July 27, 1965 D. B. CAUDILL 3,197,255

PORTABLE BACK SUPPORT

Filed Oct. 12, 1964

FIG. 1

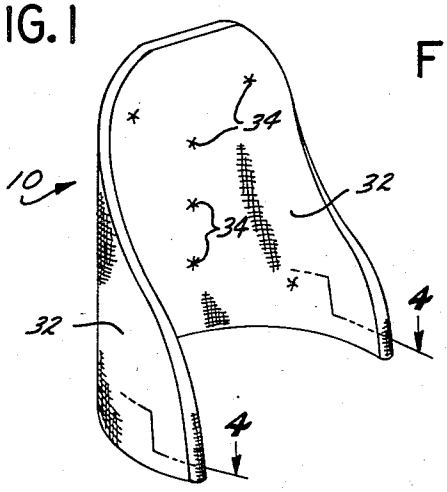


FIG. 2

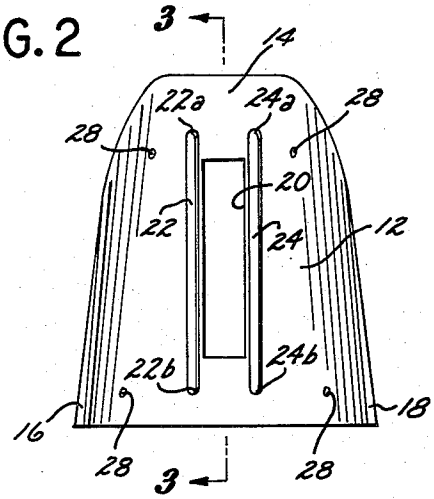


FIG. 3

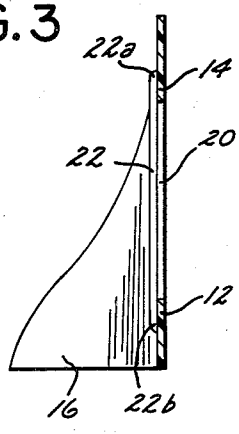


FIG. 4

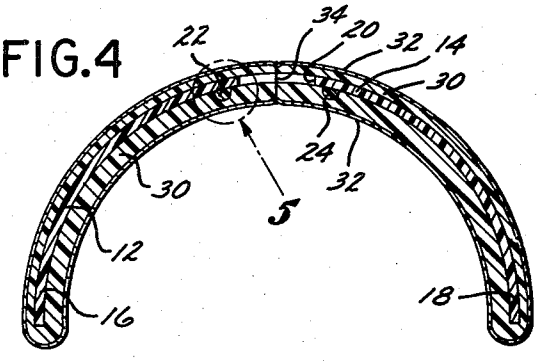


FIG. 5

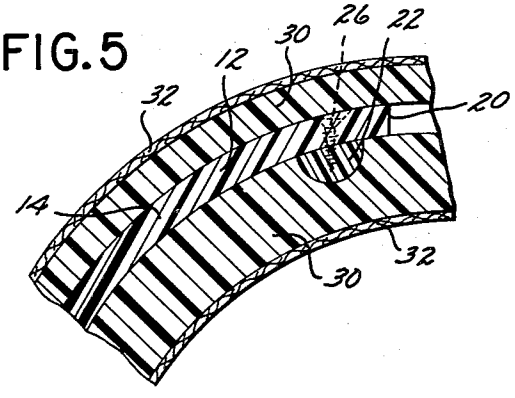
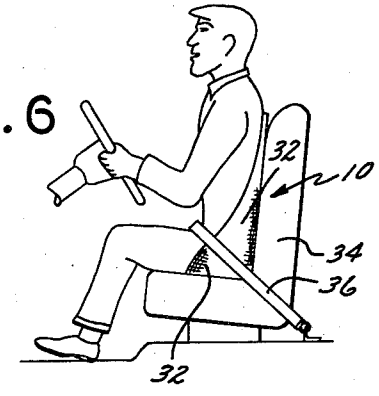


FIG. 6



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PORTABLE BACK SUPPORT

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The present invention relates generally to portable back supports, and more particularly to devices for maintaining a person's spinal column in a given position.

It is not uncommon for persons having injured vertebrae and the like to require support means for the spinal column whenever the torso of the body is in a vertical position. For instance, some persons have fractured vertebrae which, for any one of a variety of reasons, cannot be fused to adjacent vertebrae and hence are always subject to dislocation and slippage. Certain persons due to their general health conditions cannot undergo the rigors of an operation for fusing the several vertebrae together. Older persons are sometimes unable to withstand the anesthetics and the general wear and tear of the physical body which accompany virtually every medical operation. If such a person should have a fractured vertebra or a malfunction of one kind or another, it may be necessary to provide additional support for the spinal column whenever the torso of the body is in a vertical position.

Various types and styles of wearing apparel, such as tight fitting corsets or girdles have been provided to be worn by the person suffering from the above explained conditions to maintain the body in a rigid position. However, such devices usually have been quite uncomfortable due to the relatively high pressures which they exert on the body and due to the warmth thereof. The latter condition usually accompanies any type of corset structure due to the fact that such devices are made of relatively heavy, non-porous materials such as metal, rubber and elastic cloth. Also, wearing an extremely close and tight-fitting garment of any kind is very uncomfortable in and of itself.

Seating means such as chairs, couches, automobile seats and the like are particularly incapable of providing support for the spinal column of the person suffering from the above described conditions. On the other hand, it is not practicable to make standard or ordinary seating equipment with special support means for particular purposes due to the fact that not all persons would find such equipment advantageous or even comfortable. In view of this, there has developed the need for portable back supporting means which can be transported from one location to another and which can be easily and quickly positioned or mounted in an ordinary chair, couch or other seating means so as to provide the particular support means necessary for a given individual.

It is an object of the present invention to provide a portable back support which can be easily transported from one type of ordinary seating means to another as desired.

Another object of the present invention is to provide back support means as characterized above having a generally arcuate shape so as to firmly hold the torso of the person's body.

Another object of the present invention is to provide a back support as characterized above formed with a flexible generally arcuate frame for firmly holding the torso of the person's body when a seat belt or similar strap means is fastened across the person's body, the flexible frame thereby being firmly pressed against the person's body.

A still further object of the present invention is to provide back support means as characterized above having strategically located elongated ribs or projections which create a sidewise force on the spinal column of the person whenever the person is firmly positioned in the back support means.

A still further object of the present invention is to provide back support means as characterized above which does not interfere with the normal action of the spinal column but which merely exerts the desired force or forces thereon for maintaining the same in the desired general position.

An even further object of the present invention is to provide a back support as characterized above which is simple and inexpensive to manufacture, and which is rugged and dependable in operation.

The novel features which I consider characteristic of my invention are set forth with particularity in the appended claims. The device itself, however, both as to its organization and mode of operation, together with additional objects and advantages thereof, will best be understood from the following description of an embodiment when read in connection with the accompanying drawing in which:

FIGURE 1 is a perspective view of a back support according to the present invention;

FIGURE 2 is a front elevational view of the frame of the back support of FIGURE 1;

FIGURE 3 is a sectional view of the frame, taken substantially along line 3—3 of FIGURE 2;

FIGURE 4 is a sectional view through the completed structure of FIGURE 1, taken substantially along line 4—4 therein;

FIGURE 5 is a fragmentary sectional view of a portion of FIGURE 4 as indicated therein; and

FIGURE 6 is a fragmentary side elevational view of a person using the subject back support in an automobile.

Like reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to FIGURE 1 of the drawings, there is shown therein a generally arcuate back support **10** which is sufficiently portable to be carried from one location to another by even those persons having weak or injured backs. The general contour of support **10** enables the device to partially encircle the torso of a person's body to provide optimum support therefor as will hereinafter be explained in greater detail. As will be readily apparent to those persons skilled in the art, the subject back support may be formed with a seat member (not shown) whereon the person is seated while using the support **10**. However, for simplicity and maximum portability, it has been found preferable to have the support **10** be without such a seating portion. This enables the support **10** to have greater flexibility so as to more easily conform to the size and shape of a person's body.

The main body member in the back support **10** of FIGURE 1 is the generally arcuate frame **12** shown in detail in FIGURES 2 and 3. Such frame is formed with a relatively high or large central or intermediate portion **14** and a pair of oppositely disposed lower side portions **16** and **18**, all of which are formed as a unitary structure to provide the generally arcuate shape. Frame **12** may be formed of any appropriate material, but certain functional characteristics are desirable, if not mandatory, and hence certain types of material have been found preferable. For instance, due to the need for firmness and strength, while nonetheless providing a moderate amount of flexibility, it has been found desirable to utilize either one of the many plastic materials or fiber-board, either of which can be molded and shaped as desired.

The intermediate portion **14** of frame **12** is formed with an elongated centrally located opening **20** for receiving at least a portion of the spinal column of the person using back support **10** That is, as will herein-

after become more apparent, it is desirable to permit the spinal column to assume its own position without interference from the frame 12 other than as will hereinafter appear.

To properly position the person's spinal column, there is provided on one or both sides of the opening 20, a rib as shown at 22 and 24. Each such rib is formed with a generally circular or semi-circular cross-section, and extends substantially any desired length to provide the necessary support for and pressure on the person's spinal column.

It has been found that the weight of the person's body reclining in the support 10 causes either or both of the ribs 22 and 24 to exert a sidewise pressure on the person's spinal column. Accordingly, depending on the particular malfunction of the person's spinal column suitable support or supports can be provided. That is, if the person's vertebrae are so injured that there is a tendency for separation in only one direction, then a rib 22 or 24 should be provided on the appropriate side for creating sidewise pressure against such tendency. If, on the other hand, the person's spinal column is so injured that slippage or separation can take place in either sidewise direction, then both of the ribs 22 and 24 should be employed for creating pressures on opposite sides of the spinal column.

The length of the ribs 22 and 24 also depends upon the condition of the spinal column of the person using device 10. That is, in the event the malfunction is not localized but rather exists substantially throughout the length of the spinal column, or if there are several widely separated points of malfunction in the spinal column the rib or ribs should extend substantially the length of the intermediate portion 14 of the frame 12. On the other hand, as will be readily apparent to those persons skilled in the art, if the malfunction is localized, then the rib or ribs can be located in specific places and can be of sufficient length to afford the necessary support.

The opposite ends 22*a* and 22*b* and 24*a* and 24*b* of ribs 22 and 24 respectively, are preferably rounded to prevent digging into the person's body.

As shown most clearly in FIGURE 5 of the drawings, such ribs 22 and 24 may be held in fixed position on frame 12 by any appropriate fastening means such as screw 26. A plurality of such fastening devices should be used, of course, to maintain each rib in the desired position.

As shown most clearly in FIGURE 2 of the drawings, frame 12 may be provided with a plurality of through openings, 28, through which the padding and covering material to be hereinafter described can be held in place by suitable threaded ties.

Covering the frame 12 and ribs 22 and 24 thereon is a relatively large section of resilient or flexible sponge material 30 which may be formed of plastic or rubber foam as desired. Such cushioning material should completely surround frame 12 so that the support 10 will not unduly harm the chair or couch on which it is placed, and also to provide maximum comfort for the user thereof.

To finish the entire back support 10, suitable covering material 32 may be provided thereon, such material being either leather, cloth or one of the many synthetic plastic materials available today. Such covering 32 also should completely encompass the support 10, including the resilient material 30 thereon to finish the entire device. As shown most particularly at 34 in FIGURE 4 of the drawings, suitable ties formed of thread can be formed between the front and back of the covering material 32 through the various openings in the frame 12. Such ties tend to retain the resilient cushioning material and covering therefor in a generally fixed position on the frame 12.

As shown in FIGURE 6 of the drawings, the subject

support 10 is utilized merely by being placed on the ordinary or usual cushioning means of a chair or couch as shown at 34. Such cushioning means can be the normal seat and back rest of an automobile, or may be a chair or couch, depending upon the particular circumstances.

It has been found particularly desirable to utilize the subject back support 10 with seat belts, an example of which is shown at 36 in FIGURE 6, such belts firmly gripping or encompassing the midsection of the occupant of the seat, thereby firmly holding the person in a seated position.

By using the back support 10, wherein the frame 12 is formed of generally firm but flexible material, the seat belt 36 pulls the side portions 16 and 18 of the frame about the lower portion of the person's torso. As such, the back support 10 is caused to fit more snugly about the person's body, the ribs 22 and 24 thereby being urged more strongly against a person's body. The result, of course, is that firmer support is provided for the spinal column to thereby provide greater assurance that the person's posture will be maintained.

It is thus seen that the present invention provides a portable back support which is particularly desirable for persons having injured or malformed spinal columns or other portions of the back.

Although I have shown and described certain specific embodiments of my invention, I am fully aware that many modifications thereof are possible. My invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

I claim:

1. A portable back support to be placed on ordinary seating means comprising in combination, a generally arcuate stiff frame having a relatively high central portion and generally stiff but flexible relatively low side portions for firmly receiving the torso of a person's body when a seat belt is secured across the person using said support, said frame being formed with a central opening in said central portion for receiving the person's spinal column without interference with said frame, said frame having an uninterrupted surface except for said opening for firmly holding the person's body, at least one elongated rib on the central portion of said frame to one side of said central opening therein having a generally arcuate cross-section, and resilient covering on said frame and rib extending across said through opening, whereby securing of a seat belt across said person causes said frame to firmly support the back and sides of the person's torso and said rib to exert a sidewise force on the person's spinal column to maintain the same in the desired position.

2. A portable back support to be placed on ordinary seating means according to claim 1 wherein is provided on said frame two elongated ribs one on each side of said through opening to create sidewise forces in opposite directions on the spinal column of the person to maintain the same in a fixed position.

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