Dec. 31, 1935. B. E. WALSTROM 2,026,332

DEVICE FOR NORMALIZING NONORGANIC FIXATION OF THE VERTEBRAL SPINAL COLUMN

Filed Aug. 9, 1933

Fig. 1

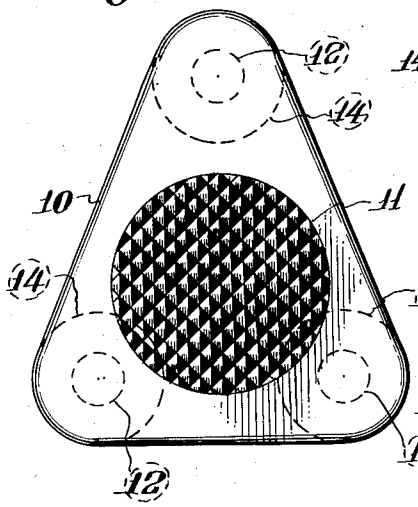


Fig. 2

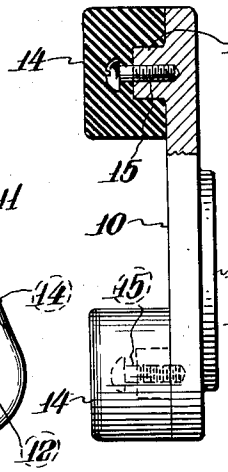


Fig. 3

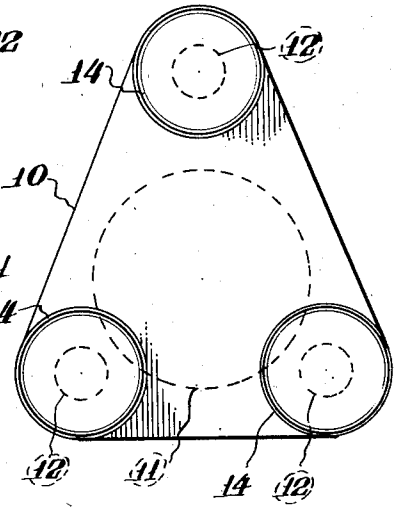


Fig. 4

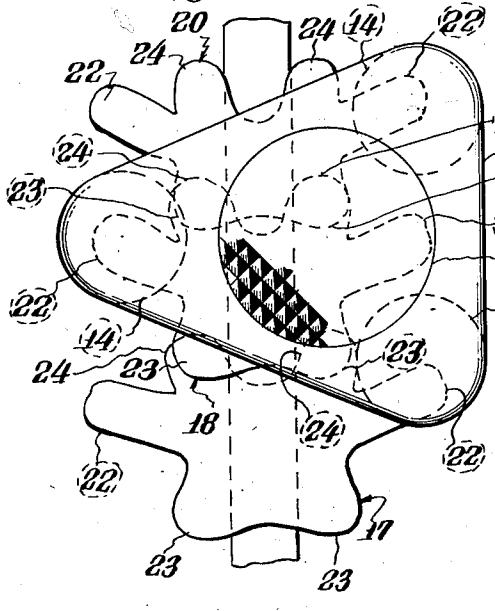
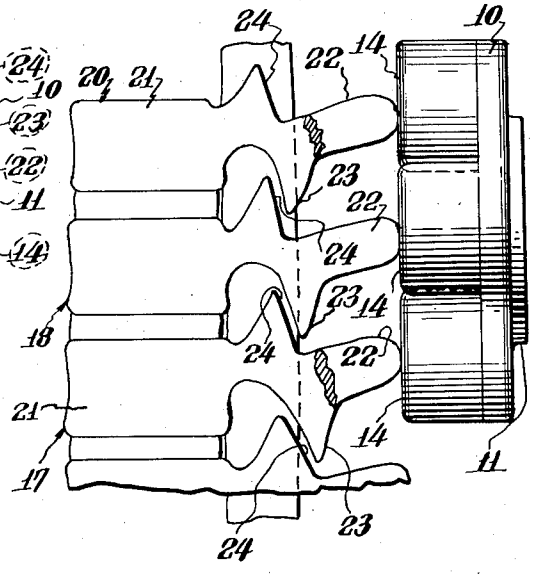


Fig. 5



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DEVICE FOR NORMALIZING NONORGANIC FIXATION OF THE VERTEBRAL SPINAL COLUMN

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2 Claims. (Cl. 128—69)

My invention relates to improvements in devices for normalizing non-organic fixation of the vertebral spinal column and has among other objects to provide a new and novel device of the class described.

Heretofore, adjustment of the vertebræ of the spinal column has been made, or fixation of the vertebræ of the spinal column has been normalized by the sudden application of pressure on the patient's back with the hand or knee, when the patient is in a cramped position, by attempting to force the vertebræ laterally with respect to the spinal column into their normal positions. Such a method is awkward and discomforting to the patient and is not always effective, sometimes requiring many treatments to get the vertebræ in such condition that they can be laterally moved into their proper position.

Devices of various types have been provided for normalizing non-organic fixation of the vertebral spinal column; such as clamps operated by hand or pressure members strapped against the back. These devices all work on the principle that the vertebræ are moved laterally with respect to the spinal column and, besides causing discomfort to the patient, have generally been ineffective and of little practical value.

My invention has as its object to obviate these difficulties and normalize mobility of the vertebræ of the spinal column in states of hypermobility and non-organic fixation thereof in a simplified and efficient manner.

Other objects of my invention will appear from time to time as the following specification proceeds.

My invention may be more clearly understood with reference to the accompanying drawing wherein:

Figure 1 is a top plan view of the device embodying my invention;

Figure 2 is a side elevation of the device shown in Figure 1 with parts shown in section;

Figure 3 is a bottom view of the device shown in Figure 1;

Figure 4 is a diagrammatic posterior view of a portion of the spinal column showing the device of my invention applied thereto; and

Figure 5 is a diagrammatic lateral view of a portion of the spinal column with parts of the vertebræ broken away, showing the device of my invention applied thereto.

Like numerals refer to like parts throughout the various figures.

Referring now in particular to the drawing illustrating one embodiment of my invention, a pressure applying member 10 is provided which comprises a flat plate of a suitable thickness so it may maintain its rigidity upon the application of pressure thereon. The pressure applying member 10 is preferably formed in the shape of an isosceles triangle, the corners of which are rounded and may be made from any suitable material, such as bakelite, hard wood, aluminum, or any other strong, relatively light material, and is of such a size that it may conveniently fit in the hand. A knurled raised central portion 11 is provided on the top portion of the pressure applying member 10 which forms a surface which may be engaged by the hand for exerting pressure thereon. While the raised central portion 11 of the pressure applying member 10 is herein preferably shown as being knurled and formed integral with said pressure applying member, it may also consist of a separate piece formed from a resilient material, such as rubber, which may be inserted in the face of said pressure applying member.

The opposite side of the pressure applying member 10 is provided with three cylindrical lugs 12, 12. Each lug 12 has a threaded bore adjacent its center and each of said lugs is located at a point adjacent a corner of said pressure applying member but spaced inwardly therefrom. A pressure member 14 having a recessed center is adapted to be fitted on each lug 12 and is secured thereto by means of a machine screw 15 imbedded therein and adapted to be threaded within the threaded bores of said lugs.

The pressure members 14, 14 are of a cylindrical form and have engaging surfaces lying in a plane parallel to the plane of the pressure applying member 10. As herein shown, the pressure members 14, 14 are preferably made from rubber of a resilient, non-slippable consistency but may be made from any resilient, non-slippable material. Said pressure members are so spaced on the pressure applying member 10 and the area of the engaging surfaces of said pressure members is such that each of said pressure members may engage transverse processes of adjacent vertebræ of the spinal column at substantially any position along the normal spinal column without engaging other transverse processes than are desired (see Figures 4 and 5). Also, the distance from the engaging surfaces of the pressure members 14, 14 to the pressure applying member 10 is such that said pressure applying member may clear the spinous processes of the vertebræ for substantially the entire length of the normal spinal column.

With reference now to the application of the device embodying my invention and Figures 4 and 5 in particular, three vertebræ of the vertebral spinal column are diagrammatically shown and generally indicated by reference characters 17, 18, and 20, respectively. Each vertebra includes a columnar or base 21, a spinous process (not shown) extending generally outwardly therefrom, transverse processes 22, 22 extending laterally therefrom, inferior facets or posterior articular processes 23, 23 depending therefrom, and superior facets or anterior articular processes 24, 24 extending upwardly therefrom, said superior facets of one vertebra being adapted to underlie inferior facets of the next adjacent vertebra.

When the spinal column is out of its position of normal adjustment, an inferior facet of one vertebra is usually fixed to a superior facet of the next adjacent vertebra, preventing normal range of motions, such as side bending, rotation, and extension of the vertebræ, which may interfere with the normal impulses carried over the nerve fibers emerging from the spinal cord. This produces an edema of tissue and swelling sufficient to cause cramping or pinching of the nerves or blood vessels with a resultant disorder or disease of the body. As has before been stated, the usual manner for adjusting the vertebræ to their normal position has been to attempt to move the mal-adjusted vertebra laterally into its proper position. The device of my invention operates on the principle that the vertebræ are pivotally moved about an axis substantially coaxial with the center of the veterbral spinal column for adjustment to their normal position in a new and novel manner instead of moved laterally into position.

When a fixed or mal-adjusted vertebra is found, the pressure member 14 at the apex of the triangle of the pressure applying member 10 is placed on the transverse process 22 of this vertebra, which transverse process is usually identified by the fact that it protrudes from the other transverse processes a certain distance and is sometimes sensitive to touch, as well as the fact that the area is restricted in side bending, rotation, and extension. Assuming this fixed or mal-adjusted vertebra is the vertebra 18, shown in the drawing, that an inferior facet 23 of said vertebra is fixed to the superior facet 24 of the vertebra 17, while a superior facet 24 of said vertebra on the opposite side of the vertebral spinal column is fixed to an inferior facet 23 of the vertebra 20, and that the pressure member 14 at the apex of the triangle of the pressure applying member 10 has been applied thereto, in the aforementioned manner, a pressure member 14 at one corner of the base of the triangle is positioned on the transverse process 22 of the vertebra 20 on the opposite side of said vertebra than the transverse process 22 of the vertebra 18 engaged by the pressure member 14 at the apex of the triangle, and the pressure member 14 at the opposite corner of the base of the triangle is positioned on the transverse process 22 of the vertebra 17 on the same side of the vetebral spinal column as the transverse process 22 of the veterbra 20 engaged by said second-mentioned pressure member. When the pressure applying member 10 and pressure members 14, 14 have been so positioned, a sudden pressure is applied thereon with the hand, either when the patient is lying with his face downward or is in a sitting position. Where fixation is non-organic, this pressure tends to pivot the vertebra 18 in one direction about an axis substantially coaxial with the center of the vertebral spinal column and simultaneously tends to pivot the vertebræ 17 and 20 in an opposite direction about an axis substantially coaxial with the center of the vertebral spinal column since pressure on the vertebra 18 is on one side of the spinal column and pressure on the vertebræ 17 and 20 is on the opposite side of the spinal column. Pivotal movement of said vertebræ in this manner tends to separate an inferior facet 23 of the vertebra 18 from a superior facet 24 of the vertebra 17 on the side of the vertebral spinal column adjacent the base of the pressure applying member 10 and simultaneously tends to separate a superior facet 24 of the vertebra 18 from an inferior facet 23 of the vertebra 20 on the side of the spinal column adjacent the apex of the pressure member 10, while it tends to engage a superior facet 24 of the vertebra 18 with an inferior facet 23 of the vertebra 20 and an inferior facet 23 of the vertebra 18 with a superior facet 24 of the vertebra 17 and tends to pivot the vertebra 18 to a normal position.

It is readily apparent that if the inferior and superior facets of the vertebra 18 are locked on opposite sides of the vertebral spinal column than is shown in Figure 4, that the pressure member 14 at the apex of the pressure applying member 10 may be positioned on the transverse process 22 of said vertebra on the opposite side of the spinal column than is shown in the drawing, and that the positions of the pressure applying members 14, 14 may be reversed.

It should also be understood that pressure may be exerted on the pressure applying member 10 with the knee as well as with the hand, and that the pressure members 14, 14 engage the respective transverse processes 22, 22 in a plane parallel to the plane of the back as is illustrated in Figures 4 and 5 to exert a pressure on said transverse processes in a plane perpendicular to the plane of the back and tend to pivot the engaged vertebræ in the proper manner and prevent any of said pressure applying members from slipping from its respective transverse process as pressure is applied thereon.

It may thus be seen that a simplified device and manner has been provided which is adapted to efficiently adjust the vertebræ of the spinal column and normalize mobility of said vertebræ in states of hypermobility and non-organic fixation thereof by pivotally moving said vertebræ in a normal manner.

While I have herein shown and described one form of my invention, I do not wish to be limited to the precise details of construction or arrangement of parts herein shown and described, excepting as specifically limited in the appended claims.

I claim as my invention:

1. In a device of the character described, a rigid member adapted to have manual pressure directly applied to the outer face thereof, three pressure members extending from the side of said member opposite its outer face, said pressure applying members being arranged at the corners of an isosceles triangle and spaced so they may be positioned to engage transverse processes of adjacent vertebræ of the vertebral spinal column at various positions along said spinal column, two of said transverse processes being on one side of the vertebral spinal column and the other of said transverse processes being between said transverse processes and on the opposite side of

the vertebræ spinal column, the engaging surface of said pressure members being arranged in a plane parallel to the plane that pressure is exerted on said member whereby one of said pressure members may act as a fulcrum about which the other two members pivot for pivoting two vertebræ in one direction about the axis of the spinal column and the other vertebræ intermediate said vertebræ in an opposite direction about said axis upon the application of pressure to said rigid member.

2. In a device of the character described, a flat rigid member having a raised engaging portion on the outer face thereof whereby manual pressure may be directly applied thereto, three resilient pressure members extending from the opposite side of said member, said pressure members having engaging surfaces in a common plane spaced from and parallel to the plane of said member, and each of said pressure members being arranged at the corner of an isosceles triangle and being adapted to engage and exert pressure on a transverse process of a vertebra of the vertebral spinal column in a plane substantially parallel to the plane of the back, the pressure member at the apex of said triangle being adapted to engage a transverse process of one vertebra, which process is on one side of the spinal column, and the pressure members at the base of said triangle being adapted to engage transverse processes of vertebræ disposed on each side of and adjacent said first-mentioned vertebræ on the opposite side of the spinal column from said first-mentioned process, in such a manner that the application of pressure on said pressure member will tend to cause said rigid member to pivot about said pressure member at the apex of said triangle and pivot said vertebræ on each side of said first-mentioned vertebræ about an axis substantially coaxial with the vertebral spinal column and tend to pivot said first-mentioned vertebra in an opposite direction where fixation of the spinal column is non-organic.

BROTHER E. WALSTROM.