Dec. 26, 1933. B. McINTOSH 1,941,264

OPERATING HANDLE FOR ARTICULATED BEDSPRINGS

Original Filed May 24, 1932

Fig. 1.

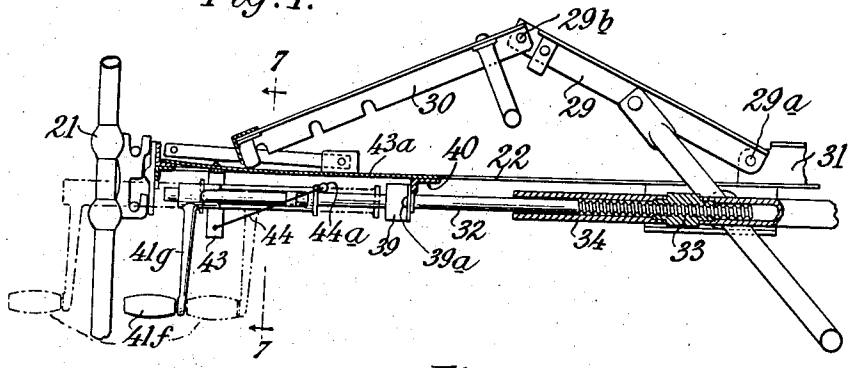


Fig. 2.

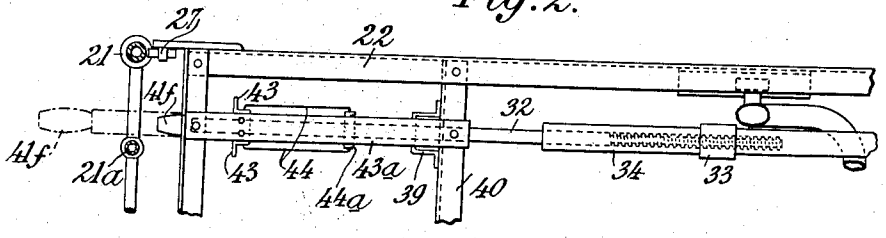


Fig. 3.

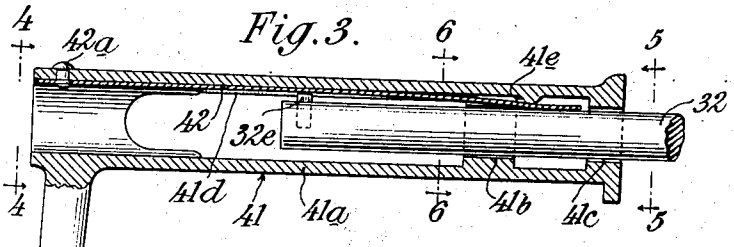


Fig. 4

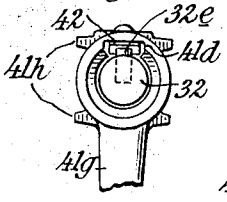


Fig. 5.

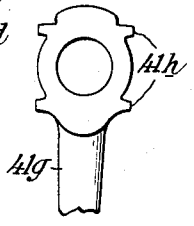
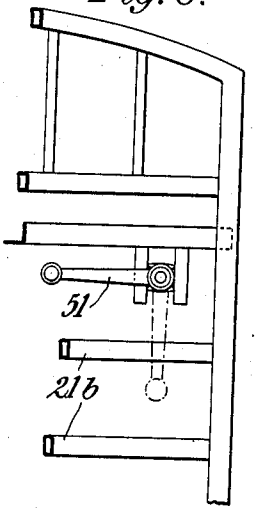


Fig. 8.



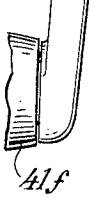


Fig. 7.

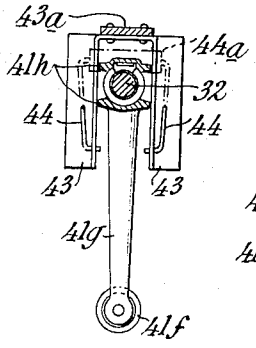
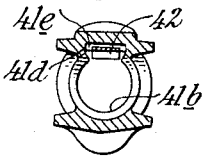


Fig. 6.



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OPERATING HANDLE FOR ARTICULATED BEDSPRINGS

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Original application May 24, 1932, Serial No. 613,156. Divided and this application April 24, 1933. Serial No. 667,518

7 Claims. (Cl. 74—33)

The present invention relates to an operating handle for articulated bed springs and aims to provide certain improvements therein; the present application being a division of my co-pending application, Serial No. 613,156, filed May 24, 1932.

Articulated bed springs as at present constructed usually consist of three sections, namely, a body-supporting section, a thigh-supporting section and a leg-supporting section. These sections are hingedly connected to either the bed frame or to each other, and are adapted for independent movement with respect to the normal plane of the spring or for conjoint movement, depending upon the manner of their cooperative relation and the manipulative means therefor. These manipulative means are either disposed at the side or foot of the bed and frequently provide either unsightly or obstructive projections, and are usually noisy in operation.

According to my present invention the foregoing objectionable features are remedied in a simple and practicable manner by the provision of a novel disappearing handle for controlling the manipulation of the articulated sections and by the provision of means for substantially lessening or deadening the noise incident to the movement of the handle and the jarring of the bed spring and the patient thereon when withdrawing the operating handle into its operative position or returning it to its inoperative position. These features of novelty, as well as others not specifically enumerated, will be apparent from the detailed description which follows, when considered in conjunction with the accompanying drawing, wherein

Figure 1 is a fractional longitudinal section of a bed embodying my invention.

Fig. 2 is a top plan view of the bed section shown in Fig. 1.

Fig. 3 is an enlarged longitudinal section of the operating handle and its manner of mounting upon the operating shaft.

Figs. 4 and 5 are opposite end views of the operating handle as seen when looking in the direction of the arrows 4, 4 and 5, 5, respectively, on Fig. 3.

Fig. 6 is a section taken substantially along the plane of the line 6—6 of Fig. 3.

Fig. 7 is a section taken substantially along the plane of the line 7—7 of Fig. 1.

Fig. 8 is a fractional end elevation at the foot of the bed having horizontal filler elements with the operating handle of my invention applied thereto.

Referring to the drawing, let the numeral 21 indicate the foot of a hospital bed having a bed bottom comprising a side rail 22, said bed bottom being supported by the head and foot portions of the bed through the medium of suitable connecting joints, one of which is shown at 27. The bed frame may be of any desired or preferred construction, and as herein shown in Figs. 1 and 2, the foot member is provided with vertically-extending filler pieces 21*a*.

Mounted upon the bed bottom is an articulated bed spring, of which the thigh-supporting section 29 and leg-supporting section 30 are shown. The thigh-supporting section is pivotally mounted to a fixed section 31, as indicated at 29*a*, and at its other end of the thigh-supporting section is pivotally connected, as indicated at 29*b*, to one end of the leg-supporting section, the other end of which is adapted to ride upon the side rail 22 as the pivoted end of said section is elevated.

As is conventional with beds of the type to which the present invention relates, the articulated sections are adapted for independent or conjoint elevation with respect to the bed frame, and various means have been proposed for accomplishing this by manipulation of one or more operating members from the foot of the bed.

According to the present invention the means which I provide for manipulating the body section (not shown) comprises an operating shaft 32 supported by the bed bottom in substantially longitudinal parallel relation thereto, one end of said shaft terminating inwardly of, but in proximity to, the foot portion 21 of the bed, and the other end being screw-threaded and extending through a nut 33 which is non-rotatably carried by a tubular sleeve 34. For supporting the shaft 32 I provide a cradle 39 which is secured, as indicated at 39*a*, to the depending arm of an angle iron member 40 which extends transversely of the bed bottom. The cradle 39 has a socket and a cutaway end wall which is shown in detail in applicant's co-pending application, whereby the shaft 32 is supported in a manner which permits a limited rocking movement in a vertical plane and a holding thereof against longitudinal movement.

At the foot end of the shaft 32 there is mounted an operating handle 41 having a bearing part 41*a* longitudinally slidable upon the shaft. The bearing part 41*a* of the handle has a cross-sectional contour which can be best determined from an inspection of Figs. 4, 5 and 6, it being apparent that the normal inner diameter of said bearing part is substantially greater than the diameter of the shaft 32. At the rear or inner end of said bearing part,

however, the internal diameter thereof is reduced, as indicated at 41*b* and 41*c*, whereby there is provided a true bearing for the handle upon the shaft. Within the bearing part 41 of the handle is a longitudinally-extending groove 41*d* which extends for the major length of the handle and terminates in an abutment 41*e* directly beyond the bearing 41*b*, it being noted that the groove 41*d* also extends through the bearing 41*b*. Within said groove is disposed a flat leaf-spring 42 which is riveted at one end to the handle, as indicated at 42*a*, the other end of said spring being free and extending beyond the abutment 41*e*. The shaft 32 at its outer end is provided with a radially-extending projection 32*e* which is of a height to normally press against the leaf-spring 42 and thus provides an additional bearing engagement between the shaft and the handle bearing part 41*a*. It will be noted, however, that the projection 32*e* is of a height not to engage in the major portion of the groove 41*d* and therefore does not normally lock the handle upon the shaft for unitary rotation, such locking engagement being only provided when the bearing portion 41*a* of the handle is withdrawn outwardly upon said shaft or to the left, as viewed in Figs. 1 to 3, whereupon the projection 32*e* will ride into the groove portion of the bearing 41*b* and be stopped by the abutment 41*e*. When in such engagement the handle and the shaft will be locked together for unitary rotation. The handle 41 when in said outermost position upon the shaft 32 will have its operating arm 41*g* and gripping portion 41*f* disposed beyond or outwardly of the foot portion of the bed and free for manipulative rotation. To guide the handle 41 in its movements inwardly and outwardly upon the shaft and to normally maintain it in proper relation with respect to the shaft when the handle is pushed inwardly of the foot portion of the bed, the bearing portion 41*a* of the handle is formed with lateral ribs 41*h* which engage between a pair of depending arms 43 suitably supported upon a protecting strip 43*a* secured upon the bed bottom. These arms 43 are located at such position with respect to the foot portion of the bed that when the handle is pulled outwardly to the limit of its outward movement upon the shaft it will clear said arms and thus be free to rotate with the shaft as a unit. Pivotally mounted on the arms 43 and normally extending over the top of the shaft 32 is a bail-like member 44, the bight or transverse portion of which is provided with a piece of rubber tube 44*a* which functions to deaden the impact and the noise of the handle when the latter is pushed inwardly upon the shaft. The bail-like member 44, however, is mounted so that it can be raised upon the top surface of the bearing handle 41*a* and permit the latter to be extended or moved farther inwardly along the shaft 32 and beyond the arms 43, in which position the handle will again be free for rotative movement with relation to the shaft, and advantage is taken of this to tie the handle against the bottom of the bed spring in the course of shipping the same. Obviously a similar handle constructon and arrangement of parts may be employed for operating the thigh and leg-supporting sections 29 and 30, details of such construction being shown in my parent application aforementioned.

Where an operating handle such as 51 is to be used with a bed having horizontal or lateral filler elements 21*b*, such, for example, as shown in Fig. 8, the handle, instead of having a depending arm which is normally in the plane of the groove 41*d*, said arm may be disposed so as to extend at right angles to said plane, as shown in full line position in Fig. 15. With such arrangement it will be apparent that after an adjustment of a spring section has been made, the arm of the handle is brought into horizontal position and the handle may thereupon be pushed inwardly upon the shaft through the lateral filler pieces at the foot of the bed.

From the foregoing detailed description it is thought that the construction and operation of the present invention will be apparent. However, a few additional words of explanation might be helpful. Hence let it be assumed that it is desired to vary the position of one of the articulated sections. To do this the operating handle 41 which is normally disposed inwardly of the foot portion of the bed, is grasped and pulled outwardly to the limit of its movement to bring the handle and shaft into interlocking engagement. During this movement the projection 32*e* riding against the spring 42 within the handle bearing portion 41*a* will cushion the impact of the projection 32*e* with the abutment 41*e* and will also deaden the sound thereof. The handle and shaft being locked, rotation of the former will rotate the latter, and in so doing will function to either elevate or lower the desired articulated section. The handle 41 is then pushed inwardly upon the shaft, in which movement it is guided by the depending arms 43, and the impact of the engagement of the inner end of the handle is cushioned by the rubber tube 44*a* on the bail 44.

It will thus be seen that I have devised a novel operating handle construction which admirably fulfills the functions for which it is intended, and while I have shown and described a preferred embodiment of my invention, it is to be understood that I do not wish to be limited to the details of construction disclosed, since it will be apparent to anyone skilled in the art that changes may be made therein without departing from the spirit of the invention.

What I claim is:

1. In a bed bottom comprising a spring having an articulated section and means for elevating said articulated section, said means comprising a rotatable shaft and operating means therefor having a part longitudinally slidable on one end of the shaft, means for normally limiting outward and inward movement of the operating means on the shaft, and means for cushioning the impact of said operating means when pulled or pushed to its outward or inward limiting positions respectively on the shaft.

2. In a bed bottom comprising a spring having an articulated section and means for elevating said articulated section, said means comprising a rotatable shaft and operating means therefor having a part longitudinally slidable on one end of the shaft, means for normally limiting outward and inward movement of the operating means on the shaft, and means for cushioning the impact and deadening the sound thereof when the operating means is pulled or pushed to its outward or inward limiting positions respectively on the shaft.

3. In a bed bottom comprising a spring having an articulated section and means for elevating said articulated section, said means comprising a rotatable shaft and operating means therefor having a part longitudinally slidable on one end of the shaft, means for normally limiting outward and inward movement of the operating means on the shaft, means for locking the op-

erating means and shaft together for unitary rotation only when said operating means is at its outward limiting position on the shaft but not at any other positions, and means for normally preventing rotation of the operating means at such other positions thereof on the shaft.

4. In a bed bottom comprising a spring having an articulated section and means for elevating said articulated section, said means comprising a rotatable shaft and operating means therefor having a part longitudinally slidable on one end of the shaft, means for normally limiting outward and inward movement of the operating means on the shaft, means for locking the operating means and shaft together for unitary rotation when said operating means is at its outward limiting position on the shaft but not at any other positions, means for normally preventing rotation of the operating means at such other positions thereof on the shaft, and said means for normally limiting the inward movement of the operating means on the shaft being manually displaceable to permit the operating means to be moved to a position where it can be turned relatively to the shaft.

5. In a bed comprising a spring having an articulated section and means for elevating said section, said means comprising a rotatable shaft terminating inwardly from the foot of the bed, an operating handle for said shaft having a bearing part longitudinally slidable on the foot end of said shaft to bring the handle beyond the foot of the bed, said bearing part of the handle for a greater portion of its length having an internal diameter greater than the shaft and having at its inner end a diameter providing a bearing for the shaft, a spring within said bearing part of the handle, means in proximity to the foot end of the shaft for normally, non-rotatably guiding the handle on the shaft, the shaft at its foot end having a radial projection adapted to bear against said spring and provided an additional bearing for the handle on the shaft, and a groove and an abutment within said bearing part of the handle within which the radial projection on the shaft is adapted to engage and lock the shaft and handle together for unitary rotation when the handle is in its outermost position on the shaft.

6. In a bed bottom comprising a spring having an articulated section and means for elevating said section, said means comprising a rotatable shaft, an operating handle therefor having a bearing part longitudinally slidable on one end of said shaft, said bearing part having an internal longitudinal groove with an abutment therein, means for normally non-rotatively guiding the handle on the shaft, the shaft at its outer end having a radial projection adapted to engage in said groove in the bearing part of the handle only when the latter is in its outermost position on the shaft to lock the shaft and handle together for unitary rotation.

7. In a bed bottom comprising a spring having an articulated section and means for elevating said section, said means comprising a rotatable shaft, an operating handle therefor having bearing part longitudinally slidable on one end of said shaft, said bearing part having an internal longitudinal groove with an abutment therein, a flat spring in said groove and overlying the abutment, means for normally non-rotatively guiding the handle on the shaft, the shaft at its outer end having a radial projection adapted to engage against and flex said spring in said groove in the bearing part of the handle and when the latter is in its outermost position on the shaft to engage in the groove at the abutment to lock the shaft and handle together for unitary rotation.

BURTNETT McINTOSH.