June 21, 1966 E. Y. CAYPINAR 3,256,880

CONVERTIBLE INTRAVENOUS ARMBOARD

Filed June 17, 1963

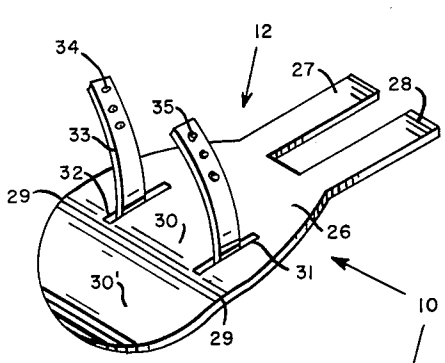


FIG. 2

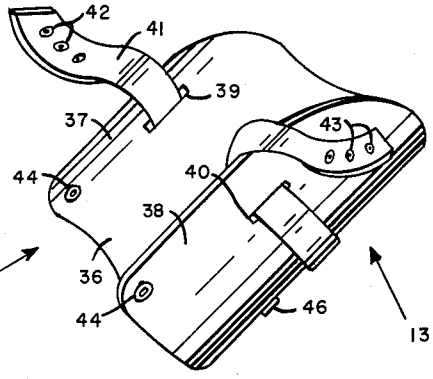


FIG. 3

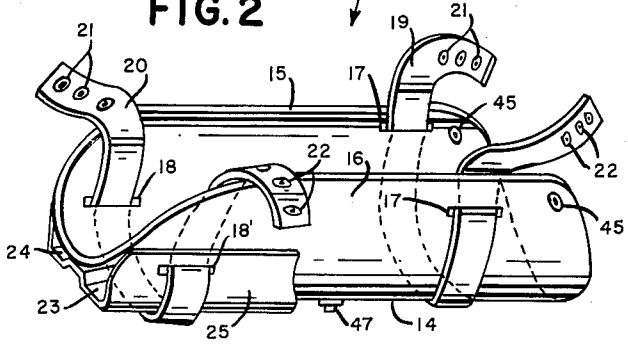


FIG. 1

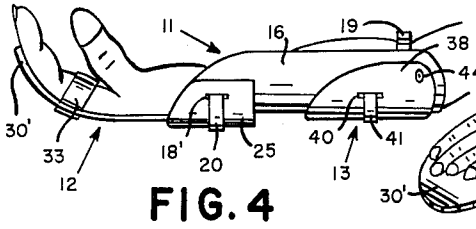


FIG. 4

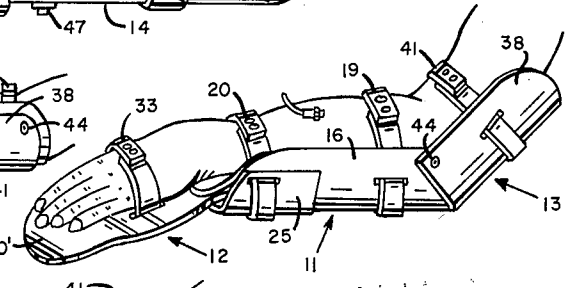


FIG. 5

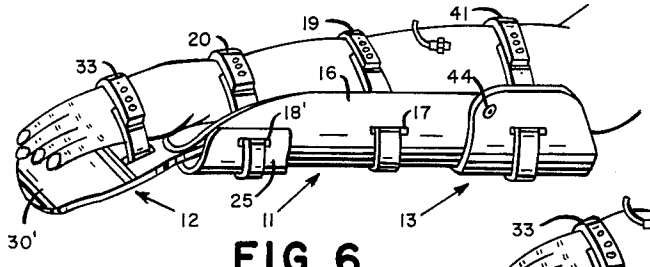


FIG. 6

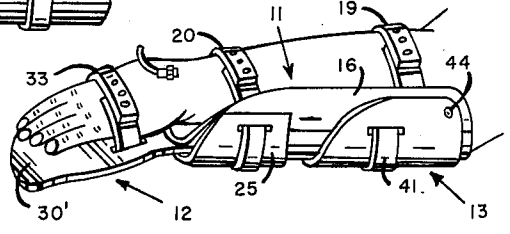


FIG. 7

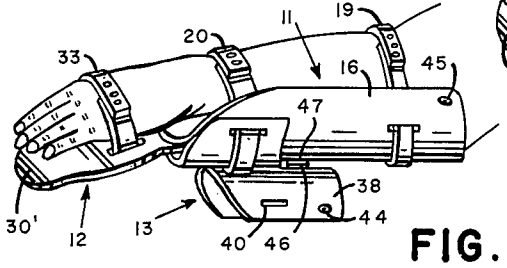


FIG. 8

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CONVERTIBLE INTRAVENOUS ARMBOARD

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This invention relates to intravenous treatments and particularly to an improved convertible armboard for use on patients being subjected to such treatments.

In modern medicine, intravenous treatments have become an increasingly important and widely used medical procedure. Many medications administered intravenously have proved to be life-saving on innumerable occasions.

Despite the undeniably favorable results of intravenous treatments, patients recall these treatments with much distaste. They remember the traumatic experience of having their arms punctured and the ensuing misery they had to endure from holding their hands or arms in uncomfortable positions for many hours and the stiffness and pain resulting from being taped to a piece of flat wood traditionally used for this purpose which is called an "armboard." Unfortunately, this memorable experience does not predispose the patient to future intravenous treatments.

These armboards onto which the arms or hands are strapped are 20- to 25-inch long, flat pieces of wood, with a plastic or paper covering. They do not have any of the inclinations of the human limb. To immobilize the arm, this wood has to be taped tightly to the hand and arm. If the patient's head is raised or if he is in a sitting position, pillows, blankets, towels, etc., have to be used under the arm to give a degree of support. Since these supports slip around very easily, the arm naturally moves and most of the time the intravenous becomes infiltrated (comes out of the vein). This keeps busy resident physicians on frequent call because in most institutions only the physician is allowed to insert the intravenous, so that every day doctors' valuable time is wasted attending to infiltrations caused by improper immobilization.

The principal object of this invention is to provide apparatus capable of maintaining a patient's arm immobilized during intravenous treatment with the least amount of discomfort and trauma to the patient, particularly in cases where the patient is unconscious, restless or debilitated.

Another object of the invention is to provide such apparatus that will give firm support to the arm without the use of other extraneous articles such as pillows, blankets, or the like.

Still another object of the invention is to provide such apparatus that has the capability of immobilizing the specific portion of the limb being treated and of enabling the rest of the limb to move.

Another object of the invention is to provide such an apparatus that will require no use of adhesives.

Still another object of the invention is to provide such apparatus capable of being stored in an antiseptic solution when not in use to avoid cross-contamination; or such apparatus may be made from a disposable material such as heavy pressed paper or the like.

Still another object of the invention is to provide such an apparatus that is simple to use under different conditions on patients in reclining, sitting and other positions.

In one aspect of the invention, a main or forearm rest may comprise a relatively thin, straight element adapted to extend substantially from the wrist to the elbow. It may be formed with curved side walls generally conforming to the shape of the forearm. The forearm rest may be provided with resilient fastening means at each end thereof for securing it to the forearm of a patient in a manner to immobilize the forearm.

In another aspect of the invention, the forward end of the forearm element may include spaced parallel slots for receiving the bifurcated end of a hand rest that includes a planar surface adjacent the bifurcated end and an angularly deflected surface at the end of the hand rest opposite its bifurcated end. Flexible strap means may also be connected to the hand rest for immobilizing the patient's hand, and the construction is such that it can be attached to the forearm rest with its concave surface formed by the angularly deflected portion facing either upwardly or downwardly to accommodate the fingers in two positions of the hand.

In still another aspect of the invention, an upper arm rest may be provided that generally conforms to, but is of less length than, the forearm rest. It may include pivotal fastening means at its one end adapted to cooperate with similar means at the elbow end of the forearm rest. The upper arm rest may also include flexible fastening strap means for attaching it to the upper arm.

The above, other objects and novel features of the invention will become apparent from the following specification and accompanying drawing which are merely exemplary.

In the drawing:

FIG. 1 is a perspective view of a forearm rest to which the principles of the invention have been applied;

FIG. 2 is a perspective view of a hand rest to which the principles of the invention have been applied;

FIG. 3 is a perspective view of an upper arm rest to which the principles of the invention have been applied; and

FIGS. 4 to 8, inclusive, are various combinations of the rests shown in FIGS. 1, 2 and 3 for application to the arm of a patient receiving intravenous treatment.

Referring to the drawing, and particularly to FIGS. 1, 2 and 3, the principles of the invention are shown as applied to a three-part arm and hand rest **10** comprising a forearm rest **11**, a hand rest **12** and an upper arm rest **13**.

Referring to FIG. 1, the forearm rest **11** may comprise a straight element **14** having curved side walls **15** and **16** so that the element **14** generally conforms to the forearm. Element **14** may be made from sheet stainless steel or plastic so that when not in use, it may be stored in an antiseptic solution to prevent cross-contamination when used with different patients, or it may be made of inexpensive material such as pressed paper board, in which latter case it is disposable after use.

Parallel slots **17**, **18** may be provided at each end of the element **14** in side walls **15**, **16**, and resilient flexible straps **19** and **20** may be threaded through the slots so that their free ends extend between the side walls **15**, **16**. The opposite ends of straps **19** and **20** may include cooperating fastening means which in the embodiment disclosed are shown as ball and socket connectors **21**, **22**. With the forearm of the patient placed between the side walls **15**, **16** of element **14**, the ends of straps **19** and **20** can be adjustably fastened together to effectively immobilize the forearm of the patient.

The wrist end of element **14** may be provided with parallel spaced slot means **23**, **24** extending longitudinally along the bottom outer surface of the forearm rest **14**. In the embodiment disclosed, the slots **23**, **24** are formed by a separate sheet of material **25** that is bent along parallel spaced lines to form the slots **23**, **24** when the bent sheet is fixed to the side walls **15** and **16** of forearm rest **14**. There are slots **18'** in the sheet **25** that align with the slots **18** in side walls **15**, **16** when the bent sheet **25** is fixed to the latter in its proper place. Thus, the resilient strap **20** extends through both slots **18** and **18'**.

Referring to FIG. 2, the hand rest **12** may comprise a paddle-shaped element **26** having a bifurcated end including parallel spaced legs **27** and **28**. The end of the

hand rest **12** may be angularly deflected along a line **29—29** at an angle in the vicinity of about 20° from the surface **30** of the hand rest, forming a finger support **30'**. Slots **31**, **32** may be provided in the surface **30** through which a flexible strap **33** is threaded. The free ends of strap **33** may be provided with ball and socket type fasteners **34**, **35**. The construction of the hand rest **12** is such that the legs **27**, **28** are adapted to be slidingly received by slots **23**, **24** of the forearm rest **11**, and it may be connected to the latter with the deflected portion **30'** extending either upwardly or downwardly, as will be explained later.

Referring to FIG. 3, the upper arm rest **13** may comprise an element **36** that is similar in shape to that of forearm rest **14** but of less length. It, too, may include side walls **37** and **38**, the distance between said walls being greater than that between walls **15** and **16** for a purpose to be described. Slots **39** and **40** may be provided in side walls **37**, **38**, and a resilient strap **41** may be threaded therethrough. Ball and socket fastening means **42** and **43** may be provided at the free ends of the strap **41** for securing the arm rest **13** to the upper arm of the patient. Socket means **44** may be provided in the side walls **37**, **38** of upper arm rest **13** adjacent the elbow end thereof, and they are adapted to cooperate with ball connectors **45** in the side walls **15**, **16** of forearm rest **11** adjacent its elbow end. Accordingly, the elbow end of rest **13** can slide over the elbow end of rest **11**, and the connectors **44**, **45** when connected provide a pivotal joint between the forearm rest **11** and the upper arm rest **13** at the elbow end of each.

Referring to FIG. 4, the apparatus is shown as applied to the arm of a patient lying supine with the inside of the forearm and hand facing upwardly. Accordingly, the hand rest **12** is attached to the forearm rest **11** such that the deflected portion **30'** extends upwardly. Since the patient is supine, the upper arm rest **13** is connected to the forearm rest such that the two are nested.

Referring to FIG. 5, the apparatus is shown as applied to the arm of a patient who is in a partly sitting position with the inner side of the forearm and hand facing downwardly. In this case, the hand rest **12** is reversed from its position shown in FIG. 4, and the upper arm rest **13** is pivoted to the forearm rest such that it pivots about fastening members **44**, **45**, adapting itself to the angle which the upper arm makes with the forearm when the former is strapped to the upper arm.

In FIG. 6, the patient is supine and the apparatus is in the same position as in FIG. 5 except that the upper arm rest pivots to a position in line with the forearm rest **11**. In this case, the intravenous needle is inserted in the forearm adjacent the elbow.

In FIG. 7, the apparatus is applied to the patient's arm in a manner similar to that shown in FIG. 4 except that the hand rest **12** is reversed and the inside of the forearm and hand face downwardly.

In some instances, it is desirable to elevate the forearm and hand rests when the patient is supine, and the upper arm rest **13** is not required for the upper arm. In this case, the upper arm rest **13** can be inverted as shown in FIG. 8 and attached to the undersurface of the forearm rest **11** through ball and socket connectors **46**, **47** (FIGS. 1 and 3).

Although the various features of the arm rest have been shown and described in detail to fully disclose one embodiment of the invention, it will be evident that changes may be made in such details and certain features may be used without others without departing from the principles of the invention.

What is claimed is:

1. Apparatus for immobilizing the arm of a patient comprising in combination, a forearm rest including a straight element with front and rear ends and having a bottom surface with curved side walls extending upwardly therefrom, said forearm rest being provided with two coplanar socket means at the front end thereof located along said bottom surface, a hand rest including proximal and distal ends and having a plane surface portion and an angularly deflected portion extending therefrom, said hand rest having a coplanar forked tongue connecting means located on said proximal end, said coplanar forked tongue means being releasably received in said forearm socket means whereby said hand rest may be alternately positioned with the angularly deflected portion thereof extending either upwardly or downwardly, and flexible strap means connected to said hand and forearm rests for securing said rests firmly to the patient's hand and forearm.

2. Apparatus for immobilizing the arm of a patient comprising in combination, a forearm rest including a straight element with front and rear ends and having a bottom surface with curved side walls extending upwardly therefrom, said forearm rest being provided with two coplanar socket means at the front end thereof located along said bottom surface, a hand rest including proximal and distal ends and having a plane surface portion and an angularly deflected portion extending therefrom, said hand rest having a coplanar forked tongue connecting means located on said proximal end, said coplanar forked tongue means being releasably received in said forearm socket means whereby said hand rest may be alternately positioned with the angularly deflected portion thereof extending either upwardly or downwardly, an upper arm rest having upper and lower ends and including a straight element having a bottom and upwardly curved side walls that are spaced sufficiently to receive the side walls of said forearm rest, a releasable snap action pivotal connection located between the rear and lower ends of said forearm and upper arm rests respectively interconnecting said forearm and upper arm rests together, and flexible strap means connected to each of said rests for securing said rests firmly to the hand, forearm and upper arm of a patient.

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