June 22, 1954 J. TALLMAN 2,681,454

VERTICALLY ADJUSTABLE BED FRAME

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Fig. 1.

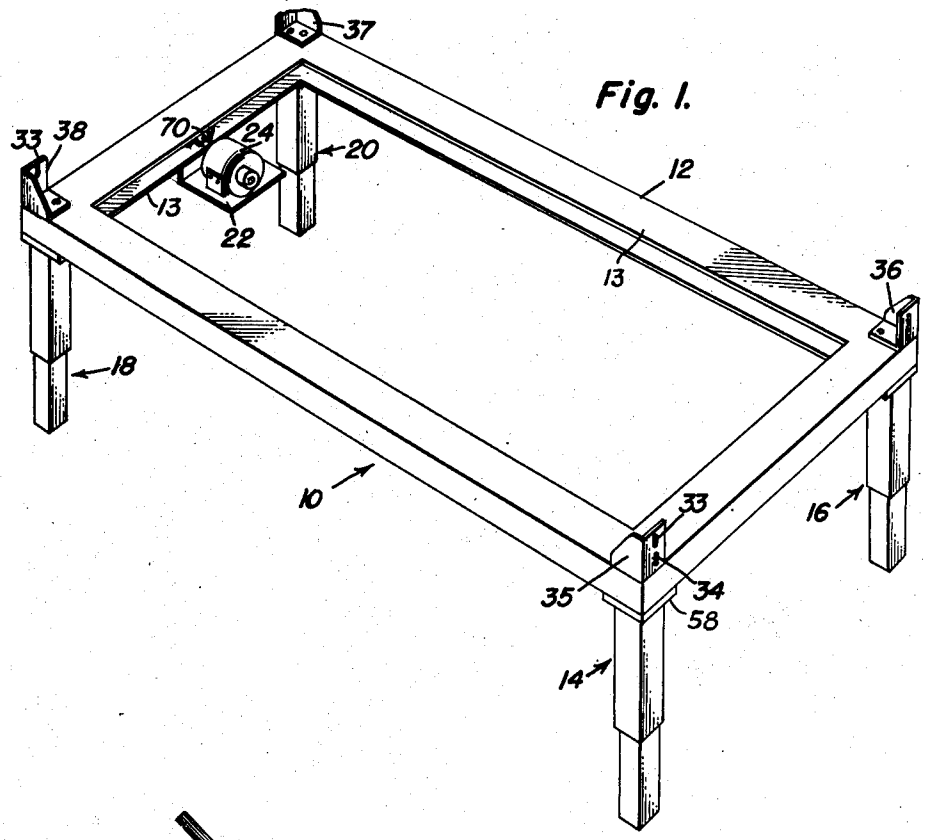
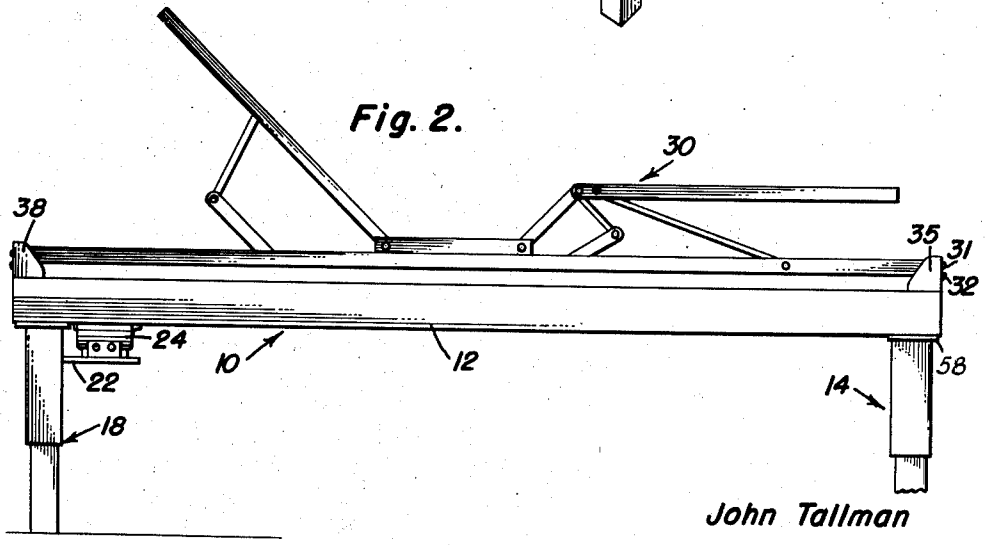



Fig. 2.




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Fig. 3.

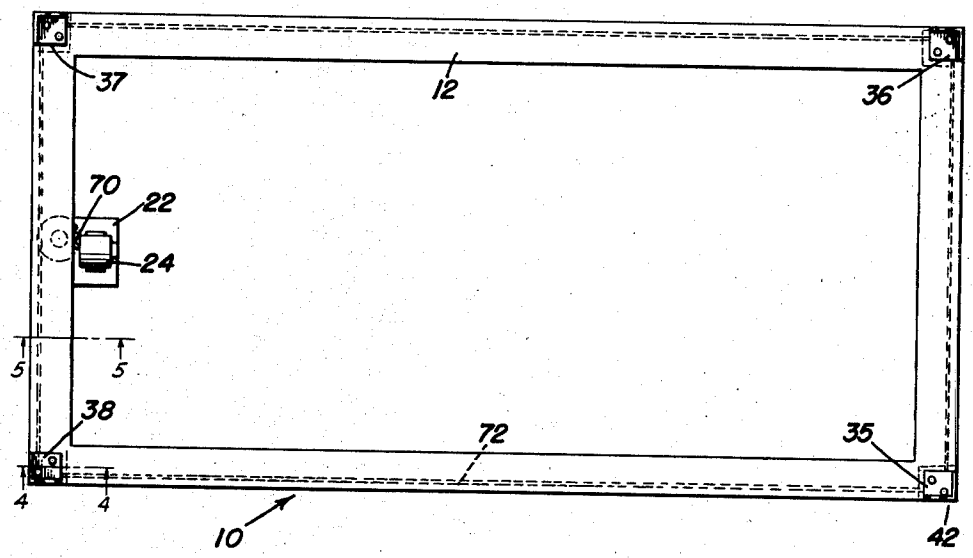



Fig. 4.

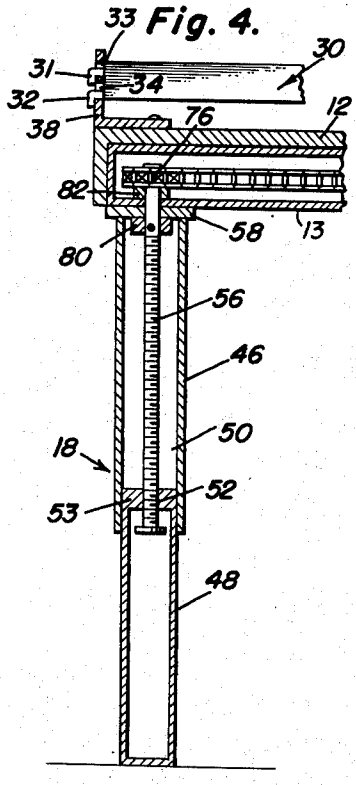
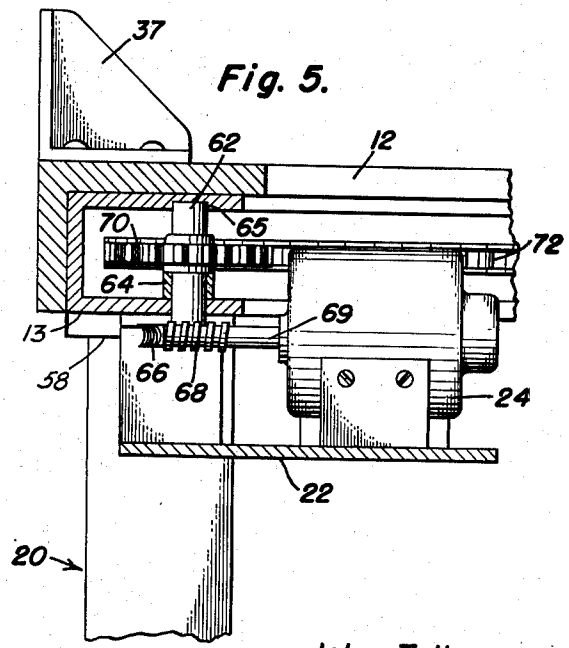



Fig. 5.




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## VERTICALLY ADJUSTABLE BED FRAME

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Application January 15, 1951, Serial No. 205,969

4 Claims. (Cl. 5—63)

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This invention relates to improvements in beds.

An object of the invention is to provide in a bed, whether it is a hospital bed or a bed to be used otherwise, a means whereby the spring and mattress support may be lifted or lowered and held in the lifted or lowered positions so that in moving a patient from a bed to a table or from a table to a bed, it will be unnecessary for the persons handling the patient to lift or lower the patient an appreciable amount.

Another object of this invention is to provide a bed frame for a bed mattress and spring support, which frame is capable of raising and lowering by means of extensible legs, which legs are extended by a screw in each extensible leg operated by a single motor and operated at the same rate of speed and extent so that no unevenness occurs.

Ancillary objects and features of importance will become apparent in following the description of the illustrated form of the invention.

In the drawings:

Figure 1 is a perspective view of the invention;

Figure 2 is an elevational view of a structure similar to that of Figure 1 but showing it used in connection with a standard bed spring support of the adjustable type;

Figure 3 is a top view of the improved bed;

Figure 4 is a vertical sectional view showing the leg construction and a part of the means for extending the leg; and,

Figure 5 is a sectional view showing a part of the motor operating assembly for the chain which is arranged to actuate each of the legs.

As noted in Figure 1 there is a Hollywood bed 10 which has a rectangular spring support frame 12. The frame 12 consists of four inwardly opening angles welded or otherwise fixed together at their corners. The frame 12 is supported on an inwardly opening, rectangular channel frame 13 having legs 14, 16, 18 and 20 at the corners thereof. There is a platform 22 fixed to one of the lower members of one of the channels and a motor 24 is disposed thereon. The channel frame 13, platform 22, motor 24 and legs 14, 16, 18 and 20 comprise the bed frame or bedstead upon which the spring support frame 12 rests. This motor has a means of extending the legs operatively connected therewith so that the upper part of the bed frame may be raised and lowered in accordance with the prerogative of the user, the normal environment for such a bed being a hospital, a house, apartment or the like.

In Figure 2 I have illustrated a standard spring and mattress support 30 of the adjustable type

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which is provided with pairs of pins 31 and 32 at each corner which are adapted to fit in keyhole or other types of slots 33 and 34 which are formed in the brackets 35, 36, 37 and 38. These brackets are provided with bases fastened to the corners of the frame 12 in order to provide a means of holding the pins at the corners of the support 30 thereby releasably mounting the support 30 on the bed 10. When found desirable a rigid spring frame may be disposed directly upon the upper surface of the frame 12 to accommodate a mattress. It is preferable that each bracket have a base and two side walls connected together at right angles and to the base. The slots 33 and 34 are formed in one side wall of each bracket.

Attention is now invited to Figures 4 and 5. In Figure 4 there is a typical leg 18 which is identical in construction to any of the other legs shown in Figure 1, each leg being multi-sided in cross section. The leg 18 consists of an upper section 46 and a lower section 48. These sections are extensibly connected together, preferably by having the lower leg section 48 smaller in cross section than the upper leg section 46 and the lower leg section 48 fitted into the bore 50 of the upper leg section 46.

There is a threaded opening 52 in the upper end wall 53 of the lower leg section 48 to accommodate the screw 56, this screw forming a part of the means of extending and retracting the leg sections and also of locking them in the selected extended or retracted positions.

The upper end of the leg section 46 is fixed to a mounting plate 58 which is connected to the lower part of one of the channels of frame 13.

The platform 22 (Figure 5) accommodating the motor 24 is disposed slightly under the frame 12, and a spindle 62 is mounted vertically at one end in a bearing 64, carried by one of the channels of frame 13 and located in a bearing 65 at the other end. A pinion 66 is fixed to the spindle 62 and is enmeshed with the worm 68, this worm being fixed to the shaft 69 of the motor 24.

There is a drive sprocket 70 fixed to the spindle 62 and a chain 72 extends therearound, being enmeshed with some of the teeth thereof. This chain also extends around a sprocket 76 which is fixed to the upper end of the screw 56 whereby upon actuation of the motor 24 the screw 56 and hence, each screw in each leg is rotated inasmuch as each leg is provided with a similar screw with a sprocket around which the chain 72 extends. Since the screws are fixed to the lower leg section of each leg by the threaded connection in the end

wall 53, the lower leg section is extended or retracted depending upon the direction of rotation of the screws of the bed legs.

In order to hold the screws assembled properly, there is a thrust bearing 80 pinned or otherwise rigidly fixed to the screw near its upper end and lying below the plate 58. Another thrust bearing 82 is disposed above the lower flange of the channel through which the screw 56 passes and is concentrically arranged with the screw 56.

In operation the motor 24 is actuated by a conveniently located switch thereby causing the sprocket 70 to rotate. This rotation is imparted to the chain 72 whereby each of the screws in each of the legs is operated. Operation of the screws causes the legs to be extended or retracted. Hence, the mattress and spring disposed directly on the frame 12 or upon the frame 30 which is carried by the brackets 35, 36, 37 and 38 is raised or lowered in accordance with the direction of rotation of the motor shaft 69, the motor of which is of a standard reversible type.

Having thus described the invention, what is claimed as new is:

1. A bed comprising a rectangular shaped inwardly opening channel frame, extensible legs secured to the corners of said frame, said legs each having an upper section fixedly secured to said frame and a lower section slidingly telescoped in said upper section, a screw extending axially within each leg and each screw having its lower end threadedly engaging a lower section, the upper end of each screw being rotatably secured to and within said channel frame, a sprocket fixedly secured to the upper end of each screw, an endless chain surrounded by said channel frame, said chain being entrained around each sprocket, and means carried by said frame to actuate said chain.

2. For use with a spring and mattress support structure, a bedstead for raising and lowering the support structure with respect to a supporting base, said bedstead comprising a frame having a plurality of legs thereon, each leg including an upper section and a lower section extensibly connected therewith, a screw located in each leg, each screw being threaded in a lower section and rotatably secured to an upper section, means for operating the screw of each leg simultaneously to thereby extend said legs, said last mentioned means comprising a sprocket attached to each screw, a chain entrained around each of said sprockets, and means for actuating said chain to thereby rotate said screw, said frame being comprised of inwardly opening channel members, said chain being disposed within said channel members.



3. For use with a bed having a spring and mattress support structure, a bedstead for raising and lowering said support structure with respect to a supporting base, said bedstead comprising a rectangular frame having legs at the corners thereof, each leg including an upper section and a lower section extensibly connected therewith, a screw located in said sections and threaded in said lower section, means for operating the screw of each leg simultaneously to thereby extend said legs, said last mentioned means comprising a sprocket attached to each screw, a chain entrained around each of said sprockets, and means for actuating said chain to thereby rotate said screws, said last mentioned means comprising a reversible motor to actuate said chain selectively in opposite directions, and a platform carried by said attachment frame supporting said motor, said frame being comprised of inwardly opening channel members, said chain being disposed within said channel members.

4. In combination with a bed having a spring and mattress support structure, a bedstead for raising and lowering said support structure, said bedstead comprising an inwardly opening channel frame secured to and beneath said support structure, a plurality of legs depending from said channel frame, each leg including an upper section and a lower section telescopingly connected therewith, a screw located in said sections and having its lower end threaded in said lower section, the upper end of said screw extending into said channel frame, a sprocket fixedly mounted on the upper end of each screw, a chain entrained around each of said sprockets and being disposed within said channel frame, and means actuating said chain to extend said telescopingly connected legs.

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