Aug. 25, 1953 E. F. SCHMERL 2,649,856

CERVICAL TRACTION FRAME

Filed May 31, 1951

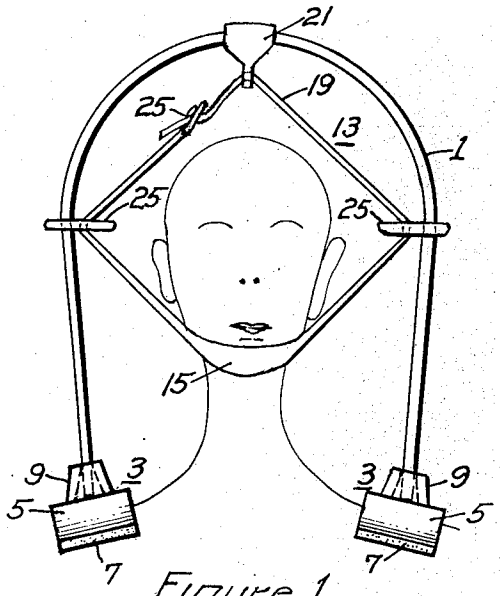


Figure 1

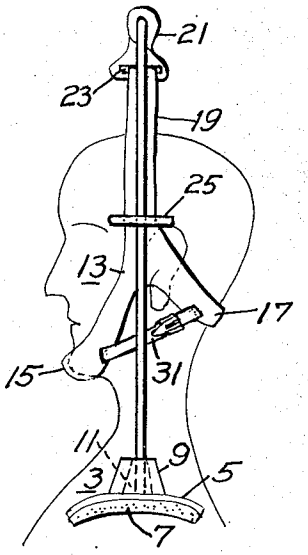


Figure 2

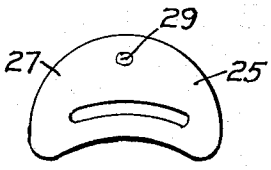


Figure 3

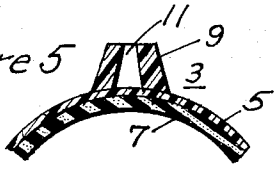


Figure 5

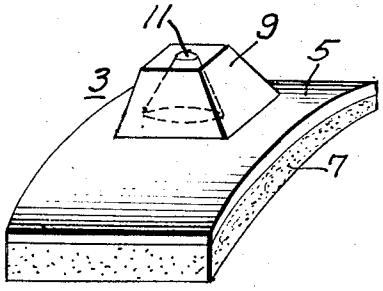


Figure 4

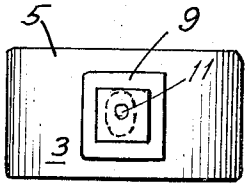


Figure 6

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CERVICAL TRACTION FRAME

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5 Claims. (Cl. 128—75)

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My invention relates to surgical appliances and more particularly to a cervical traction frame.

A recognized treatment for abnormal conditions producing cervico-brachial pain, that is pain in the neck, shoulders and arms, is stretching of the neck-shoulder region, sometimes in combination with postural training and massage. Such stretching, conventionally termed "traction" is customarily accomplished by assigning the patient to bed, and while in a prone position, suspending him from the elevated head end of the bed by a sling which extends across the nape of the neck and under his chin.

Such procedure, of course, means confining and immobilizing a patient in bed, when such patient may not actually be ill enough to be so confined.

Another practice indulged in, is to partially suspend a patient in an upright position, through the use of a similar head sling, from a point above his head, such as from a ceiling or the cross member of a doorway.

As with the bed patient, this latter procedure immobilizes the patient, and aside from this, the patient finds himself in an undignified position, not in the least to his liking, which thus tends to discourage further treatments. The treatments, if pursued, must necessarily be short and repeated at frequent intervals.

In either case, the traction is due to suspended weight of the patient and is not conveniently adjustable.

Among the objects of the present invention are—

(1) To provide novel and improved traction means for treatment of abnormal conditions producing cervico-brachial pain;

(2) To provide a novel and improved cervical traction frame;

(3) To provide a novel and improved cervical traction frame in which the traction force is independent of the weight of the patient;

(4) To provide a novel and improved cervical traction frame in which the traction force may be conveniently adjusted, and independently of the weight of the patients;

(5) To provide novel and improved cervical traction means which will not immobilize the patient;

(6) To provide a novel and improved cervical traction frame which may be worn by the patient and for extended periods of time;

(7) To provide a novel and improved cervical traction frame which not only may be worn by

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the patient, but one which can readily be applied and removed without assistance, by the patient himself, and readily adjusted by him;

(8) To provide a novel and improved cervical traction frame which can be worn by the patient and when worn, will not appreciably interfere with the patient's normal activities.

(9) To provide a novel and improved cervical traction frame which may be worn by the patient, and which will allow the patient considerable latitude as to head movements.

Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with the accompanying drawings wherein—

Figure 1 is a front elevational view of my invention in its preferred form, depicting its manner of application to a patient;

Figure 2 is a side elevational view of the device as worn by the patient;

Figure 3 is a view illustrating a guide element employed in the preferred embodiment of Figure 1;

Figure 4 is a three-dimensional view of a shoulder pad for use in supporting the device on the shoulders of the patient;

Figure 5 is a view in section, taken along the longitudinal axis of the shoulder pad of Figure 4;

Figure 6 is a plan view of the shoulder pad of Figure 4.

Referring to the drawings for details of my invention in its preferred form, the same embodies a U-shaped frame member 1 of a size to encircle the head of the patient, in a vertical plane. Such frame member is preferably formed of rod material of light weight, such as Lucite or other plastic material, and is anchored at its ends to the wearer thereof preferably by means of a pair of shoulder pads 3, one for each shoulder.

Each such shoulder pad may be of composite construction and involve an arcuate plate 5 of stiff material, to the underside of which may be affixed a relatively thick layer 7 of cushioning material such as sponge rubber or felt. On the upper surface of the arcuate plate, there is affixed a truncated element 9 having a longitudinal passage 11 of downwardly increasing section therein, to receive an end of the frame member, such passage at its lower end being preferably of greater diameter transversely of the arcuate plate.

A head sling 13 including a chin strap or support 15 and a nape strap or support 17 merging

into an overhead suspension band 19, is suspended from the upper portion of the frame member by a suspension element 21 mounted on the frame member at its midpoint and having a slit 23 therethrough for slidably receiving the suspension strap of the head sling.

The suspension band is of open-end design and provided with a conventional buckle arrangement 25 for altering the effective length thereof.

As thus far described, the device is capable of performing its intended function and, to accomplish this, the frame member is anchored to the shoulder pads which rest upon the shoulders of the wearer or patient, while the patient places his head in position in the sling, following which the suspension strap of the sling is adjusted to pull up on the chin and nape supports until adequate traction is realized.

However, to avoid pressure of the sling against the cheeks and ears of the patient and to otherwise render the wearing of the device more comfortable, I provide a pair of guide elements 25, each mounted on one leg of the frame member and provided with a slit 27 therein through which the suspension band of the sling may be passed prior to threading the same through the suspension element and buckling the same. These guides thus serve to hold the sling out of contact with the cheeks and ears of the patient, thus localizing the contact pressure to the regions of the chin and nape, the degree of traction being readily adjustable by adjustment of the suspension strap.

To relieve some of the possible discomfort which may develop after a period of time, as when the sling bears against a constant area of the patient's chin and nape, I prefer to make the guide elements slidably adjustable on the legs of the frame member, whereby the traction pressure area may be altered. Such adjustability may readily be accomplished by providing each guide with a hole 29 for slidably mounting the same on the frame member, the tension exerted by the sling serving to retain said guides in their adjusted positions.

The traction frame thus described is of light weight and offers substantial freedom to the patient in the matter of head movements, while continuously maintaining traction by exerting a pull upon the neck and shoulder regions of the body.

So long as the head is not permitted to slip out of the sling, the frame member cannot slip or fall from its assigned position, and will remain in position regardless of body or head movements of the patient. To assure against any such slippage of the head through the sling, the chin support and the nape support may be connected together by a band of material 31, which may include a buckle adjustment to accommodate patients of varying neck measurement.

In the matter of body movements, the shape of the passage in the truncated elements is of significance, in that the greater cross-sectional area at the lower ends of the passages in such elements, provides sufficient room for movements of the shoulder pads in response to body movements, without necessarily causing undesired reactions against the frame member.

While I have disclosed my invention in its preferred form and in considerable detail, the same is subject to alteration and modification without departing from the underlying principles involved, and I, accordingly, do not desire to be limited in my protection to the specific details illustrated and described, except as may be necessitated by the appended claims.

I claim:

1. A cervical traction frame comprising a U-shape frame member of a size to encircle the head of a wearer in a vertical plane, means for anchoring said frame member at its ends to the wearer thereof, said means including a pair of shoulder pads, one for each shoulder and applied to an end of said frame member, a head sling including a chin support and a nape support merging into an overhead suspension band, means on said frame member suspending said sling by its suspension strap from said frame member, and means for localizing pressure contact areas of said sling to the chin and nape of the wearer, said means involving a pair of guides each mounted on a different leg of said frame member and having an opening therein to slidably receive said suspension band.

2. A cervical traction frame comprising a U-shape frame member of a size to encircle the head of a wearer in a vertical plane, means for anchoring said frame member at its ends to the wearer thereof, said means including a pair of shoulder pads, one for each shoulder and comprising an arcuate pad element, an element thereon having a longitudinal passage of downwardly increasing section therein to receive an end of said frame member, a head sling including a chin support and a nape support merging into an overhead suspension band, said suspension band including a buckle for making elevational adjustments of said chin and nape supports, means on said frame member suspending said sling by its suspension strap from said frame member, and means for localizing pressure contact areas of said sling to the chin and nape of the wearer, said means involving a pair of guides each mounted on a different leg of said frame member and having a slit therein to slidably receive said suspension band.

3. A cervical traction frame comprising a U-shape frame member of a size to encircle the head of a wearer in a vertical plane, means for anchoring said frame member at its ends to the wearer thereof, said means including a pair of shoulder pads, one for each shoulder and comprising an arcuate pad element, a truncated element thereon having a longitudinal passage of downwardly increasing section therein to receive an end of said frame member, said passage at its lower end having a greater diameter transversely of said arcuate pad element, a head sling including a chin support and a nape support merging into an overhead suspension band, said suspension band including a buckle for making elevational adjustments of said chain and nape supports, means on the upper portion of said frame member suspending said sling by its suspension strap from said frame member, and means on the leg portions of said frame member for localizing pressure contact areas of said sling to the chin and nape of the wearer.

4. A cervical traction frame comprising a U-shape frame member of a size to encircle the head of a wearer in a vertical plane, means for anchoring said frame member at its ends to the wearer thereof, said means including a pair of shoulder pads, one for each shoulder and applied to an end of said frame member, a head sling including a chin support and a nape support merging into an overhead suspension band, means on the upper portion of said frame member

suspending said sling by its suspension strap from said frame member, and means for localizing pressure contact areas of said sling to the chin and nape of the wearer, said means involving a pair of guides each mounted on a different leg of said frame member and having a slit therein to slidably receive said suspension band, said guides being slidably mounted on said legs to permit alteration of said pressure contact areas.

5. A cervical traction frame comprising a U-shape frame member of a size to encircle the head of a wearer in a vertical plane, means for anchoring said frame member at its ends to the wearer thereof, said means including a pair of shoulder pads, one for each shoulder and comprising an arcuate pad element, a truncated element thereon having a longitudinal passage of downwardly increasing section therein to receive an end of said frame member, said passage at its lower end having a greater diameter transversely of said arcuate pad element, a head sling including a chin support and a nape support merging into an overhead suspension band, said suspension band including a buckle for making elevational adjustments of said chin and nape supports, means for suspending said sling by its suspension strap from said frame member, said means including a suspension element mounted on said frame member at its midpoint and having a slit therethrough slidably receiving the suspension strap of said head sling, and means for localizing pressure contact areas of said sling to the chin and nape of the wearer, said means involving a pair of guides each mounted on a different leg of said frame member and having a slit therein to slidably receive said suspension band, said guides being slidably mounted on said legs to permit alteration of said pressure contact areas.

EGON F. SCHMERL.

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