E. Gray,

Invalid Bedstead,

No. 76,747, Patented Apr. 14, 1868.

Fig. 1.

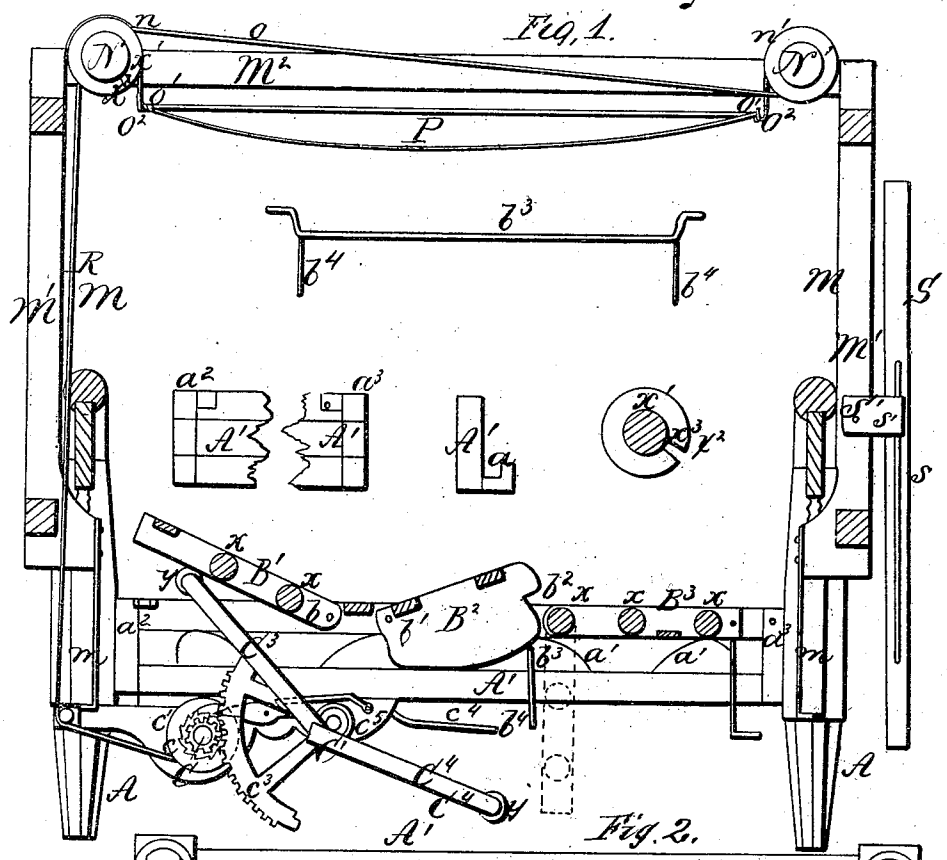
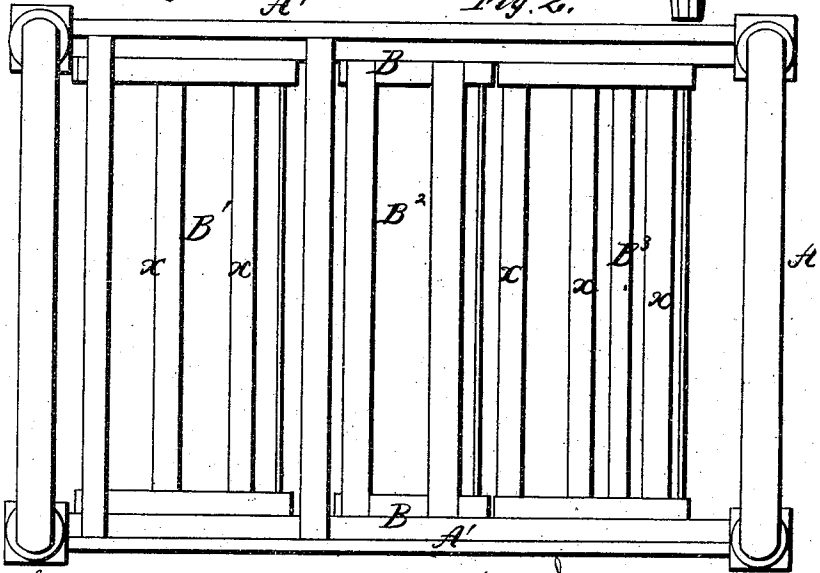


Fig. 2.



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EDWARD GRAY, OF CUYAHOGA FALLS, OHIO.

Letters Patent No. 76,747, *dated April* 14, 1868.

IMPROVED HOSPITAL-BED.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EDWARD GRAY, of Cuyahoga Falls, in the county of Summit, and State of Ohio, have invented a new and Self-Adjusting Hospital Spring-Bed Bottom; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to certain improvements in invalid-bedsteads, which consist principally in novel devices for adjusting different parts of the bed for the comfort and convenience of the invalid, and also in a novel arrangement for lifting him from the bed or turning him from side to side, when desired, as will be fully described hereinafter.

Figure 1 represents a sectional side elevation, and

Figure 2 a plan view with the top detached.

In the drawings, A represents the bedstead proper, which may be constructed of any general form desired.

A^1 A^1 represent the side-rails, constructed as shown, with the grooves, *a a*, upon their inner sides, in which rest the springs, a^1. These springs are formed of a continuous strip of steel, bent in suitable curves.

B B represent the bed-frame, whose sides rest upon the springs a^1, and which is kept in place by inserting one end under the cap, a^2, the other being held in place by means of the pin in the cap a^3, the top of the latter being open to allow the frame to slide within it. By this arrangement, the frame is readily removed, and put in place again when desired.

The bed-frame, it will be observed, consists of three parts, B^1, B^2, B^3, which divide the bed into upper, middle, and lower parts. The upper part, B^1, is hinged upon the rod *b*, and swings up toward the middle. This arrangement being intended for the purpose of allowing the invalid to assume a sitting posture, when desirous of so doing.

C represents a shaft, hung in proper bearings beneath the bedstead, which is provided with the gear-wheels *c c*, and ratchet-wheels c^1 c^1, engaging with which latter is the pawl c^2.

C^1 also represents a shaft, hung in proper bearings, and placed in front of shaft C, upon which is placed the quarter gear-wheel c^3, as shown, which latter engages with gear-wheels *c c*, when the shaft is rotated to the proper point.

C^3 represents a frame, loosely hung upon shaft C^1, which projects over shaft C, and which is provided with friction-wheels, *y*, at its ends.

This frame is operated by means of the gearing c^3, which, when thrown back, comes in contact with the frame, (its end being split and turned in each direction for that purpose,) and forces it against the upper part of the bed-frame B^1, by which the latter is elevated.

B^2 represents the middle part of the bed, which is hung upon the rod b^1, and which turns up toward the head. This is also operated by means of a frame, C^1, and the gearing c^3, as will be described more fully hereinafter.

It will be observed that the sides of the part B^2 are constructed of peculiar shape, as shown, being provided with the notch b^2, which rests upon the rod b^3. This rod is bent at each end, so as to form a crank-shaft, by means of which arrangement it may be pulled away, by using the handles b^4, and the part B^2 be let down or elevated, as may be desired.

When it is desired to elevate the part B^2, the frame C^1 is operated, and the rear end of B^2 is thus thrown up until the sides pass above the rod b^3, by which latter it is held in position. The lower portion of the bed-frame, B^3, is let fall similarly to B^2.

It will be observed that in the upper and lower portion of the frame, the slats consist of rollers, *x x*, while in the middle portion the slats are flat, as usual. By this arrangement, the necessary changes of the head and foot are much facilitated, as the friction of the bedding upon the slats is thereby much diminished. In the centre, however, it is desirable that the bedding should be firmly held, and the slats are therefore made flat.

I will now describe the manner of making the changes.

If it is desired to raise the invalid to a sitting posture, a crank is placed upon the head of shaft C^1, which, being revolved, throws up the frame C^3, by which the head portion is elevated.

The rolling slats diminish the friction of the bedding moving upon them, which office is also performed by the friction-rollers in the lower frame, by which means the operation is rendered easy of accomplishment, although the invalid be perfectly helpless. This operation may be still more easily performed, if, when the quarter-wheel c^3 engages with the gear-wheel $c\ c$, the crank be shifted to the head of shaft C, by which means the power is more advantageously applied.

The head is held in any desired position by means of the ratchet and pawl, holding shaft C. When it is desired to let down the head, levers c^4, connected by the rod c^5, throws off the pawl, c^2.

In regard to the middle portion, B^2, when it is desired to use the bed-pan, or let it down for other convenience, one of the handles, b^4, on either side of the bed, is forced back, by which means the rod is thrown out from under its rear end, and it swings down. When it is desired to raise it for the purpose of allowing the invalid to rest, by change of position, or for other purpose, the crank is placed upon the shaft C^1, and it is revolved in the opposite direction from before, by which means the frame C^4 is forced up against it, and it is elevated until the sides pass above the rod b^3, which latter immediately falls by its own weight beneath it, and supports it in that position.

The lower part is operated in a similar manner, by means of a handle situated at the rear of the bed.

M M represent a frame, which is attached to the bedstead for the purpose of supporting the lifting-arrangement.

M^1 M^1 represent parts which are attached to the frame by means of the hooked bands $m\ m$, as shown.

M^2 M^2 represent the top rail, by which the frame is held together, and in which are placed the shafts N N′. These shafts are situated one at each end of the frame, and are each provided with the double fixed wheels $n\ n$ $n^1\ n^1$, to which are attached the bands $o\ o\ o^1\ o^1$, the latter of which are provided with the hooks $o^2\ o^2$, which are used to hold the sheet-frame P.

Upon the shaft N is placed the flanged wheel x^1, a part of which is cut away, as shown, leaving a hook-like projection, x^2. Within this depression is caught the rod x^3, to which the upper end of the main band R is attached, the lower end being fastened to a fixed wheel, r, upon the shaft C.

These bands are so arranged upon these wheels relatively to each other, that when the band R is moved upon the wheel r upon the shaft C, by means of a crank placed upon its head, the bands $o\ o$ are wound upon shaft N, and unwound upon shaft N^1, all the bands o^1, however, ascending together, and the contrary takes place when the movement is reversed.

P represents a sheet-frame, formed of a single rod of metal, with eyes in each corner, for the purpose of attachment to the hooks o^2. To this frame the sheet is attached by any suitable means.

This sheet being inserted under the invalid, and the frame being attached, he may be raised entirely from the bed, or turned from one side to the other, by unhooking the bands upon either side, as may be desired.

S represents a board, provided upon each side with the rods $s\ s$, over which hook the ears, $s'\ s'$, of the rod S′, which latter is supported in the frame M. It will be observed that when the board is turned upon the rod S′, (it moving freely for this purpose,) the foot-board of the bedstead serves to support and steady the board, and makes it available for the purposes of a table. The rods upon its sides moving freely in the ears s', it can be adjusted forward or backward, as may be desired.

The various parts of this bedstead may be made detachable, so that it can be taken down, and set up readily in any place.

By these various devices, a very desirable invalid-bedstead is produced. I do not desire to confine myself to any particular material or form for making the various parts, but propose to take what is best suited for the purpose. The stretchers may be iron or wood, and other parts may be constructed of different materials, at option.

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

1. The side rails A^1, with grooves a, caps $a^2\ a^3$, in combination with springs a^1, and bed-frame B^1, B^2, B^3, as and for the purpose set forth.

2. The bed-frame, with parts B^1 B^3, having rollers $x\ x$, in combination with part B^2, having flat slats, substantially as and for the purpose described.

3. The middle part, B^2, of the bed-frame, constructed as described, in combination with rod b^3 arranged as described, as and for the purpose set forth.

4. The table S, with rods s, in combination with ears s' and rod S′, substantially as described.

5. The shaft C^1, with frames C^3 C^4, when combined and arranged so as to operate the head-piece, B^1, or middle part, B^2, of the bed-frame, or both, in the manner and for the purpose described.

This specification signed and witnessed, this twenty-fourth day of February, 1868.

EDWARD GRAY.

Witnesses:

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