June 1, 1954 I. BRILL 2,679,842

RESTRAINING DEVICE

Filed June 5, 1953

Fig. 1.

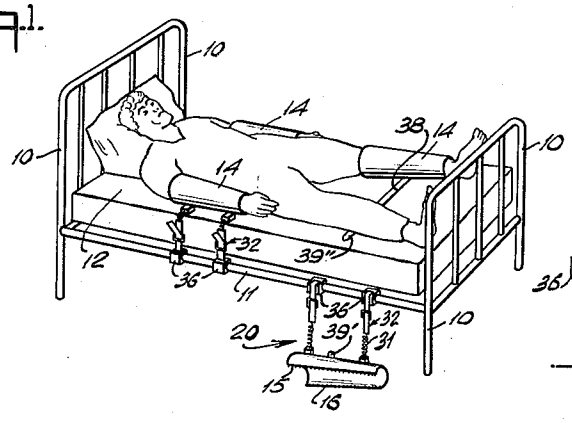


Fig. 2.

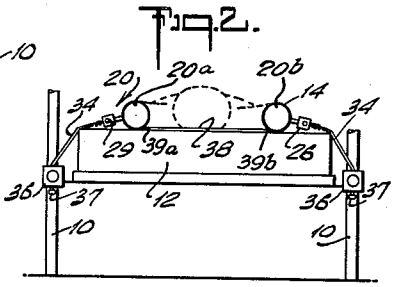


Fig. 3.

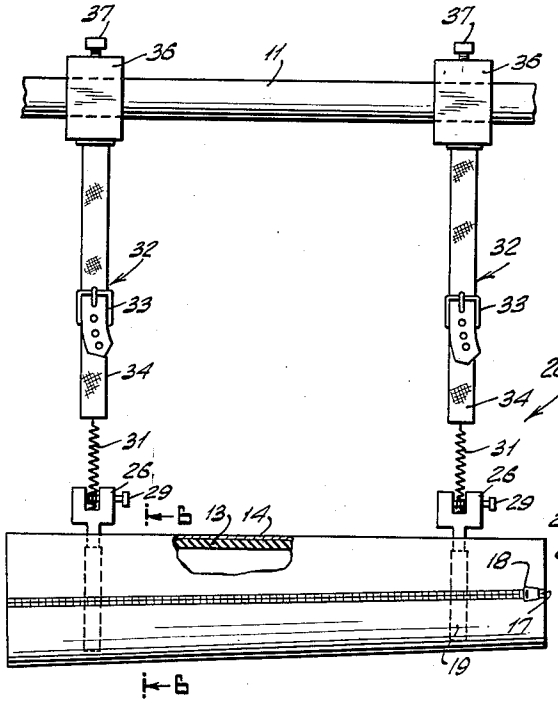


Fig. 6.

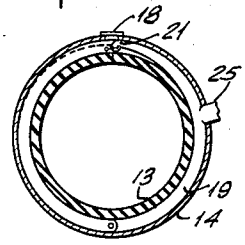


Fig. 7.

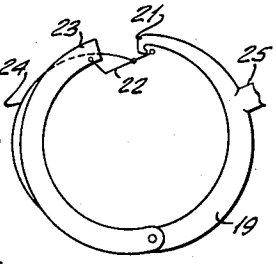


Fig. 4.

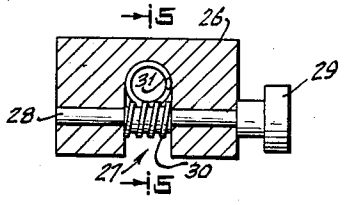


Fig. 5.

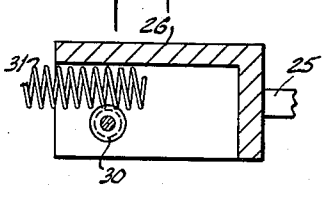
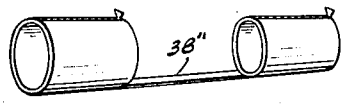


Fig. 8.



INVENTOR
IRWIN BRILL
BY J. M. Evans
AGENT

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RESTRAINING DEVICE

Irwin Brill, New York, N. Y.

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9 Claims. (Cl. 128—134)

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This invention relates to a restraining device. It deals, more particularly, with a device adapted to securely hold a delirious, insane or unruly patient, in a bed so as to prevent the patient from injuring himself or others.

There have been a number of restraining devices employed for the purpose indicated. However, these devices have usually been of such a nature that they do not afford easy adaptability to beds of varying dimensions, or permit rapid restraint of the patient regardless of his size, or these devices are such that they exert great pressure upon the patient's limbs and cut off the blood circulation with resulting injury to the blood vessels.

An object of this invention is to provide a restraining device which is laterally and longitudinally adjustable relative to beds of varying dimensions in order to restrain patients while permitting their complete comfort.

Another object of this invention is to provide a restraining device wherein a variable degree of restraint of the patient is obtained so that any one of the limbs may be entirely raised above the surface of the bed without permitting flexure thereof.

A further object of the invention is to provide a restraining device which is easily and speedily applied over any one of the limbs of a patient and which cannot be released by the patient.

Still another object of the invention is to provide a restraining device which will permit a controllable degree of movement of the limb of the patient around which it is applied.

Yet another object of the invention is to provide a restraining device which may be adjusted relative to the limb of a patient without thereby permitting motion of the latter.

Still a further object of the invention is to provide a restraining device which when applied to any one of the limbs of a patient affords a uniform distribution of the pressure exerted by said device over the surface of said limb.

Yet a further object of the invention is to provide a restraining device which is compact, easy to operate, and which may be stored within a minimum of space.

With the above and other objects in view, the invention will be hereinafter more particularly described, and the combination and arrangement of parts will be shown in the accompanying drawing and pointed out in the claims.

Reference will now be had to the drawing, wherein like reference numerals designate corresponding parts throughout the several views, in which:

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Fig. 1 is a perspective view showing the restraining devices made according to the invention being employed for holding a patient in the supine position on a bed.

Fig. 2 is a fragmentary front elevation of a bed and showing two of the restraining devices mounted thereon and around the limbs of a patient shown in phantom lines.

Fig. 3 is a plan view of one of the restraining devices constructed according to the invention.

Fig. 4 is a sectional view of the portion of the restraining device which is used to adjust the tension exerted on the limb of a patient.

Fig. 5 is a transverse sectional view taken on line 5—5 of Figure 4.

Fig. 6 is a transverse sectional view taken on line 6—6 of Figure 3.

Fig. 7 is an enlarged view of the shackle illustrated in Figure 6 and showing the details of the latch and release mechanism thereof.

Fig. 8 is a perspective view of another species of sleeve which may be substituted for the sleeve of the restraining device shown in Figure 3.

In the illustrated embodiment of the invention, the bed includes the usual head and foot sections and their corner posts 10 and connecting side rails 11. The bedding including the mattress is designated at 12 in Figure 1 of the drawing.

Each restraining device 20 comprises a limb engaging pad 13 formed of sponge rubber or any other suitable soft material which is secured to or within a covering 14 of suitable material such as "Dacron" and the like or any textile fabric. The covering 14 is provided at opposite edges with slide fastener tapes 15, 16 and the slide fastener is of the type in which the time may be completely disengaged. The engagement of the tape 15 at the lowermost end thereof with a socket at the bottom end of the tape 16, permits the operation of the slide 17 by the movement of the handle 18 connected thereto to bring the opposite sides of the covering 14 in juxtaposition and to form a tubular sleeve.

Referring more particularly to Figs. 6 and 7, the covering 14 is slightly spaced from pad 13 by a snap-closing shackle 19 positioned between said covering and said pad. The pad may additionally be provided with a groove (not shown) in order to facilitate positioning shackle 19 between the covering and the pad. The shackle 19 is provided with a hooked extremity 21 adapted to cooperate with a pawl 22 pivotally supported to the opposite extremity 23 of the shackle. A spring 24 is adapted to maintain pawl 22 in the position

wherein it is engageable with extremity 21 and pressure upon the intermediate portion of spring 24 affords disengagement of pawl 22 from extremity 21 when it is desired to open shackle 19. The shackle 19 is also provided with a neck portion 25 which connects the former with housing 26, see Figures 4 and 5.

The housing 26 is provided with a longitudinally extending groove 27 substantially U-shaped in cross-section, and with a transverse bore 28 intersecting the groove 27. Bore 28 is adapted to receive a bolt 29 provided with a worm gear section 30 intermediate the ends thereof. A helical spring with a substantially round section is designated by reference numeral 31. Spring 31 is snugly and slidably received within groove 27 at the bottom thereof in order that the coils of the spring mesh with worm gear section 30, see Figures 4 and 5. Upon rotation of bolt 29, the spring 31 is longitudinally displaceable in either direction. However, the pitch of the coils of spring 31 and of the threads of worm gear section 30 is selected so that tension or compression exerted upon the spring 31 will not be effective to longitudinally displace the latter. Therefore, spring 31 is longitudinally displaceable only upon operation of bolt 29 in either direction. Spring 31 is thus retained within groove 27 by the threads of worm gear section 30 while one end of the spring 31 is secured to one extremity 34 of a belt 32 having conventional means 33 for adjusting the length of the latter. The opposite extremity 35 of the belt 32 is secured to a clamp 36 removably and adjustably secured to any one of side rails 11 by screw means 37 which operates in a known manner.

There may be provided intermediate each pair of shackles 19, of each restraining device 20, and on a transverse member 38 extending across the bed elements 39' and 39'' of snap fasteners 39*a* and 39*b* which cooperate to maintain adjacent pairs of restraining devices 20*a* and 20*b* in predetermined spaced relationship.

In operation, a plurality of restraining devices 20 are mounted on the connecting side rails 11 of the bed, substantially as shown in Figure 1. Although the invention has been principally described as useable in conjunction with a bed it is obviously useable with any article of furniture having rails and the like; e. g. chairs. The patient is made to lie on the bed and the restraining devices are applied to the corresponding limbs by first closing the shackles over the limbs and subsequently leisurely shutting the slide fastener elements. Subsequently, the shackles 19 may be released, when desired, by simply applying pressure upon spring 24. The adjustable yielding means comprising elements 26 through 30 may be adjusted at any time so that the patient is allowed a slight degree of movement of his body or of his limbs and he will thereby be more comfortable. The transverse members 38 may, if desired, extend over the body of the patient so as to simultaneously prevent movement of the body and of the limbs of the patient.

The restraining device may be adapted to permit intravenal injections by providing a cut out within limb engaging pad 13 and covering 14. An example of this modification is described infra.

Referring more particularly to the species shown in Figure 8, a portion of the limb engaging pad 13 and of covering 14 is cut away and a pair of slide fasteners similar to the slide fastener already described has been substituted for the latter. A bar 38'' of substantially rigid material interconnects in an obvious manner the extremities of the sleeve whereby the rigidity of the latter is insured. The bar 38'' is located between the covering 14 and the pad 13 so that it will not abut directly against the limb of the patient. Apart from these modifications, the structure of the sleeve, shackles, tension adjusting means, and belts is identical to the structure of the restraining device shown in Figure 3. The sleeve of Figure 8 has been cut away in order to permit the application of hypodermic needles and the like upon the limb of the patient whenever such is deemed desirable.

Although a plurality of embodiments of the invention have been described and illustrated, it will be understood that various changes and modifications can be made therein without departing from the spirit of the invention as defined by the appended claims.

What is claimed is:

1. A restraining device for use with a bed having a plurality of rails, comprising, first means adapted to form a sleeve upon application over a portion of one of the limbs of the patient, second means for securing said sleeve to one of the rails of the bed, and adjustable yielding means connecting said first means and said second means, whereby the direction and degree of movement of said one limb of the patient is controllable.

2. A restraining device according to claim 1, wherein said first means comprises an outer covering of material provided with separable slide fastener elements upon opposite edges thereof, and an inner elastic pad secured to said outer covering, whereby upon application of said first means over said one limb of the patient and closing of said slide fastener elements the pressure exerted upon said one limb is uniformly distributed whenever the patient attempts motion of said limb.

3. A restraining device according to claim 2, wherein said first means further comprises at least one snap-acting shackle positioned between said outer covering and said inner elastic pad, whereby upon application of said first means over said one limb said shackle is first snapped shut and the slide fastener elements are subsequently operated to define said sleeve whereupon said shackle is held substantially in engagement with said one limb and the pressure exerted upon said one limb by said shackle is substantially uniformly distributed.

4. A restraining device according to claim 3, wherein said adjustable yielding means comprises a coiled spring and said shackle means is provided with bolt means including a worm gear portion engageable with the coils of said spring whereby upon actuation of said bolt means said coiled spring is displaced and the degree of movement of said limb is adjusted.

5. A restraining device for a patient comprising a flexible sheet of material provided with separable slide fastener elements upon opposite edges thereof and adapted to form a sleeve applicable over a portion of one of the limbs of the patient, said sheet of material including a pad of soft material on the inner surface thereof adjacent the one limb of the patient, shackle means positioned on the surface of said pad of soft material opposite to that adjacent the one limb of the patient, and said shackle means together with said slide fastener elements cooperating each with the other in order to substan-

tially uniformly distribute the pressure exerted by said shackle means through said pad of soft material over the entire surface of the one limb of the patient enclosed within the sleeve formed by said flexible sheet of material.

6. A restraining device constructed according to claim 5, wherein said shackle means is provided with locking means for maintaining said shackle means closed, said locking means being positioned away from the body of the patient whereby the patient cannot release said locking means.

7. A restraining device constructed according to claim 6, wherein said shackle means is provided with adjustable yielding means positioned on the side of said shackle means opposite the body of the patient, whereby the degree of movement of the one limb of the patient is controllable.

8. A restraining means for a bed-ridden patient comprising a plurality of flexible sheets of material each provided with separable slide fastener elements upon opposite edges thereof and adapted to form a sleeve applicable over one of the limbs of the patient, each of said

sheets of material including a pad of soft material on the inner surface thereof adjacent the corresponding limb of the patient, shackle means mounted on each of said flexible sheets of material and adapted to engage the corresponding limb of the patient, said shackle means being provided with other means engageable with the bed, and connecting means between at least a pair of said sheets of material and adapted to extend on the surface of the bed, whereby adjacent limbs of the patient received within said pair of said sheets of material are restrained from movement.

9. A restraining means according to claim 8, wherein said connecting means comprises adjustable yielding means whereby the degree of movement of said adjacent limbs of the patient is controllable within predetermined limits.

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