

May 7, 1968

R. T. ANDERSON

3,381,684

THERAPEUTIC APPARATUS FOR SUPPORTING PORTIONS OF THE BODY

Filed Sept. 29, 1965

2 Sheets-Sheet 1

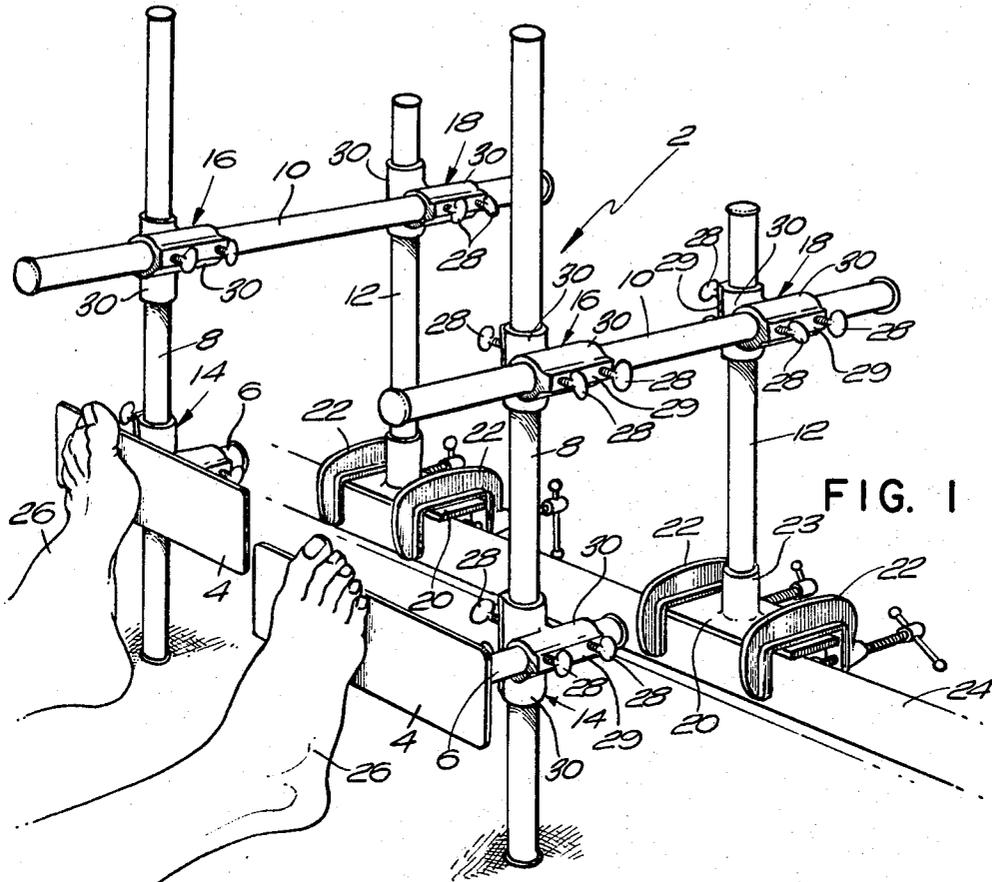


FIG. 1

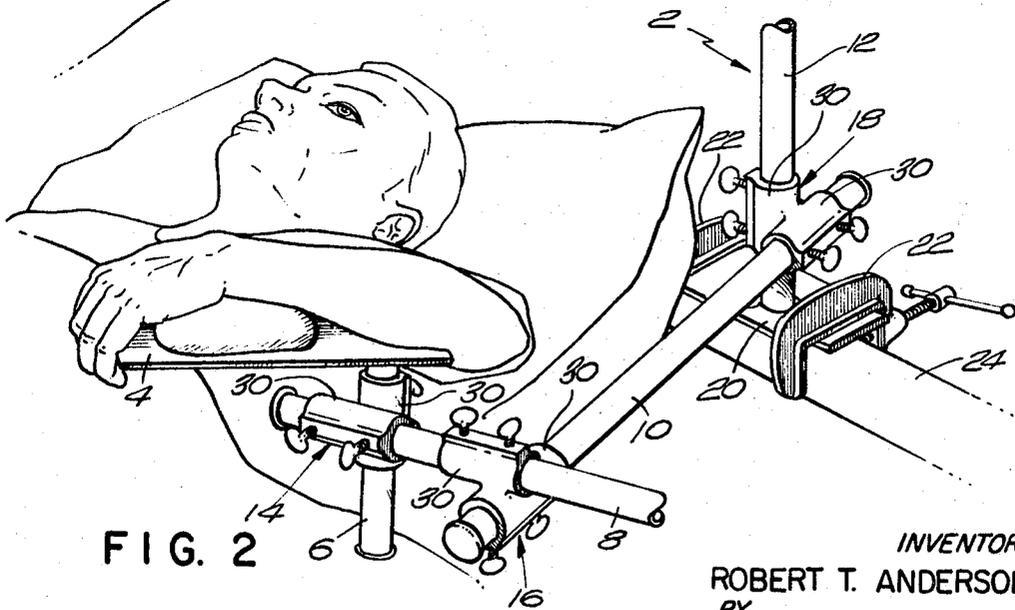


FIG. 2

INVENTOR.  
ROBERT T. ANDERSON  
BY

*Dike, Thompson, Bronstein & Morse*  
ATTORNEYS

May 7, 1968

R. T. ANDERSON

3,381,684

THERAPEUTIC APPARATUS FOR SUPPORTING PORTIONS OF THE BODY

Filed Sept. 29, 1965

2 Sheets-Sheet 2

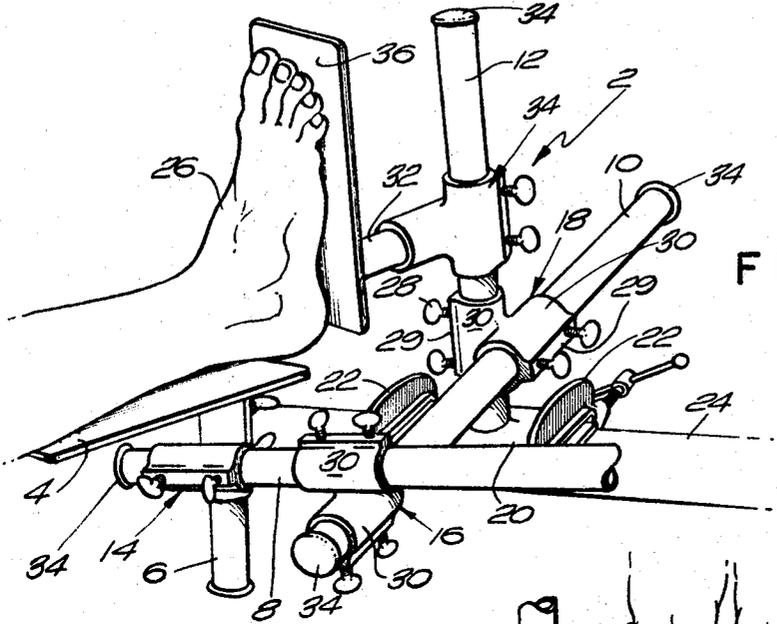


FIG. 3

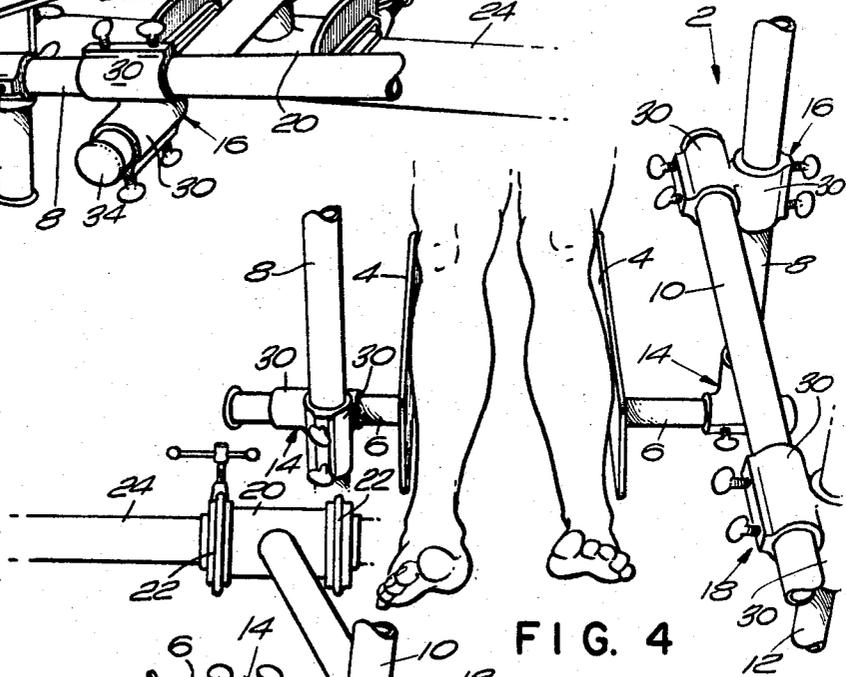


FIG. 4

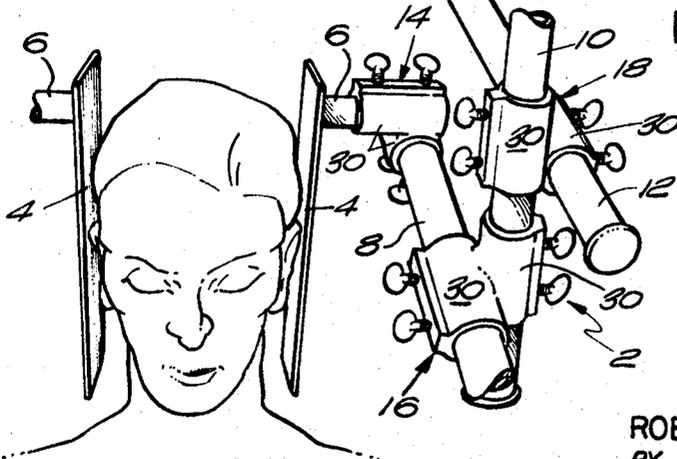


FIG. 5

INVENTOR.  
ROBERT T. ANDERSON  
BY

*Dike, Thompson, Bronstein & Morse*  
ATTORNEYS

1

3,381,684  
**THERAPEUTIC APPARATUS FOR SUPPORTING PORTIONS OF THE BODY**  
Robert T. Anderson, 75 Spring St.,  
West Roxbury, Mass. 02132  
Filed Sept. 29, 1965, Ser. No. 491,107  
4 Claims. (Cl. 128-68)

## ABSTRACT OF THE DISCLOSURE

An adjustable therapeutic support for holding certain portions of the body consisting of four hollow tubular members slideably and adjustably connected by joint members having two tubular passageways therethrough at right angles to one another with locking screws locking the tubular members in the passageways and a supporting plate connected to one of the tubular members.

The present invention relates to a therapeutic apparatus for firmly supporting various portions of the body to hold them in certain positions in the therapeutic treatment thereof. For example, in certain injuries of the foot, it is desirable to keep the front of the foot pushed upwardly relative to the heel to keep the foot tendon in tension. Furthermore, in certain other therapeutic treatments it is necessary to firmly support the neck or head or arm or leg or other portions of the body to hold and maintain them in a desired position for relatively long periods of time. Various supports for doing this are known. However, the versatility of such supports is limited and consequently it is necessary to use different support constructions for treating different parts of the body in different ways. Furthermore, the supports which do have a limited degree of versatility present difficulties in adjusting or converting them to support different portions of the body in different ways. They are relatively complex and expensive and are easily broken and, as aforesaid, their versatility is limited. Also, versatility is achieved at the expense of firmness and strength of support because the mechanisms which provide versatility also render the support less rigid and hence less firm.

It is an object of this invention to provide an improved support of the aforesaid type, which has an unlimited degree of versatility so that by simple adjustment, it can be used to firmly and rigidly support almost any part of the body in almost any position or manner, which is exceedingly simple in construction and inexpensive to produce but yet which is sturdy and long-lasting. The greatest advantages of the construction of the present invention are its extreme versatility without sacrifice in firmness of support and the ease with which it can be converted to support any portion of the body in any manner desired.

These objects are achieved in accordance with the invention by providing one or more supporting plates or members for application to the various parts of the body, a supporting skeleton frame therefor, means for mounting the supporting plates on such frame and means for adjustably mounting the frame on a bed or table or the like, the supporting frame comprising at least four hollow tubular lengths adjustably attached to each other by means of at least three connecting joints, each of which comprises a pair of short tubes extending at an angle to each other (preferably perpendicularly) with one attached to the side of the other so that they are offset from each other, one of the tubular lengths being snugly but slidably and rotatably received in one of such tubes and an adjacent tubular length being snugly but slidably and rotatably received in the other of such tubes, whereby said tubular lengths are adjustably connected with each other for rotational and axial sliding movement with re-

2

spect to the other and the joint, each of the tubes of the joint having one or more lock screws extending through a hole or holes therein for locking the tubular length within such tube in adjusted position against rotational and sliding movement, such tubular lengths comprising a first tubular length adjustably connected to a second tubular length by a first of said joints, said second tubular length being adjustably connected to a third tubular length by a second of said joints and said third tubular length being adjustably connected by a third of said joints to a fourth tubular length to which is operably connected said supporting plate, said first tubular length having means for attaching the same to a bed or table or post or the like.

In a preferred embodiment each tube of each joint has at least a pair of such locking screws spaced axially along the tube, and the portion of the wall of the tube through which the screws pass is enlarged in thickness.

Also, in a preferred embodiment, the means for attaching the supporting skeleton frame to the bed or table comprises an attaching plate at the end of the first tubular length, such attaching plate having attached thereto a pair of C-clamps, spaced from and aligned with each other, for attaching the assembly to the bed or table or the like.

Other objects and advantages of the present invention will be apparent from the following description and accompanying drawings of an embodiment of the invention for illustration purposes. In the drawings:

FIG. 1 is a view in perspective of an embodiment of the invention attached to a bed post and arranged to support the feet;

FIG. 2 is a view in perspective of the same apparatus adjusted to support the arm;

FIG. 3 is a view in perspective of the same apparatus adjusted to support the foot in a manner different from FIG. 1;

FIG. 4 is a view in perspective of the same apparatus supporting the legs and

FIG. 5 is a view in perspective of the same apparatus supporting the head.

With reference to the drawings, 2 represents the apparatus of the present invention which is made up of a light, body-supporting plate 4 (e.g. aluminum) which is rigidly secured to the end of one of four hollow rigid tubular lengths or members 6, 8, 10 and 12 of a light material, e.g., aluminum, which are adjustably connected together, as shown, by three joint members 14, 16 and 18, the four tubular lengths and three joints together providing a supporting skeleton frame for the supporting plate 4. The supporting plate 4 is rigidly secured to the end of the tubular member 6.

The end of the tubular member 12 is rigidly attached to an attaching plate 20 (e.g., aluminum) to which are secured two C-clamps 22, as shown, for clamping the supporting skeleton frame to a bed post 24 or table or post in the floor or the like. Attaching plate 20 has an integral, hollow tubular portion 23 extending upwardly from the middle thereof and into which the end of tube 12 is press fitted. The attaching plate 20 is secured, as by soldering or welding, to the inside of the C of the C-clamps, as shown.

In FIG. 1, the foot 26 of the patient is supported by the supporting plate to keep the foot tendon in tension.

Each of the joints 14, 16 and 18 consist of a pair of short, hollow tubes 30 of light material, e.g., aluminum, which are located at right angles to each other, with one attached to the side of the other, as by soldering or welding, so that they are offset from and hence bypass each other, as shown.

One of the tubular members, e.g., 12 in FIG. 1, is snugly but slidably and rotatably received in one of the tubes 30 of joint 18, and the adjacent tubular member 10 is

snugly but slidably and rotatably received in the other tube 30 of joint 18, whereby such tubular members 12 and 10 are adjustably connected with each other by the joint 18 for rotational and axial sliding movement of each with respect to the other and to the joint.

Each tube 30 of each joint is provided with a pair of lock screws 28 with finger grip, which are spaced axially along the tube and which are threaded in a pair of spaced threaded holes in a thickened portion 29 of the wall of the tube to lock the tubular member against axial and rotational movement in the tube and thereby lock such tubular member in adjusted position with respect to the other tubular member received in the other tube of such joint.

Joint 18 adjustably connects tubular members 10 and 12 in this manner.

Joint 16 connects tubular members 10 and 8 in the same way and joint 14 connects tubular members 8 and 6 in the same manner.

It can be seen that the supporting plate 4 can be adjusted to a large number of positions by adjusting the rotational and axial positions of the various tubular members in the joints. This adjustment is extremely simple to make merely by loosening the set screws and rotating and sliding the various tubular members as desired to achieve the supporting plate position desired. The various positions to which the supporting plates can be adjusted in this way are virtually unlimited to provide an extremely versatile support.

Thus, whereas in FIG. 1, the apparatus is adjusted to support the feet, in FIG. 2, it is adjusted to support the arm. Note in FIG. 2 the distance between joints 16 and 18 is relatively great and the distance between joints 14 and 16 is small as compared to FIG. 1. Also, the rotational positions of the tubular members have been changed.

In FIG. 3, an additional tubular member 32, an additional joint 34 and an additional support plate 36 are used to firmly support the foot in a position different than FIG. 1.

In FIG. 4 the apparatus has been adjusted to support the legs whereas in FIG. 5 it has been adjusted to support the head.

Although the support can be adjusted to place the supporting plate in an infinite number of positions to support any portion of the body in any position desired, nevertheless, because of its peculiar construction, it remains rigid and unyielding in all positions to firmly support the particular portion of the body involved.

Since the entire assembly comprises merely a plurality of tubes, plates, screws, and C-clamps, it is extremely simple and inexpensive to manufacture. The ruggedness of the construction is apparent.

Preferably the open ends of the tubular members are covered with plastic caps or plugs 34 for sanitary reasons.

Typical inside and outside diameters of the tubular members are 1 inch and 1¼ inches, respectively.

Typical inside and outside dimensions of the tubes 30 of the joints are 1½ inches and 1¾ inches, respectively.

In many cases, two of the support assemblies are used together as in FIGS. 1, 4 and 5. One may be used for each limb as in FIG. 1, or the two may be used to confine a portion of the body, e.g., the head, therebetween.

The joint construction of the present invention is particularly advantageous for therapeutic supports because it permits, by means of a simple but sturdy construction, a substantial increase in versatility, as compared to a joint in which only one of the tubular members connected

thereby is adjustable with respect to the other and to the joint.

It is not intended that the invention be limited to the construction described and shown but only to the constructions claimed in the following claims and their equivalents.

I claim:

1. An adjustable therapeutic apparatus for supporting various portions of the body, comprising a supporting plate for application to the various parts of the body to support the same, an adjustable supporting skeleton frame therefor, means for mounting said supporting plate on said adjustable supporting frame and means for adjustably mounting said supporting frame on a bed or the like, said supporting frame comprising at least four hollow tubular lengths adjustably connected to each other by means of connecting joints, each of which joints comprises a pair of hollow tubes extending at an angle to each other with one attached to the side of the other so that they are offset from each other, one of said tubular lengths being snugly but slidably and rotatably received in one of said tubes and an adjacent tubular length being snugly but slidably and rotatably received in the other of said tubes, whereby said tubular lengths are adjustably connected with each other for rotational and axial sliding movement of each with respect to the other and to the joint, a locking screw associated with each tube of each joint and extending through a hole therein for locking the tubular length against axial and rotational movement within said tube in adjusted position with respect to said joint and to the tubular length in the other tube of said joint, said tubular lengths comprising a first tubular length adjustably connected to a second tubular length by a first of said joints, said second tubular length being adjustably connected to a third tubular length by a second of said joints and said third tubular length being adjustably connected by a third of said joints to a fourth tubular length to which is operably connected said supporting plate, said first tubular member having means for attaching the same to a bed or the like, whereby the positions of said supporting plate can be varied over a wide range to therapeutically support various portions of the body in a variety of ways.

2. An apparatus according to claim 1, said tubes of said joint being perpendicularly disposed with respect to each other.

3. An apparatus according to claim 1, said supporting plate being attached to the end of said fourth tubular member, and said first tubular member having an attaching plate attached thereto, said attaching plate having C-clamps attached thereto for attaching the assembly to a bed or the like.

4. An apparatus according to claim 1, each of said tubes of each joint having at least a pair of said locking screws spaced axially along the tube and extending through holes in a thickened portion of the wall of said tube.

#### References Cited

##### UNITED STATES PATENTS

2,376,507 5/1945 Ruther ----- 128-82

##### FOREIGN PATENTS

42,177 10/1959 Poland.

RICHARD A. GAUDET, *Primary Examiner*.

J. W. HINEY, JR., *Assistant Examiner*.