May 14, 1929. L. R. BERRY 1,713,164

HEADREST AND INVALID RAISING MECHANISM FOR BEDSTEADS AND COTS

Filed May 3, 1927 2 Sheets-Sheet 1

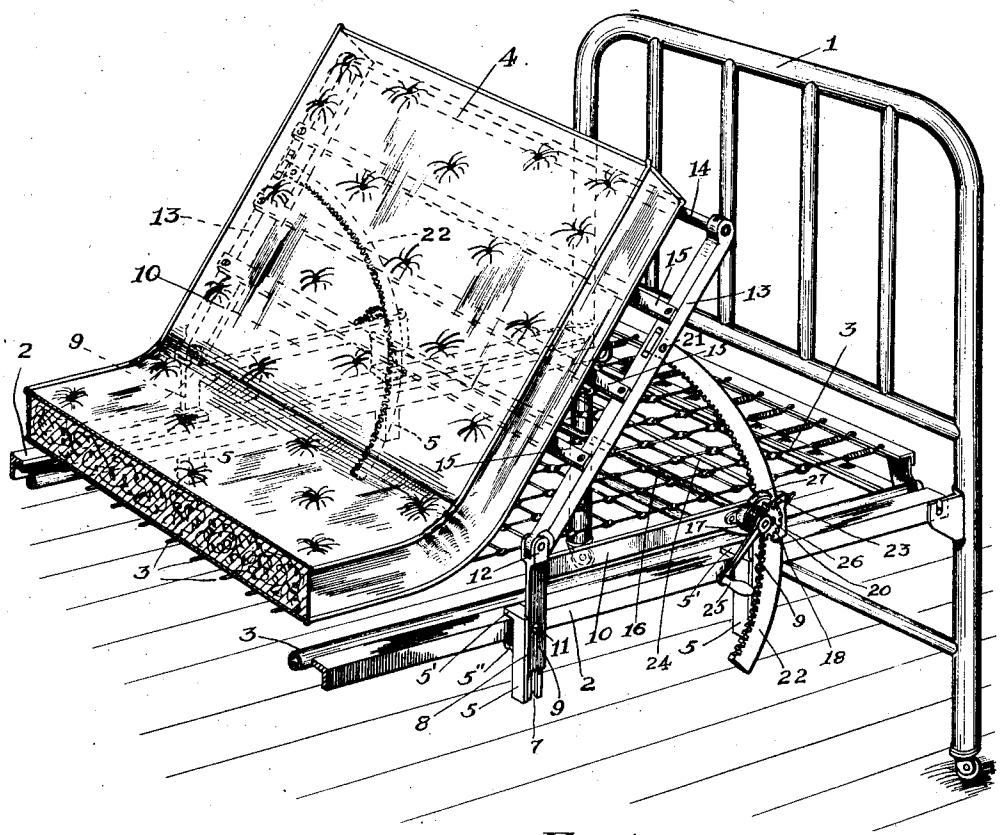


Fig. 1

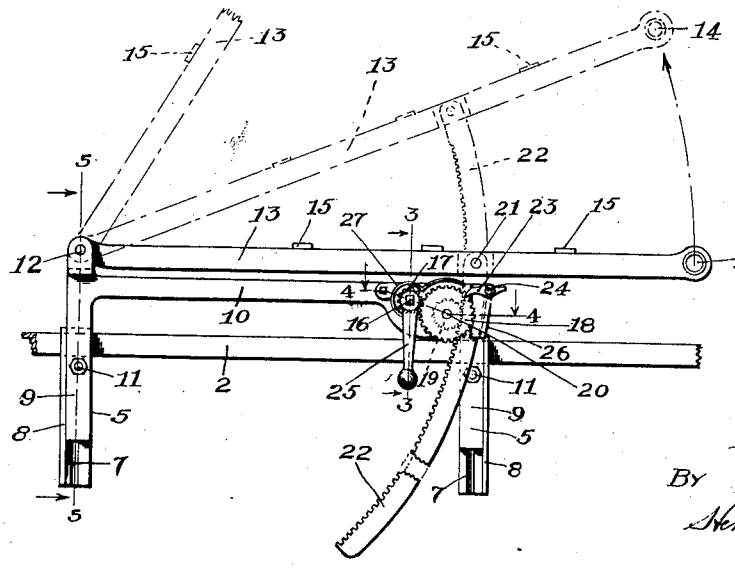


Fig. 2

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HEADREST AND INVALID RAISING MECHANISM FOR BEDSTEADS AND COTS

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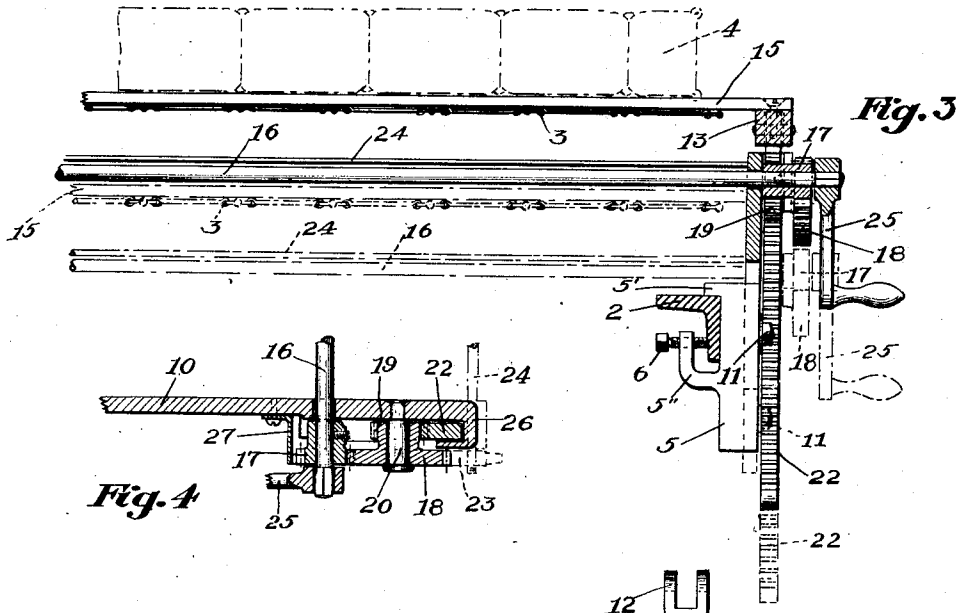


Fig. 3

Fig. 4

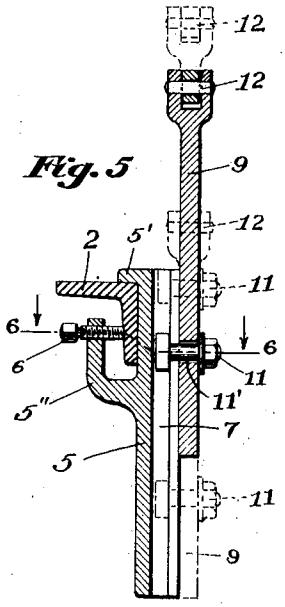


Fig. 5

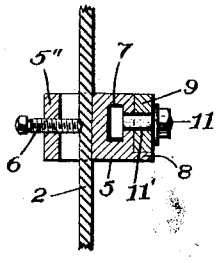


Fig. 6

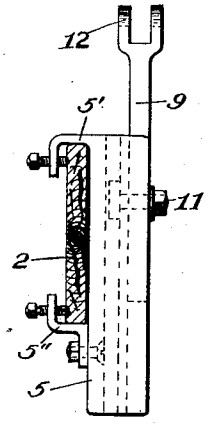


Fig. 7

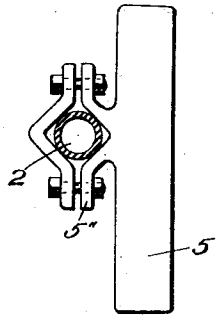


Fig. 8

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UNITED STATES PATENT OFFICE.

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HEADREST AND INVALID-RAISING MECHANISM FOR BEDSTEADS AND COTS.

Application filed May 3, 1927. Serial No. 188,567.

My invention relates to bedstead appliances and particularly concerns improvements in the operating mechanism for adjustable head-rests for invalids and others,—its application being intended more especially for beds and cots.

One of the objects of my present invention is to supply an apparatus which can be quickly and easily installed on a bedstead and one which incorporates in its structure all the essential elements required to gradually raise the head and upper-body portion of a person to any degree of inclination desired, ranging from a flat or prone to a sitting posture.

Another object I have in view is to provide improvements which make my device more nearly universal in its scope and in its application to mattress springs generally, a development suggested by the fact that these springs, as now marketed, vary in thickness or depth measurements to such an extent that to fit properly all types and styles, the head-rest must be made adjustable, vertically, so that when the mattress support is in a flat or horizontal position it will always present a definite and constant relation, with respect to its propinquity, to the spring, regardless of size or type of the latter.

A further object is to provide a convenient and easily-gotten-at operating mechanism. A nurse or attendant may readily accomplish the actuation of the moving parts, but as the use of the device is not limited to the service it renders to invalids, it may be employed by others, such as those addicted to the habit of reading while in bed. For this purpose the device will appeal to many, as the operating crank is quite accessible, the gearing compounded to make it powerful in its action and any change desired in the inclination of the head-rest put into effect while yet the person is reclining in bed.

With these and other objects in view the invention consists in the novel features of construction and arrangement of parts capable of fulfilling the foregoing objects and having characteristics which I will now describe in connection with one specific embodiment which, at the present time, I consider preferable to other possible forms of the invention.

In the accompanying drawings,—

Fig. 1 is a fragmentary, perspective view of a bedstead, mattress and spring, with my apparatus shown in position;

Fig. 2 is a side elevation of the device attached to the side rail of a bedstead;

Fig. 3 is a transverse elevation of the same, partly in section taken on line 3—3, Fig. 2;

Fig. 4 is a section taken on line 4—4, Fig. 2;

Fig. 5 is a section taken on line 5—5, Fig. 2;

Fig. 6 is a section taken on line 6—6, Fig. 5;

Fig. 7 is a view, in end elevation, showing a method of attachment of the device to the rail of a wooden bedstead, and,

Fig. 8 is a view showing an alternative design of clamp for the fixed elements when the bedstead rails are tubular.

In all views, like characters of reference indicate similar parts.

In the drawings, 1 represents the head member of an ordinary metal bedstead and 2 the angle-iron side rails thereof. Disposed between these rails is the mattress spring 3 and lying on the latter is the mattress 4.

On each of the rails 2 and adaptable of being located in various longitudinal positions thereon are rail-blocks 5, each provided with a flange 5′ extending inwardly over the top of the rails 2, and brackets 5″ extending, first inwardly and then upwardly, partially surrounding the vertical leg of the rail. Through these brackets operate the screws 6 which serve to clamp the rail-blocks to the rails.

On the outer face of each rail-block is a T-slot 7 and at one side projects a bead 8 against which the vertical arms 9 of the frame 10 bear.

Operating in the T-slots 7 are square-headed bolts 11 which, passing through holes 11′ in the arms 9, provide clamping means for the latter to its individual and adjacent rail-block.

Making pivotal connection to the frame 10, at the yoked portion 12, is an oscillating side-bar 13, one being provided for each side of the bedstead, and connecting the free ends of these two bars is a tubular member or tie 14. Secured to the side-bars 13 and extending across the width of the bedstead are a plurality of battens or slats 15,—these offering support to the mattress 4.

Extending transversely of the bedstead

and journalled in the frames 10 nearest the head of the bedstead, is a drive shaft 16 on which is fixed the pinion 17. Engaging this pinion, 17, is a gear 18, integral with which is another pinion 19, these two latter being revoluble over the stud 20 fixed in the frame.

Fixed to each side-bar 13, at 21, is a gear-toothed quadrant 22 adapted to engage its mating and adjacent pinion 19. It will be understood, of course, that there are duplicates of the foregoing parts on the opposite side of the bedstead,—both sets working in unison when operating the mechanism. Pawls 23, one of which is fixed on each end of the rod 24, engage, at certain times, the gears 18 and hold the oscillatory mattress platform, composed of the side-bars 13, slats 15 and tubular member 14, in any position to which it may be raised.

A crank 25 is employed to actuate the lifting apparatus and this may be provided with a squared hole to fit the squared ends of the shaft 16, so that by slipping it off one end and on to the other end of the shaft the mechanism may be operated on either side of the bedstead. The object of the shaft 24 is so as to be able to operate or disengage the pawls 23 on that side of the bedstead on which the crank is being operated.

It will be observed that the frames 10 are provided with a bent over end at 26 embracing a space in which the quadrants 22 are housed and held in engagement with the pinions 19. A gear guard 27 protects the operator or the patient from accidental injury to his hands by being enmeshed in the gearing.

Fig. 1 clearly illustrates the method of operating the device. As shown, the raised end of the mattress presents an angle, relative to the horizontal portion, of say approximately 45 degrees. Should it be necessary to still further raise it, the crank is turned clock-wise; if a smaller angle of inclination is desired, first disengage the pawls 23 and turn the crank contra-clock-wise.

In Fig. 3 I show the result, in dot and dash lines, of lowering the frames 10 so that the device may be attached to a bedstead having a shallower depth of mattress spring than that shown in full lines, same figure.

In house-hold mattress springs there is often considerable variation in the depth measurement, due to the several and individual ideas of the spring manufacturers. In most hospital cots these springs are very shallow, or at least project above the side rail of the cot but very little, and so, to cover the entire range, I have constructed the parts of my head-rest with the object in view of making one set of patterns serve the purpose for all depth measurements of springs where the side rails are of angle-iron, as illustrated in Fig. 1; and a large preponderance of manufacturers have adopted this style rail for their bedsteads.

In Fig. 7 I have shown a rail-block member suitable for use with a bedstead having wooden side rails. In this case I prefer two clamps, due to the depth of the rail,—the lower one being detachable, and in Fig. 8 is illustrated a slight modification in the clamping member,—this being applicable to beds having tubular side rails. The frame 10, however, is identical and common in all the different rail-blocks.

In assembling the parts on a bedstead or cot, the rail-blocks 9 are placed on the rails 2, approximately positioned and lightly secured,—the flange 5′ assisting to loosely hold them on the rail while the frame 10 is being put in place. The side bars 13 are then connected to the frame, the slats 15 and member 14 located in their respective positions and after the quadrants are housed and in engagement with their mating pinions, the rail-blocks are firmly clamped by the screws 6, and the apparatus is ready to receive the mattress,—and patient.

I have endeavored to make the structure of my invention as simple as possible, consistent with the procurement of the desirable features disclosed, but I desire to have it understood that the apparatus is only illustrative and the invention may be carried out by other means.

What I claim is:

1. In a device of the character described, adapted to be attached to the side rails of a bedstead, the combination of a plurality of rail blocks, a T slot in each of said rail blocks, means whereby said rail blocks may be detachably secured to the side rails of a bedstead, a frame adapted to connect two of said rail blocks, means operable in said T slots to secure said frame to said rail blocks in various respective vertical positions thereon, means on said rail blocks to hold the ends of said frame always in parallel relation on and relative to said rail blocks when re-positioned vertically thereon, a mattress-supporting platform pivotally connected to said frame, and means to actuate said platform.

2. In a device of the character described, adapted to be attached to the side rails of a bedstead, the combination of a plurality of rail blocks, a T slot in each of said rail blocks, clamping means on said rail blocks whereby they may be secured in various longitudinal positions on and longitudinally of the side rails of a bedstead, a frame having one horizontal and two vertical elements, a bolt operable in each of said T slots and adapted to secure said frame in various respective vertical positions on said rail blocks, a side bar pivotally attached at one end to said frame, mattress-supporting elements secured to said side bar, a gear-tooth

quadrant secured at one end to said side bar, and means to actuate said quadrant.

3. In a device of the character described, adapted to be attached to the side rails of a bedstead, the combination of a plurality of rail blocks, a T slot in each of said rail blocks, a lateral flange projecting inwardly from the top of each of said rail blocks, said flange serving to support said rail blocks on the top of the side rails of a bedstead, a bracket on each of said rail blocks projecting inwardly and upwardly therefrom, a clamp screw in said bracket, serving to secure said rail blocks to the side rail of a bedstead, a frame located on and outwardly of the said rail blocks, a bolt operable in each of said T slots and adapted to secure said frame to said rail blocks in various respective vertical positions thereon, means to hold the outer vertical edges of said frame in constant and parallel relation to said rail blocks, said means consisting of a bead disposed on the side of the respective rail blocks and against which the ends of said frame abut, and a side bar pivotally connected to one end of said frame.

4. In a device of the character described, adapted to be attached to the side rails of a beadstead, the combination of a plurality of rail-blocks, clamping means on said rail-blocks adapted to detachably secure them to the side rails of a bedstead, a frame adjustably secured to two of said rail-blocks, a side bar pivotally secured to said frame, a gear-tooth quadrant secured to and depending from said side bar, a pinion revolubly mounted on said frame and engaging said quadrant, a gear secured to and positioned laterally of said pinion, a drive shaft journalled in said frame, a pinion on said drive shaft, engaging said gear, a duplicate set of the foregoing elements adapted to be positioned on the opposite side of the bedstead, said drive shaft extending, transversely of the bedstead and fixedly secured in the second mentioned pinion in each of the two said respective sets of elements, a pawl shaft journalled in and extending from one to the other of said frames, two pawls on said pawl shaft, each respectively engaging one of said gears, and means to actuate said drive shaft.

In testimony whereof I have affixed my signature.

LEWIS R. BERRY.