April 16, 1946. J. A. VOSS 2,398,731

ADJUSTABLE BED CLOTHES SUPPORT

Filed Aug. 4, 1942

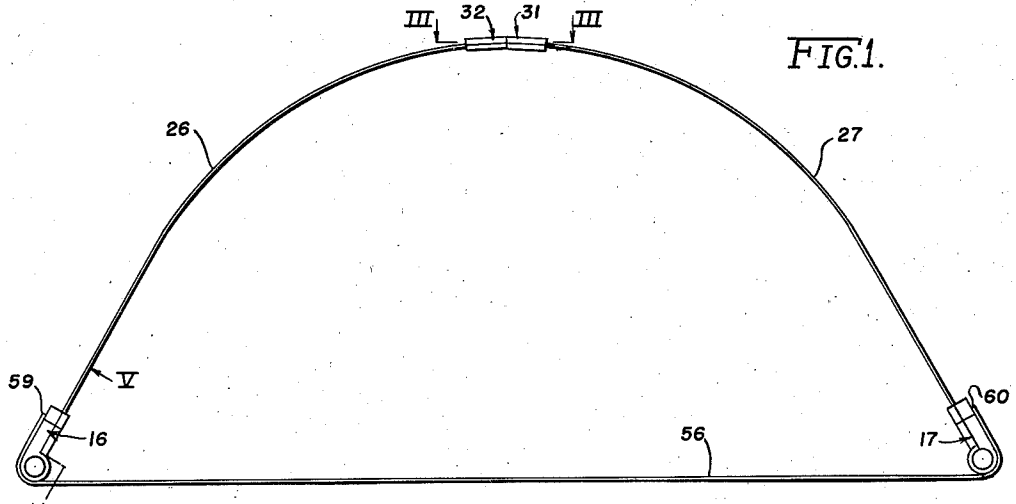


FIG. 1.

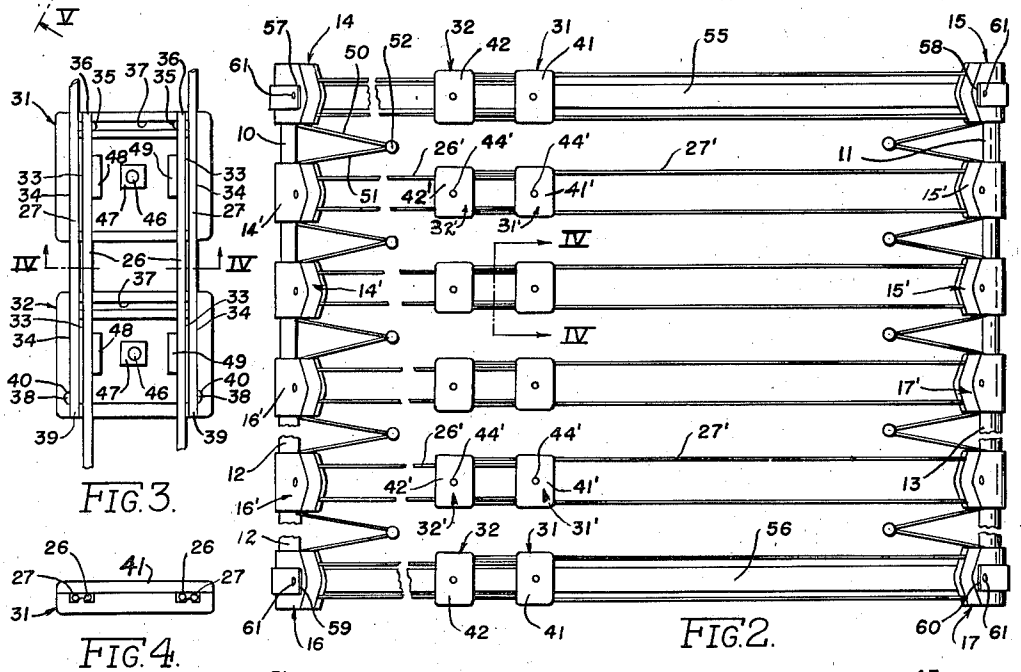


FIG. 2.

FIG. 3.

FIG. 4.

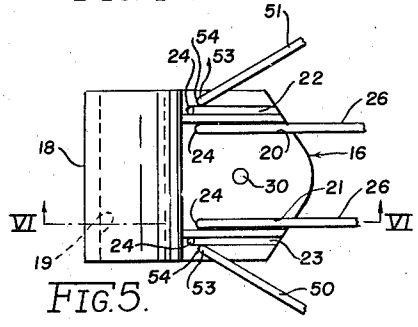


FIG. 5.

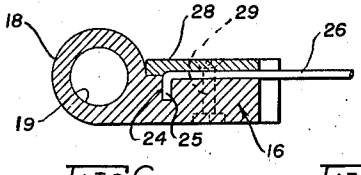


FIG. 6.

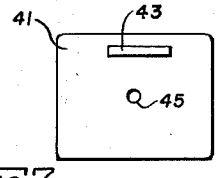


FIG. 7.

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ADJUSTABLE BEDCLOTHES SUPPORT

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5 Claims. (Cl. 5—319)

This invention relates to a bed cover support and more particularly to a portable, rigid, and adjustable frame member for positioning on a bed in operative relation to its covers to define a patient receiving conditioning chamber, although it may be employed with equal advantages for other purposes.

It contemplates more especially a portable, adjustable, and compact device which is capable of association with a bed for defining an aerated patient receiving chamber in conjunction with the bed covers to provide more comfortable sleeping accommodations for normal persons as well as more effectively treat and more speedily heal surface afflictions such as burns, wounds, surgical incisions, skin diseases and surface ulcers due to toxic or other internal disturbances for affected persons.

Numerous types of bed conditioning devices intended for the comfort and treatment of patients confined to bed without any bed clothes in direct contact wtih the body, have heretofore been proposed. These devices have not proven entirely satisfactory from the standpoint that they are expensive, cumbersome, entail a great deal of work on the part of the attendants, and require large storage room during non-use. These known devices are otherwise unsatisfactory from the consideration that hospital attendants are overtaxed in their routine so that hospital and convalescing appliances of all kinds cannot be advantageously used unless utilizable with minimum time and labor requirements by a single nurse or those who extend care to patients.

With the teachings of the present invention, a portable, self-sustaining, readily collapsible, and comparatively inexpensive bed cover support has been provided which may be easily adjusted to define a person receiving chamber in conjunction with the bed clothes for use by an individual without requiring an attendant. The novel construction enables convenient dismantling into a flat collapsed unit that may be readily stored without occupying any sizeable space or entailing any appreciable labor. The structure is equally intended for use by normal persons to provide more comfortable sleeping accommodations as well as for speeding convalescence in afflicted patients who have some degree of care exercised by an attendant or attendants.

It is a well known fact that the provision of a person receiving chamber in conjunction with the bed for accommodating the body of an individual without the bed clothes in direct contact decreases the temperature of the atmosphere surrounding the body to a substantial extent which may average at least ten degrees. This is an important conditioning that appeals to human beings in exceedingly hot weather, especially those who are adversely influenced by temperature above normal which may occur during different seasons of the year in various localities. The light weight, simplicity, and inexpensive construction lends itself for wide use in the normal sleeping conduct of individuals who are distressed during hot weather.

One object of the present invention is to simplify the construction and improve the adaptability thereof for a wider use.

Another object is to provide a bed clothes support that is light, inexpensive, and simple in construction.

Still another object is to provide an adjustable bed clothes support that is capable of being readily formed into a curved framework to define a person receiving chamber and readily collapsible for non-use.

A further object is to provide a flexible framework that is expansible and deformable into a bed clothes support to define a person receiving chamber.

A still further object is to provide a resilient wire framework that can be readily extended in two directions to provide a person receiving chamber in conjunction with the bed clothes and a supporting mattress.

Still a further object is to provide confronting extensible members which are connected by transverse flexible extensible wires to define a light, inexpensive, and readily adjustable framework serving as a bed clothes support.

Other objects and advantages will appear from the following description of an illustrated embodiment of the present invention.

In the drawing:

Figure 1 is an end view in elevation of a device embodying features of the present invention.

Figure 2 is a fragmentary plan view of the device shown in Figure 1, parts thereof being broken away to enable an enlarged showing thereof.

Figure 3 is a view taken substantially along line III—III of Figure 1 with the top plate of the slide members removed to clarify the showing.

Figure 4 is a sectional view taken substantially along line IV—IV of Figures 2 and 3 with the top plate in assembled association therewith.

Figure 5 is a view of a slide bracket taken substantially along line V—V of Figure 1.

Figure 6 is a sectional view in elevation of the

slide bracket taken substantially along line VI—VI of Figure 5.

Figure 7 is a plan view of the underside of the cover retaining plate for the guide plates shown in Figure 3.

The structure selected for illustration is not intended to serve as a limitation upon the scope or teachings of the invention, but is merely illustrative thereof. There may be considerable variations and adaptations of all or part of the teachings depending upon the dictates of commercial practice.

The present embodiment comprises pairs of confronting rods 10—11 which telescope into tubular members 12—13, respectively, to serve as extension rods. The telescopic side members 10—12 and 11—13 are extensible to a length commensurate with the length of the average adult's body from neck to toe and still provide such telescopic overlap therebetween for maintaining them in assembled association.

The extremities of the rods 10—11 and the tubular members 12—13 are fitted with brackets 14—15 and 16—17, each having rounded ends 18 formed integral therewith to provide a transverse bore 19 therethrough of somewhat smaller diameter than the rods 10—11 and the correspondingly larger tubular members 12—13 for forced frictional displacement thereover to effect their permanent attachment to the extremities of the telescopic side members 10—12 and 11—13. The brackets 14, 15, 16 and 17 are provided with parallel wire receiving grooves 20—21 and 22—23 spaced inwardly relative to each other for a distance substantially commensurate with the diameter of the wires to be received therein. The grooves 20—21 and 22—23 terminate inwardly of the brackets 14—15 and 16—17, in transverse recesses 24 that are intended to receive the downwardly offset extremities 25 of the wires 26—27 lodged therein (Figure 6).

The parallel pairs of wires 26—27 are spaced from each other at predetermined distances so that one pair 26 will be received inside of the somewhat greater spaced pair of wires 27 for extensible sliding contact in pairs relative to each other. To this end, the downwardly offset extremities 25 of the pairs of wires 26—27 are lodged in the recesses 24 of the brackets 14, 15, 16, and 17 to extend along the grooves 20—21 and 22—23 provided in each to maintain them in linear spaced sliding engagement to bridge the brackets 14—15 and 16—17, respectively. A retainer plate 28 complemental to the brackets 14, 15, 16, and 17, is similarly grooved to confront wire receiving grooves 20—21 and 22—23 for application thereover and assembled retention thereon by means of a suitable fastener such as a stud bolt 29, extending in aligned apertures 30 through the retainer plate 28 and the body of the brackets 14, 15, 16, and 17.

This maintains the spaced flexible wires 26—27 in fixed spaced relation at their extremities while their inward ends are anchored to confronting sliding guide plates 31—32 (Figure 3). The guide plates 31—32 have correspondingly spaced pairs of grooves 33—34 to receive the confronting pairs of wires 26—27. As shown, the inwardly disposed pairs of wires 26 have laterally offset nibs 35 proximate to their inward extremities 36 for reception in a transverse groove 37 provided in the guide plate 31. The outwardly spaced wires 27 have correspondingly offset (outwardly directed) nibs 38 proximate to their inward extremities 39 for reception in complemental recesses 40 communicating with the grooves 34 and the guide plate 32. This serves to anchor the inward extremities of the confronting pairs of wires 26—27 to the guide plates 31—32, respectively, which are provided with cover retaining plates 41—42, respectively.

The cover plates 41—42 have a ridge 43 formed integral with the interior surface thereof to serve as a complement thereof of the groove 37 for registry therewith. The cover plates 41—42 are anchored to the guide plates 31—32 by means of a suitable fastener such as a central stud bolt 44 extending through axial apertures 45 aligned with corresponding apertures 46 provided in the guide plates 31 and 32. It should be noted that the guide plates 31—32 have upstanding lugs 47 in the region of the axial apertures 46 to reinforce the latter and serve to properly space the cover retaining plates 41—42 from the guide plates 31—32, respectively, after the securing stud bolt 44 has been tightened.

Upstanding side lugs 48—49 are formed on the interior surface of the guide plates 31—32 to cooperate with the central lug 47 to assist in the proper spacing of the cover retaining plates 41—42 and, additionally, retain the confronting pairs of wires 26 in their proper spaced relation relative to each other and the outwardly spaced pair of wires 27. With this arrangement, the side members 10—12 and 11—13 are maintained in parallel spaced relation to any desirable extent by causing their relative approach or recession with the guide plates 31—32 and the cover plates 41—42 serving to permit the displacement of the pair of wires 26 relative to the confronting pair of wires 27 until the guide plates 31—32 reach the end brackets 14—16 and 15—17 which will define their inner limit of approach. The outer limit of recession of the side members 10—12 and 11—13 relative to each other is determined by the approach of the guide plates 31—32 relative to each other until they are engaged to prevent any further outward displacement of the pair of wires 26 relative to the pair of wires 27. This defines the inward and outward limit of parallel displacement of the telescopic members 11—13.

It should be noted that the end pairs of flexible wires 26—27 bridge the side members 10—12 and 11—13 to maintain them in spaced parallel relation for connection therewith through the fixed end brackets 14—15 and 16—17. Any number of intermediate pairs of confronting and relatively sliding wires 26'—27', in this instance four sets thereof, may be similarly interconnected by guide plates 31'—32' with their confronting cover plates 41'—42'; however, these are preferably anchored to brackets 14'—15' and 16'—17', in this instance two pairs of each, which are slidably associated with the rods 10—11 and 12—13, respectively. Except for the fact that the brackets 14'—15' and 16'—17' have bores therethrough that are somewhat larger in diameter than the rods 10—11 and 12—13, respectively, their construction is identical with the fixed corner brackets 14—15 and 16—17. This renders the intermediate brackets 14'—15' and 16'—17' slidable along the rods 10—11 and 12—13, respectively, so that the bridging pairs of relatively slidable flexible intermediate wires 26'—27' may be varied in their parallel spaced relation depending upon the telescopic extent to which the side members 10—12 and 11—13 are extended.

In order to uniformly space the intermediate

pairs of bridging members 26'—27' along the telescopic members 10—11 and 12—13 when the latter are in their extreme extended relation, spacing links 50—51 are pivotally interconnected as at their free extremities by means of a suitable fastening expedient such as a rivet 52 while their other extremities are offset downwardly as at 53 for reception in somewhat larger apertures 54 provided in the end brackets 14—15 and 16—17. The retainer plates 28 that are secured to the brackets 14—15, 16—17, 14'—15', and 16'—17' preclude the removal of the link extremities 53 from the apertures 54 so that the spacer links 50—51 pivot relative to each other at their connecting extremities 52 and also relative to the brackets 14—15, 16—17, 14'—15', and 16'—17' to permit the parallel spacing of the bridging wires 26—27 and 26'—27' along the rods 10—12 and 11—13 depending upon the extensible relation thereof and the expansible extent to which the cover of a bed is to be supported over a person lying on the bed mattress. In actual practice, it may be desired only to provide a chamber around one portion of the person's anatomy such as a leg or the thorax, or the entire human body from neck to toe depending upon conditions and the purpose to which the device is being put.

Then, too, the telescopic rods 10—12 and 11—13 may be telescoped within each other to their extreme limit and the parallel bridging members 26—27 and 26'—27' displaced toward each other to effect adjacent contact to minimize the space requirements for the framework when in non-use. During such times as the framework is not being used, the bridging members 26—27 and 26'—27' not only are in actual linear contact relative to each other, but also they are displaced inwardly to their extreme limit to require a minimum transverse size for convenience in packaging, storage, and transportation.

In order to utilize the framework for defining a person confining chamber between the mattress and bed clothes, the bridging members 26—27 and 26'—27' are extended to their maximum relative length and then bowed upwardly (Figure 1) to define a sharply curved framework having its intermediate portion in its extreme upward extent of displacement relative to the side members 10—12 and 11—13. Any suitable means may be provided to maintain the bridging members 26—27 and 26'—27' in this operative bowed or flexed position. In the present embodiment, this is accomplished by means of tapes 55 and 56, in this instance two, which extend between the corner brackets 14—15 and 16—17, respectively. The tapes 55—56 are of fixed length substantially commensurate with the minimum length of the fully inwardly displaced bridging members 26—27 and 26'—27'. In this inoperative position of the bridging members 26—27 and 26'—27', the tapes 55—56 having corresponding lengths with their extremities 57—58 and 59—60, respectively, passing under and over the rounded portions 18 of the brackets 14—15 and 16—17 for attachment thereto by means of any suitable anchoring expedients such as threaded studs 61.

Consequently, when the bridging members 26—27 and 26'—27' are relatively extended to their extreme outward limit with the guide plates 31—32 and 31'—32' in engagement with each other along a longitudinal median line of the framework, the bridging members 26—27 and 26'—27' are forced to flex upwardly to assume an extreme bowed shape to define a chamber in which a person may comfortably lie with the body over the tapes 55—56 and underneath the bowed bridging members 26—27 and 26'—27'. The telescopic tubes 10—12 and 11—13 are preferably precluded from separating by means of any suitable stops that are provided proximate to their adjacent edges. This may take the form of upstanding trips or other suitable catches that engage each other when these members are near their extreme limit of outward displacement.

Thereupon, the bed clothes can be placed over the bowed bridging members 26—27 and 26'—27' and overhang beyond the mattress to define a completely enclosed chamber except for the end portion through which the head of the confined person extends. This will provide a complete air space all around the confined person except for that portion which is in contact with the mattress serving as a support. The person so confined is free to withdraw from the chamber through the open end portion and may prepare the chamber with the bed clothes thereover prior to entering in the same manner.

With this arrangement, it is apparent that a very simple, inexpensive, compact, and fully collapsible framework has been provided for defining a person confining chamber whenever such is desirable for comfort, hospitalization, or the treatment of body surface afflictions which are hindered by contact of bed clothes and the like. This construction affords the opportunity of providing patient receiving chambers in portable hospital units such as required in military conduct of a war.

While I have illustrated and described a preferred embodiment of this invention, it must be understood that the invention is capable of considerable variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

I claim:

1. A bed chamber defining frame comprising confronting side members, flexible members bridging said side members, means slidable upon said side members and for connecting said flexible members to said side members, said flexible members serving to maintain said side members in parallel variable spaced relation, said slidable connecting means serving to vary the parallel spaced relation of said flexible members, and means for maintaining said bridging members flexed to assume a bowed configuration for defining a chamber between the mattress and covers of a bed.

2. A bed cover supporting frame comprising spaced rigid side members, a plurality of upwardly bowed resilient transverse members terminally connected to said side members, flexible straps of less length than said bowed members extending transversely of said side members, means detachably connecting said straps to said side members, said straps holding said resilient members in bowed shape, the resilient bowed members being adapted to assume a straight unbowed condition when said connecting means are released, thereby reducing storage or shipping space.

3. A bed cover supporting frame comprising spaced rigid side members, an upwardly bowed resilient transverse member terminally connected to said side members, means detachably connecting said side members for maintaining said side members spaced apart at a lesser distance than

the length of said bowed resilient transverse member, said last named means holding said resilient member in bowed shape, the resilient bowed member being adapted to assume a straight unbowed condition when said last named means are released from maintaining said side members spaced apart at a lesser distance than the length of said bowed resilient transverse member, thereby reducing the shipping space and simplifying the storage thereof.

4. A bed cover supporting frame comprising spaced rigid side members, an upwardly bowed resilient transverse member terminally connected to said side members, said resilient transverse member comprising adjacently extending confronting wires, guide means for slidably connecting said adjacently extending confronting wires to render them extensible relative to each other to vary the length of said resilient transverse member, means detachably connecting said side members for maintaining said side members spaced apart at a lesser distance than the length of said bowed resilient transverse member, said last named means holding said resilient member in bowed shape, the resilient bowed member being adapted to assume a straight unbowed condition when said last named means are released from maintaining said side members spaced apart at a lesser distance than the length of said bowed resilient transverse member, thereby reducing the shipping space and simplifying the storage thereof.

5. A bed cover supporting frame comprising spaced rigid side members, an upwardly bowed resilient transverse member terminally connected to said side members, said resilient transverse member comprising adjacently extending confronting wires, guide means for slidably connecting said adjacently extending confronting wires to render them extensible relative to each other to vary the length of said resilient transverse member, said side members consisting of telescopic sections to vary the width of said resilient transverse member, means detachably connecting said side members for maintaining said side members spaced apart at a lesser distance than the length of said bowed resilient transverse member, said last named means holding said resilient member in bowed shape, the resilient bowed member being adapted to assume a straight unbowed condition when said last named means are released from maintaining said side members spaced apart at a lesser distance than the length of said bowed resilient transverse member, thereby reducing the shipping space and simplifying the storage thereof.

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