No. 620,800. Patented Mar. 7, 1899.

J. POWLEY.

INVALID BED.

(Application filed Aug. 8, 1898.)

(No Model.) 2 Sheets—Sheet 1.

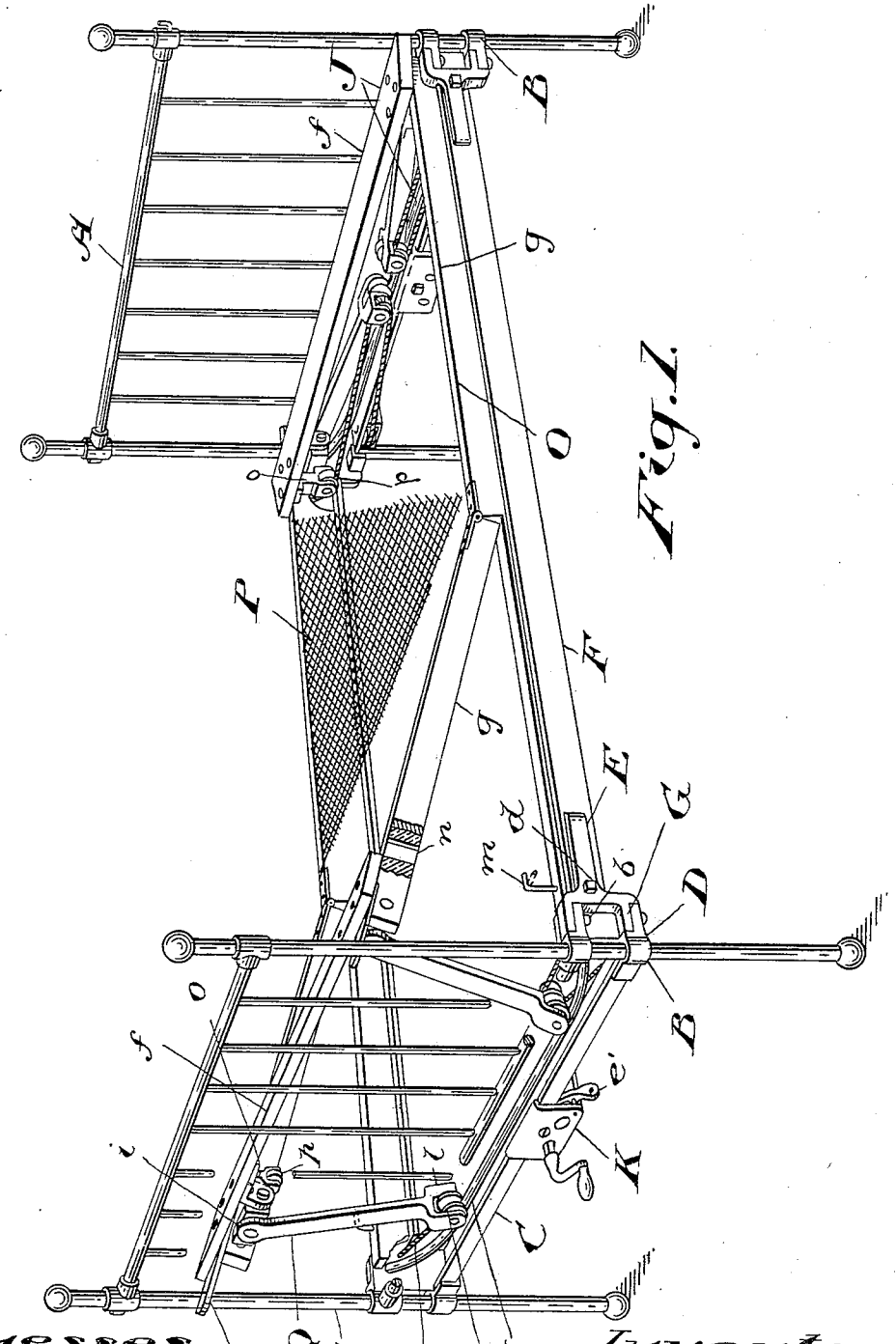


Fig. 1.

Witnesses
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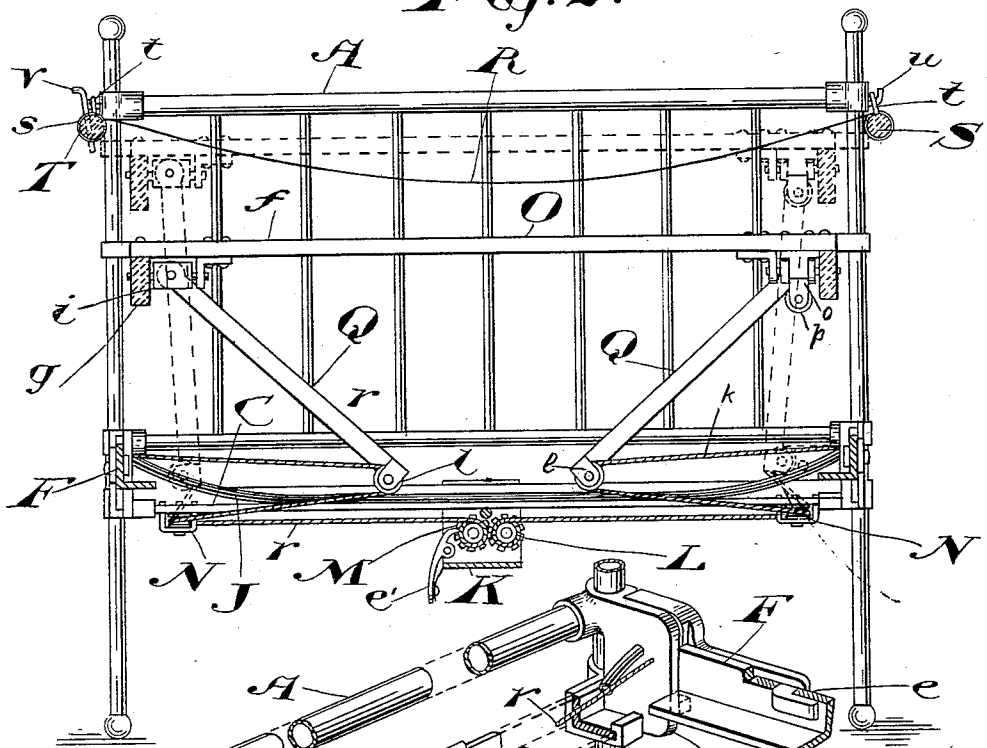
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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.



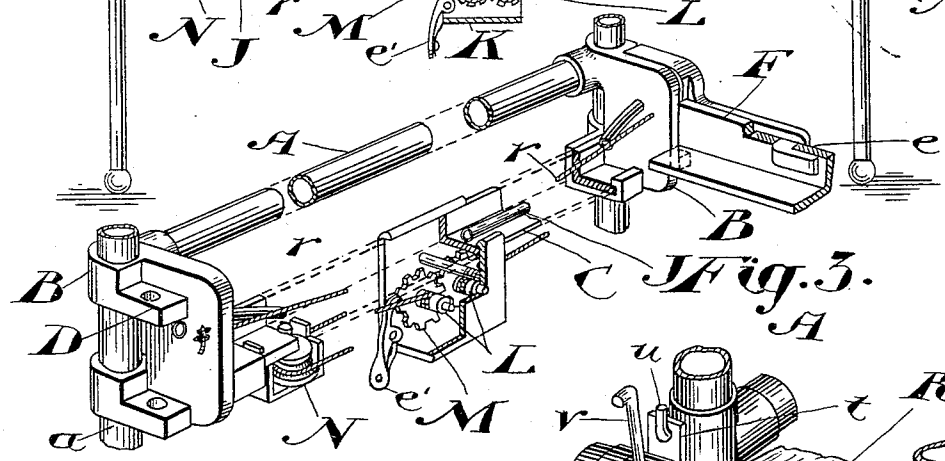


Fig. 3.

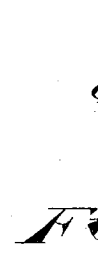


Fig. 4.

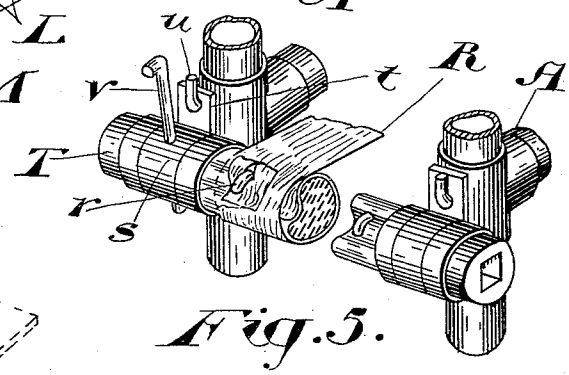


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOSEPH POWLEY, OF GALT, CANADA.

INVALID-BED.

SPECIFICATION forming part of Letters Patent No. 620,800, dated March 7, 1899.

Application filed August 8, 1898. Serial No. 688,086. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH POWLEY, mechanic, of the town of Galt, in the county of Waterloo and Province of Ontario, Canada, have invented certain new and useful Improvements in Invalid-Beds, of which the following is a specification.

The object of my invention is to devise an invalid-bed of neat appearance and strong construction which will permit of any desired position being given the patient and which will permit him to be readily swung on a stretcher while the clothes or mattress is changed; and it consists, essentially, of such details of construction as are hereinafter more specifically described and then definitely claimed.

Figure 1 is a perspective view of my improved bed. Fig. 2 is a cross-section of the bed, partly in elevation, showing the bed partly raised in full lines and completely raised in dotted lines. Fig. 3 is a perspective detail, partly broken away, showing more particularly the construction of the frame and the cord-operating rollers. Fig. 4 is a perspective detail of one of the end castings of the sides of the frame. Fig. 5 is a perspective detail showing the method of supporting and constructing the winding-roller of the stretcher and of connecting the stretcher thereto.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A are the ends of the bed, to the posts of which are connected the castings B. Connecting these castings are the angle-iron cross-bars C. Formed on the castings B are the lugs D, with holes *a* formed therein.

E are the end castings of the side rails F of the bed. These castings have lugs G formed thereon provided with pins *b*, adapted to enter the holes *a*. The castings E are made with inwardly-offset hooks H, which are adapted to pass through the holes *e* in the side rails F and engage the inner surface of the rails. When the castings have been connected to the end rails by engaging their hooks, as described, they may be securely held to the said rails by means of the screw-bolts *d*. By making the end castings detachable, as described, the side rails may be turned to permit of the flat being lowermost, as shown, or uppermost, as is sometimes desirable. Resting upon the flat of each of the angle-iron cross-bars C is a round rod J, forming a track. The ends of this bar are curved upwardly and are rigidly secured to the castings B. Centrally connected to each of the cross-bars C is a frame K, in which are journaled the rollers L, having intermeshing gear-pinions M secured thereto. With one of these pinions engages a spring-actuated dog *e'*, which will permit of the free rotation of the gear in one direction, but will prevent its revolving backward till the dog is released by hand.

N are pulleys secured one at each end of each of the cross-bars C.

O is the frame of the spring-mattress, which is of ordinary construction, with the exception that the ends of the cross-bars *f* thereof are extended beyond the side bars *g* to prevent end motion of the frame. Fingers *f'* are also connected to the cross-bars to engage with the side posts of the ends of the bed to prevent side motion. From the center to the foot of the bed the side bars *g* are divided, and the supplemental side bars *g'* thus formed and hinged at *h* to the head portions of the side bars.

The woven-wire mattress P is connected to the frame O in any desired manner. Journaled in suitable bearings beneath the cross-bars *f* are the blocks *i*, upon the outer sides of which are pivoted the arms Q. The lower ends of these arms have grooved rollers *j* journaled therein, which are adapted to run upon the tracks J. Each arm has likewise a pulley *l* secured to its end.

Cords *k* are wound upon the rollers L. Each cord passes thence around one of the pulleys N, around one of the pulleys *l* upon one of the arms Q, and thence to the side of the frame of the bed, where it is secured. The spindles of the rollers L pass through the frame K and are suitably shaped to engage a crank-handle. Upon revolving the rollers by means of such a crank-handle it is evident that the lower ends of the arms Q at that end of the bed will be drawn outwardly, thus raising the end of the bed to which they are connected. If desired, either end of the mattress may be

raised, so as to give the whole of the bed a slope from the head down toward the foot or from the foot down toward the head.

When it is desired to give the whole of the mattress a slant from the foot toward the head, it is necessary that the side bars *g* and *g'* be securely locked together. Any form of catch may be used for this purpose.

In Fig. 1 I show a rotatable hook *m* connected to each of the side bars *g*, which when its head is parallel with the side bars passes freely through the slot *n* in the supplemental side bar *g'*, and, after being passed through, the hook may be turned crosswise, when the two bars will be securely locked together.

If it be desired to raise the patient from the hips downward, the hooks *m* are disengaged, when the lower portion of the mattress may be raised, as shown in Fig. 1. When the mattress has been so raised, the head portion may be raised also to any desired height. As it is possible when the ends of the mattress are in their lowest position for the pull of the cords *k* to be in a line with the centers of the pulleys *l* and the pivot-points of the arms Q, I prefer to connect to the cross-bars *f*, above each cord *k*, an arm *o*, having a pulley *p* journaled to its end, which presses down the portion of each cord *k* between the side of the bed and the pulley *l*, as shown in Fig. 1, to avoid the difficulty.

To afford means for cooling the patient or for changing the bedclothes I provide a stretcher R, one end of which is securely attached to the roller S and the other provided with holes, so that it may be hooked upon the hooks *r*, secured to the roller T. This roller is journaled within bearings *s*, which are provided with lugs *t*, having holes formed therein, by means of which they may be hooked upon the hooks *u*, connected to or formed upon the sides of the ends of the bed. The ends of the roller S are provided with similar lugs, which are hooked upon similar hooks at the other side of the bed. A hole is formed through one end of the roller and through one of the bearings *s*, so that a pin may be passed through it to hold the roller from rotating.

When it is desired to place the patient upon the stretcher, the mattress is raised to its highest point, as shown in dotted lines in Fig. 2, and the rollers S and T are hooked upon the sides of the bed. The stretcher R is then drawn beneath the patient and engaged with the hooks *r* on the roller T. This roller is then revolved till the stretcher is tightened, when the pin *v* is inserted to prevent the stretcher unwinding. The mattress may now be lowered from beneath the patient and left to cool while the bedclothes are being changed.

What I claim as my invention is—

1. In an invalid-bed, a bed-frame and the cross-bars thereof and a track supported on one of said cross-bars, in combination with a mattress-frame, arms pivoted beneath the end of the mattress-frame, and having their lower ends adapted to engage the track, pulleys on the frame, cords passing around said pulleys and connected to said arms, and means for winding said cords, thus moving the lower ends of the arms on the track, substantially as and for the purpose specified.

2. In an invalid-bed a bed-frame and its cross-bars and a track supported on one of said cross-bars, and having its ends bent upwardly, in combination with a mattress-frame; arms pivoted beneath the end of the mattress-frame, and having their lower ends adapted to engage the track, and means for moving the lower ends of the arms on the track, substantially as and for the purpose specified.

3. In an invalid-bed a bed-frame and its cross-bars and a track supported on one of said cross-bars, in combination with a mattress-frame; arms pivoted beneath the end of the mattress-frame, and having their lower ends adapted to engage the track; a pulley journaled at each side of the bed-frame; two rollers geared together and journaled at the center of the cross-bar; and a cord wound upon each roller, passing around one of the pulleys on the bed-frame, around the pulley on the end of one of the arms, and thence secured to the bed-frame, substantially as and for the purpose specified.

4. In an invalid-bed a bed-frame and its cross-bars and a track supported on one of said cross-bars, in combination with a mattress-frame; arms pivoted beneath the end of the mattress-frame, and having their lower ends adapted to engage the track; a pulley journaled at each side of the bed-frame; two rollers geared together and journaled at the center of the cross-bar; and a cord wound upon each roller, passing around one of the pulleys on the bed-frame, around the pulley on the end of one of the arms, and thence secured to the bed-frame; an arm connected to the mattress-frame above the portion of each cord between its fixed point and the pulley on the arm, and having its end adapted to engage therewith, substantially as and for the purpose specified.

5. In an invalid-bed a bed-frame and its cross-bars and a track supported on one of said cross-bars, in combination with a mattress-frame; arms pivoted beneath the end of the mattress-frame, and having their lower ends adapted to engage the track; a pulley journaled at each side of the bed-frame; two rollers geared together and journaled at the center of the cross-bar; and a cord wound upon each roller, around the pulley on the end of one of the arms, and thence secured to the bed-frame, and a spring-actuated pawl engaging one of the gears on the rollers, substantially as and for the purpose specified.

6. In an invalid-bed, a bed-frame provided with corner-posts and tracks supported by cross-bars, in combination with a mattress-frame having its ends shaped to engage the corner-posts to prevent longitudinal or transverse motion; arms pivoted beneath the ends of the mattress-frame, and having their lower

end adapted to engage the tracks, pulleys on the frame, cords passing around said pulleys and connected to said arms, and means for winding said cords, thus moving the lower ends of the arms upon the tracks, substantially as and for the purpose specified.

7. In an invalid-bed a bed-frame and its cross-bars having tracks thereon supported by said cross-bars; in combination with a mattress-frame formed in two parts one hinged at one end to the center of the other; means for securing them together; arms pivoted beneath each part of the mattress-frame at the ends of the bed, and having their lower end adapted to engage the tracks, and means for moving the lower ends of the arms upon the tracks, the parts being constructed to move the whole mattress-frame or the hinged part thereof, substantially as and for the purpose specified.

8. In an invalid-bed a bed-frame and its cross-bars having tracks thereon supported by said cross-bars, in combination with a mattress-frame formed in two parts one hinged at one end to the center of the other; means for securing the two parts together whereby the two parts may be moved together or the hinged part by itself; arms pivoted beneath each part of the mattress-frame at the ends of the bed, and having their lower end adapted to engage the tracks, and means for moving the lower ends of the arms upon the tracks, substantially as and for the purpose specified.

9. In an invalid-bed a bed-frame provided with corner-posts and hooks secured thereto in combination with a suitably-supported mattress-frame; mechanism for elevating the same; a roller provided with means for hanging it on the hooks at one side of the bed; a stretcher connected at one edge to the said roller and provided with eyes at its other edge; a roller provided with hooks to engage the said eyes and journaled in suitable bearings; a hole in said roller adapted to receive a locking-pin; and means for supporting the bearings from the hooks at the other side of the bed, substantially as and for the purpose specified.

10. In an invalid-bed a bed-frame and a track supported on one of the cross-bars thereof, and having its ends bent upwardly, in combination with a mattress-frame; arms pivoted beneath the end of the mattress-frame, and having their lower ends adapted to engage the track; a pulley journaled at each side of the bed-frame; two rollers geared together and journaled at the center of the cross-bar; and a cord wound upon each roller, passing around one of the pulleys on the bed-frame, around the pulley on the end of one of the arms, and thence secured to the bed-frame; an arm connected to the mattress-frame above the portion of each cord between its fixed point and the pulley on the arm, and having its end adapted to engage therewith, substantially as and for the purpose specified.

Galt, August 2, 1898.

JOSEPH POWLEY.

In presence of—
C. McNAUGHTEN,
WM. S. TURNBULL.