Feb. 7, 1967 H. LUEDERS 3,302,972

SPINAL HEALTH BACK SUPPORT

Filed Sept. 9, 1964 2 Sheets-Sheet 1

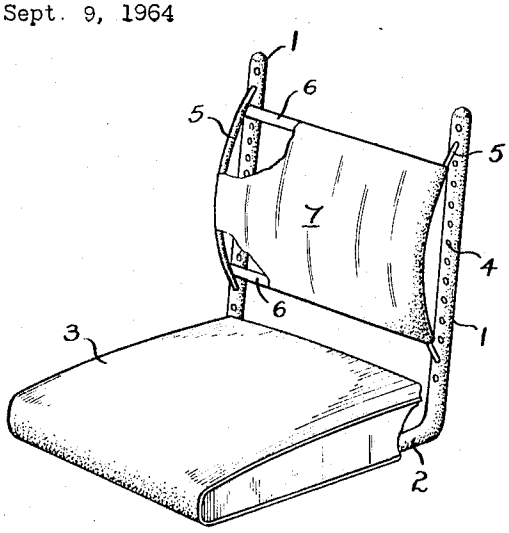



FIG 1

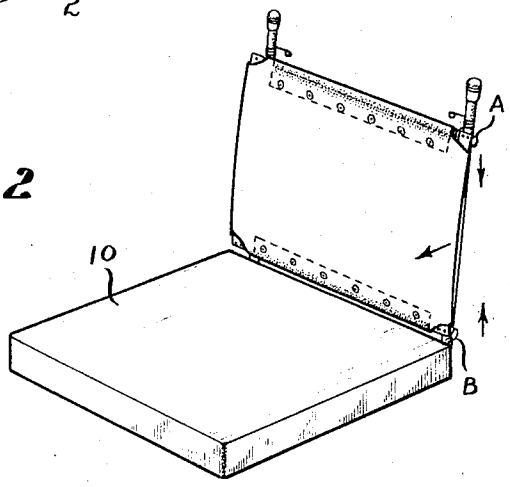



FIG 2

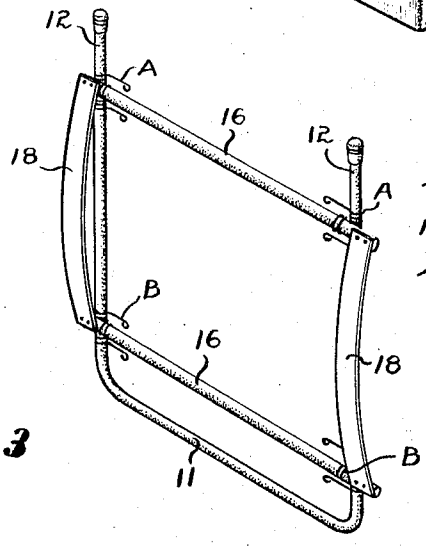



FIG 3

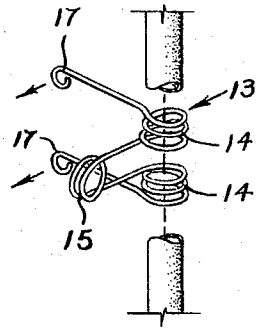



FIG 3a

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SPINAL HEALTH BACK SUPPORT

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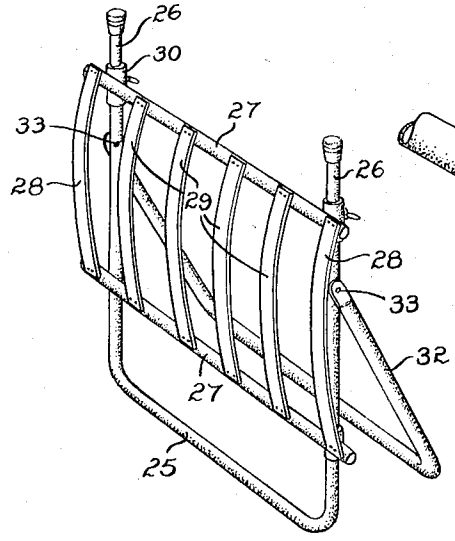



FIG 4

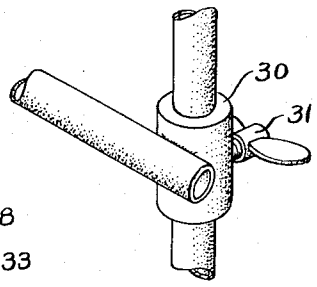



FIG 4a

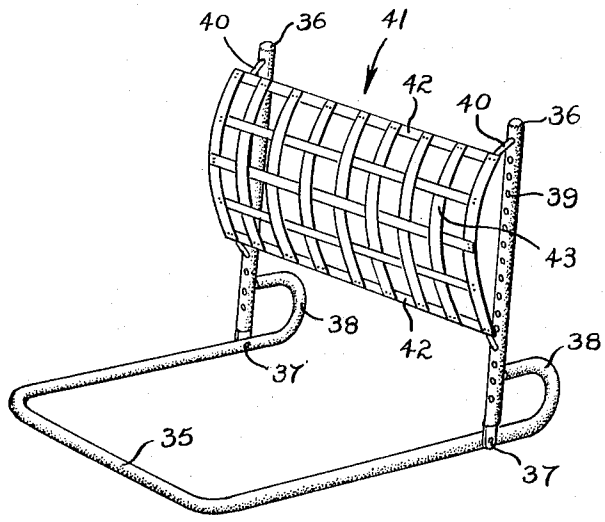



FIG 5

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3,302,972

# SPINAL HEALTH BACK SUPPORT

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7 Claims. (Cl. 297—352)

This invention relates to a spinal health back support.

It is known to use corsets and frames and the like fitted to the human body to support the spine, which devices are useful in applying spinal correction and alleviating pain but they tend to interfere with the movement of the person and also with respiration.

There are many cases where corset supports or frames for a human spine are not necessary all of the time, for example it may be sufficient to provide a support for the human spine while the person concerned is in a sitting or related position.

The present invention relates to this latter condition and therefore has as its object the provision of a spinal health back support which preferably forms part of a seat and which will be readily adjustable to support the human spine while in a sitting or relative position.

According to this invention the support comprises a frame having uprights, and adjustable but lockable on the uprights a back rest of forwardly arcuate shape of variable radii and preferably variable in position along said uprights.

The invention can of course be applied in many forms and may comprise simply a back rest which can be used in connection with an ordinary chair or seat or can attach thereto or it may itself form a seat in conjunction with a back rest which can be used independently, or it may have a seat with a folding back rest and supporting means to hold the back rest in its upright or similar position when being used, the actual methods of constructing the seat varying according to the purpose for which it is designed but in each case the essential feature is the back rest with adjustment means so arranged that both the arcuate shape of the back rest as well as the position of the back rest can be varied.

Without limiting the invention to the forms now to be described in some detail, the following description will be made with reference to the accompanying drawings in which

FIG. 1 is a perspective view of a seat constructed according to this invention,

FIG. 2 is a similar view of a seat taking somewhat different form,

FIG. 3 is a view of the frame of the seat shown in FIG. 2,

FIG. 3*a* is an enlarged view of the details of the connection between some of the frame members of FIG. 3,

FIG. 4 is a view corresponding to FIG. 3 but showing a modified form of the frame,

FIG. 4*a* is an enlarged view showing the connection detail of some of the frame members of FIG. 4, and

FIG. 5 is a view of a frame showing a back rest which is hingedly connected to a seat frame for folding purposes.

Referring first to FIG. 1 the two uprights **1** form part of a U-shaped frame **2** which is disposed within the seat **3** and is connected thereto, the uprights having in them a series of apertures **4** which are engaged by flexible side bars **5** connected by transverse supports **6** on which the fabric or similar member is supported, it being preferred to use canvas or the like which is looped around the flexible side bars **5** along the two edges and around the transverse support **6** at the upper and lower edges.



It will be realized that the flexible side bars can have their ends engaged in holes located at appropriate positions so that the arcuate shape of these flexible side bars can be varied by for instance engaging the tops of the flexible side bars in apertures nearer or further away from the apertures in which the lower ends of the flexible side bars are engaged, and similarly the back rest portion **7** can be moved up or down by appropriately engaging the upper and lower ends of the flexible side bars in selected apertures.

In the case of FIG. 1 the uprights are rigidly fixed in relation to the base of the seat and therefore the unit can be used as it is without any additional support, such a unit being capable of supporting a person wherever the unit is placed, the relationship of the member **7** to the seat **3** permitting first of all the height of the back rest to be selected in relation to the seat and of course the curvature being also adjustable as earlier explained.

In a case where the device is to be placed on to a seat of a motor vehicle or a chair or the like to form an auxiliary thereto the form shown in FIG. 2 can be used in which case the seat **10** is joined to the lower bar **11** of the frame which again utilizes a pair of uprights **12** but in this case the uprights **12** have engaged on them specially shaped springs as shown in the enlarged part of FIG. 3, these springs **13** comprising loops **14** which are adapted to engage the uprights **12** and are of such a dimension that they grip tightly on to the uprights **12**, while a loop **15** engages the respective parts of transverse supports **16** carried by these spring members **13**.

The loop **15** does not have to be adjustable on the transverse supports **16** but the spring members **13** must be adjustable up and down on the uprights **12** and for this purpose the two ends of the spring members **13** are provided with grips **17** which can be pushed by the operator to exert an unwinding force on the loops **14**, thereby allowing the loops to be moved up and down on the uprights, the upper spring members **13** which have been designated A being independently adjustable in relation to the lower spring members which are designated B so that the upper and lower transverse support **16** can be moved towards or away from each other to change the curvature of flexible side bars **18** which are securely attached to the upper and lower transverse supports **16**.

In the embodiments shown in FIG. 4 a modified form of back rest is shown in which there is again a frame having a lower bar **25** and two uprights **26**, upper and lower transverse bars **27** being again used which have joined to them flexible side bars **28**, a series of intermediate flexible bars **29** being however also shown for the purpose of indicating that the support can be formed in a number of ways.

Rigidly secured to the upper and lower transverse supports **27** are sleeves **30** which are apertured to engage on the uprights **26** but are provided with thumbscrews **31** so that the sleeves **30** can be moved up and down on the uprights and can therefore change both the position and the curvature of the flexible side bars **28** and the intermediate bars **29**.

This construction could simply be used in the same way as the back rest shown in FIG. 3, with the lower bar **25** of the frame hinged or otherwise connected to a seat, but to allow the back rest to be supported in a selected upright position a U-shaped adjusting frame **32** is connected to the uprights **26** by hinge pins **33** which thus allow the angle of the adjusting frame **32** to be varied in relation to the uprights **26**, thus allowing the back rest to be supported in a desired position without it resting against a seat back or the like.

In the embodiment shown in FIG. 4 a main seat frame **35** has a pair of uprights **36** connected to it by hinge pins

37, the frame 35 having curved ends 38 which are so located that when the uprights 36 are swung into the position shown in FIG. 5, the uprights are supported against further rearward movement and thus give a self-supporting back.

The uprights 36 are again provided with a series of apertures 39 into which the ends of flexible side bars 40 engage, the flexible side bars being attached to a flexible mesh 41 comprising flexible transverse supports 42 as well as flexible uprights 43, this construction giving a flexible back rest which can again have its curvature changed by appropriately engaging the ends of the flexible side bars and also allowing the height of the mesh 41 to be selected in relation to the lower bars of the frame 35.

It will of course be realized that the mesh 41 could be replaced by springing of any type provided it allows an adjustment of the curvature to be effected so that the user of a device will have the necessary support at the correct height which will ensure that his spine will be accommodated in a position where the greatest comfort and best health giving position is attained.

What I claim is:

1. A spinal health back support comprising a frame having uprights, and adjustable but lockable on the uprights a back rest of forwardly arcuate shape of variable radii and variable in position along said uprights.

2. A spinal health back support comprising a frame having a pair of spaced apart uprights, flexible arcuate side bars associated with said uprights, transverse supports connected to said flexible side bars, and means interconnecting said flexible side bars with said uprights to allow the curvature of said side bars to be adjusted.

3. A spinal health back support comprising a frame having a pair of spaced apart uprights, flexible arcuate side bars associated with said uprights, transverse supports connected to said flexible side bars, and means interconnecting said flexible side bars with said uprights to allow the curvature of said side bars to be adjusted and also to allow the position of said side bars along said uprights to be varied.

4. A spinal health back support comprising a frame shaped to have a base section and having a pair of spaced apart uprights projecting therefrom, a seat member on said base section, flexible arcuate side bars associated with said uprights and projecting forwardly therefrom, transverse supports connected to said flexible side bars, and means interconnecting said flexible side bars with said uprights to allow the curvature of said side bars to be adjusted.



5. A spinal health back support comprising a frame shaped to have a base section and having a pair of spaced apart uprights projecting therefrom, a seat member on said base section, flexible arcuate side bars associated at their ends only with said uprights, the center portions of said side bars being bowed and projecting forwardly of said uprights, transverse supports connected to said flexible side bars, and means interconnecting said flexible side bars with said uprights to allow the curvature of said side bars to be adjusted and also to allow the position of said side bars along said uprights to be varied.

6. A spinal health back support comprising a frame shaped to have a base section and having a pair of spaced apart uprights projecting therefrom, hinging means between said base section and said uprights, stops to limit such movement, a seat member on said base section, flexible arcuate side bars having bowed center portions associated with said uprights, transverse supports connected to said flexible side bars, and means interconnecting said flexible side bars with said uprights to allow the curvature of said side bars to be adjusted and also to allow the position of said side bars along said uprights to be varied.

7. A spinal health back support comprising a frame having a pair of spaced apart uprights projecting therefrom, a series of apertures in said uprights, flexible arcuate side bars adapted to have their ends engage in the apertures in said uprights to provide curved center portions, transverse supports connected to said flexible side bars, and means secured to said side bars and said transverse members to complete a back rest, said series of apertures allowing the curvature of said side bars along said uprights to be varied.

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JAMES T. McCALL, *Examiner.*

G. O. FINCH, *Assistant Examiner.*