March 29, 1960 J. NAWARA 2,930,566

ADJUSTABLE BED CLAMPS FOR THERAPEUTIC DEVICES

Filed June 11, 1959

2 Sheets-Sheet 1

Fig. 1

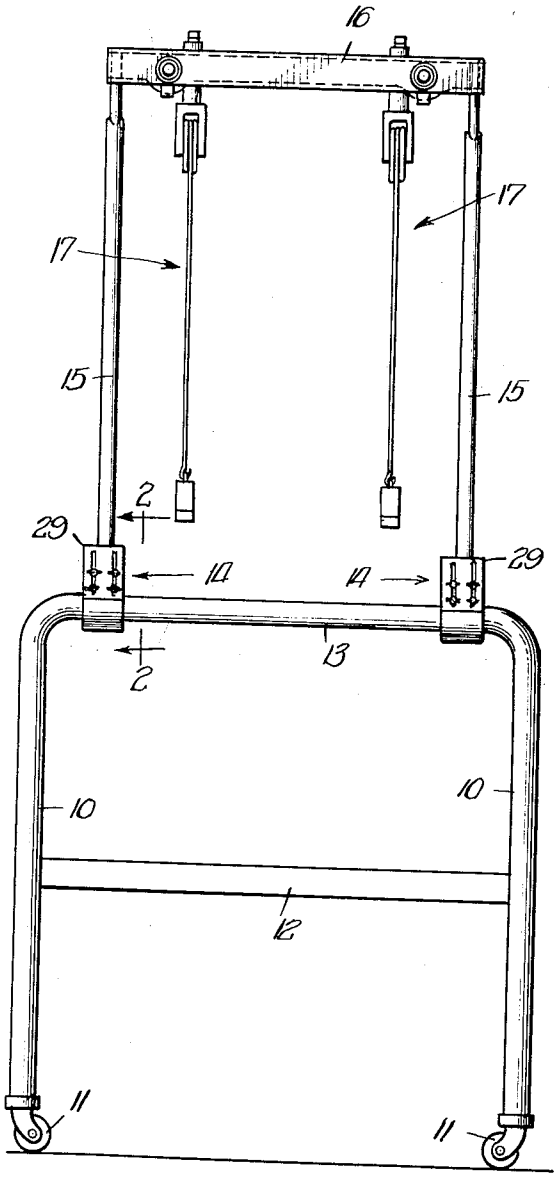


Fig. 4

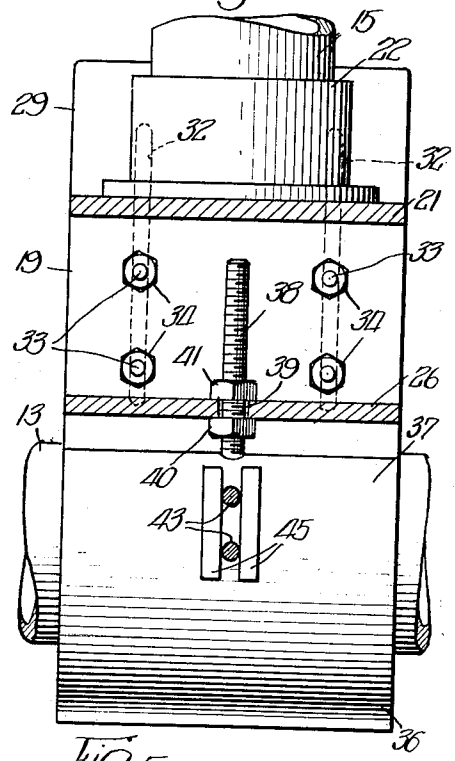
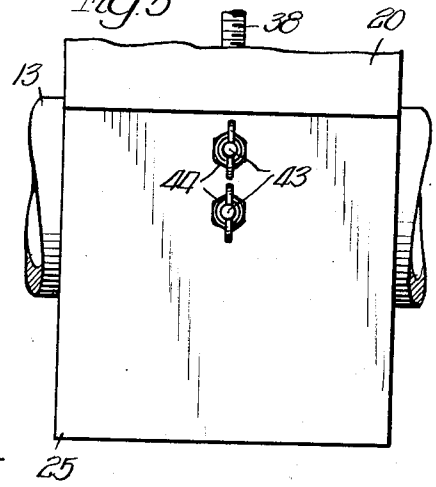


Fig. 5



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2 Sheets-Sheet 2

Fig. 2

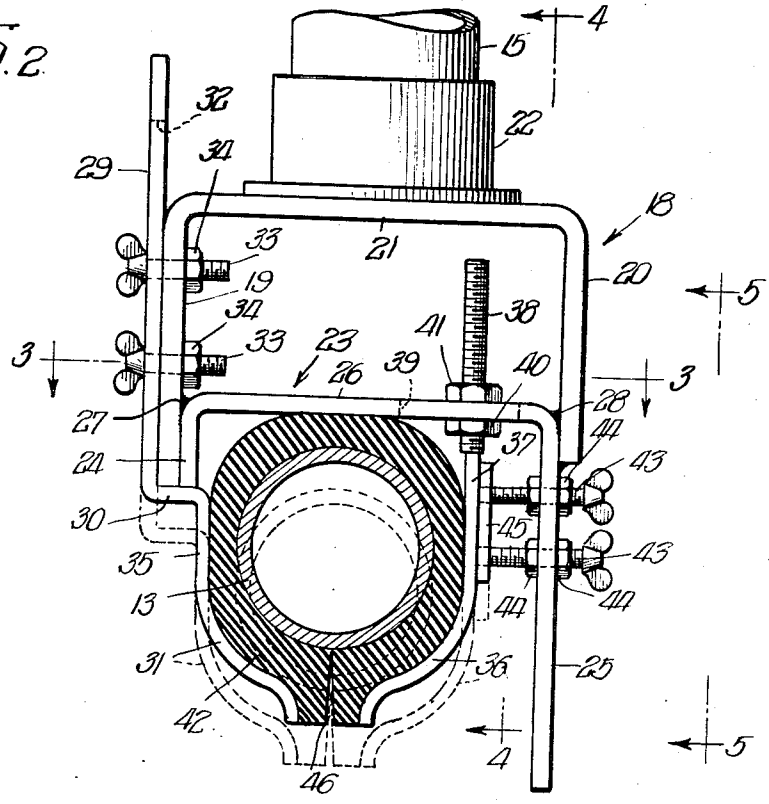
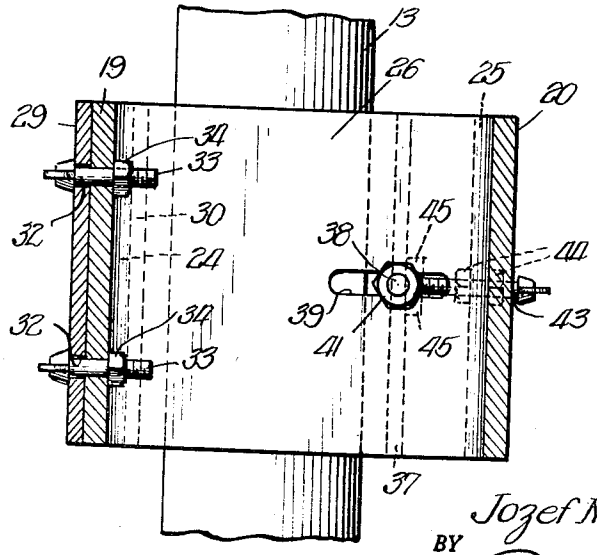


Fig. 3



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ADJUSTABLE BED CLAMPS FOR THERAPEUTIC DEVICES

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Application June 11, 1959, Serial No. 819,634

8 Claims. (Cl. 248—230)

The present invention relates to clamps capable of engagement with the horizontal top rails of head and foot frames of a bed for supporting thereon four legs, in a vertically adjustable relation, which legs in turn, by their upper ends are capable of supporting a superstructure frame disposed above the bed on a horizontal plane, which frame in turn is capable of supporting various therapeutic exercising devices for use of a patient while in a reclining position upon the bed. The frame supporting legs, to the use with which the present clamp relates, are disclosed in my co-pending application, Serial No. 714,565, now Patent 2,921,790.

The principal object of the present invention is the provision of a suitable clamp capable of engagement with the horizontal top bar of either head or foot frame of a bed, whereby the lower end of a leg hereinabove indicated may be supported in a vertical position.

Normally the horizontal top bars, one at the head of a bed and the other at the foot of the bed, are not upon the same horizontal plane. Therefore, another object of the present invention is the provision of a clamp of the type hereinabove indicated which may be capable of vertical adjustment, so that when four of the clamps are used for engagement with the two horizontal top bars of the head and foot frames of a bed, they may be capable of vertical adjustment for the purpose of vertical adjustment of the four legs supported by the four clamps in order that the superstructure frame aforesaid may be supported above the bed upon a horizontal plane.

A still further object of the present invention is the provision in a clamp of the type hereinabove indicated of a stationary frame defining a support for the lower end of a superstructure frame supporting leg, with adjustable means, depending in a downward direction from said stationary frame for engaging a horizontal top bar of a head or foot frame of a bed, as the case may be, which means may be adjustable in a vertical direction with relation to the said stationary frame, whereby the superstructure frame supporting leg may be supported upon the said horizontal top bar in a vertically adjusted relation therewith.

A still further object of the present invention is the provision, in conjunction with the clamp stationary frame aforesaid, of a pair of clamping members, downwardly depending from the said stationary frame, and which clamping members may be capable of vertical as well as horizontal adjustment with relation to the said stationary frame.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings forming a part of this application, and in which like designating characters refer to corresponding parts throughout the several views:

Fig. 1 is the end elevational view of a bed, including a pair of legs and a horizontal top bar of either the head or foot frame of a bed, illustrating an operative position of a pair of leg supporting clamps in engagement with the said horizontal top bar, for supporting the lower ends of a pair of legs, the latter supporting by their upper ends a superstructure frame disposed above the bed, which superstructure frame in turn supports various therapeutic exercising devices;

Fig. 2 is an enlarged end elevational view of the present clamp, the view having been taken upon a plane transverse with relation to the horizontal top bar of either the head or foot frame of the bed, on line 2—2 of Fig. 1;

Fig. 3 is a horizontal cross section through the clamp, taken on line 3—3 of Fig. 2;

Fig. 4 is a cross sectional view on a vertical plane through the clamp, taken on line 4—4 of Fig. 2; and

Fig. 5 is a side elevational view of the clamp, taken upon a vertical plane indicated by 5—5 of Fig. 2.

Referring in detail to Fig. 1 of the present drawings, there is shown a bed, including a pair of end legs **10**, the lower ends of which are provided with casters **11**. The four bed legs **10** support bedstead **12** in the usual manner. A pair of end legs **11** supports a head or foot frame of a bed, which includes a horizontal top bar **13**.

Disengageably affixable to the said horizontal top bar **13** is a pair of clamps, generally indicated by **14** in Fig. 1 for supporting thereon a pair of end legs **15**, which, in cooperation with a pair of similar legs **15** at the opposite end of a bed, support by their upper ends a horizontal, substantially rectangular superstructure frame **16**.

Said superstructure frame **16** is disposed above bedstead **12**, and is capable of supporting in a downwardly depending relation various therapeutic exercising devices, which are generally indicated by **17** in Fig. 1, and which are in a greater detail shown and described in my said co-pending application. The said exercising devices **17** are intended for employment by a patient while in a reclining or supine position upon bedstead **12**.

Considering that the two horizontal top bars **13**, one at each end of the bed, are not upon the same horizontal plane, and also bearing in mind that it is often desirable to position the said superstructure frame **16** nearer to or farther away from bedstead **12**, so as to locate said exercising devices **17** at a most convenient distance from the patient, and this latter consideration irrespective as to whether or not the horizontal top bars **13** at both ends are upon the same horizontal plane, it therefore becomes both desirable and necessary to have clamp **14** adjustable in a vertical direction for the purpose of attaining the objects last hereinabove specified.

Referring now in detail to the construction and operation of clamp **14**, the same includes an inverted U-shaped, leg supporting member, generally indicated by **18** in Fig. 2. Said leg supporting member **18** includes a vertical side plate **19** and a similar vertical side plate **20**, said plates **19** and **20** are downwardly depending from the ends of the horizontal, connecting, leg supporting plate **21**. Rigidly affixed to the top face of said horizontal plate **21** is socket **22** wherein the lower end of the superstructure frame supporting leg **15** is insertable and wherein the same is held against a lateral displacement.

The lower end of side plate **19**, may, although it need not, extend past the horizontal plane extended through the lower end termination of plate **20**. The lower ends of plates **19** and **24** may be in a mutually flush relation, as seen in Fig. 2.

Receivable within the lower open end of said leg supporting member **18** is an inverted, substantially J-shaped member, generally indicated by **23** in Fig. 2, and which includes a shorter vertical plate **24** and a longer vertical plate **25**, both of said plates being integrally formed with and downwardly depending from the ends of the hori-

zontal connecting plate 26. Weld 27 interconnects the vertical side plate 19 with said vertical plate 24, while weld 28 rigidly interconnects the vertical side plate 20 with the said vertical plate 25. By virtue of the rigid connection through welds 27 and 28, members 18 and 24 are in a mutually rigid position, with said horizontal connecting plates 21 and 26 in a mutually rigid, stationary relation.

Cooperating with said vertical side plate 19 is a vertical shiftable plate 29, the former being much wider on a vertical plane than the latter. The lower end of said shiftable plate 29 is bent in a transverse relation with the ends of said side plate 19 and plate 24 to define shoulder 30, which, coming in contact with the ends of plates 19 and 24 acts as a stop for preventing further shifting movement of said shiftable plate 29 in an upward direction. Downwardly depending from said shoulder 30 is an integrally formed arcuate clamping jaw 31.

Made in said plate 29 is a pair of vertical slots 32 for accommodating therewithin shanks of thumb screws 33, a pair of the latter within each of said slots 32. The thumb heads of said screws 33 are positioned adjacent the outer face of said shiftable plate 29, as seen in Figs. 2 and 3. Portion of the shank of each of said screws 33 is positioned within a corresponding aperture made in said vertical side plate 19, through which each of said screws 33 is passed. The inner threaded ends of said screws 33 are engaged by lock nuts 34. On loosening said lock nuts 34 said shiftable plate 29 is capable of upright shifting in either direction for adjusting the distance of the clamping jaw 31 with relation to the said leg supporting plate 21.

When proper adjustment of said clamping jaw 31 has been made, lock nuts 34 are then tightened for rigidly engaging said shiftable plate 29 in its adjusted relation with said vertical side plate 19.

It is observed that said clamping jaw 31 downwardly depends from and merges with a vertical plate portion 35 which immediately extends from the adjacent end of said shoulder stop 30.

Coacting with clamping member 31—35, at the opposite side of the clamp is a similar arcuate clamp jaw 36 which is integrally formed with and extends in a downward direction from a vertical clamp plate 37. Integrally formed with and upwardly extending from the center of the upper edge of said clamp plate 37 is a screw rod 38, which is positioned within and extended through slot 39 made in a central longitudinal relation with the horizontal connecting plate 26, and in a tranverse relation with the clamp device. Mounted upon said screw rod 38, for a rotary adjusting relation therewith, is nut 40, adapted to contact the underface of said horizontal connecting plate 26, along its body portion adjacent said slot 39, as is seen in Figs. 2 and 4. The purpose of said nut 40 is to adjust said screw rod 38 longitudinally with relation to the said horizontal connecting plate 26, for thereby vertically shifting the clamp member 36—37 toward or away from the said leg supporting plate 21. When proper longitudinal adjustment of said screw rod 38 has been made, with nut 40 brought in contact with the underface of said horizontal connecting plate 26, lock nut 41 is then rotatably shifted upon said screw rod 38 in a downward direction until it comes in contact with the upper face of the said horizontal connecting plate 26. Thus, said nut 40 and lock nut 41 are adapted to clamp the said horizontal connecting plate 26 therebetween for maintaining said screw rod 38 and said clamp member 36—37 in their vertically adjusted relation with said leg supporting plate 21.

Prior to the engagement of the present clamp device with the horizontal frame bar 13, a tubular split gasket 42, made of hard rubber or like material, is placed upon the said horizontal frame bar 13 in an encompassing relation therewith. To apply the present clamp to the said gasket 42, the shiftable plate 29 with its depending clamp member 31—35 is removed from the vertical side plate 19 on disengagement of lock nuts from screws 33, while maintaining the ultimate operative position of screw rod 38 and clamp member 36—37, as related to the ultimate required distance of the leg supporting plate 21 from the said horizontal frame bar 13. The preliminary establishment of the said ultimate operative position of the said screw rod 38 and clamp member 36—37 with relation to their respective distances from the said leg supporting plate 21 will be aided by first loosening both nuts 40 and 41. When the required preliminary positional relationship of said screw rod 38 and clamp member 36—37 with relation to the distance of the latter with respect to the said leg supporting plate 21 has been established, both nuts 40 and 41 are thereupon tightened in a clamped relation with the said horizontal connecting plate 26. Having done this, the shiftable plate 29 with its clamp member 31—35, is applied by passing screws 33 through slots 32 and the apertures made in the vertical side plate 19 which accommodate the shanks of said screws 33, and thereupon lock nuts 34 are tightened in order to clamp said shiftable plate 29 to said vertical side plate 19 for maintaining the former in its vertically shifted adjusted relation with the latter.

The above operations having been completed, means are provided and resorted to, in order to shift said clamp member 36—37 upon a horizontal plane, in a strong cooperative clamping relation with the clamping member 31—35.

The means last hereinabove mentioned includes a pair of thumb screws passed in a threaded relation through said plate 25. In threaded engagement with each of said screws 43 is a pair of lock nuts 44, one on each side of said plate 25. The inner ends of said screws 43 enter the space defined by a pair of vertical ribs 45, either integrally formed with or rigidly affixed to the outer face of clamp plate 37. The inner ends of said screws 43 bear against the adjacent outer face of said clamp plate 37. Said ribs 45 have for their function to properly locate the inner ends of said screws 43 as they bear against said clamp plate 37 and also to prevent lateral bending or deviation of the inner ends of said screws 43 when strong contactual pressure of the inner ends of said screws 43 upon said clamp plate 37 is brought about by operatively turning the thumb heads at the outer ends of said screws 43.

Prior to resorting to turning of said screws 43 lock nuts 44 are first loosened. Also, prior to the turning of said screws 43 the lower nut 40 upon screw rod 38 is also loosened to bring about the disengagement of the said nut 40 from the lower face of said horizontal connecting plate 26. This being done, the upper nut 41 constitutes means whereby said screw rod 38 and said clamp member 36—37 hang upon the said horizontal connecting plate 26 for maintaining the undisturbed preliminary positional relationship theretofore established for said clamp member 36—37 with relation to the said leg supporting plate 21 so as to adjust the latter in a vertical direction to or away from the said horizontal frame bar 13, as may be required for proper vertical adjustment of leg 15, in conformity with the remaining three legs 15 for the purpose of supporting thereby the superstructure frame 16 upon a horizontal plane and for the purpose of properly distancing of the said exercising devices 17 from the patient upon the bedstead 12, as was heretofore mentioned.

While maintaining the connection of said screw rod 38 and the clamp member 36—37, with the said horizontal connection plate 36, through engagement of the latter by nut 41, with lower nut 40 in a loose position with relation to the said horizontal connecting plate 26, screws 43 are driven against the clamp plate 37 by turning the thumb heads of the said screws. A strong pressure engendered by said screws 43 against said clamp plate 37 will cause the said clamp member 36—37 to shift against said gas-

ket 42 in the direction of the clamp member 31—35, whereby the two clamp members will squeeze said gasket 42 and will rigidly interconnect the clamp device with said horizontal frame bar 13, for rigidly connecting the clamp device with the said horizontal frame bar 13, for rigidly supporting the lower end of leg 15 in its longitudinally adjusted relation and in its adjusted relation with the remaining legs.

While pressure upon said clamp plate 37 by screws 43 is brought about, screw rod 38 is capable of shifting within slot 39, until ultimate clamping action of both clamp jaws upon gasket 42 has been brought about. This accomplished, the lower nut 40 is shifted in an upward direction, so as to clamp the said horizontal connecting plate 26 between both of said nuts 40 and 41 for the purpose of rigidly interlocking the said screw rod 38 with said horizontal connecting plate 26, in the ultimately established shifted position on a horizontal plane with relation to the said horizontal connecting plate 26. Thereupon, each pair of the cooperating lock nuts 44, on each screw 43, is tightened, in order to clamp therebetween plate 25 and thereby prevent the disengagement of the inner ends of said screws 43 from clamp plate 37, which otherwise might ensue due to vibration of the superstructure frame 16 due to the use of the said exercising devices 17.

From the hereinabove description it will be seen that clamp members 31—35 and 36—37 are adjustable vertically to or away from the horizontal connecting plate 26 for thereby shifting the said horizontal leg supporting plate 21 to or away from the horizontal bed frame bar 13, as is indicated by dotted lines in Fig. 2, for vertical adjustment of leg 15 for the purposes hereinabove specified. During the vertical adjustment of the screw rod 38 for vertical shifting of the clamp member 36—37 so as to bring the latter to its cooperating clamping position with relation to the clamp member 31—35, ribs 45 shift simultaneously with the clamp plate 37, as is indicated by dotted lines in Fig. 2, without displacing the positional relation of the inner ends of screws 43 with the space defined by said ribs 45.

From the hereinabove description it will also be seen that the clamp member 36—37 is also adjustable upon a horizontal plane, through the medium of said screws 43, for the purpose of shifting said latter clamp member to or away from the cooperating clamp member 31—35, for exerting pressure upon gasket 42 in a lateral direction, for thereby mounting the clamp device upon and interconnecting the same with the said horizontal frame bar 13.

Although in one of the various positional adjustments of the horizontal plates 21 and 26, in a vertical direction, away from the horizontal frame bar 13, an upper outward peripheral portion of gasket 42 may contact the underface of said horizontal plate 26, as is seen in Fig. 2, no such result need occur under all conditions, because, as is obvious, when plates 21 and 26 have been shifted to a sufficient degree away from the clamp members 31—35 and 36—37, or to put it in different words, when the said clamp members have been shifted away from plate 26 in a downward direction, then gasket 42 will become spaced from said plate 26 and out of contact therewith.

It is observed that clamp plates 35 and 37 need not be straight on a vertical plane, as is indicated in Fig. 2, but may be transversely arcuate to conform to the arc of gasket 42 or of the horizontal frame bar 13, as the case may be, and thereby to define the continuing respective arcs of jaws 31 and 36. From this aspect of the invention clamping members 31—35 and 36—37 are in effect the clamping jaws. Forming clamp plate 37 in an arc indicated would require either the corresponding forming of ribs 45 or the enlargement of their depth width with relation to the transverse plane of said clamp plate 37, but otherwise the function of said ribs 45 would remain unaltered.

The diameter, the girth, the transverse configuration and the contour of gasket 42 may be varied to conform the same to the particular diameter, girth or contour of the horizontal frame bar 13. Although the transverse split 46 made in gasket 42 will sufficiently adapt the same for use with multi-shaped horizontal frame bars 13, a set of multi-shaped gaskets may be provided from which a most suitable selection may be made for use with a horizontal frame bar 13 of any particular cross-sectional shape. Some of the horizontal frame bars 13 may be either square or rectangular on transverse cross-section, in connection with which the gasket may be made in an approximately corresponding shape on transverse cross-section. Then again head and foot end parts in some beds are made of a solid metallic sheet, with the upper horizontal edge portions of which strengthening ribs, corresponding to the horizontal frame bar 13, integrally connect. With such ribs gasket 42, such as herein disclosed, would work equally well, with the adjacent marginal portion of the sheet material, depending from the rib in a downward direction, passed through and accommodated within split 46.

Obviously, the employment of gasket 42 is not an essential element of the invention. The primary purpose of gasket 42 is to bring about a more positive engagement of the clamping jaws with the horizontal frame bar 13 as well as to prevent scratching and marring of the said horizontal frame bar 13, which otherwise might ensue if in a direct contact with the metallic parts of the present clamp device. However, if the clamping jaws were to directly contact with the said horizontal frame bar 13 the result would be reasonably satisfactory.

It is further observed that said plates 21 and 26, along with the vertical side plates 19 and 20, due to the interconnection through welds 27 and 28, define a substantially rectangular fixture on a transverse cross-section through the clamp, with the space defined by said plates 21 and 26 affording access for manipulation of nuts 34 and 41 as well as accommodation for the vertical shifting movement of screw rod 38.

Plate 25 may be cut off from the adjacent end of the horizontal connecting plate 26, with the said adjacent end directly welded to the inner face of the vertical side plate 20, with the lower end of said vertical side plate 20 extended in a downward direction, with the said extended end substituting the said plate 25. From this aspect of the invention plate 25 may be considered as an integral part of the said vertical side plate 20 for supporting the said screws 43.

The lower ends of the vertical side plate 19 and plate 24, which limit the upward shifting movement of the clamp member 31—35 when shoulder 30 comes in contact therewith, may be considerably reduced, or entirely eliminated, and this particularly when no gasket such as gasket 42 is employed in connection with the horizontal frame bar 13, and the clamping jaws are made to directly engage the same.

The reduction of the lower ends of the vertical side plate 19 and plate 24 would permit the shifting of the screw rod 38 until the upper end thereof comes in contact with the underface of the horizontal connecting plate 21 for bringing to the uppermost vertically shifted position of clamp member 36—37 to conform to the uppermost vertical shifted position of the clamp member 31—35, when said latter shifting is not barred by shoulder 30 coming in contact with the lowermost ends of the vertical side plate 19 and plate 24. Then again the depending ends of the vertical side plate 19 and plate 24, below the horizontal connecting plate 26 may be entirely eliminated, with the adjacent ends of said vertical side plate 19 and the said horizontal connecting plate 26 joined through a weld such as 27.

While the employment of screws 43 for bearing upon clamp member 36—37 from a lateral direction is preferable for supporting said latter clamp member in a firm

operative positional relation on a horizontal plane with respect to the other clamp member 31—35, a reasonably operative clamp device will result if said screws 43 were entirely eliminated. In this latter instance the vertical as well as the horizontal operative positional relation of said clamp member 36—37 with respect to the clamp member 31—35, will be had solely through screw rod 38, slot 39, and nuts 40 and 41, the latter clamping therebetween said lower horizontal plate 26 for supporting the clamp member 36—37 in both of its adjusted relations. However, prior to the shifting of nuts 40 and 41 in a clamped relation with the said lower horizontal plate 26, initial manual pressure against the clamp member 36—37 in the direction of the clamp member 31—35 should be resorted to in order to bring the said clamp member 36—37 in a firm contactual position with gasket 42 or the horizontal frame bar 13, as the case may be. The said positional relation of the clamp member 36—37 brought about by the manual pressure exerted thereagainst will continue to be maintained to a reasonably satisfactory degree when nuts 40 and 41 have been brought in a clamped relation with said lower horizontal plate 26.

Thus, screws 43 do not constitute an essential element of the invention under all conditions. The employmnt or elimination of screws 43 will depend upon such factors as the degree of vibration brought about by the use of the said exercising devices 17, the weight of the superstructure over the bed, including legs 15, frame 16, and exercising devices 17, and the force employed by the patient for pulling or otherwise using said exercising devices 17.

While there are described herein preferred embodiments of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:

1. A clamp of the class described comprising a supporting fixture including a pair of horizontal spaced plates and a pair of vertical spaced plates, a pair of clamping members each depending in a downward direction from said supporting fixture, means for shifting said clamping members in an upright direction to or away from said supporting fixture for adjusting the distance of said supporting fixture from said clamping members, means for rigidly interconnecting said clamping members with said supporting fixture in their adjusted relation, and means for shifting one of said clamping members towards the other on a horizontal plane for bringing said clamping members to their mutual clamping relation.

2. A clamp of the class described comprising an oblong supporting fixture, a pair of clamping members each depending in a downward direction from an end of said supporting fixture, means carried by said supporting fixture whereby said clamping members may be shifted in an upright direction to or away from said supporting fixture for adjusting the distance of the latter from said clamping members, means for rigidly interconnecting said clamping members with said supporting fixture in their adjusted relation, means supported by said supporting fixture permitting shifting of one of said clamping members toward the other on a horizontal plane for adjusting the mutual clamping relation of said clamping members, and means supported by said supporting fixture for maintaining said clamping members in their adjusted clamping relation.

3. A clamp of the class described comprising a substantially rectangular supporting fixture including a lower horizontal plate, an upper horizontal plate and a pair of vertical plates, said vertical plates rigidly interconnecting the ends of the two horizontal plates, a shiftable member in a contactual relation with the outer face of one of said vertical plates, a clamping member depending from the lower end of said shiftable member, said shiftable

member being adapted to adjust the distance of said clamping member on a vertical plane to or away from said lower horizontal plate, means for rigidly interconnecting said shiftable member with said vertical plate for supporting said clamping member in its adjusted relation with said lower horizontal plate, a second clamping member, means carried by said lower horizontal plate for adjusting the distance on a vertical plane of said second clamping member to or away from said lower horizontal plate, and means downwardly depending from the other of said vertical plates for shifting said second clamping member to or away from said first named clamping member for adjusting both of said clamping members on a horizontal plane in their mutual clamping relation.

4. A clamp of the class described comprising a substantially rectangular supporting fixture including a lower horizontal plate, an upper horizontal plate and a pair of vertical plates, said vertical plates rigidly interconnecting the ends of the two horizontal plates, a shiftable member in a contactual relation with the outer face of one of said vertical plates, a clamping member depending from the lower end of said shiftable member, said shiftable member being adapted to adjust the distance of said clamping member on a vertical plane to or away from said lower horizontal plate, means for rigidly interconnecting said shiftable member with said vertical plate for supporting said clamping member in its adjusted relation with said lower horizontal plate, a second clamping member, a rod in a rigid association with the upper end of said second clamping member, said lower horizontal plate being provided with an oblong slot for accommodating said rod therewithin and for permitting extension thereof within the space defined by both of said horizontal plates, said rod being adapted for shifting movements within said slot both in a transverse and a longitudinal relation with said lower horizontal plate for thereby shifting said second clamping member upon vertical and horizontal planes to a clamping position with relation to said first named clamping member, means depending from the other of said vertical plates for bearing against said second clamping member on a horizontal plane for firmly supporting said second clamping member on a horizontal plane in its clamping position with respect to said first named clamping member, and means in association with said rod and said lower horizontal plate for interlocking the former with the latter for rigidly supporting said rod in its transverse and longitudinal adjusted relations with respect to said lower horizontal plate.

5. A clamp of the class described comprising a substantially rectangular supporting fixture including a lower horizontal plate, an upper horizontal plate and a pair of vertical plates, said vertical plates rigidly interconnecting the ends of the two horizontal plates, a shiftable member in a contactual relation with the outer face of one of said vertical plates, a clamping member depending from the lower end of said shiftable member, said shiftable member being adapted to adjust the distance of said clamping member on a vertical plane to or away from said lower horizontal plate, means for rigidly interconnecting said shiftable member with said vertical plate for supporting said clamping member in its adjusted relation with said lower horizontal plate, a second clamping member, a screw rod in a rigid association with the upper end of said second clamping member, said lower horizontal plate being provided with an oblong slot for freely accommodating said screw rod therewithin and for permitting extension thereof within the space defined by both of said horizontal plates, said screw rod being adapted for shifting movements within said slot both in a transverse and a longitudinal relation with said lower horizontal plate for thereby shifting said second clamping member upon vertical and horizontal planes to a clamping position with relation to said first named clamping member, means depending from the other of said vertical

plates for bearing against said second clamping member on a horizontal plane for firmly supporting said second clamping member on a horizontal plane in its clamping position with respect to said first named clamping member, and a pair of nuts mounted for shifting movement upon said screw rod, one below and the other above said lower horizontal plate for clamping the latter therebetween for rigidly interconnecting said screw rod with said lower horizontal plate for maintaining said screw rod in its transverse and longitudinal adjusted relations with respect to said lower horizontal plate.

6. A clamp of the class described comprising an oblong supporting fixture, a clamp member disposed below said supporting fixture adjacent one end of the latter, means carried by said latter end of said supporting fixture for shifting said clamp member upon a vertical plane to or away from said supporting fixture in an adjusted relation therewith, means carried by said supporting fixture for rigidly interlocking said clamp member in its adjusted shifted relation with respect to said supporting fixture, a second clamp member disposed below said supporting fixture adjacent the opposite end of the latter, means for shifting of said second clamp member upon a vertical plane to or away from said supporting fixture in an adjusted relation therewith and for shifting the same upon a horizontal plane to or away from said first named clamp member in an adjusted relation with the latter, and means for interlocking said second named clamp member with said supporting fixture in both of its adjusted shifted positions.

7. A clamp of the class described comprising an oblong supporting fixture, a clamp member disposed below said supporting fixture adjacent one end of the latter, means carried by said latter end of said supporting fixture for shifting said clamp member upon a vertical plane to or away from said supporting fixture in an adjusted relation therewith, means carried by said supporting fixture for rigidly interlocking said clamp member in its adjusted shifted relation with respect to said supporting fixture, a second clamp member disposed below said supporting fixture adjacent the opposite end of the latter, a rod in a rigid association with the upper end of said

second clamp member, said supporting fixture adjacent the said opposite end of the latter being provided with a longitudinal slot for accommodating said rod therewithin, said rod being capable of vertical and horizontal shifting movements within said slot for adjusting both the vertical shifted position of said second clamp member with relation to said supporting fixture and the horizontal shifted position thereof with relation to said first named clamp member, and means in association with said rod for interlocking the same with said supporting fixture for rigidly supporting said second clamp member in both of its adjusted shifted positions with said supporting fixture.

8. A clamp for attachment to a horizontal frame bar at the foot or head of a bed for supporting thereon a leg in therapeutic devices disposed over the bed, comprising a lower and upper horizontal plates, said upper horizontal plate being adapted to carry a socket wherein the lower end of the said leg may be received, a pair of vertical end walls rigidly connecting the ends of said lower and upper horizontal plates, a clamp member, means carried by one of said vertical end walls for permitting vertical adjustment of said clamp member with respect to said lower horizontal plate, a second clamp member supported by said lower horizontal plate adjacent the opposite of said vertical end walls, said clamp members being adapted to accommodate therebetween the said horizontal frame bar, means carried by said second clamp member and associated with said lower horizontal plate for vertically adjusting said second clamp member with respect to said lower horizontal plate, means for shifting said second clamp member towards said horizontal frame member on a horizontal plane to a cooperative clamping relation with said first named clamp member, means associated with said second clamp member and coacting said lower horizontal plate for maintaining said second clamp member in its vertical adjusted position, and means carried by the opposite of said vertical end walls for maintaining said second clamp member in its horizontal adjusted position.

No references cited.