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(54) **KAYAK BACK-BAND INSTALLATION
ASSEMBLY AND METHOD FOR
INSTALLING A BACK-BAND IN A KAYAK**

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(57) **ABSTRACT**

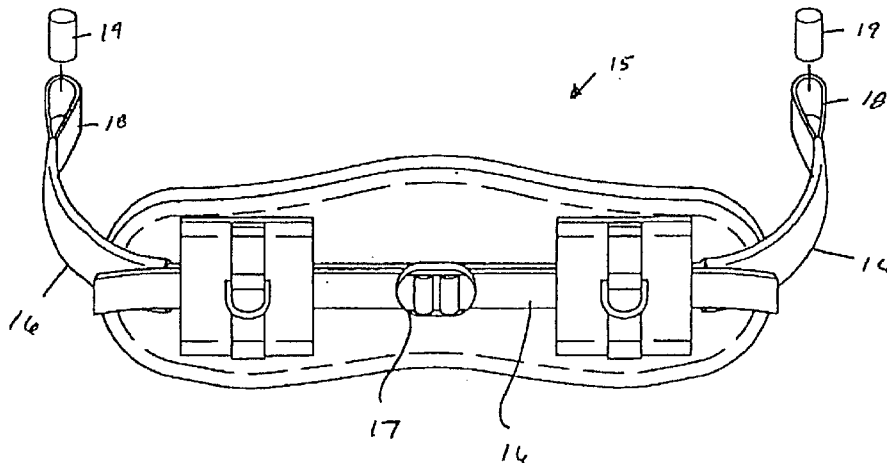
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Related U.S. Application Data

(63) Continuation-in-part of application No. 09/734,447,
filed on Dec. 11, 2000, now Pat. No. 6,305,311.

An assembly and method for installing a back-band utilize ratchet straps and pawl members interconnected with the back band and cockpit area of a kayak. The pawl member may be mounted to either the back-band or kayak. The ratchet strap has a first end insertable in the pawl members, and inclined teeth engage the pawl member. A second end of the ratchet strap is secured to either the kayak or back-band. In addition, a band and buckle assembly may interconnect with the back-band and kayak to support and align the back-band in the kayak cockpit.



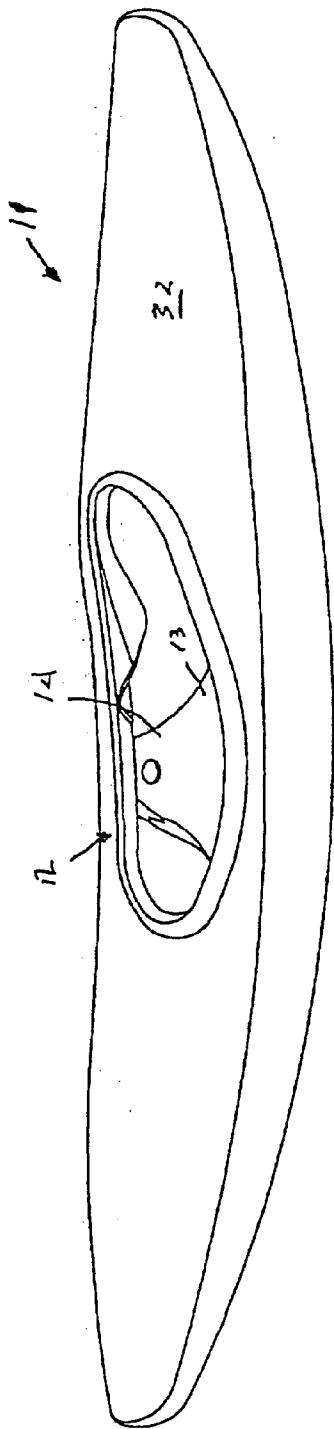


FIG. 1

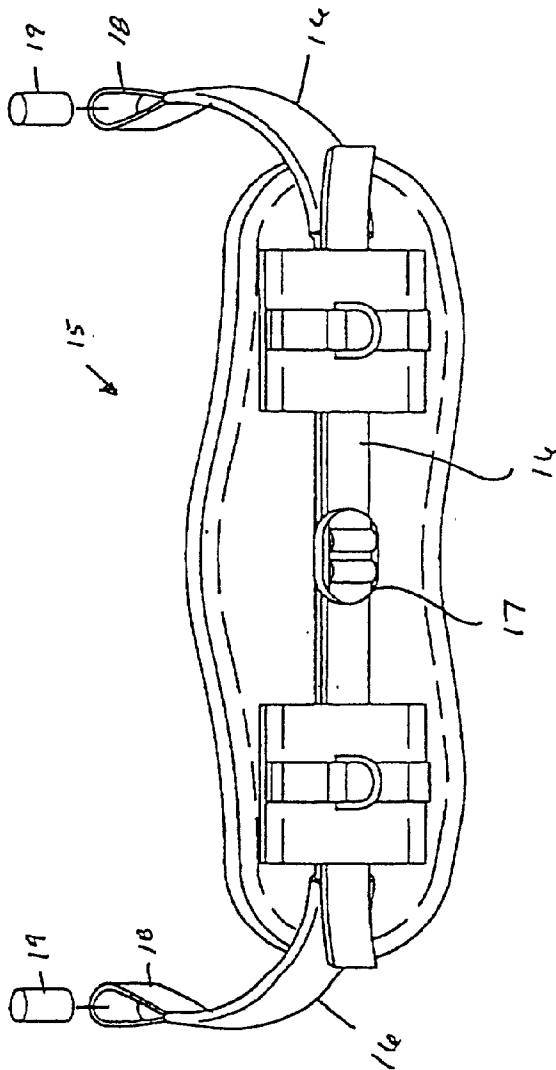


FIG. 2

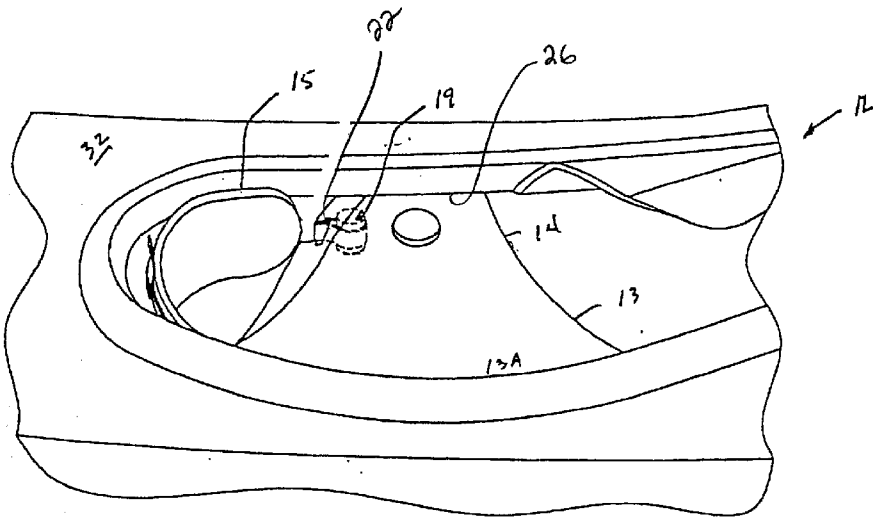


FIG. 3

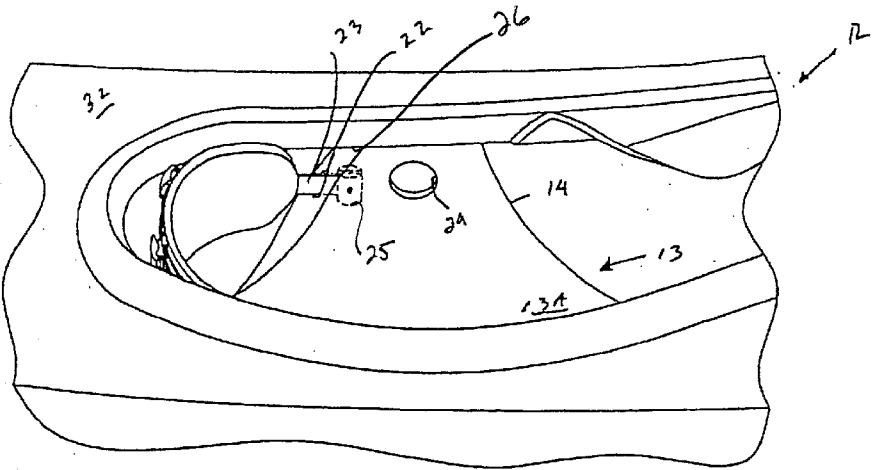


FIG. 6

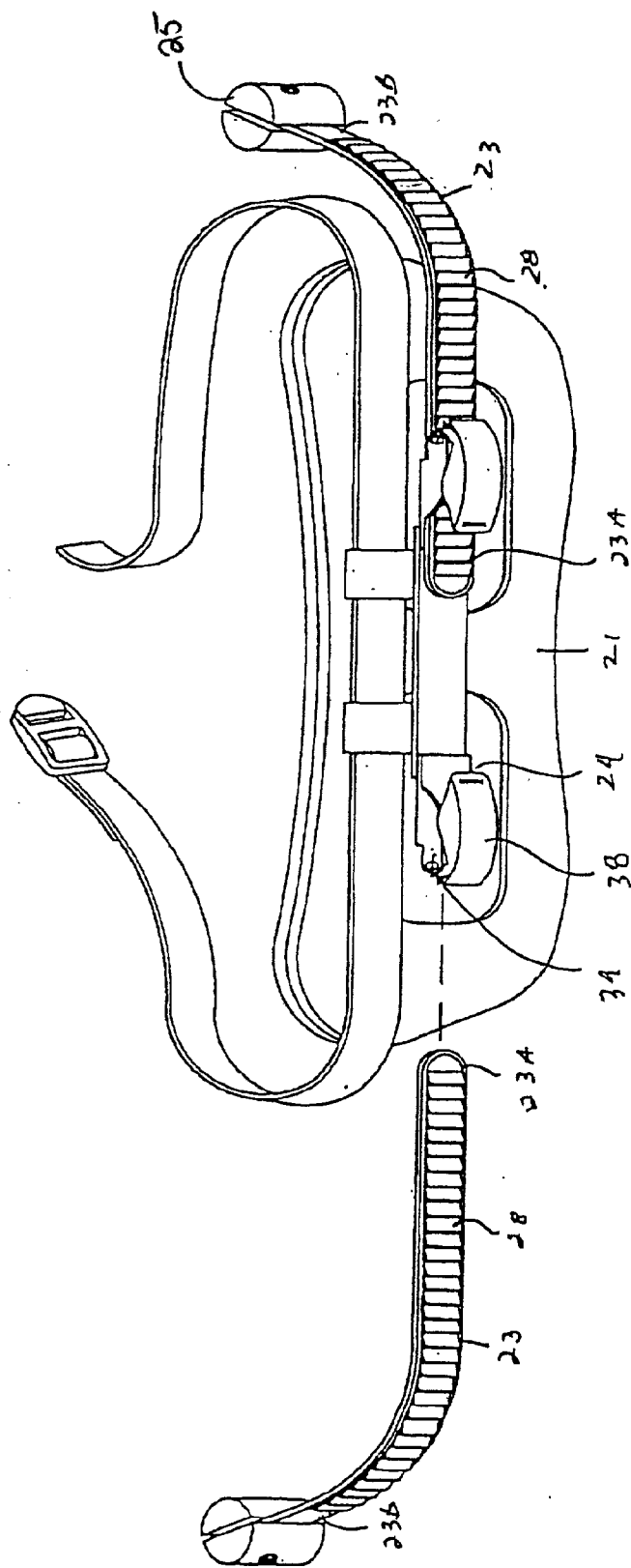


FIG. 4

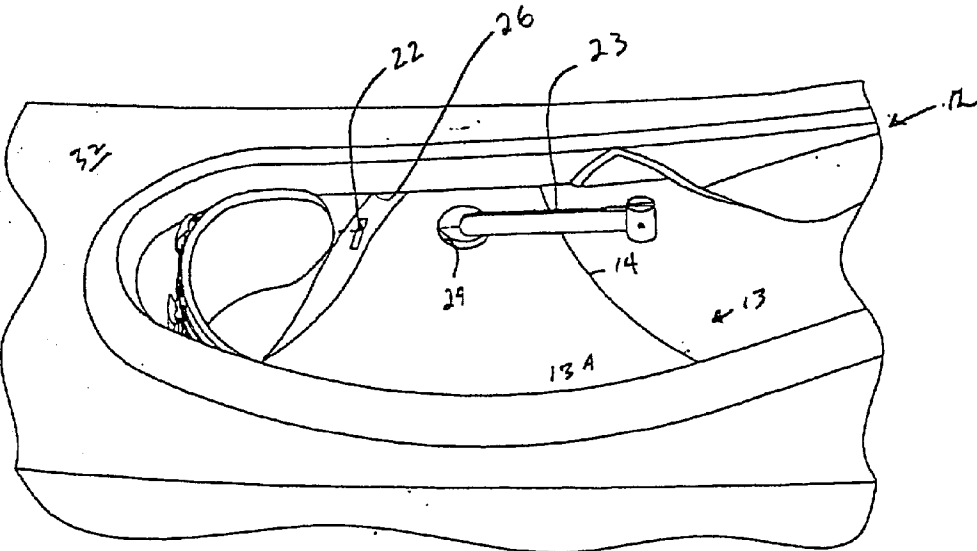


FIG. 5

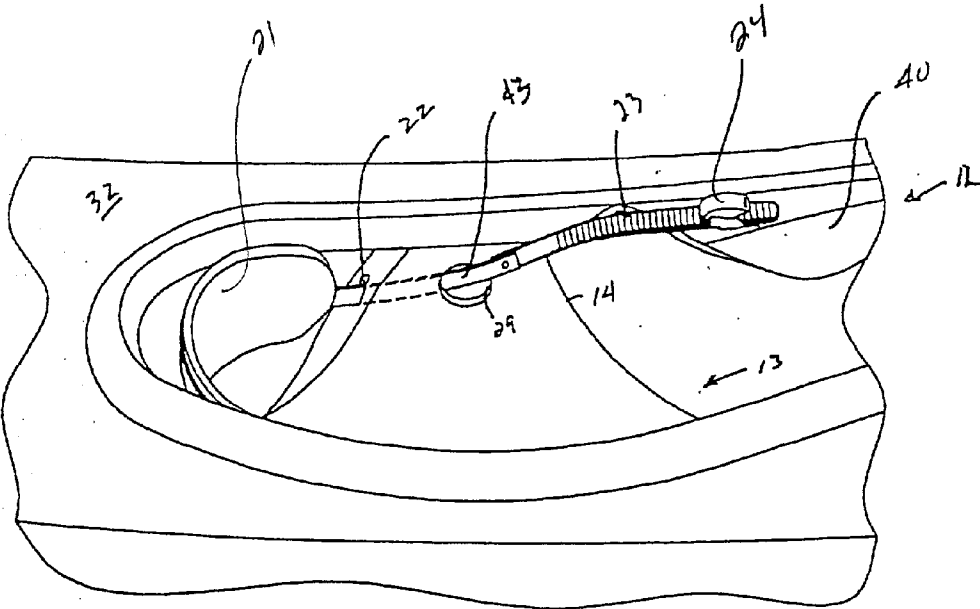


FIG. 7

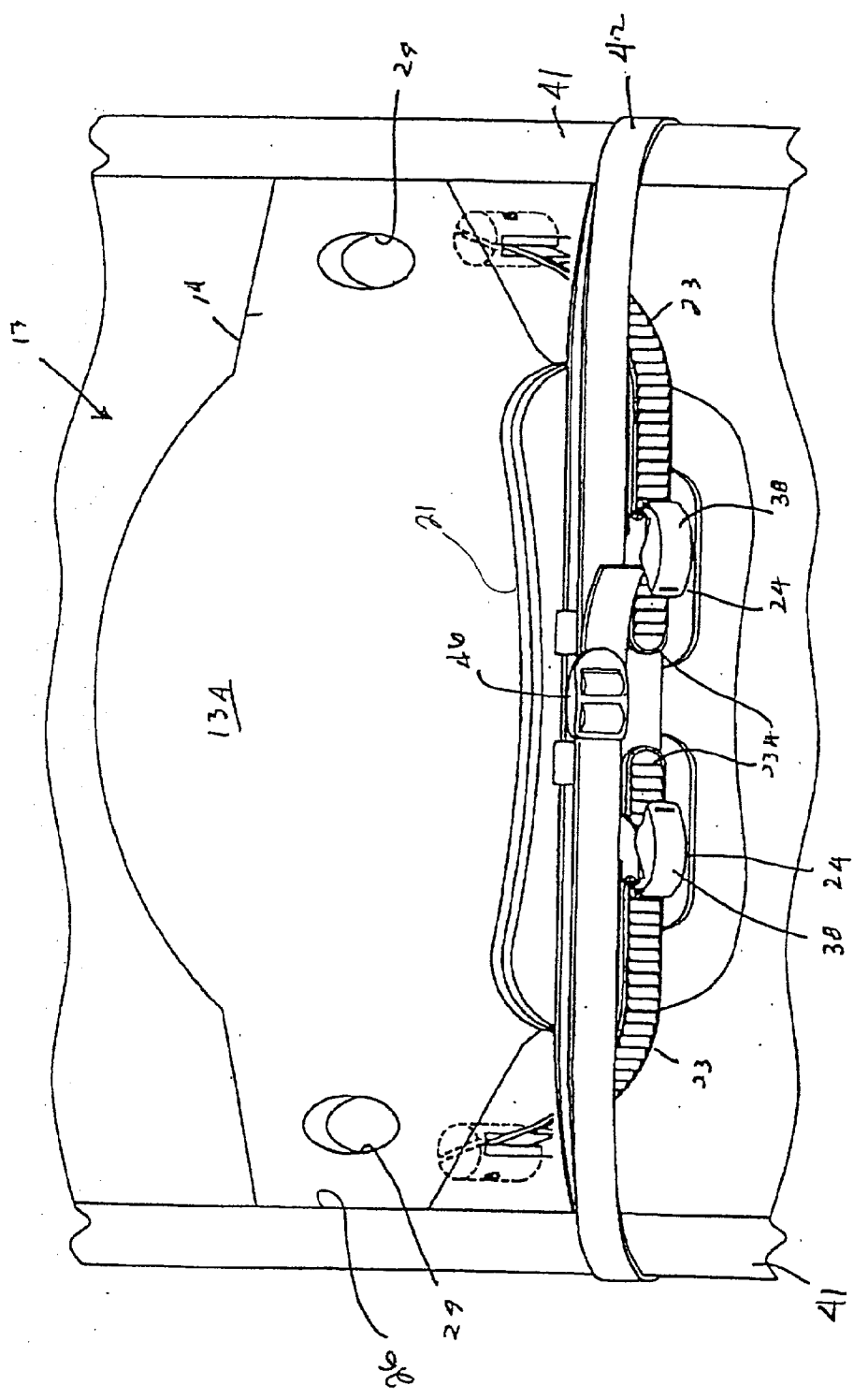


FIG. 8

Figure 10

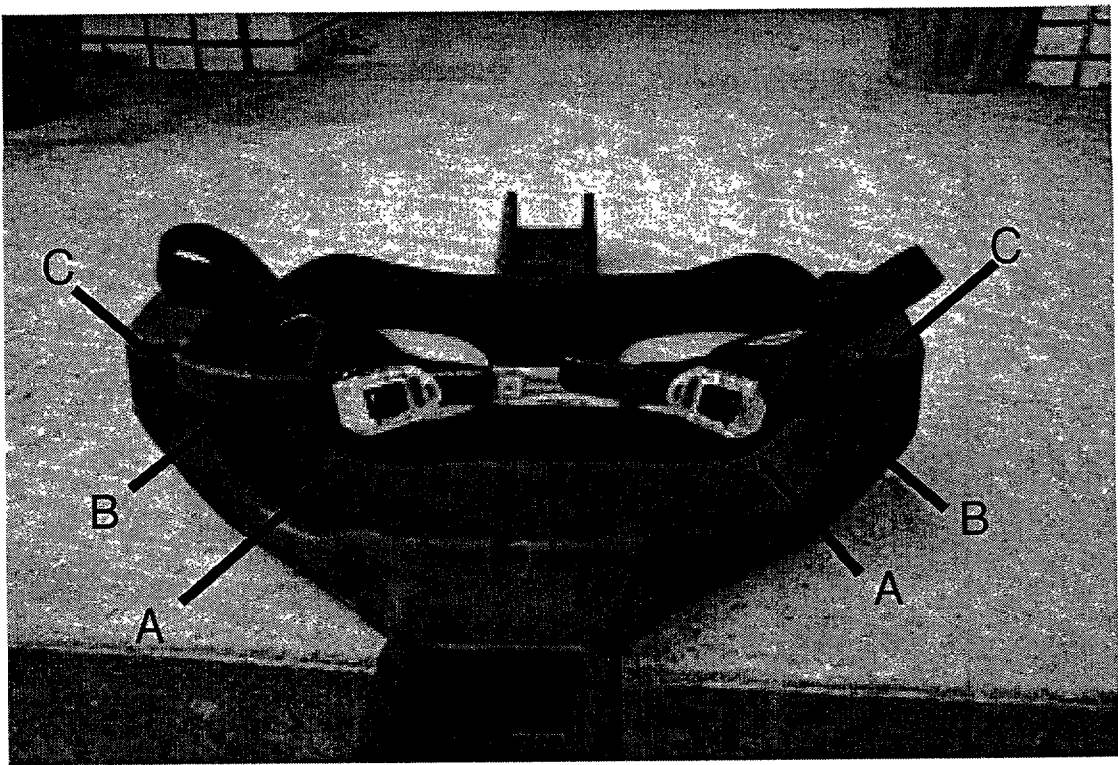


Figure 71

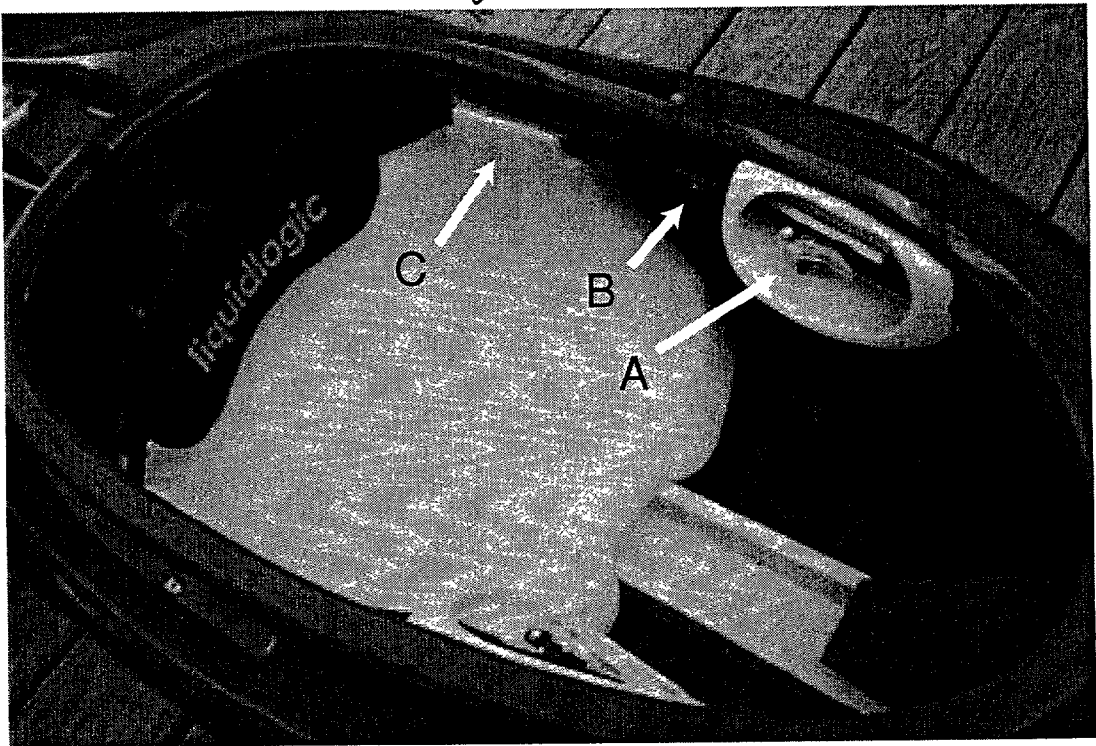


Figure 17

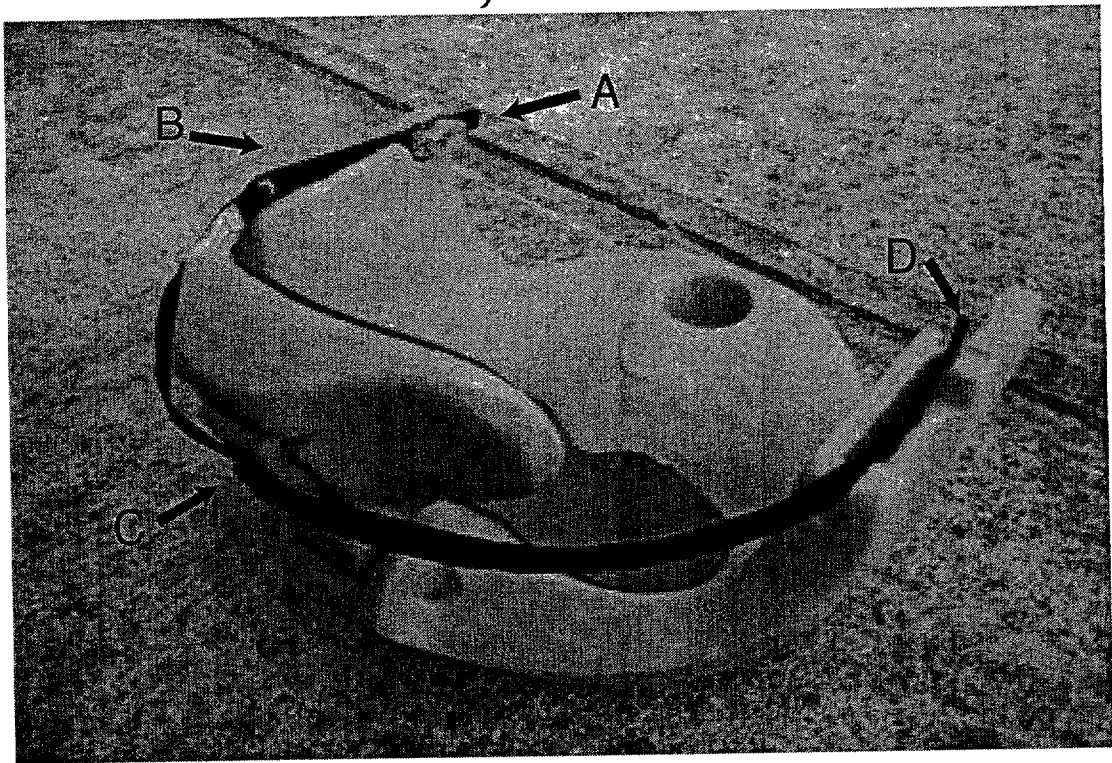


Figure 13

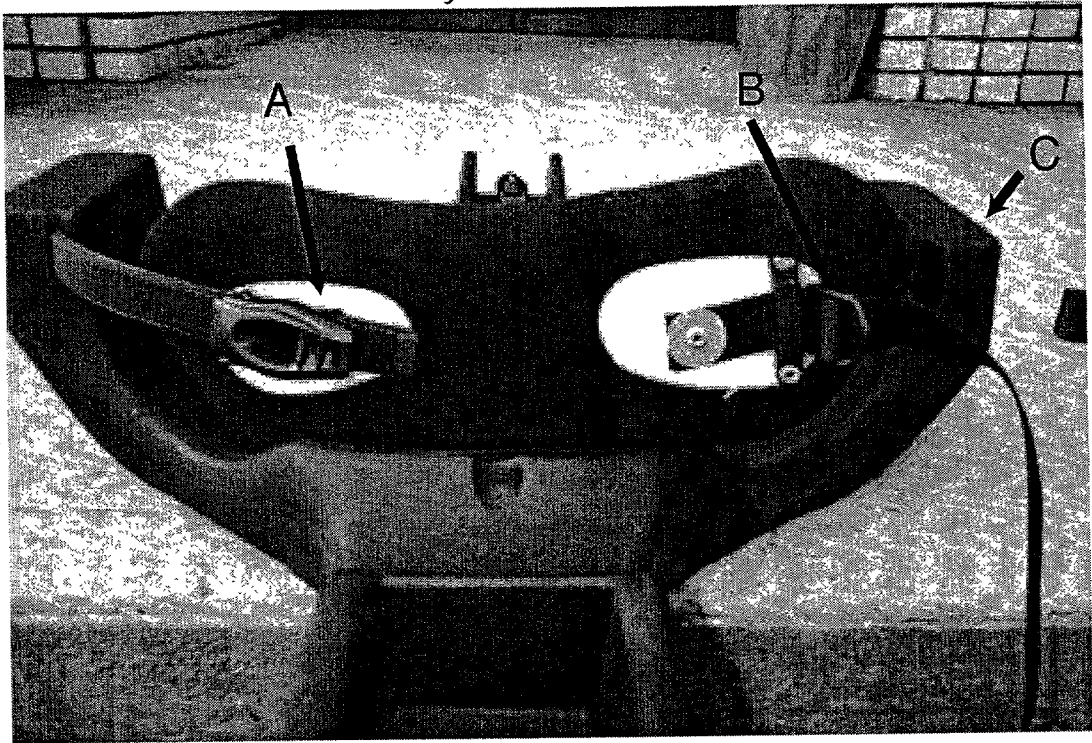


Figure 14

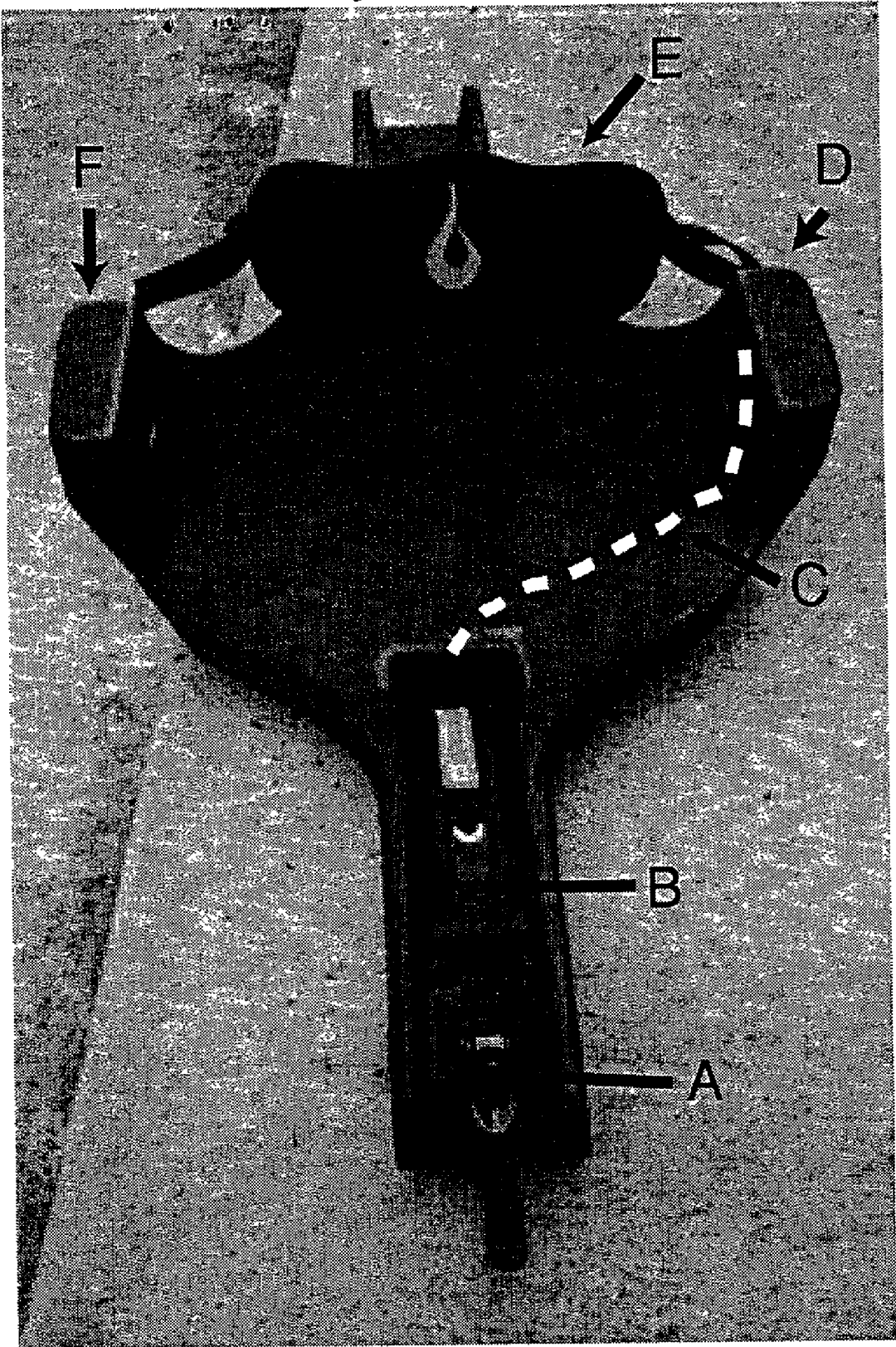
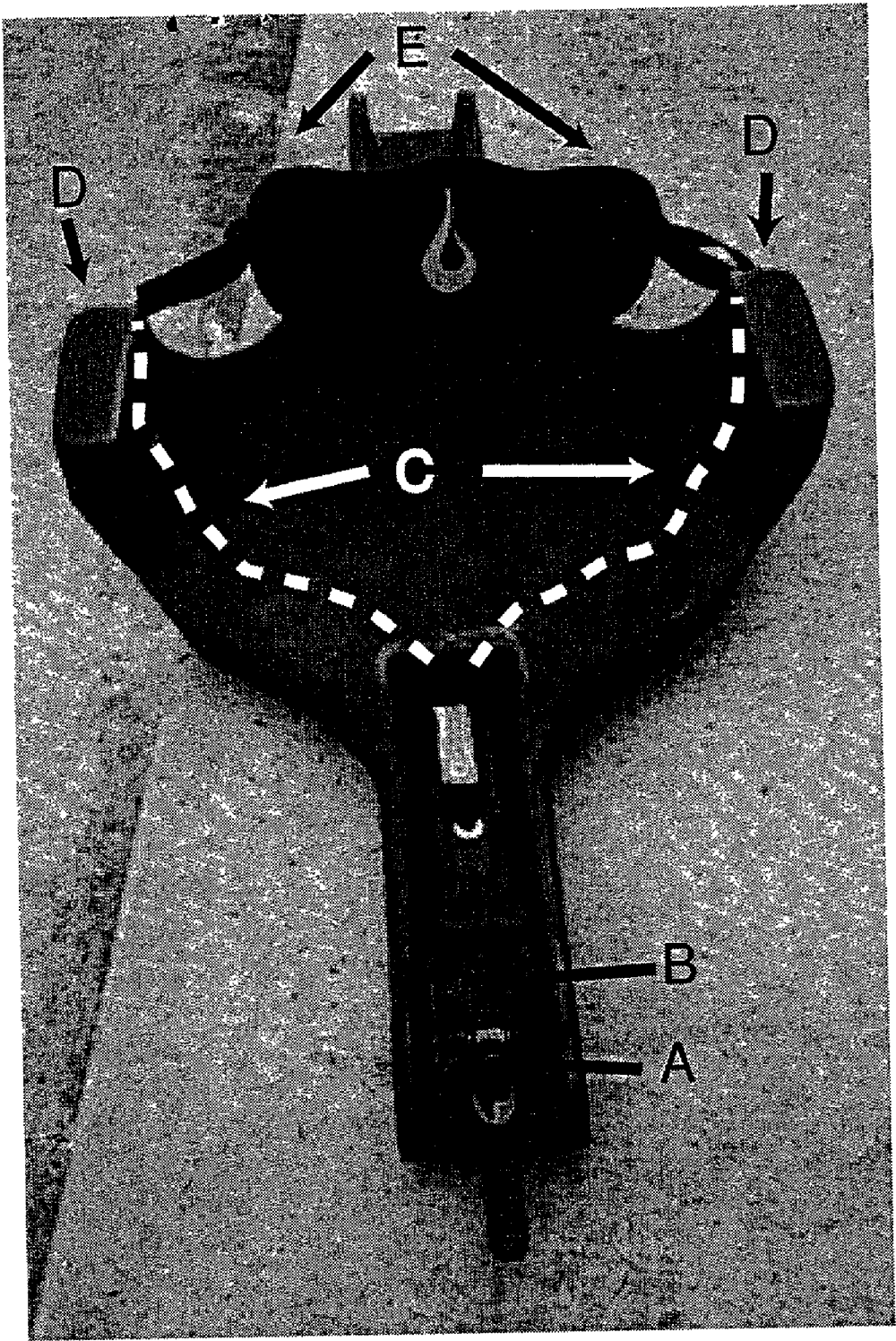


Figure 15



KAYAK BACK-BAND INSTALLATION ASSEMBLY AND METHOD FOR INSTALLING A BACK-BAND IN A KAYAK

CROSS REFERENCE

[0001] This application is a continuation-in-part (CIP) of U.S. patent application Ser. No. 09/734,447 filed Dec. 11, 2000.

FIELD OF THE INVENTION

[0002] This invention relates generally to kayaks, and specifically to back-bands used with kayaks. More specifically, the invention pertains to those assemblies and methods used to install and use a back-band in a cockpit of a kayak.

BACKGROUND OF THE INVENTION

[0003] Kayaking continues to increase in popularity as a recreational outdoor sport and activity. A kayak is a single hulled water vessel that is propelled in the water by paddles controlled by a user. This invention is for use with a kayak **11** as shown in **FIG. 1**. This particular model kayak has a semi-enclosed cockpit **12** within which a kayaker may sit.

[0004] A seat **13** is mounted in the cockpit **12** for supporting the kayaker. The seat **13** is attached to the hull by seat towers **14**. As shown in **FIG. 1**, two seat towers **14** are preferably integrally molded to the seat **13** and the inside surface of the cockpit **12**, although other known means of attachment are possible. The seat towers **14** depend substantially vertically from the top of the cockpit **12** to the seat **13**, suspending the seat within the cockpit **12**. Accessory parts are manufactured to adapt the seat **13** and cockpit area for the comfort of the kayaker. One such part is a back-band that is attached to the seat towers, or other areas of the cockpit. The back-band is secured in the cockpit so the back-band is suspended rearward of the seat to support the kayakers' back while sitting in the kayak.

[0005] Generally, back-bands include an elongated padded member. Straps are generally attached to the back-band and to different parts of the kayak within the cockpit area. One such back-band **15** is manufactured by Bomber Gear, Inc., shown in **FIG. 2**, and includes a foam piece covered by a skin. In that device, a nylon strap **16**, sewn to the skin, has two looped ends **18**. As illustrated in **FIG. 3**, each end of the strap **18** is preferably inserted through an aperture machined through a flange on respective seat tower **14**. As shown in the device of **FIG. 2**, a section of "pvc" pipe **19** is fitted in each looped end **18** of the strap **16**, and secured in the looped end **18** by a flexible wire. In the device of **FIG. 2**, the pipe section **19** prevents the strap **16** from slipping through the aperture on the seat tower **14**, while the strap **16** is tightened or loosened around the user by a buckle **17** through which the strap is threaded.

[0006] Prior art back-bands such as that shown in **FIG. 2** suffer from certain disadvantages. The straps are made of a nylon-webbed material typically used for such buckle and strap assemblies. The straps are awkward to handle during installation of the back-band. In addition, the back-bands require assembly of parts as described which unnecessarily complicate installation of existing back-bands. Further, during use of the back band, the buckle and strap arrangement increases the possibility that the band will become inadvertently

loosened due to stresses encountered during use, thus decreasing user comfort and safety.

[0007] In view of the foregoing, an object of the present invention is to provide an assembly and method of installation and use for a kayak back-band that is easier to install, costs less to manufacture, and is more efficient in use.

[0008] These and other objectives are met by using a ratcheted back band assembly.

SUMMARY OF THE INVENTION

[0009] The assembly of the present invention generally utilizes ratcheted straps which engage pawl members interconnected with the back band and cockpit area of a kayak. The pawl member may be mounted to either the back-band or kayak. The ratcheted strap has a first end insertable in the pawl member, and inclined teeth engage the pawl member. A second end of the ratchet strap is secured to either the kayak or back-band.

[0010] In addition, a band and buckle assembly may interconnect with the back-band and kayak to support and align the back-band in the kayak cockpit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] **FIG. 1** is a perspective view of a kayak.

[0012] **FIG. 2** is a prior art back-band strap assembly.

[0013] **FIG. 3** is the prior art back-band installed in a kayak.

[0014] **FIG. 4** is a perspective view of a first embodiment of the invention.

[0015] **FIG. 5** is a sectional view of a kayak cockpit showing the first embodiment of the invention installed in a kayak.

[0016] **FIG. 6** is a perspective view of the first embodiment of the invention.

[0017] **FIG. 7** is a sectional view of the second embodiment of the invention installed in a kayak.

[0018] **FIG. 8** is a top view of a third embodiment of the invention.

[0019] **FIG. 9** is rear perspective view of a fourth embodiment of the invention.

[0020] **FIGS. 10 through 15** show other embodiments of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

[0021] In **FIG. 1**, a kayak **11** is illustrated as a single hull water vessel. The kayak **11** has a cockpit **12** which includes a seat **13** for supporting a kayaker. A kayak has a shell forming the hull **32** of the vessel, which is preferably constructed from polyethylene. The seat **13** includes a substantially horizontal member **13A** (**FIG. 8**) and the upright supports **14**, also referred to as seat towers, which are fixed to the hull **32** adjacent a rim of the cockpit **12**. The seat towers **14** have sections **26**, which extend laterally from the seat towers **14** to the sides of the kayak **11**.

[0022] With respect to **FIG. 4**, a first embodiment of the invention is shown including a back-band **21** having a

ratchet assembly for securing the back-band 21 within the cockpit 12 of the kayak 11. The ratchet assembly preferably includes two pawl members 24 mounted to a backside of the back-band 21, although a greater or lesser number of pawl members may be used and they may be mounted to other locations. Ratchet straps 23 are insertable into the pawl members 24, and connect to an area within the interior of the hull 32 of the kayak 11 and/or within the cockpit 12 of the kayak 11.

[0023] Each of the ratchet straps 23 may be constructed of a resilient elongated member having a first end 23A insertable through the pawl member 24, and a second end 23B which may be secured to the kayak 11 and/or the back band 21 in some fashion. In the embodiment of FIG. 4, second end 23B contains a knob 25 for affixing the strap 23 to the kayak, such as for example through the aperture in seat tower 14. The ratchet straps 23 have a plurality of inclined teeth 28 disposed along a surface of the ratchet strap 23. The inclined teeth 28 engage the pawl member 24 in order to adjust and secure the ratchet strap 23 on the back-band 21.

[0024] In a preferred embodiment, the ratchet straps are approximately 10½ inches long, and about 1 inch wide, and the thickness of the strap is approximately ¼ to ⅜ inches measured from the crest or peak of an inclined tooth to a back surface of the strap 23. The straps 23 are similar to those obtained from manufacturers of snowboard or ski boots as known to one skilled in the art. For example, straps (as well as the pawl members) can be purchased from either Everest, S.P.A., or ATA, each located in Italy.

[0025] In FIGS. 5 and 6, the back-band 21 is shown installed in the cockpit 12 of the kayak 11. A slot 22 is drilled into the section 26 disposed toward the stern of the kayak on each seat tower 14. The slot 22 is made large enough so the ratchet strap 23 fits through the slot 22. To that end, the slot 22 can preferably be one inch in length and approximately 3/16 of an inch wide. Each seat tower 14 can be manufactured with a hole 29, preferably approximately two-inches in diameter, within which a pad (not shown) is secured for the comfort of the kayaker. The pad is removed and the first end 23A of the ratchet strap 23 is inserted through the hole 29 and then through the slot 22, although either of these apertures may be bypassed in favor of the other. The ratchet strap 23 is then guided through pawl member 24 that engages the inclined teeth 28 of the ratchet strap 23, thereby securing and adjusting the ratchet strap 23 on the back-band 21.

[0026] The pawl member 24 can optionally include engagement and biasing member 38 mounted to a bracket 39 that is riveted to the back band 21. As the first end 23A of the ratchet strap 23 is inserted through the pawl member 24 the engagement member 38 automatically opens and closes engaging the strap 23. In this manner, the length of the ratchet strap 23 inserted through the pawl member 24 is adjustable to a desired length, and the back-band 21 may thereby be centered over the seat of the cockpit to accommodate a particular user. When a kayaker seats himself in the kayak 11, the back-band 21 supports the lower back of the kayaker. The knob 25 on the second end 23B of the ratchet strap 23 prevents the ratchet strap 23 from sliding through the slot 22, securing the back-band 21 in the kayak 11. The desired slack or tension between the ratchet strap 23 and back-band 21 is determined by adjusting the ratchet strap 23

length through the pawl member 24 as above described. The knob 25 can optionally be a plastic member including two halves riveted, molded or otherwise attached to the second end 23B of the ratchet strap; therefore eliminating the need for assembly as in prior art devices.

[0027] Additional support and adjustment to the back-band 21 may be added by optional attachment of a strap and buckle mechanism along the cockpit area. As shown in FIG. 8, the nylon strap 42 threads through apertures formed along or around the cockpit rim 41 of the kayak 11, adjacent the seat 13 toward the stern of the vessel. In addition, each end of the strap 42 is laced through a buckle 46. The nylon strapping 42 is interconnected to the back band 21. Tightening the strap 42 in the buckle 46 will adjust the height of the back-band 21, and assists centering the back-band on the seat 13.

[0028] As shown in FIG. 7, the pawl members 24 may be optionally mounted to protrusions within the hull of the kayak or other points. The mounting point shown in FIG. 7 illustrates thigh braces 40 against which a kayaker may brace himself/herself. A pawl member 24 is mounted to each thigh brace 40. The first end 23A of the ratchet strap 23 is inserted through the pawl member 24. The second end 23B is preferably fixed to a nylon webbing strap 43 which extends toward the stern to the back-band 21 where it attaches either permanently, or in an adjustable manner as through a buckle. A fixed attachment means can include a grommet and rivet mechanism known to one skilled in the art.

[0029] In the embodiment shown in FIG. 9, the ratchet and back-band assembly are equipped with a nylon strap and buckle mechanism. Two buckles 31 are used in this embodiment. A middle strap 43 is threaded through the fixed end of each buckle 31, and secured to the back band by rivets 45. The pawl member 24 is positioned on the middle strap 43, and the rivet 45 extends through the middle strap 43 and the pawl member bracket 39, securing both the pawl member 24 and middle strap 43 to the back-band 21. End straps 46 are threaded through apertures on or around the cockpit rim 41 of the kayak 11. The end straps 46 are loosened or tightened within the buckle 31 to adjust the back-band 21 to a desired position within the cockpit 12 and/or to secure the back-band 21, as the case may be.

[0030] The back-band 21 with the ratchet assembly is not intended to be limited by the means of attachment to the kayak 11, point of attachment of the ratchet straps 23 to the kayak 11, or the number of ratchet straps 23 used in its operation. Nor is the invention intended to be limited to the above-described embodiments. That is, the ratchet straps 23 may be secured at points other than the seat towers 14. For example, some cockpits 12 may not be equipped for attachment of the back-band 21, or users may desire operating the ratchet assembly at locations other than the back-band 21 such as at the thigh brace 40 as shown in FIG. 7.

[0031] Other embodiments of the present invention falling generally within the scope of the above-described subject matter are shown in FIGS. 10 through 15. FIG. 10 shows two ratchets A attached to the backband that adjust two ratchet straps B. The ratchet straps B are fixed to the backs of the seat towers C. FIG. 11 shows ratchets A placed on the thigh braces, used to adjust ratchet straps B. The straps in turn pull the webbing threaded through the seat tower C to

adjust the backband. **FIG. 12** shows one ratchet A fastened to one side of the seat tower and one ratchet strap B that adjust a length of webbing that goes through the back of the seat C and is anchored to the other side of the seat tower D. **FIG. 13** uses one ratchet A fastened directly to the backband. The backband can be centered by adjusting the webbing through the tension lock B. The webbing is attached to the other seat tower C. **FIG. 14** shows a ratchet A, that adjusts strap B. The strap is connected to a cord or length of webbing that is threaded through a channel under the seat C, out through the back of the seat tower on one side of the seat D. The webbing or cord continues through loops on the back of the back band E, and then is anchored to the other side of the seat tower F. **FIG. 15** shows ratchet A mounted in front of the seat that adjusts a strap B. Two cords or lengths of webbing are threaded through two channels C and out through the backs of both seat towers D. The cords or webbing then attach to the back band E.

[0032] The ratchet assembly may include only a single ratchet strap 23 and pawl member 24 or may include more than two each of them, and may eliminate the nylon strap and buckle assembly used to secure the back-band 21 within the cockpit 12. A single (or more than one) pawl member 24 may be mounted to the back-band 21 or on the thigh brace 40 as described above, or in other locations as shown in **FIGS. 10 through 15**, and the ratchet strap 23 can be threaded through cockpit area 12 or other locations for engagement with the pawl member 24 as shown in **FIGS. 10 through 15**.

[0033] The present disclosure includes that contained in the appended claims, as well as that of the foregoing description. Although this invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention.

I claim as my invention the following:

1. A kayak back-band assembly, comprising:
 - (a) a back-band having an elongated member for supporting the back of a person situated in the kayak;
 - (b) at least one pawl member mounted to the back-band; and,
 - (c) at least one ratchet strap having a first end secured to said pawl member and a second end adapted to being secured to the kayak.
2. A kayak back-band assembly as defined in claim 1 further comprising two pawl members mounted on a back surface of the back-band, and two ratchet straps, each ratchet strap having a first end extending through a corresponding pawl member, and a second end adapted to being secured within the cockpit area of the kayak.
3. A kayak back-band assembly as defined in claim 1 wherein said kayak includes a seat mounted in the cockpit of the kayak, and said seat including a substantially horizontal member, two upright support members mounted to a hull of the kayak depending therefrom and suspending said seat within the cockpit, and each said upright support member having a slot through which a ratchet strap is adapted to

extend and said ratchet strap having a knob mounted on said second end of each ratchet strap.

4. A kayak back-band assembly as defined in claim 1 further comprising a buckle and strap assembly interconnected to the back-band and adapted to being secured to the kayak for supporting said back band in the kayak.

5. A kayak back-band assembly as defined in claim 4 wherein said strap and buckle assembly includes a flexible material adapted to being threaded through said buckle and through apertures formed in the cockpit of the kayak.

6. A kayak back-band assembly as defined in claim 4 wherein said strap and buckle assembly includes a flexible strapping having a middle strap fixed to the back band and adapted to being threaded through two buckles, and two end straps with each end strap adapted to being threaded through a slot formed in the kayak and through each said buckle, and said buckle being adjustable along a length of respective end straps.

7. A kayak back-band assembly, comprising:

- (a) a back-band having an elongated member for supporting the back of a person situated in the kayak;
- (b) at least one pawl member adapted to be mounted within the kayak; and
- (c) at least one ratchet strap having a first end secured to said pawl member and having at least one member attached to a second end of the ratchet strap to interconnect the ratchet strap to the back-band.

8. A kayak back-band assembly as defined in claim 7 wherein said kayak has at least one thigh brace in the cockpit area of the kayak, and at least one said pawl member is adapted to be mounted to a thigh brace.

9. A kayak back-band assembly as defined in claim 7 wherein at least one said pawl member is located in front of a seating area within said kayak and wherein at least one said member attached to said second end of said ratchet strap is routed beneath said seat and through an upright support member mounted to a hull of the kayak depending therefrom and suspending said seat within the cockpit.

10. A kayak back-band assembly as defined in claim 7 wherein at least one said pawl member is attached to an upright support member mounted to a hull of the kayak depending therefrom and suspending a seat of the kayak within the cockpit.

9.

11. A method for installing a back-band in a kayak, comprising:

- (a) mounting at least one pawl member on the back-band;
- (b) securing a first end of a ratchet strap to a pawl member; and
- (c) supporting a second end of said ratchet strap in the kayak.

12. A method as defined in claim 11 wherein the step of supporting the second end of the ratchet strap includes fixing a knob on said second end of the ratchet strap and installing said strap through a slot formed in a seat in the kayak.

13. A method as defined in claim 11 further comprising the step of interconnecting a strap and buckle assembly to the back-band and to a cockpit of the kayak.

14. A method as defined in claim 13 wherein said step of interconnecting a strap and buckle assembly includes forming at least one aperture in the kayak, threading at least one

flexible strap through said aperture and through at least one buckle, and adjusting the tension of the flexible strap with the buckle.

15. A method for installing a back-band in a kayak, comprising:

- (a) mounting at least one pawl member to the kayak;
- (b) securing a first end of a ratchet strap to a pawl member; and
- (c) supporting a second end of said ratchet strap to the back-band.

16. A method as defined in claim 15 wherein said step of mounting at least one pawl member includes mounting at least one said pawl member to a thigh brace in the kayak.

17. A method as defined in claim 15 wherein the step of supporting said second end of a ratchet strap includes fixing a flexible strap to the second end of the ratchet strap and fixing the said flexible strap to the back-band.

18. A method as defined in claim 15 wherein said step of mounting at least one said pawl member includes mounting said pawl member in front of a seating area within said kayak and wherein said step of supporting said second end of said ratchet strap includes attaching a flexible strap to said second end and routing said flexible strap beneath said seat and through an upright support member mounted to a hull of the kayak depending therefrom and suspending said seat within the cockpit.

19. A method as defined in claim 15 wherein said step of mounting at least one said pawl member includes mounting said pawl member to an upright support member mounted to a hull of the kayak depending therefrom and suspending a seat of the kayak within the cockpit.

* * * * *