 of FIG. 2, and the second screw bolt 270 of FIG. 2. The device segment 600 also includes the lower cross member 120 of FIG. 3, a second lower cross member 121, the upper support disc 400 of FIG. 4, a second upper support disc 401, the lower support disc 500 of FIG. 5, a second lower support disc 501, the washer 530 of FIG. 5, a second washer 531, the stop nut 540 of FIG. 5, and a second stop nut 541. Additionally, the device segment 600 further includes a first upper recess 610, a second upper recess 611, a first spacer 620, a second spacer 621, a first lower recess 630, and a second lower recess 631.

[0043] The upper cross member 110 is connected to the lower cross member 120 and the second lower cross member 121. At the first end 210 of the upper cross member 110, the first screw bolt 230 is first passed through an opening located in the first upper recess 610. Next, the first screw bolt 230 is passed through the first spacer 620, the lower cross member 120, the upper support disc 400, the lower support disc 500, and the washer 530, as shown in FIG. 6. Finally, the stop nut 540 is threaded onto the end of the first screw bolt 230, such that the stop nut 540 and the end of the first screw bolt 230 are within the first lower recess 630. At the second end 250 of the upper cross member 110, the second screw bolt 270 is first passed through an opening located in the second upper recess 611. Next, the second screw bolt 270 is passed through the second spacer 621, the second lower cross member 121, the second upper support disc 401, the second lower support disc 501, and the second washer 531, as shown in FIG. 6. Finally, the second stop nut 541 is threaded onto the end of the second screw bolt 270, such that the second stop nut 541 and the end of the second screw bolt 270 are within the second lower recess 631. As described above with respect to FIGS. 1 and

9-11, the hockey stick-handling device 100 may be positioned to form a variety of shapes or configurations. To adjust the shape of the hockey stick-handling device 100, the stop nut 540 may be loosened by the assembler and tightened again after the assembler has moved the upper cross member 110 and the lower cross member 120 to the desired position.

[0044] At both ends of the hockey stick-handling device 100, this construction is slightly modified. As illustrated in FIG. 1, the outermost cross members are lower cross members 120. The terminal support columns 150 do not support an upper cross member 110. Accordingly, shorter screw bolts—than the previously described screw bolts 230 and 270—are employed through the terminal support columns 150 at the ends of the hockey stick-handling device 100.

[0045] In alternative embodiments, the outermost cross members may be upper cross members 110. In such a configuration, the terminal support columns 150 may include additional or thicker spacers—than the previously described spacers 620 and 621 of FIG. 6—in order to maintain the outermost upper cross members 110 parallel to the ground.

[0046] In alternative embodiments, the hockey stick-handling device 100 may include an upper cross member 110 as the outermost cross member at one end and a lower cross member 120 as the other outermost cross member at the other end.

[0047] In alternative embodiments, modifications to the device segment 600 may be made. For example, the first and second spacer 620 and 621 of FIG. 6 may be removed. Additionally the first and second upper recesses 610 and 611 of FIG. 6 may be removed. In alternative embodiments, the first washer 530 and the second washer 531 of FIG. 6 may be removed. Moreover, the alternative configurations described above with regard to FIGS. 1-5 also apply to the embodiment of the present invention illustrated in FIG. 6.

[0048] FIG. 7 illustrates a plan view of a hockey stick-handling device portion 700 according to an embodiment of the present invention. The device portion 700 includes the intermediary support column 140 of FIG. 1, a second intermediary support column 141, the upper cross member 110 of FIG. 2, the first washer 220 of FIG. 2, the first screw bolt 230 of FIG. 2, the second washer 260 of FIG. 2, the second screw bolt 270 of FIG. 2, the lower cross member 120 of FIG. 3, and the second lower cross member 121 of FIG. 6.

[0049] In operation, the first screw bolt 230 is passed through the first washer 220 and an opening in the upper cross member 110. The first screw bolt 230 is then passed through the lower cross member 120 and the intermediary support column 140. The second screw bolt 270 is passed through the second washer 260 and another opening in the upper cross member 110. The second screw bolt 270 is then passed through the second lower cross member 121 and the second intermediary support column 141. As described above with regard to FIG. 1, the configuration of the first screw bolt 230 forms the rotatable connecting point 130 of FIG. 1, and the configuration of the second screw bolt 270 forms a similar rotatable connecting point.

[0050] The alternative configurations described above with regard to FIGS. 1-6 also apply to the embodiment of the present invention illustrated in FIG. 7.

[0051] FIG. 8 illustrates a flow chart of the process of using the hockey stick-handling device 100 of FIG. 1 according to an embodiment of the present invention. First, at step 800, the user selects the hockey stick-handling device 100 of a desired length. (As mentioned above, the length of the hockey stick-

handling device 100 may be modified by increasing or decreasing the number of cross members 110 and 120 and intermediary support columns 140.) Next, at step 810, the hockey stick-handling device 100 is positioned into a desired shape. At step 820, the hockey stick-handling device 100 is placed on a desired training surface. Then, at step 830, an object, such as a hockey puck or a ball, is stick-handled through the spaces created by the hockey stick-handling device 100 structure. Finally, at step 840, the hockey stick-handling device 100 is collapsed for storage until its next use.

[0052] As contemplated by the present invention, potential training surfaces upon which the hockey stick-handling device 100 may be used include ice and hard dryland surfaces, such as an asphalt surface or the floor of an athletic court. If the hockey stick-handling device 100 is used on ice for ice hockey training, the preferred object for stick-handling is an ice hockey puck. If the hockey stick-handling device 100 is used on a hard dryland surface, the preferred object for stick-handling is a ball.

[0053] Additionally, the degree of elevation of the cross members above the training surface can be adjusted to allow objects of different heights to pass underneath them when being stick-handled. This can be accomplished by using spacers and/or support discs of varying thicknesses and in varying quantities (depending on the height of the object to be stick-handled and the amount of clearance desired).

[0054] In alternative embodiments, the steps comprising the process of using the hockey stick-handling device 100 may be combined, separated or reordered in ways that do not affect the overall process. For example, the step 810 of placing the hockey stick-handling device 100 on a desired surface may be performed before the step 800 of positioning the hockey stick-handling device 100 into a desired shape. As another example, the step 830 of collapsing the hockey stick-handling device 100 for storage until its next use is unnecessary and may be omitted if the user wishes to keep the hockey stick-handling device 100 in the same configuration or on the same surface until the hockey stick-handling device 100 is next used. Additionally, the hockey stick-handling device 100 may be used in conjunction with other objects besides pucks or balls that may be stick-handled through the spaces created by the hockey stick-handling device 100.

[0055] In alternative embodiments, the hockey stick-handling device 100 may be collapsed without the user having to loosen or tighten the stop nut 540. Instead, the collapsing mechanism may be, for example, a hinge or a system of removable pins. Additionally, the alternative configurations described above with regard to FIGS. 1-7 also apply to the process illustrated in FIG. 8.

[0056] The alternative material compositions and connection mechanisms described above with regard to FIGS. 1-7 also apply to the embodiment of the present invention illustrated in FIGS. 9-11.

[0057] As described herein, embodiments of the present invention offer valuable solutions to the problems associated with traditional hockey stick-handling training aids. Embodiments of the present invention meet the long-felt need for an improved hockey stick-handling training aid that is capable of multiple configurations and may be easily expanded and collapsed without repeated assembly. Embodiments of the present invention provide a versatile and convenient hockey stick-handling device that is durable, easy to assemble, and adaptable to a variety of drills, players, and surfaces.

[0058] While particular elements, embodiments and applications have been shown and described, it is understood that the invention is not limited thereto since modifications may be made by those skilled in the art, particularly in light of the foregoing teaching. It is therefore contemplated by the appended claims to cover such modifications, and incorporate those features which come within the spirit and scope of the invention.

1. A hockey stick-handling device, comprising:
 - two cross members, each of said cross members configured to be elevated from a training surface by a height sufficient to allow an object for stick-handling to pass underneath said cross member; and
 - three support columns, each of said support columns configured to support an end of one of said cross members, said cross members being rotatable with respect to one another at one of said three support columns.
2. The hockey stick-handling device of claim 1, wherein said object for stick-handling is a hockey puck.
3. The hockey stick-handling device of claim 1, wherein said object for stick-handling is a ball.
4. The hockey stick-handling device of claim 1, wherein said cross members are rotatable with respect to one another through an angle of approximately 180 degrees.
5. The hockey stick-handling device of claim 1, wherein said cross members are rotatable to form a storage configuration, said cross members being substantially parallel to one another in said storage configuration.
6. The hockey stick-handling device of claim 1, further comprising hardware for preventing rotation of said cross members during use of said hockey stick-handling device.
7. The hockey stick-handling device of claim 6, wherein said hardware comprises a bolt and a nut.
8. The hockey stick-handling device of claim 6, wherein said hardware comprises a removable pin.
9. A hockey stick-handling device, comprising a plurality of cross members and a plurality of intermediary support columns, wherein:
 - each of said cross members is configured to be elevated from a training surface by a height sufficient to allow an object for stick-handling to pass underneath said cross member; and
 - each of said intermediary support columns is configured to support an end of two of said cross members, wherein said two of said cross members are rotatable with respect to one another at said intermediary support column.
10. The hockey stick-handling device of claim 9 further comprising two terminal support columns, each of said terminal support columns located at one of two ends of said hockey stick-handling device, and each of said terminal support columns configured to support an end of one of said cross members.
11. The hockey stick-handling device of claim 9 wherein said object for stick-handling is a hockey puck.
12. The hockey stick-handling device of claim 9 wherein said object for stick-handling is a ball.
13. The hockey stick-handling device of claim 9 wherein said two of said cross members are rotatable with respect to one another through an angle of approximately 180 degrees.
14. The hockey stick-handling device of claim 9, wherein said cross members are rotatable to form a storage configuration, said cross members being substantially parallel to one another in said storage configuration.
15. The hockey stick-handling device of claim 9, wherein said cross members are rotatable to form a working configuration.

ration, said working configuration being one of the group consisting of a straight-line configuration, a curved configuration, and a zigzag configuration.

16. The hockey stick-handling device of claim **9**, further comprising hardware for preventing rotation of said cross members during use of said hockey stick-handling device.

17. The hockey stick-handling device of claim **15**, wherein said hardware comprises a bolt and a nut.

18. The hockey stick-handling device of claim **15**, wherein said hardware comprises a removable pin.

* * * * *