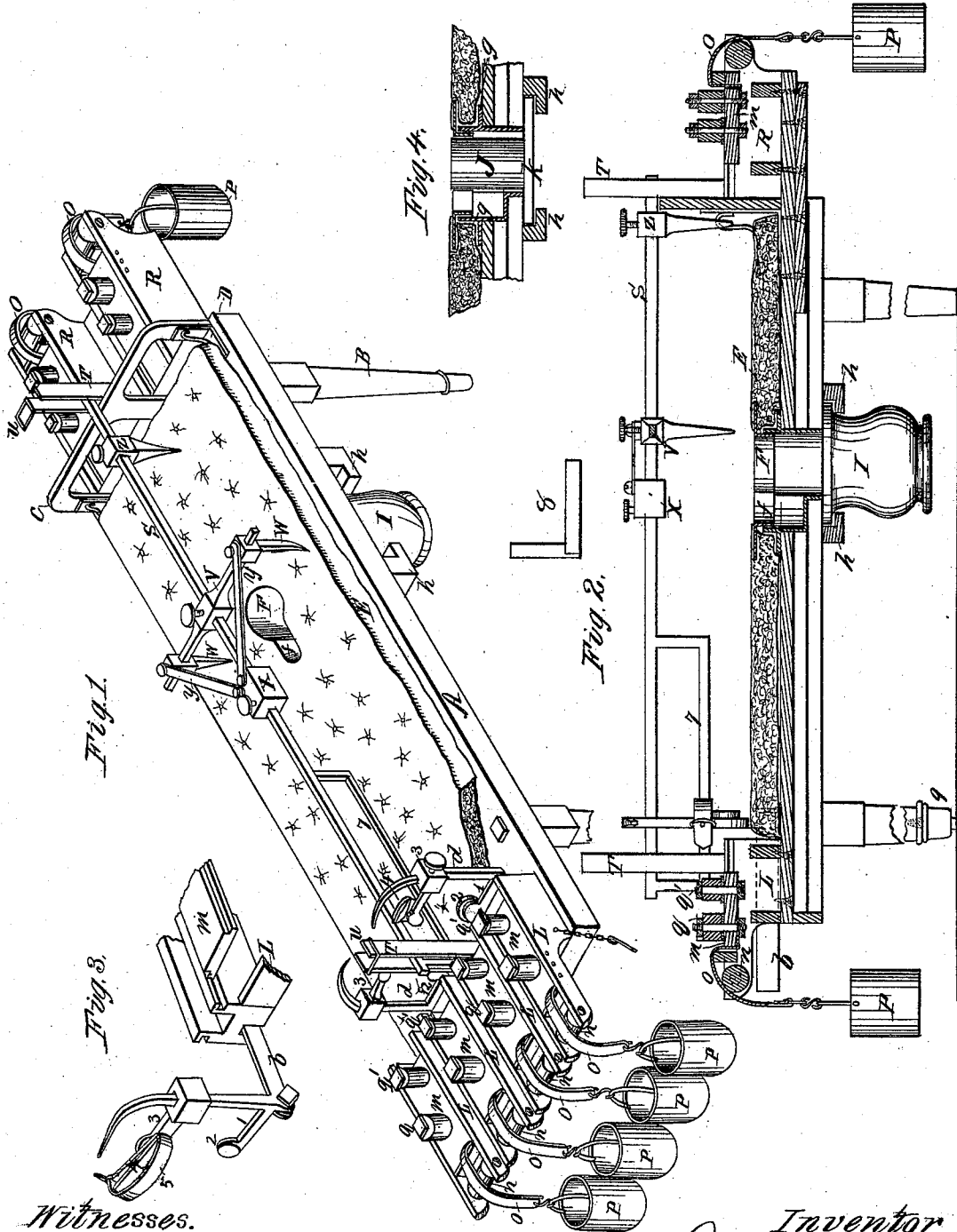


O. ALLEN.
SURGICAL BEDSTEAD.

No. 173,254.

Patented Feb. 8, 1876.



Witnesses.

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UNITED STATES PATENT OFFICE.

OLIVER ALLEN, OF PETALUMA, CALIFORNIA.

IMPROVEMENT IN SURGICAL BEDSTEADS.

Specification forming part of Letters Patent No. **173,254**, dated February 8, 1876; application filed October 4, 1875.

To all whom it may concern:

Be it known that I, OLIVER ALLEN, of Petaluma, Sonoma county, State of California, have invented an Improved Fracture Bedstead; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to a bedstead which is provided with all of the necessary appliances and conveniences for reducing and curing fractures of those bones in the human anatomy which require extension in order to keep the fractured parts in apposition while union is taking place.

My improved bedstead, with its various attachments and parts, is fully described in the following specification, in which reference is had to the accompanying drawing, in which—

Figure 1 is a perspective view of my bed. Fig. 2 is a longitudinal section. Figs. 3 and 4 are detailed views of parts of the carriage.

A represents the frame of the bed-bottom, upon which any desired style of bed can be placed.

I prefer to use a solid bottom, which is made of boards, as such a bottom is better adapted to the various devices which are to be attached to the bed.

The bed frame or bottom is supported on legs B B, which are secured to the corners of the frame by any of the usual means, so that they can be removed when desired. The head-board C is secured to one end of the bed by means of screws, and is supported at each side by a bracket or brace, D. This head-board is removable at pleasure, by removing the screws. Upon the bed-bottom I place a mattress, E, upon which the patient will lie. In order to provide for the evacuations of the patient I make a hole, F, through the bed-bottom, at the proper place, and a corresponding hole through the mattress and sheet, as shown. This hole is circular, with an extension recess or chamber, *f*, on the side toward the foot of the bed. The hole F and its extension *f* in the bed-bottom are lined with metal, and the

lining projects upward above the level of the bed-bottom, so as to form an upward-projecting flange, *g*, which entirely surrounds the hole. The bottom of the recess or extension *f* inclines toward the bottom of the circular hole F. The hole in the mattress is also lined with sheet metal, and this lining projects downward on the under side of the mattress, so as to pass inside of the lining of the hole in the bed-bottom, thus forming a perfectly water-tight passage both through the mattress and bed-bottom. The metal lining of the hole in the mattress is secured to the top of the mattress around the edge of the hole by a horizontal flange, and this flange is upholstered, so that it will form a soft cushion. A space is also left around the metal lining of the mattress, so that when the mattress is pressed down, the upward-projecting flange of the hole in the bed-bottom will enter the space and allow the mattress to be compressed.

Underneath the bed I secure two transverse rails, *h h*, one on each side of the hole F. The inner edges of these rails are grooved so that they will receive the opposite flanges of an ordinary chamber-vessel, I, and allow the vessel to be moved along beneath the bed until it is directly beneath the hole. The object of the extension *f* is to allow the patient to pass his or her urine while lying in the bed without danger of soiling or wetting the mattress.

When the chamber-vessel is not in use I employ an upholstered plug, J, for filling the hole. This plug is long enough to be passed into the hole from beneath the bed and extend up to upper surface of the mattress. To the lower end of the plug I secure a horizontal bar, *k*, which can be turned after the plug is introduced, so as to lock its opposite ends into the grooves in the rails *h h*, and thus secure the plug in place.

To the foot of the bed I secure, by means of screws, four parallel boxes, L L L L, so that their rear ends will project beyond the foot of the bed. Each of these boxes has a sliding top, *m*, and a roller, *n*, is placed across the rear end of each, its journals bearing in the opposite sides of the box. A strap or cord, O, has one end secured to the rear end of each sliding cover and passes over the roller *n*,

while a bucket, P, is attached to its opposite or hanging end. Upon each sliding top *m* I place two studs, *q q'*, one directly in advance of the other. For convenience, I place a roller upon each stud, the roller of the front stud *q* being smaller than the one on the rear stud *q'*, for the purpose hereinafter explained.

To the head of the bed I secure two parallel boxes, R R, which are in all respects similar to the boxes L L. These boxes are secured to a board or plate, the opposite end of which is secured to the under side of the bed by means of screws, so that the boxes will project from the head of the bed outside of the head-board.

When the patient is placed upon the bed the first thing to do is to place him or her in the proper position, and by extending the well limb determine the amount of extension to be applied to the fractured one. This is necessary, otherwise the fractured limb is liable to be too short when the fracture heals.

In order to adjust the patient properly for the purpose of obtaining a correct extension, I use a measuring-bar, S, which is supported at each end by a standard, T, at the middle of each end of the bed, so that the bar will pass longitudinally above the middle of the bed and above the patient. The standards T are made of two parallel pieces of wood, between which the ends of the bar S are placed and adjusted to any desired height. A link, *u*, at the top of the standard is then used to draw the two parts together and tighten them upon the ends of the bar, so as to keep them in place. Upon the bar S I place a transverse sliding bar, V, the arms of which project upon each side of the bar S. A set-screw serves to fix this transverse bar in place.

Upon each arm of this bar I place a downward-projecting sliding finger, W, and these sliding fingers I connect with a sliding block, X, by links T, so that by moving the block X back or forth along the bar the fingers will be moved toward or from each other along the arms of the bar V. A sliding finger, Z, is also placed upon the bar S at the head of the bed.

When the patient is placed in the bed the finger Z is moved against the top of his or her head, and secured in place by a set-screw. The transverse sliding bar V is then moved opposite his shoulders, and his body adjusted until the fingers pressequally upon both shoulders. The same operation is repeated with the hips, thus bringing the body of the patient in a straight line.

At the foot of the bed a bar, *b*, is arranged to slide horizontally in a socket formed between two of the boxes L L, one upon each side of the bar S. To the outer end of this sliding bar is secured, by a bolt, an upright bar, *d*, the upper end of which is curved over toward the middle of the bed, so as to provide a fender, which will prevent the weight of the bed-clothes from falling upon the feet of the patient. Near the lower end of this bar *d* is a horizontal arm, 1, which projects toward the middle of the bed, and upon the extremity of

this arm is formed a heel-pad, 2. A sliding arm, 3, is arranged to move up and down along the bar between the arm 1 and the upper curved end of the bar, and to the outer end of this arm is fixed a swivel-block, 4, to which a toe-strap, 5, is secured. This arm can be fixed at the desired position by a set-screw.

When the body of the patient has been adjusted in the bed the sliding bar *b* is drawn out until the heel of the foot rests against the heel-pad 2. The sliding arm 3 is then moved to the proper place to allow the ball of the toe to rest upon the block 4, and the strap 5 is drawn around the foot and buckled, thus keeping the foot in a proper position to prevent eversion without any rigid fastenings. The bar *b* will slide easily in its socket in line with the leg of the patient, so that it can be moved longitudinally, but be prevented from moving laterally.

At the foot end of the measuring-bar S I construct a drop-bar, 7, which is parallel with the bar S, and attached rigidly to it at each end. This drop-bar will come midway between the feet of the patient. I then use a try-square, 8, for determining whether the feet are in the proper position or not, by placing one arm of the square upon the drop-bar 7—first upon one side, and then upon the other—so that the opposite arm will stand at right angles to the bar, and thus give the exact measurement. When the patient has been thus adjusted, and his position fixed, if the fracture is of a leg-bone I attach the well leg, by means of bandages, with one of the studs *q* on the sliding top *m* of the box L, which is in line with the foot. I then place weights of any kind in the bucket P of the box until the leg is extended to its utmost. I then employ the square 8 for the purpose of measuring the extension. The well leg is then released, and the fractured limb is connected with the sliding top of its proper box, and the bucket of this box is weighted, so as to extend the fractured limb until it is equal in length to the greatest extension of the well leg.

The counter-extension is obtained by means of straps, which pass under the arms of the patient, and thence extend back through openings in the head-board to one of the studs on the sliding tops of the boxes R R, the buckets of which are weighted sufficiently to equalize the strain upon the leg; or the foot end of the bed can be elevated, so as to cause the weight of the patient to counterbalance the weight in the bucket. To do this I employ feet 9, which are screwed into the bottom of the legs at the foot of the bed, so that by turning the screws the feet can be extended or shortened, as desired, in order to give the bed a proper inclination.

If the fractured bone is in one of the arms, the outside boxes L L are used for its extension, while the inside boxes are used only for extending the leg. I thus provide a very complete and convenient combination of devices for reducing and curing fractures.

The parts of which the bed is composed can be readily taken apart, so as to permit of their being stowed in small compass for transportation. The bed can thus be taken to the patient without trouble.

By following the plan and employing the devices above described, fractures can be cured without shortening of the limb, while the patient is kept comparatively comfortable, and all his wants supplied without disturbing his position.

If the bandage should become irksome, its position can be shifted by securing a second bandage in another place, and connecting it with the rear stud *q'*, which is made larger than the front one, to permit of the bandage being attached to it without interfering with the front stud.

When this second bandage is properly adjusted, the first one can be removed, thus changing the location of the bandage without disturbing the extension of the limb.

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

1. The bed-bottom *A*, constructed with its metal-lined hole *F* and extension *f*, said lining projecting above the surface of the bed-bottom, so as to form an upward-projecting flange surrounding said hole, in combination with the mattress *E*, constructed with its corresponding metal-lined hole, the lining of which projects downward, so as to provide a downward-projecting flange, which passes inside of the hole in the bed-bottom, substantially as and for the purpose described.

2. In combination with the bed-bottom *A*, with its supporting-legs *B B*, I claim the boxes *L L L L* and *R R*, arranged as described, and having the sliding tops *m* and rollers *n*, said sliding tops having one or more studs, *q q'*, and attached bucket *P*, all combined and arranged to operate substantially as above specified.

3. The sliding tops *m*, provided with a weight attachment, *P*, and having two studs, *q q'*, the rear one of which is larger than the one in front, substantially as and for the purpose described.

4. The measuring-rod *S*, supported longitudinally over the middle of the bed, and having the sliding finger *Z*, and transverse sliding bar *V*, with its sliding fingers *W*, which are connected by links *T* with the sliding block *X*, substantially as and for the purpose specified.

5. The measuring-rod *S*, constructed with its drop-bars *7*, substantially as and for the purpose described.

6. The horizontally-sliding bars *b*, having the upright *d*, the upper ends of which are bent so as to form supports for the bed-clothes, and which have the fixed arms *1*, with heel-pads *2*, and sliding arms *3*, with swivel-blocks *4*, and toe-straps *5*, all combined and arranged to operate substantially as and for the purpose described.

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Witnesses:

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