

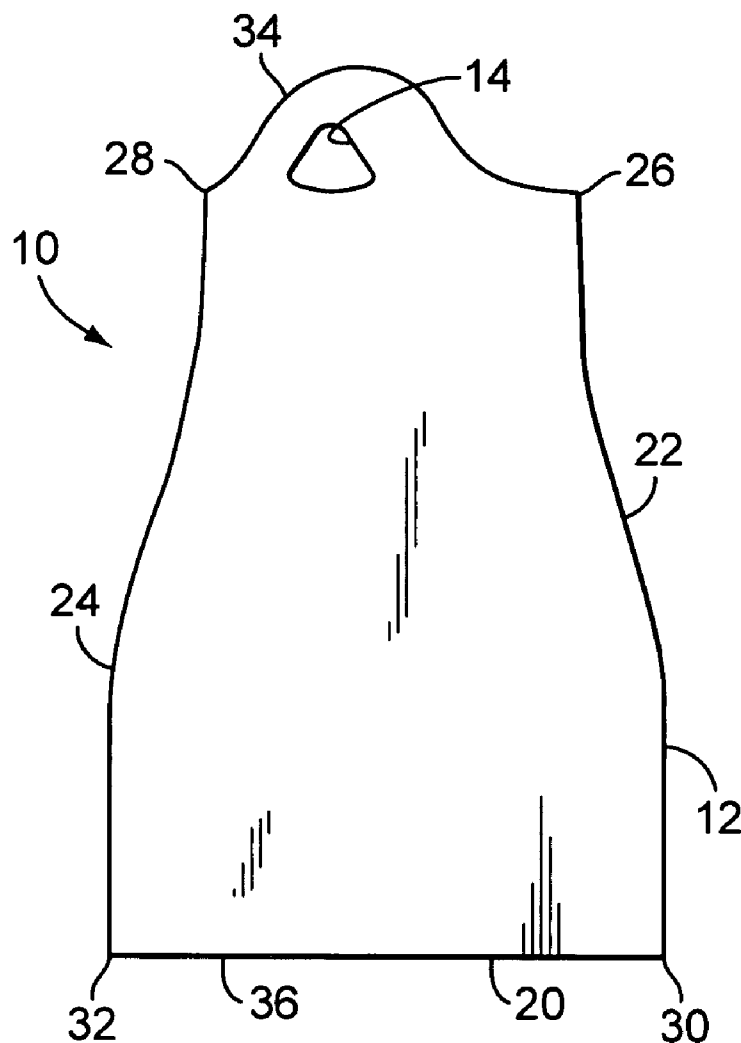


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(19) **United States**(12) **Patent Application Publication**
Schleicher et al.(10) **Pub. No.: US 2007/0000004 A1**(43) **Pub. Date: Jan. 4, 2007**(54) **ARM GUARD****Related U.S. Application Data**(76) Inventors: **Patrick M. Schleicher**, Shawnee, KS
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KS (US)(60) Provisional application No. 60/694,861, filed on Jun.
29, 2005.**Publication Classification**(51) **Int. Cl.**
A41D 13/08 (2006.01)(52) **U.S. Cl.** 2/16(57) **ABSTRACT**

An item of apparel covers the arms of a wearer engaged in water sports. The item is a sleeve, or a pair of sleeves, made of neoprene-type fabric that will cover a wearer's wrists, forearms and elbows.

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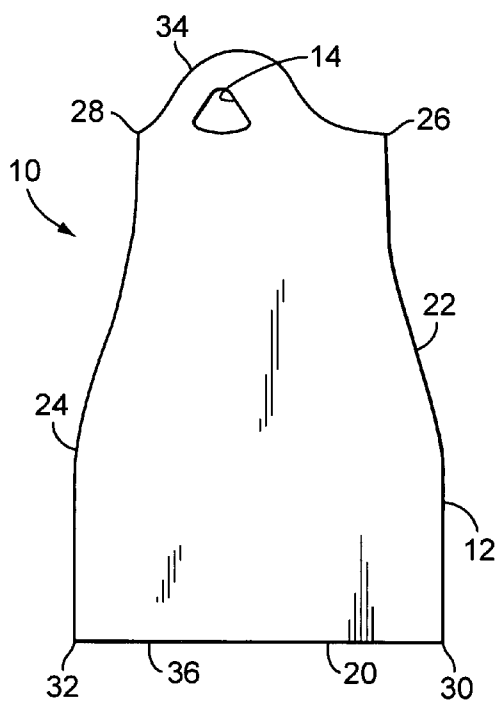


FIG. 1

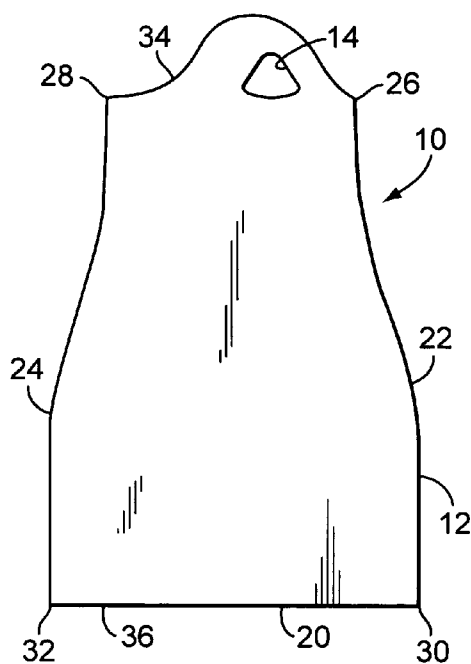


FIG. 2

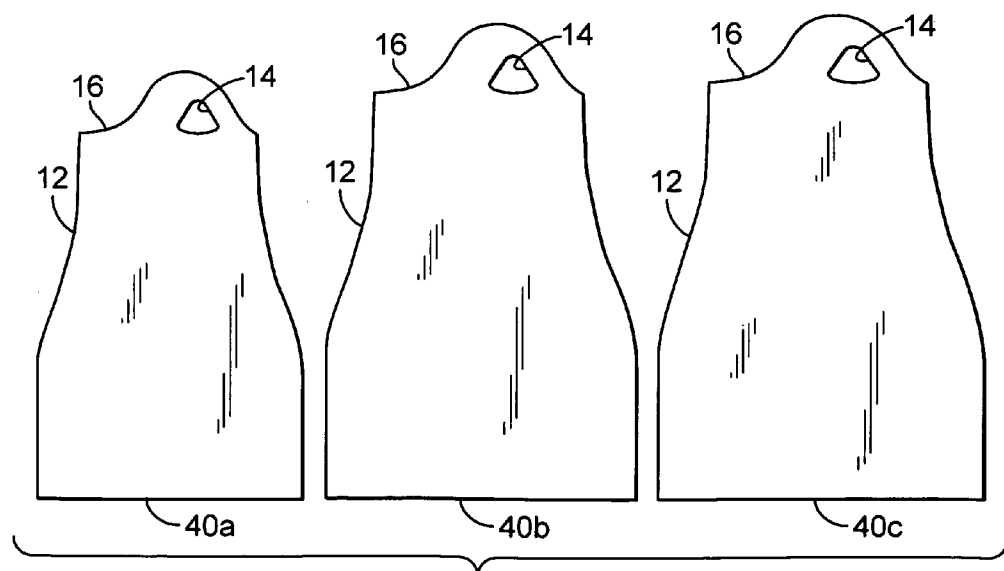


FIG. 3

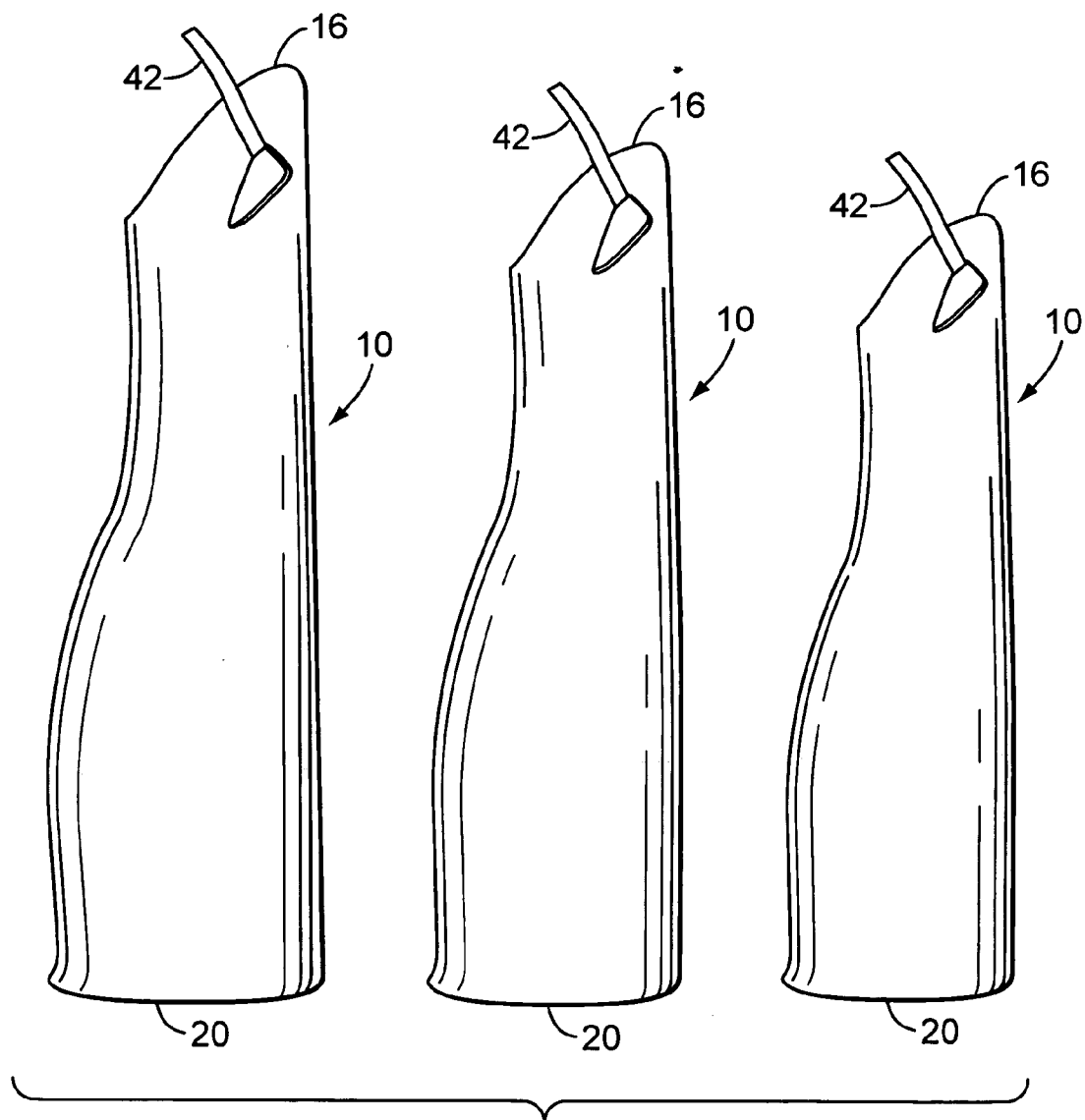


FIG. 4

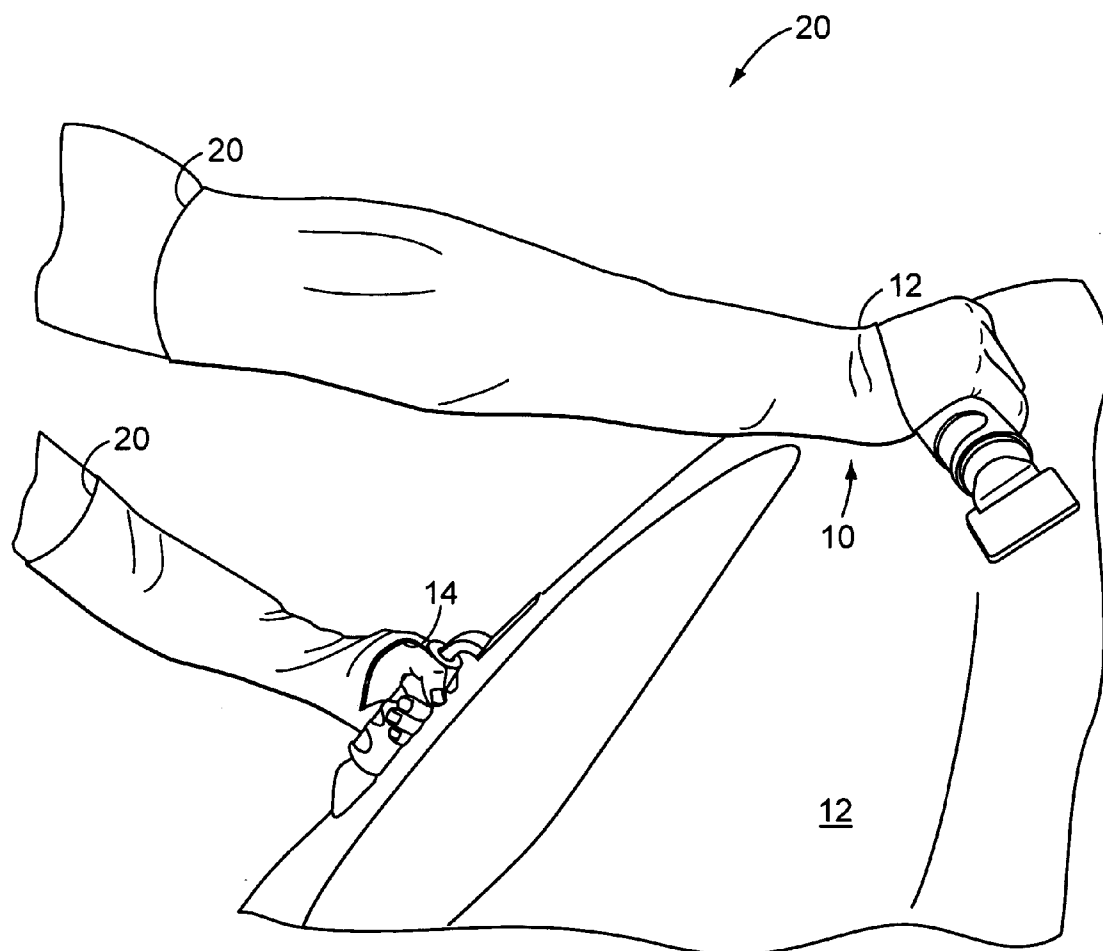


FIG. 5

ARM GUARD

[0001] This application claims priority from Provisional Patent Application No. 60/694,861, filed Jun. 29, 2005, herein incorporated in its entirety.

BACKGROUND OF THE INVENTION

[0002] This invention has to do with an item of apparel that will cover the arms of a wearer when engaged in water sports. The apparel item is a sleeve, or a pair of sleeves made of neoprene-type fabric that will cover a wearer's wrists, forearms and elbows.

[0003] A popular family recreational activity on a lake or a river is riding an inner tube pulled behind a boat. The inner tube is attached to the boat by a ski rope. A tube rider hangs on to the tube as best he/she can while the boat operator pulls the rider on a serpentine ride back and forth across the wake of the boat with varying degrees of aggressiveness depending on the skill of the tube rider. Eventually the tube rider may be thrown from the tube. The boat will circle back, pick up the rider and start the entertaining process all over.

[0004] Since before 1962 "tubing" was gaining popularity for families that enjoyed lake activities. It is easy to learn; relatively safe, and tubing doesn't require the steep learning curve required to learn how to water ski. Inner tubes have evolved over the years from large truck tire inner tubes to purpose built inflatable structure that have the principle of the inner tube at the core of the design. Some of the newer "inner tubes," which may or may not incorporate a truck inner tube, were never intended to be used inside a tire but are, instead, platforms, rings and structures of various shapes purpose built for "tubing" behind a boat or personal water craft. For instance a nylon canvas covered tube has been on the market since at least 1989. The nylon canvas cover, a textured fabric resulting from being a woven fabric, has an abrasive surface that can rub the hands, elbows, and forearms in a bothersome way. This rubbing of the tube rider's body on the textured fabric causes chafing that leads to sores, eventually producing a scab. There has been a long felt need to come up with a solution and product that will make tubing more enjoyable by eliminating the arm-chaffing problem. Over the years the inventors tried several "quick fixes." Ski gloves were used to protect fingers and knuckles. However, finding protection for the forearm and elbows was challenging. In the tubing situation the forearms often support the body on the surface of the tube while the feet, legs and sometimes the torso are off the tube and either in the water or bouncing off the tube and the water. The inventor's family members tried wearing long sleeved t-shirts and even elbow braces to protect them from the chaffing of the tube cover. The long sleeves and elbow braces would either roll up, slide up, or tear apart providing little, if any, protection. No satisfactory solution to the "tubing rash" problem came to the inventors of the arm guards presented herein.

[0005] For three years, the inventors discussed possible solutions before deciding to design and develop an arm guard. Eventually, in the design and development of the arm guards, the inventors determined that neoprene would be a good material to use for the arm guards. Neoprene was chosen because it would not slip or shift on the user. It is a very strong and flexible material and can stretch to fit almost anybody. The inventors experience and knowledge of the sport of tubing and the nuances of riding a tube that

generated "tubing rash" gave us information needed to design the arm guard. One discovery was that the arm guard needs to cover the skin from the palm to approximately three inches above the elbow. This would be an ideal approximate length that covers the skin that is subject to abrasion on from the tube. Ski gloves, worn over the arm guard, protect the hand area.

[0006] Having the basic parameters of a preferred design in mind, i.e., neoprene sleeve fitting from the thumb to several inches above the elbow, the inventors searched the market for a product like the arm guards disclosed herein. In a search of catalogues, stores, sports shows, and on line internet searches the inventors found that no product to protect a rider's arms while they are riding on an inner tube was available.

[0007] Finding neoprene to make our unique design of arm protectors for tubing was problematical. A rubber sheet was procured, but was not the material of first choice. Rubber sheet material or other materials, such as nylon or a natural or synthetic fabric of some type may work in another embodiment of invention but the preferred material is the material that "wet suits" are made of. Such "wet suit" fabric or material is generally referred to as "neoprene" and comes in various thicknesses. For instance, "neoprene" is available in 1.5 mm to 6 mm thickness and thicknesses greater or lesser than this range of thicknesses is also available.

[0008] Even though the inventors knew that a preferred embodiment of material for the arm guards is neoprene of the type used in wetsuits, such material was not easy to locate. Local fabric stores didn't carry neoprene fabric. Finally, after several days of searching on-line, the inventors found a dealer that stocked two-millimeter fabric faced, in this case nylon backed, neoprene, one preferred fabric for use in making the arm guards. The material was ordered from the "Foam Order" website based out of San Francisco, Calif. The neoprene material supplied by Foam Order is a preferred material. It is a 2 mm nylon backed neoprene, which is a good material for the arm guards.

[0009] A specialized sewing machine is used to stitch the neoprene fabric for the arm guards. An acceptable sewing machine is a "four stitch overlay" sewing machine. This unique sewing machine lays down an elastic band holding the stitch and shape together while providing the stretch and expandability required for the arm guard. In one embodiment of the arm guards the design is enhanced by sewing a stretch stitch around the perimeter of the thumb hole to give the arm guard a finished look.

[0010] One embodiment of the invention may use a stretch stitch, not only in the thumb hole, but also at the hand end and, also as a matter of design, at the elbow end of the arm guard. These are optional finishing touches and arm guards may be made without incorporating these optional finishing touches. Such a stitched finish may enhance the look of the device, the wear characteristics of the device and the fit of the arm guards on a person.

[0011] Various sizes of arm guards are contemplated. For instance, the sizes can include, at least, "one size fits most," which is self explanatory; "youth," which will fit most children and small adults; and "XL," fitting larger adults. Three templates and sizes of neoprene cutouts are shown in the attached drawing. The templates are made from thin

aluminum sheets for the sake of pattern consistency and durability so that the arm guards out can be cut out perfectly every time. The patterns are placed on the neoprene sheet, the pattern is traced and removed. The arm guard is cut out from the neoprene sheet using a hand held rotary blade cutter on a cutting mat. A craft knife or razor knife are alternatives to the rotary cutter, for use in cutting each individual arm guard out of the neoprene. This method is very time consuming and allows room for "operator error." In an alternative method of cutting out the neoprene arm guards, the step of tracing the pattern on the material is eliminated if the pattern is left in place and the rotary knife, or other cutting device, is directed around the template while cutting the neoprene material. Another alternative method of cutting out the arm guards, and a desirable alternative, is the use of a die cut machine to minimize waste from error, to increase utilization of the sheets of neoprene, and to increase productivity.

[0012] After cutting the arm guard shapes from the neoprene they are sewn such that the flat shape becomes a tubular shape. The "four stitch overlay" sewing machine lays down an elastic band holding the stitch and shape together while providing the stretch and expandability in the design of the arm guard. In addition to stitching, or as an alternative to stitching, an adhesive can be used to bond the seam making the flat pieces into a tubular structure.

[0013] The arm guard product was tested by family cousins, enthusiastic tube riders, of the inventors. The arm guards performed perfectly while the prototype testers were riding the inner tubes. The arm guards cover and protect all areas of the arms that would otherwise rub and chafe against the nylon canvas cover on the inner tube. After just one ride, one of the testers said that she was not going to ride again unless she wore the arm guards. This proved the success of the arm guards in protecting the rider from abrasions while tubing.

[0014] Screen printing of a logo and a company name on each of the arm guards is contemplated.

[0015] The inventors are environmentally aware and want packaging to be at a minimum. A tagging gun with 2" hook attachments along with a cardstock product tag can be used to identify the product. This allows the consumer to feel the fabric, texture and "heft" of the arm guards, each a positive marketing input. As the arm guards are customer accessible the customer can try the arm guard on for size before purchasing. This is also a sales enhancing opportunity as a customer can see the arm guard in place and envision its effectiveness in tube riding activities.

[0016] The preferred embodiments of the invention presented here are described below in the drawing figures and Detailed Description of the Drawings. Unless specifically noted, it is intended that the words and phrases in the specification and the claims be given the ordinary and accustomed meaning to those of ordinary skill in the applicable arts. If any other special meaning is intended for any word or phrase, the specification will clearly state and define the special meaning.

[0017] Each variation of the invention is limited only by the recited limitations of its respective claim, and equivalents thereof, without limitation by other terms not present in the claim. Likewise, the use of the words "function" or "means" in the Detailed Description of the Drawings is not intended to indicate a desire to invoke the special provisions of 35 U.S.C. 112, Paragraph 6, to define the invention. To the

contrary, if the provisions of 35 U.S.C. 112, Paragraph 6 are sought to be invoked to define the inventions, the claims will specifically state the phrases "means for" or "step for" and a function, without also reciting in such phrases any structure, material or act in support of the function. Even when the claims recite a "means for" or "step for" performing a function, if they also recite any structure, material or acts in support of that means or step, then the intention is not to invoke the provisions of 35 U.S.C. 112, Paragraph 6. Moreover, even if the provisions of 35 U.S.C. 112, Paragraph 6 are invoked to define the inventions, it is intended that the inventions not be limited only to the specific structure, material or acts that are described in the preferred embodiments, but in addition, include any and all structures, materials or acts that perform the claimed function, along with any and all known or later-developed equivalent structures, material or acts for performing the claimed function.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The invention will be understood through the perusal of this description and the drawings figures that accompany this disclosure. In the drawing figures:

[0019] FIG. 1 is a flat, unsewn right-handed arm guard component before completion of the arm guard;

[0020] FIG. 2 is a flat, unsewn left-handed arm guard component before completion of the arm guard;

[0021] FIG. 3 shows three unsewn arm guard sleeves of various sizes;

[0022] FIG. 4 shows three completed arm guards of various sizes positioned vertically and supported on the elbow end of the arm guards;

[0023] FIG. 5 shows a pair of arm guards on a user grasping handles of a recreational tubing device.

DETAILED DESCRIPTION

[0024] In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the various aspects of the present invention. It will be obvious, however, to one skilled in the art that the present invention may be practiced without these specific details.

[0025] The arm guards are shown on a wearer in FIG. 7. Looking first at that figure will give the reader a good idea of how an arm guard will fit on a user. In this FIG. 7 an arm guard, generally 10 is shown on the right arm of the user. The arm guard extends from the palm area of the users hand, over the wrist, forearm and elbow to a point several inches above the user's elbow. This will protect the user's arm from abrading on the surface of a tube 12 while the user is riding the tube in the water.

[0026] Turning now to FIGS. 1-6, where like numbers identify like or similar elements, the arm guard will be further described.

[0027] FIG. 1 shows a flat piece of neoprene 12; preferably nylon, polyester or lycra covered (one side or two) grade 2 neoprene as supplied by "Foam Order" through its online store. The neoprene sheet stock has been cut to the initial shape for a single arm guard. A thumb hole 14 is cut in the hand end 16 of the flat piece 12. The elbow end 20 can be straight cut as shown or can be cut with a curve to better accommodate a user's arm above her elbow.

[0028] The right side edge 22 is attached to the left side edge 24 and stitched together therewith to form a tubular structure as shown in FIGS. 4-7. The stitching may be made using “four stitch overlay” sewing machine that lays down an elastic band holding the stitch and the neoprene material together while providing the stretch and expandability required in the finished arm guard. Point 26, point A, is indexed to point 28, point B, and point 30, point C, is indexed to point 32, point D, such that the hand end 16 of the arm guard has a smoothly curved hand end 34 and a straight or smoothly curved elbow end 36.

[0029] The thumb hole 14 is preferably the smooth triangular shape as shown in the figures but may be more round, oblong, square or rectangular than is shown in the figures.

[0030] FIG. 2 is similar to FIG. 1 however it is for the other arm of the user such that the pieces or blanks, shown in FIG. 1 and FIG. 2 make up a set of arm guards.

[0031] FIG. 3 shows three arm guard templates, 40a-c. A youth size is at the left 40a, a “one size fits most” is 40b in the middle and a large arm guard is shown as 40c. These are used as the patterns for three sizes of arm guards that are being produced and other sizes are, of course, possible. A template, such as 40a, will be placed on the neoprene sheet material, traced and a blank for forming the arm guard cut out. When using neoprene that is not fabric covered or neoprene that is covered on both sides, that being the front and the back of the neoprene sheet, the “handedness” of the templates on the fabric doesn’t matter. However, when a particular side of the neoprene material needs to be positioned next to the user’s skin in the completed arm guard, or a particular side of the neoprene material needs to be on the outer surface of the arm guard when it is completed, then the top side or bottom side of the template matters. For half the arm guards the template will be placed on the neoprene material topside up. On the other half of the arm guards from the same run of complete sets, the template will be placed on the neoprene fabric bottom side up, that is, flipped over from the first position. The template will be flipped over once per pair of arm guards.

[0032] FIG. 4 shows the three sizes of completed arm guards. Two arm guards of each size will make up a pair of arm guards. In this figure a tab, each labeled 42 is visible. These tabs are product hang tags. They are used to indicate the manufacturer of the arm guards and contain information concerning the arm guard.

[0033] As shown in FIG. 5, it is preferred that the seams 44 of the arm guards 10 are on the top of the wearer’s arms. A flat seam can be made, that being the preferred seam, or an overlapped seam could be made. It is best to have the seam flat and smooth inside the arm guard for comfort.

[0034] One advantage of the neoprene arm guard is that they are designed to not have any water retention cavities. This is desirable to avoid the “skunkiness” possible if lake water was trapped for days in a cavity. Also, it is easy to clean these arm guards as they can be easily turned inside out assuring that both the inner surface and the outer surface can be washed in soap water.

[0035] In summary the apparatus is an article of protective wear comprising an elongated arm guard having a hand end and an elbow end. The arm guard is open at each end. The hand end of the arm guard has an aperture formed in the arm guard and this aperture is spaced away from the open hand end of the arm guard. This aperture forms a thumbhole. Since the arm guard is formed from a flat blank, a seam is

formed along the length of the elongated arm guard and the thumb hole is offset from the seam location. It is preferred that the arm guard is formed of neoprene material and this neoprene may fabric backed in one embodiment.

[0036] The disclosure sets forth a method of protecting a tube rider from arm abrasions through the acts of providing a pair of arm guards and placing the arm guards on the arms of the tube rider. The arm guards are tubular structures of neoprene material having a hand end and an elbow end. The hand end may have a thumbhole formed therein. One method of making the arm guard comprises the acts of cutting out a blank of material, the material being a neoprene material which may have a fabric coating on one or both sides of a neoprene core, in a desired shape, cutting a thumb hole in a hand end of the blank, the blank having a right side edge and a left side edge, connecting the left side edge to the right side edge, this can be done by any of several methods such as sewing the edges together, taping the edges together, gluing the edges together, heat welding the edges together, or the like. A tubular like structure is thus formed from the blank.

[0037] Having fully disclosed the various aspects of the invention and some of its exemplary embodiments, methods and applications, those skilled in the art will undoubtedly expand its application and devise other embodiments while still being within the scope and spirit of the invention as recited in the following claims.

What is claimed is:

1. An article of protective wear comprising:

an elongated arm guard having a hand end and an elbow end, the arm guard open at each end, the hand end of the arm guard having an aperture formed in the arm guard, the aperture spaced away from the open hand end of the arm guard.

2. The article set forth in claim 1 wherein the aperture is a thumb hole.

3. The invention in accordance with claim 2 wherein a seam is formed along the length of the elongated arm guard and the thumb hole is offset from the seam location.

4. The invention in accordance with claim 1 wherein the arm guard is comprised of neoprene material.

5. The invention in accordance with claim 4 wherein the neoprene is fabric backed.

6. The invention in accordance with claim 5 wherein the neoprene is fabric backed and the fabric is nylon.

7. The invention in accordance with claim 3 wherein the arm guard is formed from an arm guard blank and the seam is formed by affixing a right side edge of an arm guard blank to a left side edge of the arm guard blank.

8. The invention in accordance with claim 7 wherein the seam is formed by stitching the right side edge to the left side edge.

9. The invention in accordance with claim 8 wherein the seam comprises an elastic band sewn into the seam by a four stitch overlay sewing machine, the stitch holding the edges of the blank together while providing stretch and expandability.

10. The invention in accordance with claim 2 wherein the thumb hole comprises a stretch stitch on the edge of the thumb hole around the perimeter thereof.

11. The invention in accordance with claim 1 wherein the open end of the hand end comprises a stretch stitch on the edge of the open end of the hand end.

12. The invention in accordance with claim 1 wherein the open end of the elbow end comprises a stretch stitch on the edge of the open end of the elbow end.

13. The invention in accordance with claim 7 wherein the seam is affixed by an adhesive to bond the right side edge to the left side edge of the blank.

14. An article of protective wear comprising:

an elongated tubular arm guard having a hand end and an elbow end, the arm guard open at each end, the hand end of the arm guard having a thumb hole spaced away from the open hand end of the arm guard;

the arm guard made of nylon backed neoprene material having a thickness in the range of less than 1.5 mm to greater than 6 mm.

15. The invention in accordance with claim 14 further comprising:

a seam extending the length of the elongated tubular arm guard and the thumb hole is offset from the seam.

16. A method of providing arm protection to a rider of a water bourn tube comprising the acts of:

cutting a blank from a sheet of material, the blank having left and right side edges;

cutting a thumb hole in the blank;

attaching the left and right side edges of the blank together to form a tubular arm guard having openings at the ends of the arm guard;

positioning the arm guard on an arm of the rider and positioning the rider's thumb through the thumb hole of the arm guard.

17. The method set forth in claim 16 where positioning the arm guard includes the act of pulling the arm guard on the arm to a location beyond the elbow of the rider.

18. The method set forth in claim 16 wherein the sheet of material is neoprene.

19. The method set forth in claim 16 wherein the act of cutting a blank further includes the acts of placing a pattern template on the sheet of material;

directing a cutting device around the template while cutting the material.

20. The method set forth in claim 16 wherein the act of attaching the left and right side edges of the blank together creates a seam, the seam comprising an adhesive bonding the left and right side edges making the blank into a tubular structure.

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