ADJUSTABLE BACK SUPPORTER

Field of the Invention

The present invention is directed to a back supporter to support the back of a user while the user in the bending position for extended periods of time.

Summary of the Invention

Embodiments of the present invention include a back supporter for a user comprising an upper portion adapted to cover the front portion of user extending from the hips towards the shoulder of the user, a lower portion adapted to cover the front portion of user extending from the hips towards the knees of the user, and a hinge connecting the upper portion and lower portion, wherein the hinge is adjustable and limits the movement of the upper portion relative to the lower portion when the user bend forward.

Brief Description of the Drawings

Figure 1 is a diagrammatic view of a back supporter in accordance with an embodiment of the invention shown on a user.

Figure 2 is a diagrammatic side view of a back supporter in accordance with an embodiment of the invention.

Detailed Description of Embodiments of the Invention

Some preferred embodiments of the present invention are described in this section in detail sufficient for one skilled in the art to practice the present invention without undue experimentation. It is to be understood, however, that the fact that a limited number of preferred embodiments are described in this section does not in any way limit the scope of the present invention as set forth in the claims.

It is to be understood that whenever a range of values is described herein, i.e. whether in this section or any other part of this patent document, that the range includes the end points and every point therebetween as if each and every such point had been expressly described. Unless otherwise stated, the words “about” and “substantially” as used herein are to be construed as

meaning the normal measuring and/or fabrication limitations related to the value or condition which the word “about” or “substantially” modifies. Unless expressly stated otherwise, the term “embodiment” is used herein to mean an embodiment of the present invention.

The present invention is directed to an adjustable back supporter designed to be worn by anyone who needs support in the bending position for prolonged periods of time. It is to be worn on the front of the body from mid-chest to mid-thigh. It is hinged at the waist with supports that allow the wearer to bend to a certain degree and stop. This will take pressure off of the lower back. Saving the back will reduce fatigue and lower back injuries. Advantageously, the hinge is adapted to be locked in a primary supported position while on the user

With reference now to Figure 1, there is shown a back supporter 10 in accordance with an embodiment of the invention positioned on a user. The back supporter 10 includes an upper portion 12 and a lower portion 14 connected to the upper portion by a hinge 16. The upper portion 12 is adapted to cover a portion of the front torso of a user. In certain embodiments the upper portion 12 begins from about the hips of the user and extends towards the shoulders of the user. The lower portion 14 is adapted to cover a portion of the front torso of a user beginning from about the hips of the user and extending towards the knees of the user. As used herein, the “hips” of the user is that region of the user that allows for and provide the ability of the user to bend the upper torso forward. The upper portion 12 and lower portion 14 may be contoured to the approximated shape of the user taking into consideration general anatomical shapes and curves of the user. The upper portion 12 and lower portion 14 may be customized to a particular user or alternatively may contain certain general anatomical shapes and curves. The upper portion 12 and the lower portion 14 may also contain holes or perforations 18 to allow ventilation for the user while the back supporter 10 is being worn by the user. Further, cushioning material such as a foam may be used on the upper and lower portions to provide a move comfortable fit.

The upper portion 12 and the lower portion 14 may be made from any material suitable to hold or support the weight of the user. Suitable materials may include but are not limited to metals, plastics, and composite materials. Preferably the materials are lightweight materials to minimize the fatigue of a user for wearing the back supporter 10. In certain embodiments the upper portion 12 and the lower portion 14 are made from a moldable plastic, such as those used for

injection molding. In other embodiments, the upper portion and lower portion may be made from a composite material such as a fiber reinforced composite such as carbon fiber or glass fibers embedded in a polymer matrix. The upper portion 12 and the lower portion 14 may be made from the same or different materials.

The upper portion 12 and the lower portion 14 are connected by a hinge 16. The hinge 18 allows restricted movement of the upper portion 12 relative to the lower portion 14. The hinge 18 allows the upper portion 12 to move and form an angle with the lower portion 14 when the user is bending forward. In certain embodiments the hinge 16 limits the movement of the upper portion 12 such that when the user in bending forward, the upper portion 12 will move and form an angle with the lower portion 14 to a certain point at which the hinge 16 will no longer allow the upper portion 12 to continue to move in the direction of the user's bend. In this way, the user may "rest" on the upper portion 12 while in a bending position. In certain embodiments, the hinge 16 may be adjustable such the degree of forward movement of the upper portion 12 may be adjustable based on the needs of the user. In some embodiments, the hinge may be made from metal. In other embodiments the hinge 16 may be made from plastic.

In further embodiments, the hinge 16 includes a locking mechanism 17 such as a button or lever to lock the hinge 16 in a predetermined position desired by the user. Preferably the locking mechanism is easily accessable to the user while wearing the back supporter 10 such that the locking mechanism may be engaged and disengaged at anytime while being worn by the user. Hinges with locking mechanisms themselves are known to those skilled in the art and may be utilized with the present invention.

In additional embodiments the hinge 16 may optionally include a counterweight mechanism (not shown) such as a spring or other tensioning material. As the user is bending forward, the counterweight mechanism provides a force towards the user. In this way, the user encounters resistance being provided by the counterweight mechanism while bending forward. In certain embodiments, the force is suffient to support the weight the user is exerting on the upper portion 12 when bending at an angle of about 30 to about 90 degrees from vertical. Similarly, hinges with tensioning springs or materials are known to those skilled in the art and may be used with

the present invention provided they meet the criteria of being able support the users weight and be able to be locked in a predetermined position as discussed above.

With reference to Figure 2 and continued reference to Figure 1, to assist in maintaining the position of the upper portion 12 and lower portion 14 on the user, upper straps 20 and lower straps 22 may be used. In certain embodiments upper straps 20 are adapted to hold the upper portion 12 in place on the user. The upper straps 20 preferably include a pair of straps that connect to a top edge 24 of the upper portion 12 and connect to a top edge 26 of the lower portion 14. The upper straps 20 are adapted to go over the shoulders of the user. Preferably the upper straps 20 are adjustable to allow for correct positioning of the back supporter 10 on the user.

Lower straps 22 are connected to the lower portion 14 and adapted to go around one or more legs of the user. Lower straps 22 may include a pair of lower straps as shown in Figure 1 that secure the lower portion 14 to each leg of the user, or alternatively, only one strap may be used to secure one or both legs of the user. Preferably the lower straps 22 are adjustable to allow for correct positioning of the back supporter 10 on the user.

The upper straps 20 and lower straps 22 may be made from any material known to those skilled in the art for producing straps or adjustable straps. The straps may be made from materials, including but not limited to, leather, natural or synthetic fabrics. To provide adjustability of the upper straps 20 and lower straps 22, a traditional belt and buckle system may be used or more preferably a hook and loop fastening system may be used.

While several embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention as described in the claims. All United States patents and patent applications, all foreign patents and patent applications, and all other documents identified herein are incorporated herein by reference as if set forth in full herein to the full extent permitted under the law.

CLAIMS

What is claimed is:

1. A back supporter for a user comprising:

An upper portion adapted to cover the front portion of user extending from the hips towards the shoulder of the user, a lower portion adapted to cover the front portion of user extending from the hips towards the knees of the user, and a hinge connecting the upper portion and lower portion, wherein the hinge is adjustable and limits the movement of the upper portion relative to the lower portion when the user bends forward, and wherein the hinge comprises a locking mechanism for locking the position of the hinge in a predetermined position.

2. The back supporter of claim 1, wherein the hing further comprises a counterweight mechanism.

ABSTRACT OF THE DISCLOSURE

A back supporter is designed to be worn by anyone who needs support in the bending position is described. It is to be worn on the front of the body from mid-chest to mid-thigh. It is hinged at the waist with supports that allow the wearer to bend to a certain degree and stop. This will take pressure off of the lower back. Saving the back will reduce fatigue and lower back injuries.