

Oct. 27, 1959

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2,910,061

INTERMITTENT TRACTION DEVICE

Filed Aug. 27, 1954

3 Sheets-Sheet 2

FIG. 4

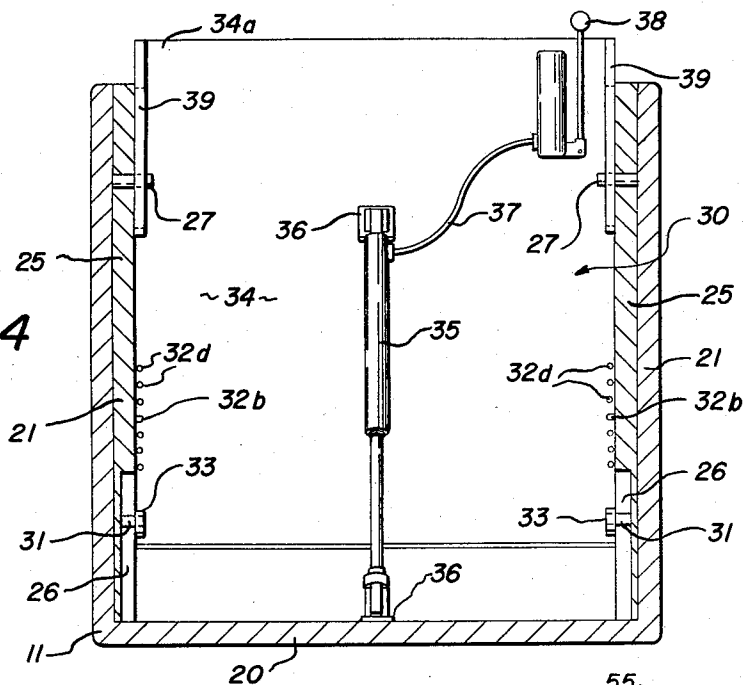
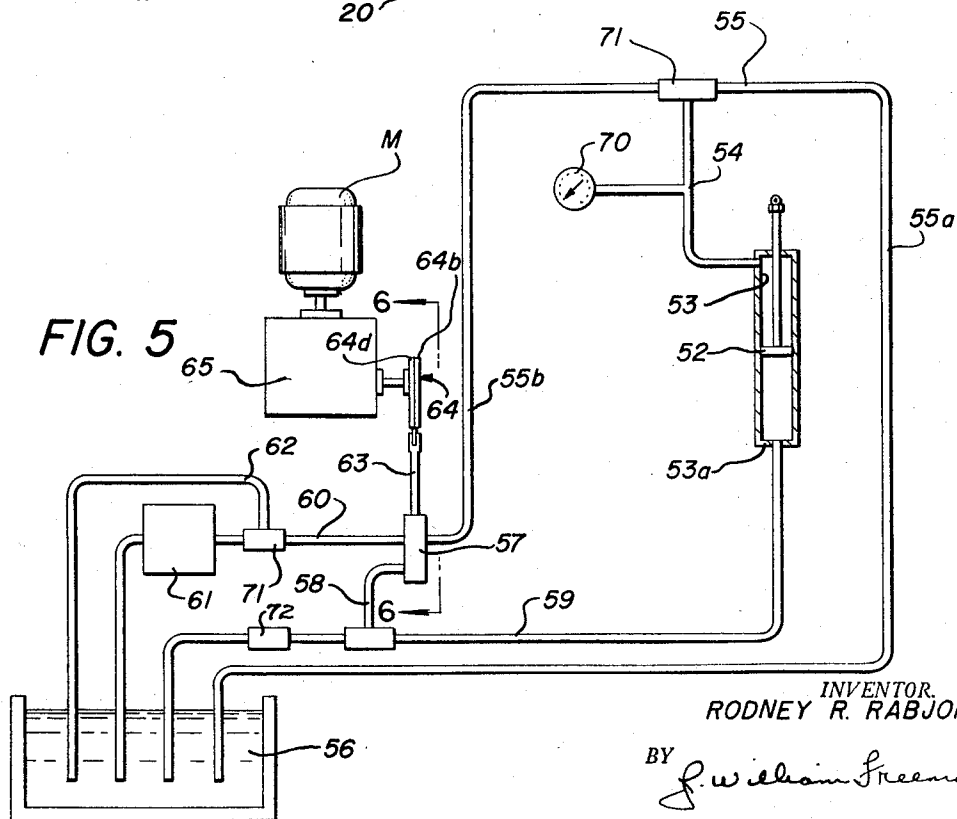


FIG. 5



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FIG. 6

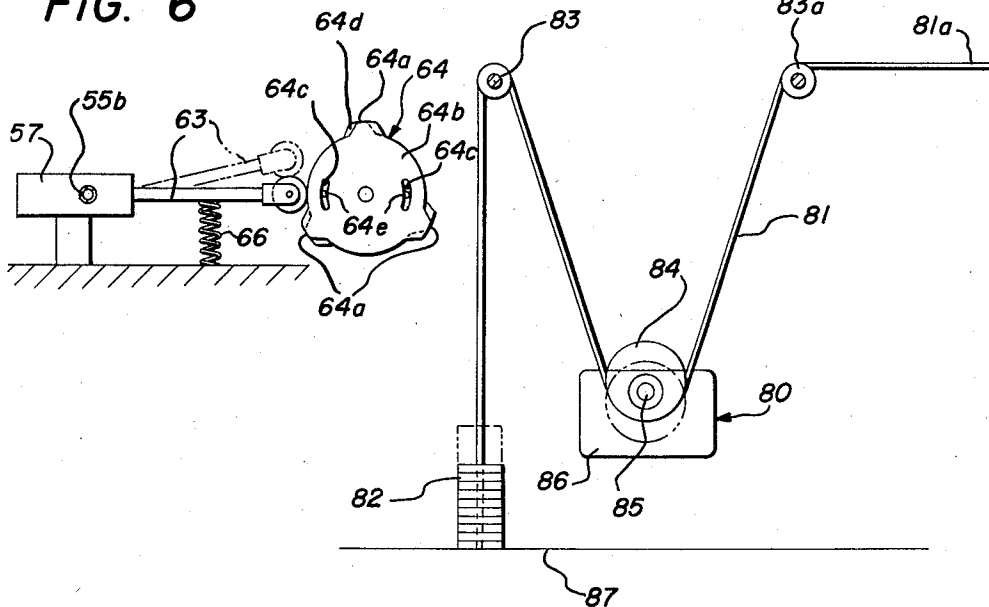
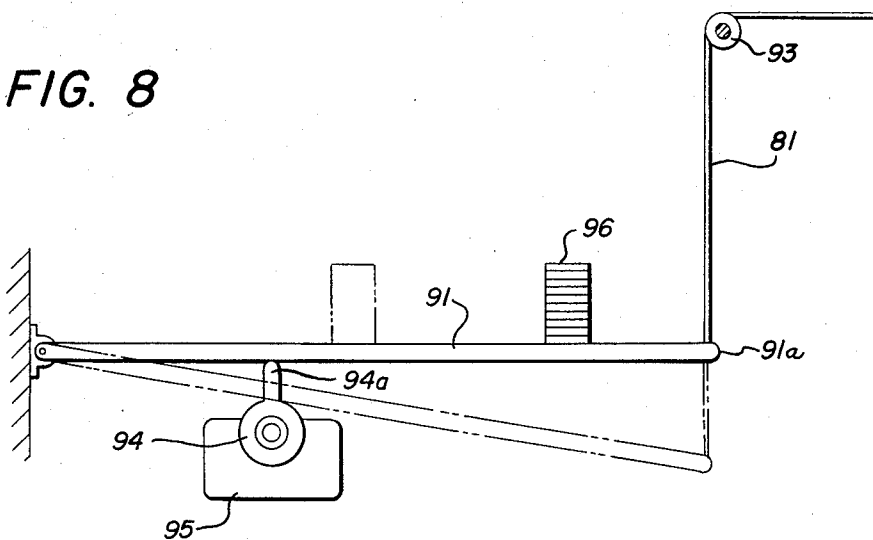


FIG. 7

FIG. 8



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2,910,061

INTERMITTENT TRACTION DEVICE

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15 Claims. (Cl. 128—70)

This invention relates to therapeutic devices, and in particular, relates to therapeutic devices used as traction devices.

In the known prior art, traction devices have long been used as a method of treating broken limbs, strained muscles, torn ligaments, and impairments affecting the mobility of joints. The usual traction device of the prior art operated by exerting a constant stretching pull against the injured portion of the person being treated. This pull was normally obtained by securing an appropriate harness to the injured extremity and then exerting a force against the harness by use of weights, suspended over pulleys by an interconnecting rope member.

While the foregoing prior art traction device has been found to be satisfactory for treatment in conjunction with certain types of injuries, it was discovered that more effective treatment of certain injuries could be effectuated if the traction "pull" was applied intermittently to the patient. In this latter type of treatment a period of traction is followed by one in which no traction is applied. This treatment, in effect, "exercises" the joint or injured portion being treated.

The known prior art devices that have been employed to effectuate this intermittent type of treatment have been unsatisfactory for several reasons. The first and foremost of these reasons relates to the fact that the same are unable, as a practical matter, to exert a uniform amount of pull during successive traction periods. It has been found that the amount of traction applied actually diminishes with each successive traction period, with the result that a negligible amount of traction is being employed after the machine has been in use for a few minutes. The foregoing difficulty arises as a result of the inability of the prior art devices to compensate for any movement of the patient during the period of treatment. Such movement inadvertently occurs during the periods of traction when the patient is "pulled" by the force of the traction device with the result that the position of the patient's body is shifted with respect to the traction apparatus. This shifting movement just described causes a slack in the ropes secured to the harness, and, as a consequence, the amount of traction force applied is progressively diminished during successive periods of application.

A further disadvantage of the known prior art is found in the fact that the same normally requires a specially built patient support as an integral part thereof, and is not capable of properly functioning without such support. As a result, the prior art devices are of a complex nature, resulting in the same being relatively expensive.

Accordingly, it is one object of this invention to provide an intermittent therapeutic traction device where shifting of the patient during use of the machine will not operate to reduce the traction force applied to the patient.

It is a further object of this invention to provide a therapeutic device having means thereon to cooperatively coact with the usual bed frame whereby the same can

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be utilized as an element of the improved therapeutic device.

It is a still further object of this invention to provide an intermittent therapeutic device of simple construction that is accordingly economical to manufacture.

It is a still further object of this invention provide an intermittent traction device wherein the duration and force of successive traction periods can be accurately predetermined.

These and other objects of the invention will become more apparent upon a reading of the following brief specification, considered and interpreted in the light of the accompanying drawings.

Of the drawings:

Figure 1 is a perspective view illustrating the improved intermittent traction device attached to a conventional bed for exerting a traction pull around the waist of a person reclined on the bed.

Figure 2 is a side elevation illustrating in cross-section the lifting apparatus of the intermittent traction device.

Figures 3 and 4 are views taken on the lines 3—3 and 4—4 respectively, of Figure 2.

Figure 5 is a schematic diagram illustrating the operating mechanism of the intermittent traction device.

Figure 6 is a view taken on the lines 6—6 of Figure 5. Figures 7 and 8 are schematic illustrations of modified mechanisms for effectuating intermittent traction.

Referring now to the drawings and in particular, to Figure 1 thereof, the improved intermittent traction device, generally designated as 10, is shown as including a housing 11 that supports the foot end of a bed 12 in elevated position, whereby intermittent traction can be applied to the waist of patient P through the medium of a harness 13 that is retractable with respect to the housing 11.

The housing 11 is shown as being defined by a bottom plate 20, sidewall members 21, 21, a front wall 22, a top wall 23, and a control panel 24, the arrangement of the aforementioned wall members being such that the same coact to define a compartment for reception of the operating mechanism in a manner to be described. A pulley housing 28, of conventional construction, extends upwardly from the top plate 23 while the bottom plate is supported by casters 29, 29 that add mobility to the housing 11.

For the purpose of providing means for raising the lower end of the bed 12, the rear portion of the just described housing 11 is left open for reception of a lifting mechanism that is generally designated as 30. This lifting mechanism 30 is positioned between a pair of spaced frame members 25, 25 that are slotted at their lower ends, to define vertically extending guides 26, 26. (See Figure 2.) Receivable in the guides 26, 26 are a pair of pins 31, 31 that are fixed with respect to the opposed edges of a rectangular plate 34 by a pair of arms, 33, 33, the component parts being so arranged that vertical movement of the plate 34 is effectuated by vertical movement of the pins 31, 31 in the guides 26, 26. This vertical movement of the plate 34 is shown accomplished in Figures 2 and 4 by provision of a hydraulic piston 35, the opposed ends of which are secured to the bottom plate 20 and plate 34 by the usual lugs 36, 36. Entrance of the requisite fluid interiorly of the piston 35 through supply conduit 37 is controlled by handle 38 in known manner.

To the end of moving the upper edge portion 34a of plate 34 in an arcuate path during the just described vertical movement, the same (edge 34a) is shown provided with spaced arms 39, 39 that include guides 39a, 39a that are receivable about pins 27, 27 of the frame members 25, 25. In this manner the vertical movement of the pins 31, 31 in guides 26, 26 will cause an upward and outward movement of the edge 34a with the result that

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the surface 34b of the plate 34 is always in substantially parallel relationship with the end frame 12b of the bed 12 during the period the same is being raised.

Engagement between the lifting mechanism 30 and the end frame 12b, is shown facilitated in Figures 2, 3 and 4 by provision of an elongated plate 32, the face 32a of which is angularly adjustable with respect to the face 34b of plate 34. The control of this angular adjustment is effectuated by a pair of hook members 32b, 32b that are secured to the opposed ends of the plate 32 and have their free ends 32c, 32c intumed for selective reception within a plurality of vertically spaced holes 32d, 32d.

The mechanism utilized to apply a traction pull against the harness 13 has been generally designated as operating mechanism and with reference to Figure 1, this operating mechanism is connected to the harness 13 by a rope 51 that is passed through the pulley housing 28, the arrangement being such that a traction pull is exerted on the rope 51 that operates, during the period of such application, to urge the harness to the left of Figure 1 under the influence of a constant force. As will best be seen from Figure 5, this constant force is applied during the period that the piston head 52 is subjected to downward pressure from fluid entering the piston cylinder 53 through fluid conduit 54. It is similarly true that no traction force will be applied during the period that the conduit 54 is free from fluid under pressure.

To the end of controlling the presence of fluid under pressure in the conduit 54, the same is shown leading into a supply conduit 55, one branch 55a of which leads to a fluid reservoir 56 for relief, while the other branch 55b thereof is connected to one exhaust port of the three-way valve 57. The remaining exhaust port of valve 57 leads by conduit 58, into a relief line 59 that interconnects the lower end 53a of cylinder 53 with the fluid reservoir 56. The inlet port of the valve 57 is connected to the reservoir 56 through conduit 60, the usual pump 61 and relief line 62 being provided to supply fluid to the valve under proper pressure. The valve 57, while illustrated schematically in Figure 5, may be of such construction as to divert the course of fluid flow therethrough upon movement of the actuating lever 63. Thus, fluid entering the valve 57 through conduit 60 may be diverted into either conduit 55b or conduit 58, dependent upon the position of the actuating lever 63.

The position of the actuating lever 63 is controlled by the action thereagainst of an adjustable cam 64 that is rotated by the projecting shaft of a gear reduction box 65 that is in turn moved by the usual motor M. In Figure 6 of the drawing the lever 63 is shown maintained in approximately horizontal position by a spring 66. Movement of the lever arm 63 to the position indicated by the chain-dotted lines in Figure 6 is accomplished by engagement between the lever arm 63 and the land areas 64a, 64a of the cam 64, the lever arm 63 acting as a cam follower during the period of engagement.

For the purpose of varying the duration of the period in which the valve 57 diverts fluid into the conduit 55b, for example, the cam 64 of Figure 6 is shown as being adjustable with respect to the arcuate length of the land areas 64a, 64a. This adjustment is obtained by use of a pair of abutting discs 64b, 64d of equal configuration, that are respectively provided with arcuate slots 64c, 64c and engaging pins 64e, 64e with arcuate slots 64c, 64c being provided in disc 64b, while the pins 64e, 64e project from the face of disc 64d. (See Figure 6.) In this manner relative rotational movement is provided between the cam discs 64b, 64b, with the result that the arcuate length of the overall land areas 64a, 64a can be increased or decreased by merely adjusting the position of the pins 64e, 64e with respect to the slots 64c, 64c to thus determine the duration of cycle desired.

By like token, further control of the fluid pressure is provided for by inclusion in the hydraulic system of the usual pressure regulator 70 and relief valves 71, the

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former being connected to the control board 24 in known manner, while a restriction 72 may be provided in line 59 for controlling the flow of fluid into sump 56.

Additional controls of known type, such as those employed to start and stop the motor M and pump 61, are attached in like manner to the control board 24, but the same are not illustrated herein, for the sake of clarity.

In use or operation of the improved traction device for therapeutic treatment of a person placed on a bed 12, the housing 11 is first rolled on casters 29, 29 into the position of Figure 1 adjacent the end frame 12b of the bed 12. In this position the face 32a of the plate 32 is engaged with the underside of the transverse framework of end frame 12b, and the same (end frame 12b) may then be raised off the floor by actuation of the handle 38 to expand the piston 35, and thus raise the pins 31, 31 in guides 26, 26, while the upper guides 39a, 39a are simultaneously moved about pins 27, 27. This raising of the pins 31 results in movement of the edge 34a of plate 34 in an arcuate path that is upwards and away from the housing 11. This arcuate movement operates to dispose the face 34b of plate 34 in substantially parallel relationship with the end frame 12b at all times during the raising thereof with the result that tipping of the housing 11 is eliminated during the period in which the bed is elevated.

With the bed thus raised and the patient P positioned in inclined position thereon, the harness 13 may be secured about the injured portion of the patient P. In Figure 1, the harness 13 is shown secured about the waist although it is manifest that the same may be positioned about any other extremity with equal facility. Similarly, while the harness 13 has been described as being attached after elevation of the bed 12, it is apparent that the same could be secured prior to elevation.

When the harness 13 has been positioned about the patient P in the elevated condition just described, the operating mechanism 50 may be energized to begin a series of intermittent applications of traction force by first adjusting the rope 51 so that the same is taut about the pulley housing 28. At this point the pump 61 may be turned on through the usual controls provided on control panel 24, and the pressure of the fluid in the system may be adjusted by the pressure regulator 70. With the apparatus thus adjusted, the motor M may be started, resulting in rotation of the cam 64. It will be assumed for the purpose of disclosure that the cam 64 is in the full-line position of Figure 6 when the motor M is started and further that the lever 63 is so positioned in the full-line indication thereof, so as to cause exhaust from the valve 57 into conduit 55b. In this condition fluid entering conduit 55b will enter cylinder 53 through conduit 54 and will, accordingly, exert a downward force on piston head 52. This force will be constant and the extent thereof will be determined by the pressure regulator 70.

Because the hydraulic fluid is confined under pressure interiorly of the cylinder 53, it is manifest that if the patient P moved to the left (Figure 1) under the influence of this traction force, the resultant slack in rope 51 will be immediately and automatically compensated for by the further downward movement of piston head 52, resulting from the entrance of additional fluid under pressure into the upper chamber of the cylinder 53. This additional fluid is able to force the piston head 52 downwardly because of the absence of fluid under pressure in line 59 that would operate to counter-balance the force present in the upper chamber of cylinder 53.

As the rotation of the cam 64 continues, the lever 63, acting as a cam follower, will engage one land area 64a and will accordingly be moved to the chain-dotted position of Figure 6 against the force of the spring 66. This movement of the lever 63 operates to divert the fluid flow through the valve 57 so that fluid will now exhaust from the valve into conduit 58 for return to the reservoir 56 through conduit 59. Fluid entrance to the reservoir 56

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is however, controlled by the restricter 72 with the result that the initial discharge from valve 57 will flow into the lower end 53a of cylinder 53 to raise the piston head 52, it being understood that the pressure on the fluid in line 54 is now relieved and accordingly, fluid in line 54 will return to reservoir 56 through conduit 55a. During this just described period, the harness 13 will not be subjected to a traction force.

Termination of this relaxed period during which no traction pull is exerted occurs upon further rotation of the cam 64 to the point where the lever 63 will become disengaged from the land area 64a and will be returned to the full-line position of Figure 6, at which time the valve will exhaust into conduit 55b for initiation of another period of traction pull as has been previously described. It is apparent that further intermittent application of traction force will occur upon the continued rotation of the cam 64, it being manifest that flow reversal in the valve 57 will occur upon engagement and disengagement of the lever 63 by the rotationally advancing land areas 64a, 64a.

In Figures 5 and 6 of the drawings, the valving mechanism is described as being constructed to cause a traction pull on harness 13 during the period when the lever 63 is out of contact with the cam 64. It is manifest that this arrangement could be reversed so that traction pull was exerted only during the period of engagement between the lever 63 and land areas 64a, 64a. By like token, the duration of any period can be varied by increasing or decreasing the arcuate length of the land areas 64a, 64a upon relative rotational movement between discs 64b, 64c, as has been previously described. Similarly, while the valve 57 has been described as being of a diverter type wherein a constant flow of fluid from line 60 is selectively diverted into either line 55b or line 58, it is manifest that an equivalent three-way shut-off valve could be provided with equal result. In such an installation the fluid flow through the valve would be stopped during such periods as the lever 63 was in engagement with the land areas 64a, for example, and fluid in line 55b would be exhausted through line 58, thus eliminating the need for the relief line 55a.

It will be seen from the foregoing that there has been provided a novel form of intermittent traction device, wherein a constant force is intermittently applied to a patient. This traction force has been illustrated as being constant even if the patient should move during the period of application of the traction force, provision having been made in the apparatus for immediately and automatically compensating for this movement without decreasing the amount of applied traction pull. It has been further shown how the apparatus includes a coacting mechanism that is operable to raise the patient-supporting device, thus further diminishing the possibility of patient movement during the period in which traction force is being applied. Additionally, it has been shown how the period of traction application can be easily and quickly adjusted to permit shorter or longer periods of traction force.

The modified forms of the invention illustrated in Figures 7 and 8 relate to alternate operating mechanisms that can be employed in lieu of the operating mechanism 50 of Figures 1-6. Accordingly, these modifications would be positioned interiorly of the housing 11 and would operate to exert a traction force on the harness 13 in a similar manner to the operation of the mechanism 50.

Accordingly, in Figure 7 of the drawings there is illustrated a modified form of operating mechanism 80, that includes a rope or cable 81 that is secured at one end thereof to weights 82, while the opposite free end 81a thereof leads away from the operating mechanism 80 for attachment with the harness (not shown). The application of a traction force to the harness is controlled in

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this form of the invention by placing the rope 81 over a series of pulleys 83, 83a, and 84. The pulleys 83, 83a are shown fixed, while the pulley 84 is eccentrically mounted on the projecting shaft 85 of a motor 86. In this manner, when the pulley 84 is in the full-line position of Figure 7, the weights will be slack. As the pulley or sheave 84 rotates, the same will draw up the slack in rope 81 and cause the weights 82 to be raised off the support 87, thus causing a traction force to be exerted against the harness by virtue of the force created by the suspended weights when the mechanism is in the chain-dotted position of Figure 7. As the eccentric rotation of the pulley 84 continues, the weights 82 will be lowered until such time as the same rest on the support 87, at which time no traction pull is exerted on the harness. In the event that the patient to whom the harness is attached should shift the position of his or her body during the application of the traction force, it is manifest that such movement would cause a temporary slack in the rope 81. This slack, however, would be immediately taken up by the effect of gravity on the weights 82 which would cause the same to drop and automatically resume the traction force during the period in which the pulley 84 was in the position indicated by the chain-dotted lines of Figure 7.

While the weights 82 have been shown in Figure 7 of the drawings as being vertically operable to exert a traction pull against the rope 81, it is manifest that the same could be supported by an inclined surface (not shown), with the result that the gravitational movement of the weights 82 would be less severe and result in a lesser degree of pressure variation.

In the modified form of the invention shown in Figure 8 of the drawings, a frame member 91 is pivotally hinged to a sidewall member of the cabinet 11 and has the free end 91a thereof secured to the usual rope 81 that leads to the harness (not shown) and over the pulley 93. For the purpose of supporting the frame member 91 in substantially the position as indicated by full lines in Figure 8 of the drawings, the underside of the frame 91 is shown as being engageable by a driven cam member 94 that is rotated by the usual motor 95, the arrangement being such that when the land area 94a of the cam 94 is engaged with the underside of the frame 91, the weights 96 that are placed on the frame 91 will be completely supported by the land area 94a and the frame 91, with the result that the rope 81 will be slack and no tension will be exerted upon the harness that is secured to the patient. As the cam 94 rotates, the land area 94a will become disengaged from the frame member 91, with the result that gravitational force of the weights 96 will cause the rope 81 to become taut. Whereupon a traction force will be exerted against the harness that is applied to the patient. This traction force will continue until such time as the land area 94a completes the necessary rotation to re-engage the underside of the frame member 91, at which time the frame 91 will be lifted from the chain-dotted position of Figure 8 to the full-line position thereof, and at which time the rope 81 will again become slack.

It will also be seen in this modified form of the invention that the amount of force employed can be adjusted by lateral shifting of the weights 96 with respect to frame 91. Thus, if the weights are placed in the position indicated in full lines in Figure 8, a greater amount of force will be supplied to the rope 81, while it is similarly manifest that if the weights 96 are in the chain-dotted position of Figure 8, the traction force will be somewhat smaller.

Provision also is made in this modified form of the invention for compensating for shifting movement of the patient during the period of the traction forces being applied. Thus, if during the period within which the land area 94a is out of engagement with the frame 91,

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the patient should be moved to cause a slack in the rope 81, the weights 96 would immediately cause the frame 91 to pivot downwardly about the hinged pivot point until such time as the rope 81 again became taut, and the traction force was resumed.

While the modifications of Figures 7 and 8 have been introduced to illustrate the points of modification of the operating mechanism without the exercise of invention, it is equally apparent that equivalent modifications could be resorted to with regard to other component elements of the apparatus without the exercise of invention. For example, while a bed 12 has been indicated as being the preferred form of patient-supporting device, it is equally manifest that a chair or other form of patient-supporting device could be employed in conjunction with the invention with equal facility. Similarly, in Figures 1 to 6 of the drawings, a reduction gear has been described to reduce the rotational advancement of the cam member 64, but it is equally apparent that a hydraulically operated motor could be employed to achieve an equivalent result. By like token, while the traction pull has been indicated in the drawings as being effectuated in a substantially horizontal direction, it is obvious that the pulley housing 28 could be easily modified to produce a traction pull in a vertical direction, such as would be required in the treatment of cervical injuries. Similarly, while a diagrammatic elevation of the operating mechanism 50 has been provided, it is apparent that the operation of this fluid system could be controlled by the employment of restricting and/or relief valves at additional points, in a manner well known in the prior art.

Accordingly, other modifications may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A traction device for use on a patient positioned adjacent thereto, comprising; a housing; tensioning means including an elongated flexible element terminating in a free end adapted for attachment to said patient; guide means for maintaining said free end of the flexible element in given relation with respect to the patient; means operable on said tensioning means for intermittently retracting said flexible element with respect to said guide means, whereby said free end of the flexible element exerts a traction pull on said patient; and take-up means self-operating on said flexible element to maintain substantially uniform tension on the same during traction periods regardless of movement of said patient relatively of said guide means.

2. The device of claim 1 further characterized by the fact that said take-up means include a fluid actuated piston having the free axial end thereof secured to said flexible element and being axially shiftable upon selected application of fluid pressure against the piston head thereof.

3. The device of claim 1 further characterized by the fact that said take-up means include a pair of fixed pulleys; a weight member secured to the free end of said flexible element and a weight supporting platform; said means operable upon said tensioning means including a pulley member eccentrically mounted on said power mechanism between said pulley members in a lower horizontal plane; said eccentric pulley member being positioned to alternately raise weights from said platform upon rotation thereof.

4. The device of claim 1 further characterized by the fact that said take-up means include a lever arm hinged to said frame and having the free end thereof connected to said flexible element; weights positioned upon said lever arm to urge the same downward about said hinge point and create tension in said flexible element; and said means operable upon said tensioning means including a cam member having the land area thereof recurrently engageable with said frame, whereby the downward thrust

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of said lever, as created by said weights, is recurrently interrupted.

5. A traction device for use on a patient positioned adjacent thereto, comprising; a housing; guide means carried by said housing; a tensioning cord received over said guide means and having the free end thereof adapted for attachment to said patient; means for intermittently retracting said cord members over said guide means towards the interior of said housing, whereby said free end of said cord exerts a traction pull of predetermined amount on said patient; and take-up means automatically maintaining said predetermined amount of traction pull on said patient regardless of movement of said patient towards said housing.

6. A therapeutic traction device of the character described, comprising a patient-supporting device; a frame member having at least one roller thereon; a harness adapted to be secured to an extremity of a person positioned on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord, whereby a traction force is applied to said harness; and means for retaining a constant tensing force on said cord during traction periods, whereby patient movement during traction periods will not result in cessation of said traction force being applied to said harness.

7. The device of claim 6 characterized by the fact that the operation of said tensioning mechanism is cycled whereby said cord member is alternately tensed and slackened during attachment of said harness to a person positioned on said patient-supporting device.

8. A therapeutic traction device of the character described, comprising a patient-supporting device; a frame member having at least one roller thereon; a harness adapted to be secured to an extremity of a person positioned on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord, whereby a traction force is recurrently applied to said harness; and means for retaining a constant tensing force on said cord during traction periods, whereby patient movement during traction periods will not result in cessation of said traction force being applied to said harness.

9. A therapeutic traction device of the character described, comprising; a patient-supporting device; a frame member having at least one roller thereon; a harness, adapted to be secured to an extremity of a person positioned on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord, whereby a traction force is applied to said harness in recurrent cycles; and means for retaining a constant tensing force on said cord during traction periods, whereby patient movement during traction periods will not result in cessation of said traction force being applied to said harness; said tensioning mechanism being adjustable as to the duration of said traction period.

10. A therapeutic traction device of the character described, comprising; a patient-supporting device; a frame member having at least one roller thereon; a power mechanism carried by said frame member; a harness, adapted to be secured to an extremity of a person positioned on said patient support; a flexible cord member passed over said roller, and having one free end thereof secured to said harness; a tensioning device, connected to said power mechanism and being secured to the opposed end of said cord member and being recurrently operable by said power mechanism to effectuate tensioning of said cord member whereby said cord member is alternately tensed

and slacked during attachment of said harness to a person positioned on said patient-supporting device; and means connected to said cord for automatically removing slack that occurs therein as a result of patient movement during said recurrent periods of tension, whereby a substantially uniform tension is recurrently exerted by said cord on said harness, notwithstanding shifting of said harness due to patient movement.

11. A therapeutic traction device of the character described, comprising; a patient-support device; a frame member having at least one roller thereon; a lifting mechanism, carried by said frame and being cooperatively engageable with said patient-supporting device to raise a portion thereof; a harness adapted to be secured to an extremity of a person placed on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord whereby a traction force is applied to said harness.

12. The device of claim 11 characterized by the fact that the operation of said tensioning mechanism is cycled whereby said cord member is alternately tensed and slacked during attachment of said harness to a person positioned on said patient-supporting device.

13. A therapeutic traction device of the character described, comprising; a patient-support device; a frame member having at least one roller thereon; a lifting mechanism, carried by said frame and being cooperatively engageable with said patient-supporting device to raise a portion thereof; a harness adapted to be secured to an extremity of a person placed on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord whereby a traction force is applied to said harness; and means for retaining a constant tensing force on said cord during traction periods, whereby patient movement during the application of traction force will not result in a decrease of traction force.

14. A therapeutic traction device of the character described, comprising; a patient-support device; a frame member having at least one roller thereon; a lifting mechanism, carried by said frame and being cooperatively engageable with said patient-supporting device to raise a portion thereof; a harness adapted to be secured to an extremity of a person placed on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord whereby a traction force is applied to said harness in recurrent cycles; said tensioning mechanism being adjustable as to the duration of said traction period.

15. A therapeutic traction device of the character described, comprising; a patient-support device; a frame member having at least one roller thereon; a lifting mechanism, carried by said frame and being cooperatively engageable with said patient-supporting device to raise a portion thereof; a harness adapted to be secured to an extremity of a person placed on said patient-supporting device; a flexible cord member, passed over said roller and having one free end thereof secured to said harness; a power-operated tensioning mechanism, secured to the opposed free end of said cord and being operable to tense said cord whereby a traction force is applied to said harness; said tensioning mechanism including a fluid-actuated piston having the free axial end thereof secured to said cord and being axially shiftable upon selected application of fluid pressure against the piston head thereof.

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