

Feb. 4, 1958

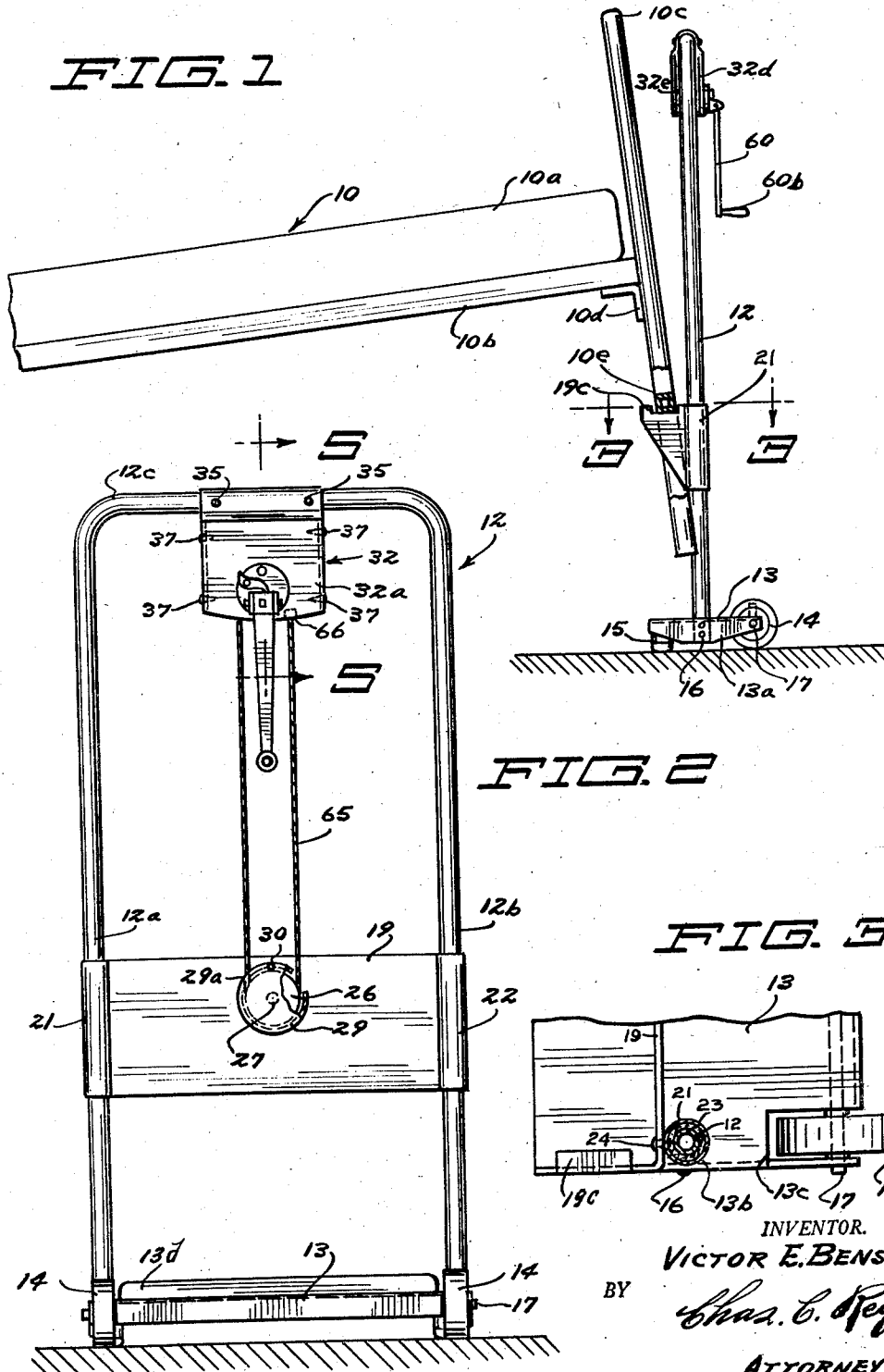
V. E. BENSON
BED LIFTING DEVICE

2,821,722

Filed Sept. 17, 1953

2 Sheets-Sheet 1

FIG. 1



Feb. 4, 1958

V. E. BENSON
BED LIFTING DEVICE

2,821,722

Filed Sept. 17, 1953

2 Sheets-Sheet 2

FIG. 4

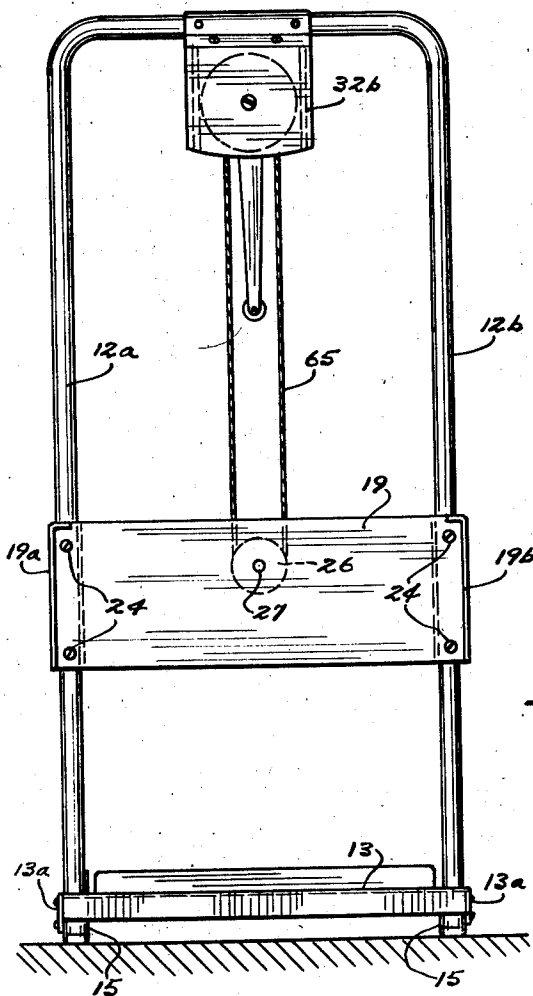


FIG. 7

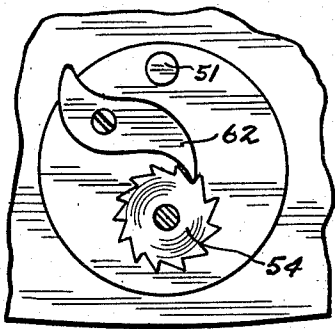


FIG. 5

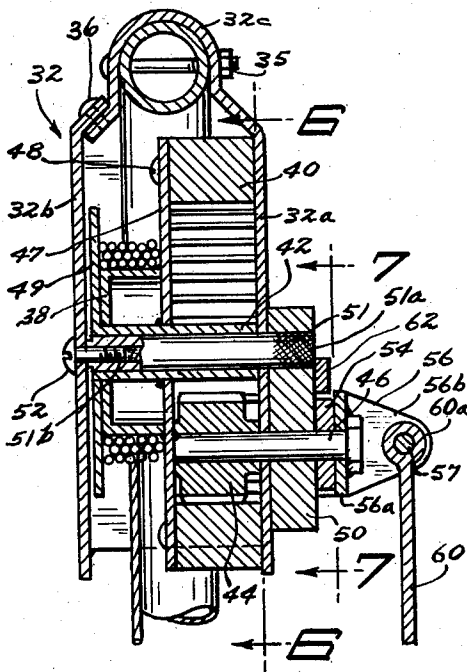
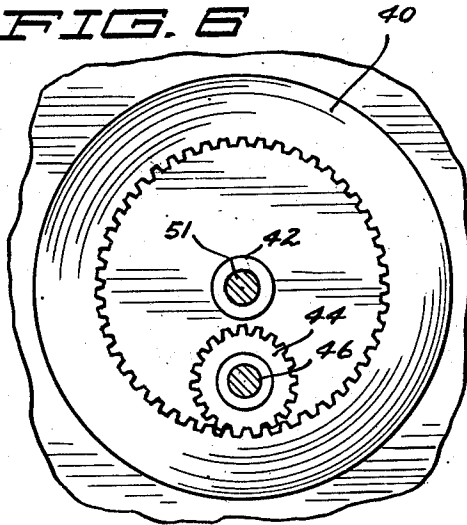


FIG. 6



INVENTOR.
VICTOR E. BENSON
BY *Chas. C. Ref.*
ATTORNEY

1

2,821,722

BED LIFTING DEVICE

Victor E. Benson, Minneapolis, Minn.

Application September 17, 1953, Serial No. 380,841

3 Claims. (Cl. 5—328)

This invention relates to a bed lifting device, and more specifically to a bed lifting device for use in a hospital for raising an end portion of a bed to put said bed into an inclined position.

It is an object of this invention to provide a simple and efficient bed lifting device for raising an end portion of a bed, which device can be easily handled by one person.

It is also an object of this invention to provide a bed lifting device which is easily movable about and which will maintain a stationary position when in operating position.

It is more specifically an object of this invention to provide a bed lifting device comprising a frame, a base member supporting said frame, a member extending transversely of said frame member and movable thereon, and means secured to said frame for easily raising and lowering said last mentioned member.

It is a further object of this invention to provide a bed lifting device comprising a tubular frame, a base member supporting said frame having casters at one side thereof, and means for holding said base in a stationary position at the other side thereof, a member extending across said frame member and movable thereon and having supporting members projecting therefrom, a housing secured to the upper end portion of said frame, a shaft journaled in said housing, a plurality of gears in said housing, means for rotating said gears and said shaft, a cable connecting said second mentioned member and said shaft being windable about said shaft whereby said second mentioned member can be easily raised or lowered on said frame.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view in side elevation of applicant's device in operating position;

Fig. 2 is a view of applicant's device in rear elevation showing some portions broken away and some portions in dotted lines;

Fig. 3 is a partial view taken on line 3—3 of Fig. 1 as indicated by the arrows;

Fig. 4 is a view in front elevation showing some portions in dotted lines;

Fig. 5 is a partial view taken on line 5—5 of Fig. 2, as indicated by the arrows;

Fig. 6 is a partial view taken on line 6—6 of Fig. 5, as indicated by the arrows; and

Fig. 7 is a partial view taken on line 7—7 of Fig. 5, as indicated by the arrows.

Referring to Fig. 1, a portion of a bed 10 is shown. Said bed is of a common and well known construction and disclosed here are a portion of a mattress 10a, a portion of a spring 10b, a foot member 10c, a cross member 10d for supporting said spring and a bracing

2

member 10e extending across the lower portion of said foot member 10c.

Referring to applicant's invention, a frame member 12 is shown. In the embodiment of the invention as here disclosed, said frame member is tubular in transverse section and generally of an inverted U-shape in form. Any suitable material may be used in forming said frame member and the material here disclosed is chromium coated steel tubing. Said frame member 12 comprises side portions 12a and 12b and an upper end connecting portion 12c. Supporting said frame 12 is a base member 13. Said base member is here disclosed as being made of metal sheet material having a generally flat upper surface with a flange 13d along one side thereof and with end portions of decreasing width and having its end portions bent downwardly at right angles to form side members 13a. Respectively disposed at the one side of said member 13 and having its ends journaled in side portions 13a is a shaft 17. Said base member 13 has recesses 13c therein, as shown in Fig. 3, to accommodate casters 14, journaled on said shaft 17. Said casters are preferably made of material which would be noiseless when used, such as fiber or hard rubber. Respectively secured to the other side of said member 13 are supporting members 15. Said supporting members are disposed beneath member 13 and may be secured thereto, as by cementing. Said members 15 are preferably formed of a material, such as rubber, which has a non-slipping surface and which will hold said device from moving when in operating position. Said base member 13 is provided with apertures 13b at each side thereof substantially at its midportion. The lower end portions of members 12a and 12b are disposed through apertures 13b and are secured to side members 13a respectively, as by headed and nutted bolts 16.

Extending transversely of said frame member 12 is a plate member 19. Said member 19 is here disclosed as being made of a metal sheet material of substantial width. Said member 19 has its end portions respectively bent forward at angles of 90 degrees to form projecting support portions 19a and 19b. Said portions 19a and 19b have substantial portions of their outer end portions inclined inwardly and have recesses 19c in their upper end portions. Said recessed portions 19c are formed so as to receive therein the portion of a bed, such as cross member 10e as shown in Fig. 1.

Disposed about members 12a and 12b are tubular members 21 and 22. Said tubular members 21 and 22 are movable on members 12a and 12b respectively, and have spacing members 23 therebetween. Said tubular members are of substantially the same width as member 19. The end portions of member 19 are respectively secured to members 21 and 22, as by the metal screws 24. Secured to the front side of member 19 is a pulley 26. Said pulley is secured to member 19 by a headed and nutted bolt 27. Disposed over said pulley is a housing 29 which is secured to member 19 by a metal screw 30. Said housing 29 has slotted openings 29a in its upper portion.

Secured centrally to an end portion 12c is a substantially rectangular housing 32. Said housing 32 comprises a front plate 32a and a rear plate 32b. Said front plate has an upper end portion 32c which is disposed substantially about member 12c and underlaps member 32b and is secured thereto respectively by headed and nutted bolts 35 and metal screws 36. Said members 32a and 32b respectively have overlapping side portions 32d and 32e. Said side portions are here disclosed as being secured together by metal screws 37. Disposed in housing 32 is an internal gear 40. Said internal gear 40 is secured on a shaft 42 which is disposed centrally in

said housing and substantially transversely thereacross. Said shaft 42 has a bore of substantial diameter there-through. Disposed in gear 40 is a pinion 44 which is secured on shaft 46. Secured to the outer side of gear 40 and overlying the same is a plate member 47 and the same is secured to said gear 40 by metal screws 48. Spaced from said member 47 and secured to the outer end portion of shaft 42 is a plate member 49 and the same is shown as having a somewhat smaller diameter than said member 47. Disposed between members 47 and 49 and secured to shaft 42 is a drum 38. Said shaft 42 and members 47 and 49 and drum 38 rotate integrally with gear 40. Secured to the outer side of plate member 32a is a circular spacing member 50 having a substantial thickness. A bolt 51 is provided having an end portion 51a pressed into member 50 and being disposed through shaft 42 and being interiorly threaded at its other end 51b to receive therein a screw member 52. Said plate members 32a and 32b have openings therein through which members 51 and 52 pass. Shaft member 46 extends outwardly of plate member 32a and through member 50 for a short distance. Secured on shaft 46 outwardly of member 50 is a ratchet wheel 54. Secured to shaft 46, adjacent wheel 54, is a member 56 having a base portion 56a overlying wheel 54 and having a pair of outwardly extending substantially V-shaped portions 56b. A shaft 57 is journaled between the end portions 56b. Journaled on member 57 is a crank 60 having one end portion 60a bored to be disposed about shaft 57 and at its other end having an outwardly extending handle portion 60b. Gear member 44 and ratchet wheel 54 are adapted to rotate integrally with shaft 46 when handle member 60 is turned about. A pawl 62 is provided secured to member 50 and adapted to engage member 54.

A cable 65 is provided having one end portion secured to a clamping member 66 which is fastened in a suitable manner, as by welding, to the lower inner side of plate member 32. Said cable 65 is disposed about pulley 26 and has its other end portion secured to drum 38 so that said cable may be wound about said drum 38, as shown in Fig. 5.

In operation, applicant's device will be positioned adjacent the end portion of a hospital bed which it is desired to raise. Member 19 will be placed in a lowered position and portions 19c will be aligned under cross member 10d. Crank 60 will be turned clockwise to raise member 19 and one end portion of cable 65 will be wound about drum 38, thus lifting said member 19. Pawl 62 will hold ratchet wheel 54 so that member 19 and the bed portion raised thereby may be held in any given position. In view of the arrangement of gears in applicant's device, very little strength is required to operate said device and thus the end portion of a hospital bed can be raised very easily and efficiently by one person. Said device may be left in this position and it will remain in stationary position without any possibility of slipping, being so held by non-slipping members 15. When it is desired to lower the end portion of a bed, pawl 62 will be disengaged from ratchet wheel 54 and crank 60 will be slowly turned counter-clockwise to lower the bed.

Thus it is seen that I have provided a very efficient and durable bed lifting device which is easily wheeled about and operated by a person having a normal amount of strength.

It will of course be understood that various changes may be made in the form, details, arrangement and

proportions of the parts without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A bed lifting device having in combination, a pair of upstanding bars, a member connecting said bars, means for movably supporting said bars, a member engaging said bars and movable thereon, and having spaced portions extending outwardly therefrom for supporting a bed frame, a pulley secured to said last mentioned member, a cable running over said pulley, a member carried by said connecting member, a shaft journaled in said last mentioned member, gears actuated by said shaft, a pawl contacting one of said gears, a drum actuated by said gears, said cable having one end secured to said last mentioned member and having its other end secured to said drum, and means for rotating said shaft whereby said second mentioned member can be moved along said bars and be held in any given position.

2. A bed lifting device having in combination, a frame comprising a pair of upstanding members and a connecting portion therebetween, means for supporting said upstanding members, a vertically disposed plate member movable on said upstanding members, said plate member having spaced supporting arms extending therefrom, a pulley secured to said plate member, a cable running over said pulley, a housing member depending from said connecting portion, a shaft journaled in said housing member, a drum in said housing member secured to said shaft for winding and unwinding said cable thereon, an internal gear secured to said shaft, a pinion disposed in said gear, a second shaft journaled in said housing having said pinion secured thereto, a ratchet secured to said second shaft, a pawl secured to said housing and engaging said ratchet, and a crank journaled in said housing for rotating said last mentioned shaft whereby said plate member may be raised or lowered to any desirable position and held in said position.

3. A bed lifting device having in combination, a frame comprising an inverted U-shaped member, means for movably supporting said frame in upright position, a second member movable vertically on said frame having spaced arms extending outwardly at right angles to the plane of said frame for supporting a bed frame, a pulley journaled to said second member, a housing carried by the upper portion of said frame, a cable passing over said pulley and having one end secured to said housing, a ratchet gear journaled in said housing, a drum rotated by said gear and having the other end of said cable secured thereto, and means for rotating said gear whereby said second member may be raised or lowered to different points substantially the full height of said frame to support said bed frame at different points of said height.

References Cited in the file of this patent

UNITED STATES PATENTS

608,619	McKnight	Aug. 9, 1898
923,525	Hopkins	June 1, 1909
1,275,751	Riopelle	Aug. 13, 1918
1,277,712	Germond	Sept. 3, 1918
1,630,792	Hahn	May 31, 1927
1,789,025	Shepard et al.	Jan. 13, 1931
2,650,795	Bell	Sept. 1, 1953

FOREIGN PATENTS

19,861	Switzerland	Aug. 11, 1899
--------	-------------	---------------