

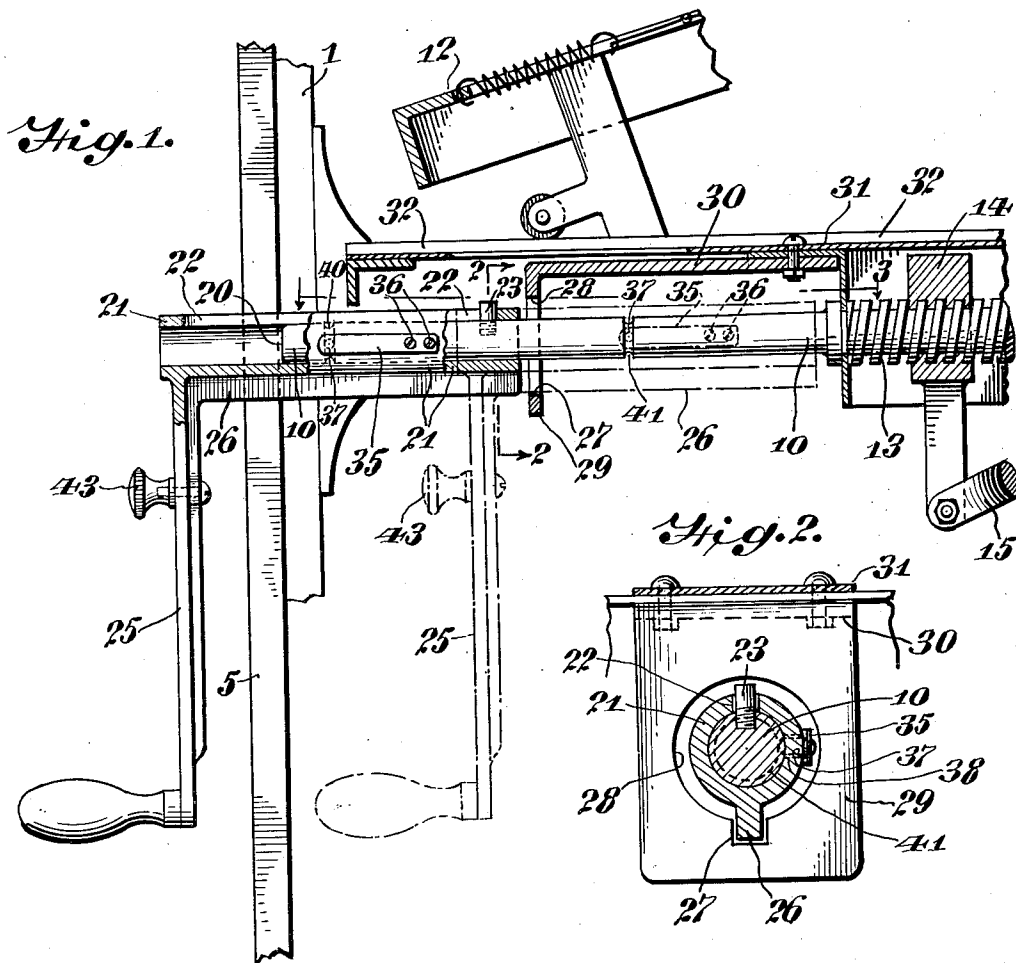
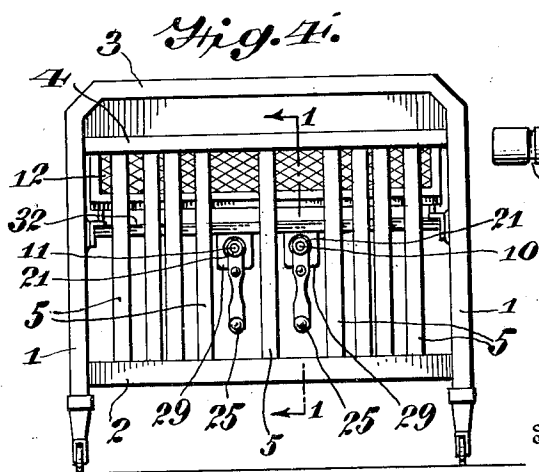
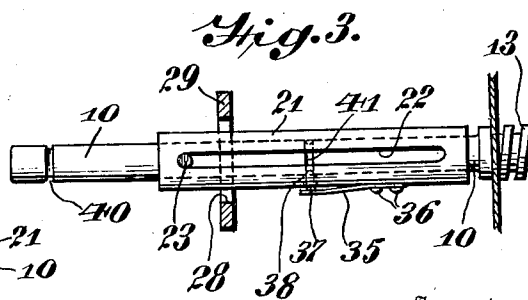
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MEANS FOR ADJUSTING ARTICULATED BEDSPRINGS

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MEANS FOR ADJUSTING ARTICULATED BEDSPRINGS

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Broadly speaking, my invention may be regarded as an improvement relating to springs for use upon beds in hospitals, which springs comprise a plurality of hinged or articulated parts. An example of such spring which is well known and in general use is known as the "Fowler" spring, and the present invention relates specifically to an improvement in the means for effecting adjustment of the hingedly connected or articulated parts of the said spring.

In the construction at present employed for effecting relative adjustment of the hingedly connected parts of these springs a couple of shafts are provided the ends of which project beyond the end of the foot portion of the bed, in consequence of which the cranks, or other means by which the said shafts may be rotated, are located outside of the bed structure and are in the way of persons who may be working in the room where the bed is located—particularly persons who may be caring for a patient who may be occupying the bed.

The general object of the invention is to provide means of novel construction whereby the ends of the shafts may be terminated inwardly of the outer side of the frame at the foot of the bed without interfering in the slightest with the practical operation of the said shafts to effect relative adjustment of the articulated members of the springs.

It also is an object of the invention to provide means adjustably connected with the said end portions and adapted to be moved into positions partially outside of the said frame and into positions inwardly of said frame.

To these and other ends the invention comprehends the construction as hereinafter described in detail and as illustrated in the accompanying drawing, in which I have illustrated one form of a convenient mechanical embodiment of the said invention. However, it is to be understood that the invention is susceptible of embodiment in other forms of construction than that shown, and that changes in the details of the construction may be made within the scope of the claims ap-

pended hereto without departing from the invention or the principle thereof.

In the drawing:

Fig. 1 is a view in vertical longitudinal section of a fragmentary portion of a bed and a spring, the structure of the invention being shown in sectional side elevation, the said view being taken in the plane of the line 1—1 of Fig. 4;

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1;

Fig. 3 is a view in sectional plan taken on the line 3—3 of Fig. 1, and showing the handle in its inward or inoperative position; and

Fig. 4 is a view in end elevation of a bed provided with the invention.

In the drawing I have shown the foot end portion of a bed comprising the legs 1, bottom cross bar 2, and top cross bars 3 and 4. Slats 5 are provided, as usual, between the cross bars 2 and 4. The shafts 10 and 11, for effecting relative adjustment of the articulated or hingedly connected portions of the spring, are of the usual known construction except as they are modified in connection with my invention. I have shown at 12 a portion of one part of a spring which is adapted to be adjusted relatively to other parts thereof not shown.

In Fig. 1 of the drawing I have shown the shaft 10 as provided with a worm 13, which is in engagement with the internally threaded opening through a block 14, whereby upon rotation of the said shaft 10 adjustment of the said block 14 is effected to cause adjustment of the link 15, one end of which has pivotal connection with the said block, as shown. The other or opposite end of the said link, not shown, has connection in the usual manner with a part of the spring structure.

It will be understood that both of the shafts 10 and 11 are identical in construction. Hence the description of the construction as applied to shaft 10 will be equal to the construction as applied to shaft 11. Both of the shafts terminate preferably inwardly of the inner side of the frame at the foot of the bed, as indicated at 20. A sleeve 21 is slidably

or adjustably mounted upon the end portion of the said shaft 10. The said sleeve is of considerable length and is provided with a slot 22, through which a stud 23 projects from the said shaft 10. It will be apparent that while the stud 23 permits adjustment of the sleeve upon the shaft it prevents its removal therefrom and also limits the extent of the back-and-forth or longitudinal adjustment of the sleeve. The outer end of the sleeve is provided with a handle or crank 25. The said sleeve is also provided with a web or fin 26, which constitutes a strengthening means thereof and also constitutes means for engaging a slot at 27 in the lower side of a circular opening 28 in a depending flange portion 29 of a plate 30 secured in turn to a plate 31 mounted upon the frame 32 supported by the legs of the head and foot portions of the bed. The parts 29 and 30 may be regarded and referred to as a bracket. It will be observed that when the inner end of the slot 22 is in engagement with the stud 23 the outer end of the sleeve 21 projects beyond the frame at the foot of the bed. This relationship is clearly shown in Fig. 1 of the drawing. At such time the web 26 is out of engagement with the slot 27 in the depending flange portion 29, so that the said sleeve, together with the shaft 10 to which it is connected, may be rotated. At such time it is desirable that the sleeve shall be held against accidental movement inwardly into or toward the position indicated in dotted lines in Fig. 1 and in full lines in Fig. 3. To that end I have provided a flat spring 35, secured at its inner end by screws 36 to the outer side of the sleeve 21. The opposite or outer end of the said spring is provided with a pin 37 which extends through an opening 38 in the said sleeve and is adapted to engage either the groove 40 near the outer end of the shaft 10 or the groove 41 located further inwardly from the end of said shaft, as shown or indicated in Figs. 1 and 3 of the drawing.

To facilitate the adjustment of the sleeve 21 and the handle 25 thereof inwardly and outwardly upon the shaft 10 I have provided a nurlled finger piece 43 upon the said handle at a point intermediate its ends, as shown. The said finger piece affords a convenient means to be grasped by a person desiring to adjust the sleeve and the handle inwardly or outwardly.

It will be seen that by my invention I have enabled the provision of means whereby the handle or other device for rotating a shaft, the rotation of which effects relative adjustment of the articulated members or sections of a bed spring, may be adjusted inwardly so as to occupy a position or positions inside of the end frame of a bed, as when the said device is not in use, or may be caused to occupy a position partly or partially outside of

said frame when it is desired to use the same to rotate the said shaft to effect the desired relative adjustment of the spring.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In means for relatively adjusting the articulated members of a bed spring, the combination of a rotatable shaft one end of which terminates inwardly of the outer side of an end frame of a bed, means mounted upon the end portion of said shaft for causing rotation thereof, the said means including a sleeve, means to permit the said sleeve to be adjusted inwardly and outwardly upon the said shaft to position the outer portion of the said sleeve either inwardly or outwardly of the outer side of the said end frame, and means operating to lock said sleeve and shaft against rotation when the sleeve is adjusted to its inward position upon the shaft.

2. In means for effecting relative adjustment of the articulated members of a bed spring, the combination of a shaft rotatably supported upon the frame of a bed, one end of which shaft terminates inwardly of the outer side of an end frame of the said bed, which shaft is provided with a stud which projects outwardly therefrom, a sleeve mounted upon the end portion of said shaft and being adjustable longitudinally thereof the said sleeve having an elongated slot through which the said stud projects, the said sleeve having at its outer end a crank by which it together with the said shaft is adapted to be turned and the said sleeve being adapted to be moved into position with its outer end and the said crank located inwardly of the said end frame and also into position with its outer end and the said crank located outside of the said frame.

3. In means for relatively adjusting the articulated members of a bed spring, the combination of a rotatable shaft supported upon the bed frame with one end thereof terminating inwardly of an end frame of the said bed, the said shaft being provided a distance from said end with a stud which projects therefrom, a sleeve mounted upon the end portion of said shaft which sleeve is provided with an elongated slot through which the said stud projects, the said stud permitting longitudinal adjustment of the said sleeve upon the said shaft but preventing removal thereof from the said shaft, the outer end of said sleeve being provided with a handle by which it together with the said shaft may be rotated, and means for preventing rotation of the said sleeve and of the said shaft upon which it is mounted when the said sleeve occupies an inner position upon said shaft.

4. In means for relatively adjusting the articulated members of a bed spring, the combination of a shaft rotatably supported upon the bed frame one end of which terminates

in adjoining relation to but inwardly of the frame of the bed at the foot end thereof, said shaft being provided in spaced relation to the said end with a stud which projects therefrom and with recesses therein in predetermined spaced relation to each other, a sleeve mounted upon the end portion of said shaft adjoining the said end frame which sleeve is provided with a longitudinally extending slot through which the said stud projects and the said sleeve being also provided with a spring having a pin mounted upon a yielding part thereof which pin projects through an opening in the said sleeve and is adapted to engage either of the said recesses in the said shaft, a handle provided upon the outer end of said sleeve whereby the latter together with the said shaft may be rotated, which sleeve is adapted to be adjusted upon said shaft into inner and outer positions in the first of which positions the said handle is located inwardly of the outer side of the said end frame and in the second of which positions the said handle is located outside of the said frame.

5. In means for relatively adjusting the articulated members of a bed spring, the combination of a shaft, means mounted upon one end of said shaft for causing rotation of said shaft, said means being adjustable longitudinally of said shaft, means for preventing rotation of said first named means relatively to said shaft, and means which engages said first named means upon adjustment of the same longitudinally of said shaft into one position thereon to positively lock the said shaft against rotation.

6. In means for relatively adjusting the articulated members of a bed spring, the combination of a rotatable shaft one end of which terminates inwardly of the outer side of an end frame of a bed, a sleeve mounted upon the end portion of the said shaft and adjustable longitudinally thereof, means connecting said sleeve to said shaft whereby upon rotation of the said sleeve rotation of the said shaft is effected, a handle upon the outer end of said sleeve for actuating the same together with said shaft, and means adapted to engage the said sleeve when it is moved inwardly upon said shaft to prevent rotation of the said sleeve and of the said shaft.

7. In means for relatively adjusting the articulated members of a bed spring, the combination of a shaft one end of which terminates inwardly of the outer side of an end frame of the bed, the portion of said shaft adjoining said end being provided with a stud which projects laterally therefrom, and the said shaft being also provided with recesses in predetermined spaced relation to each other, a sleeve mounted upon said shaft which sleeve is provided with a slot extending longitudinally thereof through which the said

stud projects, the said sleeve being adjustable longitudinally upon the said shaft, the said stud and slot cooperating to limit the movements of said adjustments and the said sleeve being provided with a spring mounted upon its outer side and having a pin projecting through an opening in the said sleeve which pin is adapted to engage the outermost of said recesses in the shaft when the sleeve is in its outermost position and the other of said recesses when the said sleeve is in its innermost position, the engagement of the said pin with the said recesses preventing accidental longitudinal movement of the said sleeve, and a handle mounted upon the outer end of said sleeve for rotating the latter together with the said shaft.

8. In means for relatively adjusting the articulated members of a bed spring, the combination of a shaft rotatably supported with one end thereof terminating inwardly of the outer side of an end frame of the bed, a handle for rotating said shaft, which handle is provided with a sleeve slidably engaging the end portion of said shaft which is in adjoining relation to said frame the said handle being adjustable longitudinally of said shaft to inward and outward positions, means for preventing relative rotation of said shaft and handle, and means for yieldingly retaining the said handle in either its inward or outward position.

9. In means for relatively adjusting the articulated members of a bed spring, the combination of a shaft which is rotatably supported, a sleeve mounted on an end and being slidable longitudinally of said shaft, a stop for retaining said sleeve in engagement with said shaft, the said stop also operating to lock the said sleeve and shaft together so that rotation of the sleeve causes rotation of the said shaft, and a handle connected with said sleeve by which the said sleeve and shaft may be rotated, and means operating upon longitudinal sliding movement of the said sleeve into one position upon said shaft to positively lock the said sleeve and shaft against rotation.

10. In means for relatively adjusting the articulated members of a bed spring, the combination of a shaft which is rotatably supported, a sleeve mounted on an end of said shaft, means for permitting slidable movement of said sleeve to inward and outward positions on said shaft, means for locking the said sleeve and shaft together to prevent relative rotation of the sleeve and shaft, a handle having connection with said sleeve for rotating the same together with said shaft, means for yieldingly retaining the said sleeve in either its inward or outward position, and means engaging the said sleeve to positively lock the same and the said shaft against rotation upon movement of the said

sleeve and the said handle to inward position.

11. Means for relatively adjusting the articulated members of a bed spring, which means comprises a shaft rotatably supported with one end thereof terminating inwardly of the outer side of an end frame of the bed upon which the spring is mounted, a sleeve mounted upon the said end of the said shaft, means for permitting inward and outward adjustment of said sleeve on said shaft, means for locking said sleeve and shaft together, a handle having connection with said sleeve for rotating the same together with the said shaft, the said sleeve being provided with a rib extending longitudinally thereof and projecting from a side thereof, a stationary bracket having an opening through which the said sleeve is adapted to be moved, the said opening having a notch in one edge thereof with which the said rib is adapted to engage when the said sleeve is moved inwardly on the said shaft and lock the said sleeve together with the shaft upon which the same is mounted against rotation, and a support for said bracket, said support being mounted upon the bed.

12. Means for adjusting the articulated members of a bed spring, which means comprises a shaft rotatably supported, a stationary bracket having an opening through which an end of the said shaft projects, said opening having a notch in one edge thereof, a sleeve mounted upon the said end of said shaft, and means connecting said sleeve to said end of said shaft, said means preventing rotation of the shaft and sleeve relatively to each other to permit movement of said sleeve longitudinally of said shaft whereby the said sleeve may be moved back and forth through the said opening, said sleeve having means thereon for engaging the notch in the said opening to lock the said shaft and sleeve against rotation, and the said sleeve also having a handle projecting from the outer end thereof by which the said shaft and sleeve may be rotated.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this third day of February, A. D. 1928.

LAURENCE R. DOUGHERTY.