

(No Model.)

2 Sheets—Sheet 1.

W. J., RICHARD H. & RICHARD HENRY DAWSON.
INVALID BED.

No. 542,994.

Patented July 23, 1895.

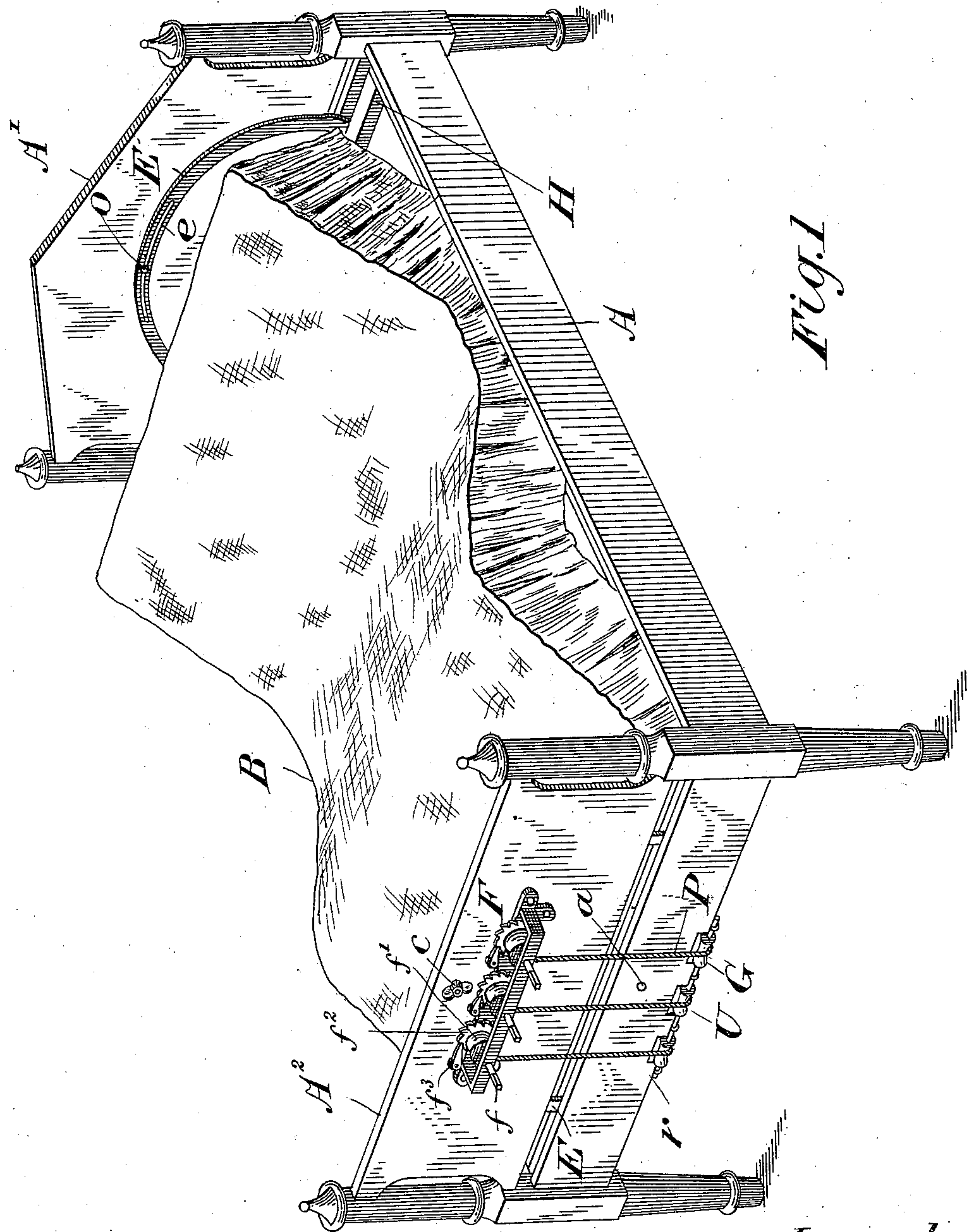


Fig. 1

Witnesses.

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Inventors

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by *Ridout & Maybee*
Attys

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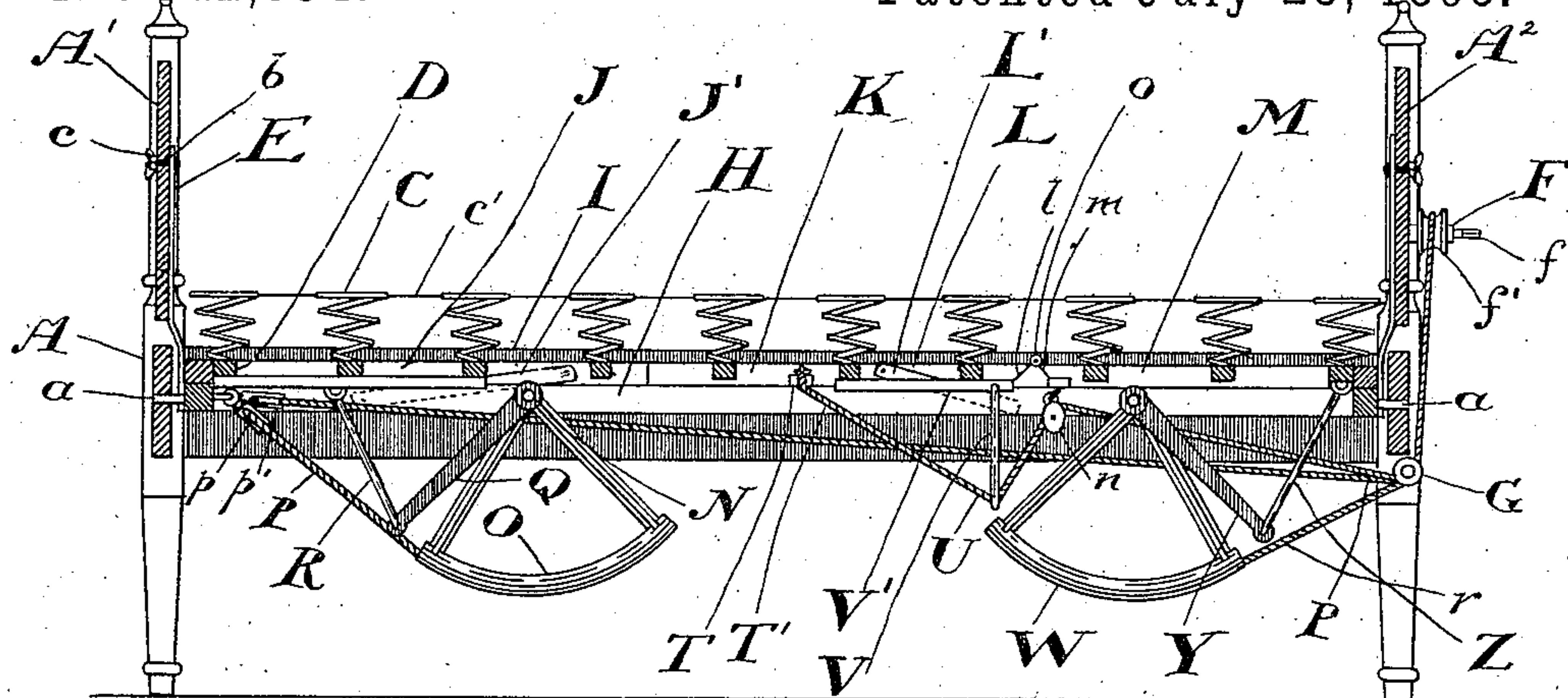


Fig. 2

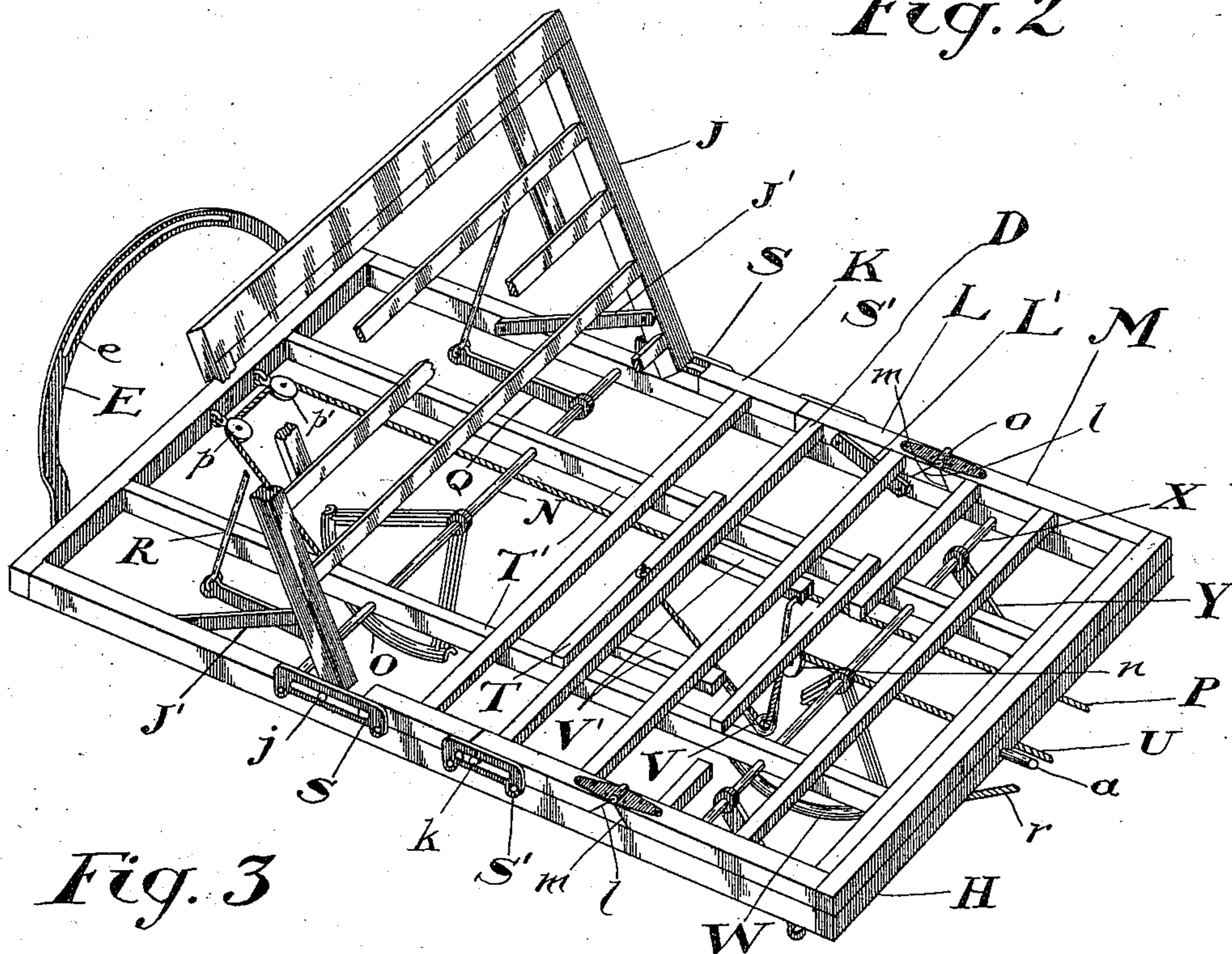


Fig. 3

Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM J. DAWSON, RICHARD H. DAWSON, AND RICHARD HENRY DAWSON,
OF CANNINGTON, CANADA.

INVALID-BED.

SPECIFICATION forming part of Letters Patent No. 542,994, dated July 23, 1895.

Application filed March 4, 1895. Serial No. 540,512. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM JOHN DAWSON, RICHARD H. DAWSON, and RICHARD HENRY DAWSON, all of the village of Cannington, in the county of Ontario 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 the invention is to provide an invalid-bed by means of which the head and upper portion of the body, the knees, or feet of the patient may be raised and then lowered, as may be desired, or by which the patient may be rolled over from side to side; and it consists essentially of a double frame adapted for use in ordinary beds, the lower frame being provided with gudgeons suitably journaled, on which it may rock, and an upper frame for carrying the slats applied to said lower frame, which upper frame is divided into four sections, of which one only is stationary, the movable sections thereof being capable of being raised and lowered by suitable means, the double frame carrying the mattress being also capable of being tilted and held in any desired position when so tilted, substantially as hereinafter more particularly described.

Figure 1 is a perspective view of the invalid-bed. Fig. 2 is a sectional elevation of the same. Fig. 3 is a perspective detail of the double frame of the same.

Like letters of reference indicate similar parts in the various figures.

Fig. 1 shows the position of the invalid-bed in which the head and upper part of the body and the knees of the patient are raised. This is caused by winding up the ropes P and U, seen at the foot of the bed, as hereinafter explained.

A is the main frame of an ordinary bed, of which A' is the head-board of the bed and A² is the foot-board.

B is a mattress resting on top of the springs C, shown in Fig. 2 carried by the upper sectional frame I of the invalid-bed, referred to hereinafter.

E is a slotted semicircle which is fixed to the lower frame H at the head and foot thereof, as seen in Figs. 2 and 3. Each semicircle is slotted at e and is part of the circle, of which the center is at the gudgeons a, which carry the lower frame H.

b is a carriage-bolt, which is squared near its head, so as to prevent it turning in the slot e, the other end of the bolt being threaded and passed through the head-board and bottom-board respectively, the thumbscrew c being screwed onto the threaded portion.

When it is desired to tilt the bed in any desired position on the gudgeons a, these thumb-screws c are loosened and the bed tilted. If it is desired to retain the bed in this tilted position, the thumb screws c are tightened, so as to draw the head of the bolt b against the semicircle E, and thus hold the bed in position.

In the drawings the bed is shown in its normal horizontal position.

At the bottom of the bed, on the foot-board A², the drum-frame F is fixed. This drum-frame is bolted or otherwise rigidly secured to the bottom board of the bed and may be further strengthened by vertical stays, if desired.

f are spindles having bearings in this drum-frame, the ends of which are squared, so as to receive the crank-handle for operating the drums f' which are fixed to these spindles. On the same spindles are fixed the ratchet-wheels f², and the pawls f³ pivoted on the drum-frame are designed to engage with the teeth of the ratchet-wheels. These pawls, of course, hold the cords in place, so as to keep the sections of the bed in the required position.

G are guide-pulleys, over which the cords P, U, and r pass for operating the sections.

In Fig. 2 the double frame of the invalid-bed is shown in its normal position, while Fig. 3 shows a detail of this double frame with the section for the head and upper part of the body in an elevated position. The various letters hereinafter referred to may be found in either or both of these figures.

C are springs of ordinary construction, the tops of which are held in place in the ordinary manner by the small wires c'. These springs are carried by the slats D, which are fixed in the upper sectional frame I.

H is the lower frame, provided with the gudgeons or trunnions a, which are centrally located at the head and foot of the frame and have bearings in the main frame of the bed. The upper sectional frame I, which carries

the slats D, is carried by the lower frame H. This upper sectional frame I is divided into four sections J, K, L, and M, the section J being movable and designed to carry the head and upper part of the body, the section K being fixed and carrying the main weight of the body, the sections L and M being also movable and hinged together, so as to raise the knee of the patient when it is desired, and the section M being also designed to raise the feet when the section L is lowered.

In the section J, which is shown elevated in Fig. 3, the heel of the section is provided with pins *j* adapted to move in the slotted pieces S.

J' are pivoted links pivoted to the lower frame H, as well as to the section J near its heel. These last-mentioned parts are for the purpose of giving a sliding motion to the frame J, (and keeping it in position on the lower frame H,) at the same time to prevent the springs C in the adjoining section K from interfering with those carried by the section J.

N is a spindle journaled in the lower frame H, and O is a quadrant rigidly attached thereto. Q are crank-arms, also rigidly attached to the spindle N, and R are pivoted links pivoted to the end of the crank-arms Q, as well as to the bottom of bars on the slats in the section J.

P is a rope fixed to the quadrant and running through a groove formed on the curved portion of this quadrant. It passes over the pulleys *p* and *p'*, thence under the whole section over one of the guide-pulleys G at the foot of the bed, and then on to one of the drums *f'*, already referred to. By winding this drum *f* the spindle N is caused to rotate, thus raising the crank-arms Q and the pivoted links R, so as to throw the section J into the position indicated in Fig. 3. The pawl *f*³, engaging with the teeth of the ratchet-wheel *f*² (shown in Fig. 1,) keeps this frame in the raised position. By throwing up the pawl and allowing the drum to unwind, this section will of course assume the normal position shown in Fig. 2.

The movable section L for raising the knees is also provided at its heel with the pins *k*, which work in the slots in the slotted pieces S'.

L' are pivoted links attached to the lower frame H, as well as the frame L, near its heel. These links, with the pins *k*, working in the slotted pieces S', cause the section L to slide on top of the lower frame H when it is raised for the purpose of raising the knees of the patient and thus permit the springs C in section L and the adjoining section K to clear one another.

T' are longitudinal braces passing from the head to the foot of the lower frame H, and T is a bar attached to two of these longitudinal braces.

V is a pivoted stay, made preferably of iron in the shape indicated, which is pivoted in the ends of the bars V'.

U is a rope attached to the bar T and also

to the lower part of the pivoted stay V. It passes over the pulley *n* and round the guide-pulleys G and one of the drums *f'* shown at the foot of the bed in Fig. 1. When this rope U is wound on the drum it raises the pivoted stay V and also the two sections L and M where they are hinged together by the hinges *o*. The ends of the frame pieces are beveled off at *l* and *m*, as indicated, to permit the raising of the two adjoining parts of the sections L and M, so as to raise the legs and knees of the patient.

X is a spindle journaled in the lower frame, near the foot thereof, and W is a quadrant similar to that employed for raising the section J. This quadrant is rigidly attached to the spindle X. Y are crank-arms also rigidly attached to the spindle, and Z are links (see Fig. 2) pivoted to the end of the crank-arms Y and to the bottom of a slat near the foot of the section M.

r is a rope attached to the quadrant W, passing round the curved portion of this quadrant within a groove and then around one of the guide-pulleys G to one of the drums *f'* on the foot of the bed. (Shown in Fig. 1.) When this rope *r* is wound on the drum, the spindle X is caused to rock, thus throwing up the crank-arms Y and the pivoted links Z, which are attached to the foot of the frame M. The bottom of the frame M is thus raised, turning on the hinge which connects it with the adjoining section L. In this way the feet of the patient alone may be raised, while the rest of the body is left in a horizontal position. It will thus be seen that we have provided an invalid-bed in which it is possible to raise the head and upper portion of the body alone or to raise the knees and legs of the patient or the feet of the patient, lowering the other portions, if desired, so as to get the body into any required position. By reason of the double frame H and I being carried by the gudgeons *a*, which are centrally located at the head and foot of the double frame of the bed, it may be tilted and held in position by the slotted semicircles E and the carriage-bolts *b*, as already indicated.

It will of course be understood that the construction might be varied by the use of equivalents for some of the parts without departing from the spirit of our invention and that the device may be applied to any ordinary bed, whether made of iron or of wood.

What we claim as our invention is—

1. In an invalid bed, a lower frame H, in combination with section J of the upper sectional frame I; slats D; spindle N; quadrant O; pulleys *p*, *p'*; rope P, and means for winding and holding the same when wound; the crank arms Q; pivoted links R; and means for sliding the heels of section J, on the lower frame H, substantially as described and for the purpose specified.

2. In an invalid bed, a lower frame H, in combination with section J, of the upper sectional frame I; spindle N; quadrant O; pul-

ley p ; rope P ; and means for winding and holding the same when wound; the crank arms Q ; pivoted links R ; and means for sliding the heels of section J on the lower frame

5 H , substantially as described and for the purpose specified.

3. In an invalid bed, a lower frame H , capable of being tilted sidewise and means for holding the same in position when so tilted, 10 in combination with section J , of the upper sectional frame I ; slats D ; longitudinal braces T' ; spindle N ; quadrant O ; rope P ; pulleys p , p' ; guide pulley G ; spindle f , journaled in the drum frame F , and operated by a crank handle; drum f' ; ratchet wheel f^2 ; pawl f^3 ; crank 15 arms Q ; pivoted links R ; pin j ; slotted piece S , and links J' , substantially as described and for the purpose specified.

4. In an invalid bed, a lower frame H , in 20 combination with section L , and section M , of the upper sectional frame I , and the said sections having beveled ends l and m respectively; means for sliding the heels of section L , on the lower frame H ; the hinges o ; slat D ; longitudinal braces T' ; bar T ; bars V' ; pivoted 25 stay V ; pulley n ; rope U ; and means for winding and holding the same when wound, substantially as described and for the purpose specified.

30 5. In an invalid bed, a lower frame H , capable of being tilted sidewise, and means for holding the same in position when so tilted, in combination with section L , and section M , of the upper sectional frame I , and having 35 beveled ends l and m respectively; the pin k ; slotted piece S' ; pivoted links L' ; the hinges o ; slats D ; longitudinal braces T' ; bar T ; bars V' ; pivoted stay V ; pulley n ; rope U ; guide pulley G ; spindle f , journaled in the 40 drum frame F , and operated by a crank handle; drum f' ; ratchet wheel f^2 ; and pawl f^3 , substantially as described and for the purpose specified.

6. In an invalid bed, a lower frame H , in 45 combination with section M , of the upper sectional frame I ; slats D ; spindle X ; quadrant W ; crank arms Y ; links Z ; the rope r ; and means for winding and holding the same when wound, substantially as described and for the 50 purpose specified.

7. In an invalid bed, a lower frame H , capable of being tilted sidewise, and means for holding the same in position when so tilted, in combination with section M , of the upper

sectional frame I , and which is hinged to section L ; slats D ; longitudinal braces T' ; spindle X ; quadrant W ; crank arms Y ; links Z ; rope r ; guide pulley G ; spindle f , journaled in the drum frame F , and operated by a crank handle; drum f' ; ratchet wheel f^2 ; and pawl 60 f^3 , substantially as described and for the purpose specified.

8. An invalid bed comprising the following elements: main frame A , with head board A' and foot board A^2 ; slotted semi-circle E ; carriage bolt b ; thumb screw c ; lower frame H , with gudgeons a ; sections J , K , L and M respectively; of the upper sectional frame I ; beveled ends l and m on sections L , and M ; spindle N ; quadrant O ; rope P ; pulleys p , 65 p' ; crank arms Q ; pivoted links R ; pins j ; slotted pieces S ; pivoted links J' ; pins k ; slotted pieces S' ; pivoted links L' ; slats D , carrying springs C ; bar T ; longitudinal braces T' ; rope U ; pivoted stay V ; bars V' ; 75 pulley n ; hinges o ; quadrant W ; spindle X ; crank arm Y ; links Z ; rope r ; guide pulleys G ; spindles f ; journaled in drum frame and operated by a crank handle; drums f' ; ratchet wheels f^2 ; and pawls f^3 , substantially as described and for the purpose specified. 80

9. An invalid bed comprising the following elements:—main frame A , with head board A' and foot board A^2 ; lower frame H , suitably supported on the main frame; sections 85 J , K , L and M respectively; of the upper sectional frame I ; beveled ends l and m on sections L and M ; spindle N ; quadrant O ; rope P ; pulleys p , p' ; crank arms Q ; pivoted links R ; pins j ; slotted pieces S ; pivoted links J' ; 90 pins k ; slotted pieces S' ; pivoted links L' ; slats D , carrying springs C ; bar T ; longitudinal braces T' ; rope U ; pivoted stay V ; bars V' ; pulley n ; hinges o ; quadrant W ; spindle X ; crank-arm Y ; links Z ; rope r ; 95 guide pulleys G ; spindles f , journaled in drum frame F , and operated by a crank handle; drums f' ; ratchet wheels f^2 ; and pawls f^3 , substantially as described and for the purpose specified.

Cannington, February 21, 1895.

WILLIAM J. DAWSON.

RICHARD H. DAWSON.

RICHARD HENRY DAWSON.

In presence of—

JOHN GORDON,

GEORGE DAWSON.