

No. 834,477.

PATENTED OCT. 30, 1906.

N. W. KLINE.
INVALID BED.
APPLICATION FILED NOV. 14, 1905.

2 SHEETS—SHEET 1.

Fig. 1

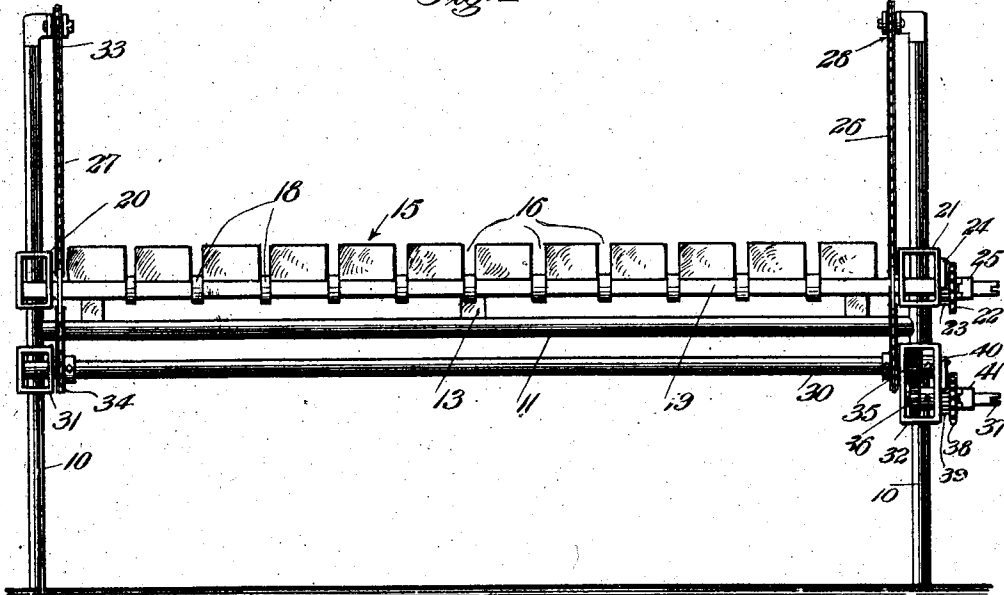
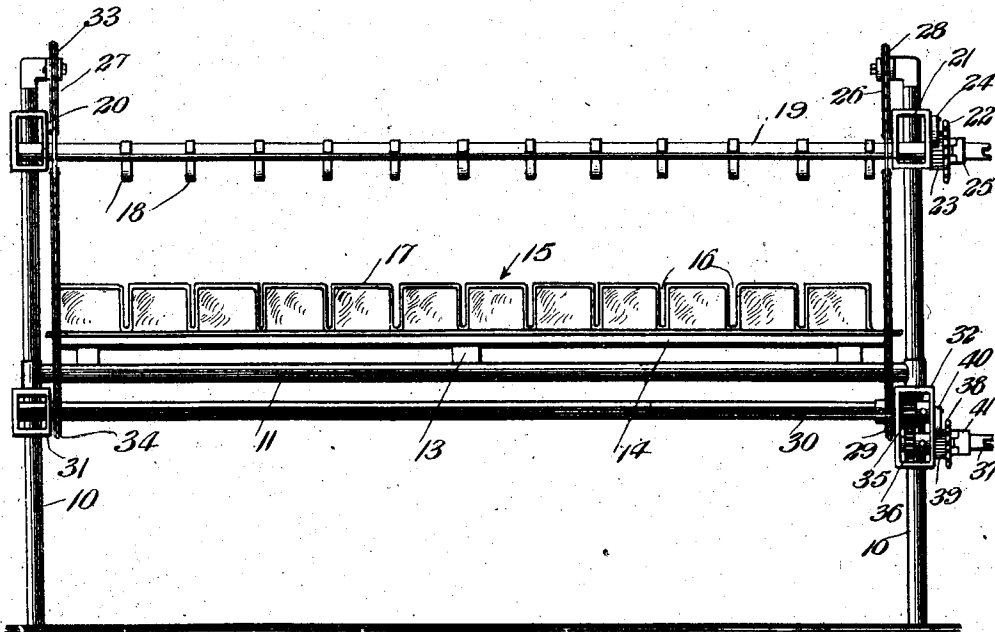


Fig. 2



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UNITED STATES PATENT OFFICE.

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INVALID-BED.

No. 834,477.

Specification of Letters Patent.

Patented Oct. 30, 1926.

Application filed November 14, 1905. Serial No. 287,323.

To all whom it may concern:

Be it known that I, NICK W. KLINE, a citizen of the United States, residing at Longbeach, in the county of Los Angeles and State of California, have invented new and useful Improvements in Invalid-Beds, of which the following is a specification.

The object of my invention is to provide a bed on which a sick person may lie and be supported as by an ordinary bed and to provide mechanism by which the person can be elevated above the supporting portion of the bed, so that the bedclothes can be quickly and easily changed or the supporting portion of the bed can be removed and the bath-tub placed thereunder and the patient lowered into the tub and given a bath without being handled by the hands of the attendant. I accomplish these objects by the mechanism described herein and illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my invalid-bed in its normal condition ready for use, but with the bedclothes removed therefrom. Fig. 2 is a side elevation showing the mechanism for elevating the patient in its raised or elevated position and a sheet in place on the mattress. Fig. 3 is a side elevation with a bath-tub thereunder in section and the mechanism in position for giving a patient a bath. Fig. 4 is an end elevation. Figs. 5, 6, and 7 are details showing construction of parts of the device.

In the drawings the corner-posts 10 are preferably made of iron tubing and are united by the side rails 11 and the end rails 12, also preferably made of iron tubing, thus forming the bedstead-frame proper of iron tubing, as the same is sanitary and easily assembled and of cheap construction. Resting upon preferably the side rails is the spring-frame, which supports the mattress. This spring-frame is composed of the cross-bars 13, which have notches 13' at the ends thereof, as shown in Fig. 7, in which the side rails are received to keep the frame from sliding. To these cross-bars are secured spring-slats 14. Upon these slats rests the mattress 15, which is composed of small square-shaped sections united together by a continuous strip of cloth at the bottom, so as to form what I term a "ventilated" mattress, as the interstices 16 between the sections permit of the circulation of air therethrough when desired. The sections can be made of air-cushions, if desired. The sheet or blanket 17 is tucked into these

interstices, as shown in Fig. 2, and straps 18 also pass through these interstices, as shown in Fig. 1, in which figure the bedclothes which pass under the straps are omitted. These interstices run crosswise of the bed. Straps 18 are fastened to the elevator-rails 19, of which there is one on each side. For the purposes of description I will call that portion of the bed on the right-hand side of the different side views the "head" of the bed and the other end the "foot" thereof, although either end may be the head or foot. At the foot of the bed the elevator-rails are rotatively mounted in bearing-frames 20, which are slidably mounted upon the corner-posts. At the head of the bed the elevator-rail on one side is rotatively mounted in and passes through bearing-frame 21, and exterior the frame is a sprocket-wheel 22, provided with a ratchet 23, which is engaged by dog 24, mounted on the side of the frame to hold the sprocket-wheel against rotating toward the bed—that is, the top from moving inwardly. This sprocket-wheel is loosely mounted on the elevator-rail and is rigidly secured thereto by a sliding clutch 25 when it is desired to lock the sprocket-wheel to the elevator-rail. To this elevator-rail are secured sprocket-chains 26 and 27, there being one at each end. Sprocket-chain 26 passes over a sprocket-wheel 28, rotatively mounted in a bearing secured to the top of the corner-post, and also passes over a sprocket-wheel 29, rigidly secured to the operating-rod 30, which rod is rotatively mounted in a bearing-frame 31, rigidly secured to the corner-post at the foot of the bed, and at the other end is rotatively mounted in a bearing-frame 32, rigidly secured to the corner-post at the head of the bed. Sprocket-chain 27 passes over a sprocket-wheel 33, rotatively mounted on bearings secured to the top of the corner-post, and over sprocket-wheel 34, rigidly secured to the operating-rod 30.

Rigidly secured to operating-rod 30 within the bearing-frame 32 is a pinion 35, which meshes with a like pinion 36, rigidly secured to shaft 37, which shaft is rotatively mounted in said bearing-frame. On shaft 37 is loosely mounted a sprocket-wheel 38, which is provided with a ratchet 39, which is engaged by a dog 40 to prevent the sprocket-wheel from turning to the right. Sprocket-wheel 38 may be locked to shaft 37 by a sliding clutch 41 when desired. On the other side of the bed is an operating-rod 42, which

is rotatively mounted in bearing-frames rigidly secured to the corner-posts. This operating-rod is provided with like sprocket-wheels similarly situated to the sprocket-wheels on operating-rod 30, and one end of this rod passes through the bearing-frame 43, rigidly secured to the corner-post, and is provided with a sprocket-wheel 44, that is connected by chain 45 to sprocket-wheel 38, so that when shaft 37 is rotated both operating-rods will move together at the same rate of speed and in opposite directions.

On the other side of the bed from that shown in Figs. 1, 2, and 3 elevator-rail 19 is mounted in bearing-frames slidable upon the corner-posts and is connected to sprocket-chains (one of which, 47, is shown in Fig. 4) in the same manner as elevator-rail 19, except that at the head of the bed the elevator-rail is mounted like the operating-rod 30, and within the bearing-frame 48 it is provided with a pinion similar to pinion 35, which meshes with a pinion similar to pinion 36, which last pinion is mounted on a shaft 49, which is similar to shaft 37. Exterior the bearing-frame this shaft is provided with a sprocket-wheel 50, loosely mounted on the shaft, and the sprocket-wheel is provided with a ratchet similar to ratchet 39, and on the sliding frame is a dog similar to dog 40, that engages the ratchet to prevent its rotation inwardly, and the sprocket-wheel is locked to the shaft by a sliding clutch 51 similar to the sliding clutch 41. Sprocket-wheel 50 is connected with sprocket-wheel 22 by sprocket-chain 52, so that when the sprocket-wheels of both elevator-rails are locked thereto and one of them is rotated the other will rotate at the same time and at the same rate of speed, but in opposite directions.

In order to cause the supporting-straps 18 to roll up evenly upon the respective elevator-rails, guide-bars 53 are provided, one on each side of the bed, provided with apertures 54 therethrough, through which the straps pass. These apertures register with the interstices in the mattress, so as to keep them in alinement. The projecting ends of the elevator-rails and shafts carrying pinions are provided with slots 55 for the reception of a wrench, whereby the shaft or rail may be rotated.

In Fig. 3 I have shown a bath-tub under the bed.

Instead of sprocket wheels and chains I may use shafts and gears or cables and pulleys.

It will thus be seen that by this construction I have provided mechanism by means of which both elevator-rails may be moved together vertically and their movement stopped at any point and that they will be held in such elevated position, or, if desired, the elevator-rail on one side only may be moved, and that the straps secured to the elevator-

rails provide means for raising and lowering a patient, so that the bedding on the mattress may be changed or so that the mattress and spring-frame may be removed and a bath-tub placed beneath the bed and the patient lowered into the tub without being touched by the hands of the operator.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an invalid-bed means to elevate a patient above the mattress comprising revoluble side elevator-rails mounted in bearings slidably secured to the corner-posts; supporting-straps secured to said rails and passing across the bed; and means to move said rails vertically.

2. In an invalid-bed means to elevate the patient above the mattress comprising side elevator-rails rotatively mounted in bearings slidably secured to the corner-posts; supporting-straps secured to said rails and passing across the bed; and means to move said rails vertically; and means to cause the rotation of said elevator-rails separately or together.

3. In an invalid-bed a frame; bearing-frames slidably mounted on the corner-posts of the bed-frame; elevator-rails rotatively mounted in said bearing-frames; straps secured to said elevator-rails and passing across said bed; and means to rotate said elevator-rails at the same rate of speed and in opposite directions at the same time.

4. An invalid-bed comprising a frame; a mattress-supporting spring-frame removably secured upon said frame; a mattress on said spring-frame, said mattress composed of a plurality of transverse sections with interstices therebetween; bearing-frames slidably mounted at the corner of said bed; elevator-rails mounted in said frame; straps secured to said elevator-rails and passing across said mattress and through the interstices therein; and means to move said elevator-rails vertically.

5. An invalid-bed comprising a frame; a mattress-supporting spring-frame removably secured upon said bed-frame; a mattress on said spring-frame; bearing-frames slidably mounted upon the corner-posts of said bed-frame; elevator-rails rotatively mounted in said bearing-frames; means to rotate said elevator-rails in opposite directions at the same rate of speed, said means being adapted to cause the movement of only one of said elevator-rails when desired; straps secured to said elevator-rails.

6. An invalid-bed comprising a frame; a mattress-supporting frame removably secured upon said bed-frame; a mattress on said frame; bearing-frames mounted upon the corner-posts of said bed-frame; elevator-rails rotatively mounted in said bearing-frame; means to rotate either of said eleva-

tor-rails; and means to rotate both of said elevator-rails at the same time in opposite directions and at the same rate of speed.

7. An invalid-bed comprising a frame; a
5 mattress-supporting frame removably secured upon said bed-frame; a mattress thereon; bearing-frames slidably mounted upon the corner-posts of said bed-frames; elevator-rails mounted in said bearing-frames;
10 means to rotate said elevator-rails in opposite directions at the same time at the same

rate of speed; straps secured to said elevator-rails, said straps passing across said mattress; and means to move said elevator-rails vertically.

In witness that I claim the foregoing I
have hereunto subscribed my name this 7th
day of November, 1905.

NICK W. KLINE.

Witnesses:

G. E. HARPHAM,

MARGARETE C. NICKELESON.