

(No Model.)

2 Sheets—Sheet 1.

A. F. ROBINSON & A. B. DODGE.
FOLDING BED.

No. 580,146.

Patented Apr. 6, 1897.

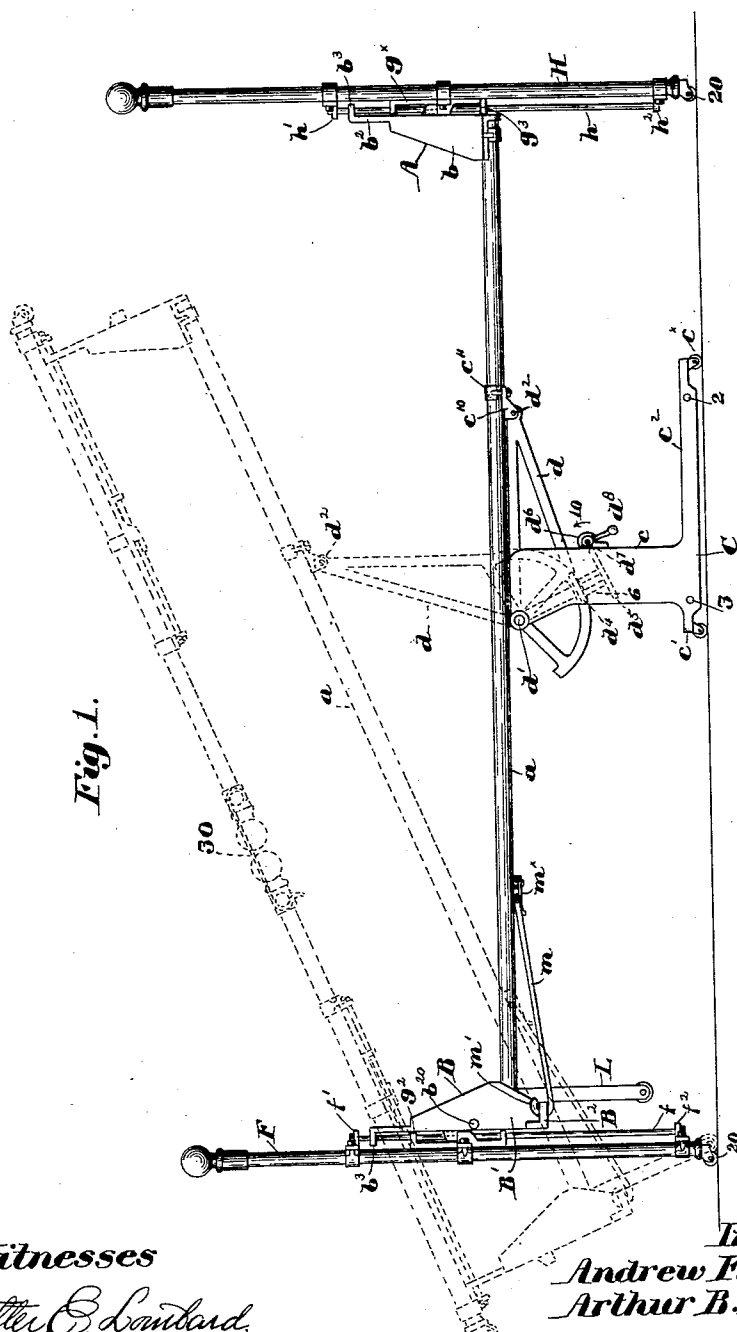


Fig. 1.

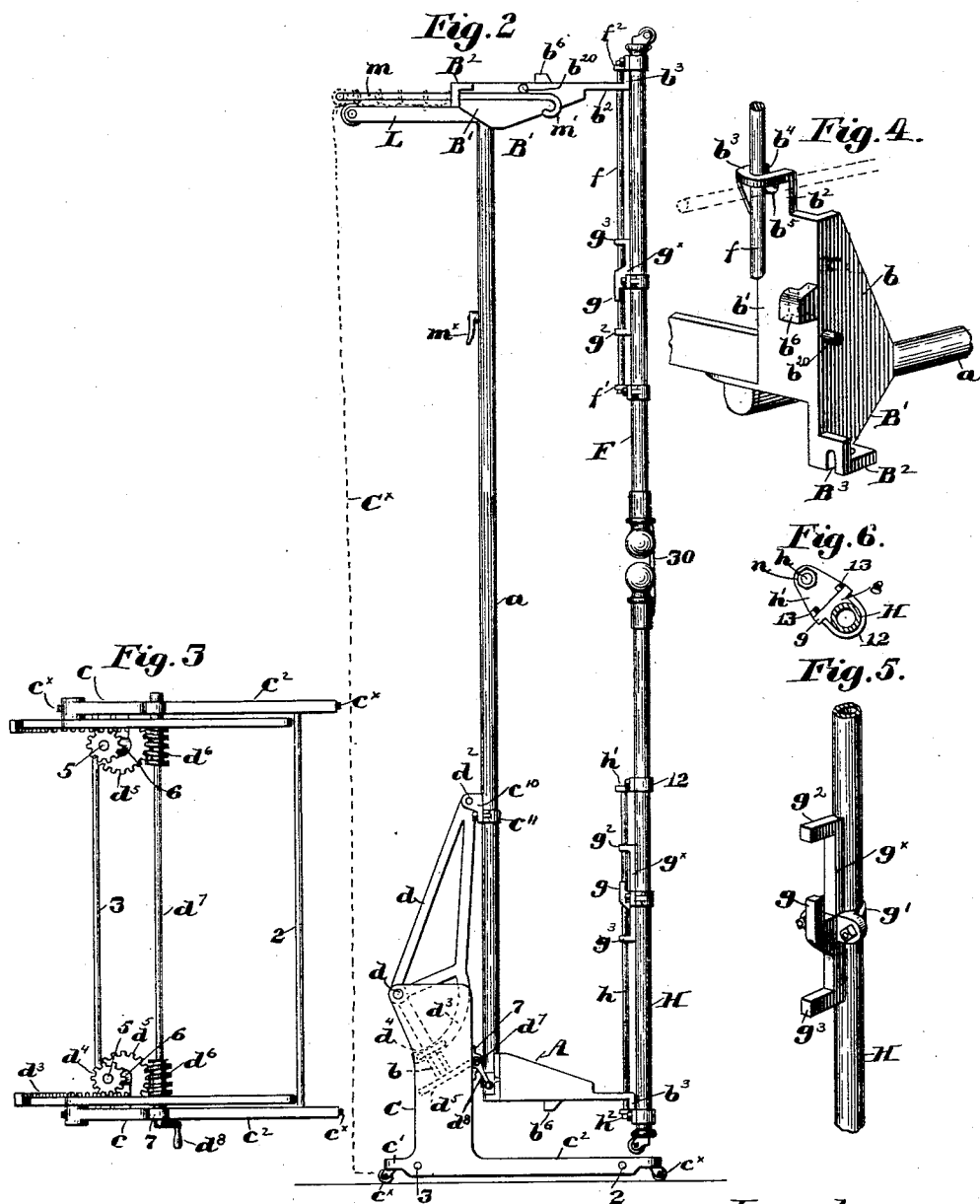
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by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

ANDREW F. ROBINSON AND ARTHUR B. DODGE, OF CAMBRIDGE,
MASSACHUSETTS.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 580,146, dated April 6, 1897.

Application filed September 19, 1896. Serial No. 606,353. (No model.)

To all whom it may concern:

Be it known that we, ANDREW F. ROBINSON and ARTHUR B. DODGE, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Folding Beds, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention has for its object the production of a simple, strong, and easily-operated folding bed, the bed proper being mounted upon a suitable support in such manner that the bed may be turned up vertically as a mantel-bed.

In United States Patent No. 520,244, granted to us May 22, 1894, a folding bed of a somewhat similar character is shown and described, and in the present case we have improved the construction, operation, and arrangement of parts thereof very materially.

Figure 1, in side elevation, represents a bed embodying our invention, the spring and mattress being omitted, and in dotted lines the position of the bed is shown preparatory to turning it up into vertical position. Fig. 2, in side elevation, represents the bed as turned up completely, a covering-curtain being indicated in dotted lines. Fig. 3 is a top or plan view of the support and the mechanism for lifting the bed preparatory to turning it up. Fig. 4 is a perspective detail, enlarged, of one of the corner-castings. Fig. 5 is a similar view of one of the corner-posts, and Fig. 6 is a detached plan view of one of the guide-rod connections to be described.

The bed-frame is herein shown as comprising side rails a , preferably metal tubes, having rigidly secured thereto at their ends castings to form corner-pieces A and B at the head and foot, respectively, the general characteristics of said pieces being similar, and rails a^x (best shown in Fig. 4) connecting the side rails a and to which any suitable spring or other mattress support may be attached.

A stand or support C comprises upturned sides c , rigidly connected by tie-rods 2 3, the sides having oppositely-extended feet c^1 c^2 , preferably provided with suitable casters c^x , the feet c^2 being quite long to form a firm base for the support. Like links d are

pivoted to d' in bosses in the sides c and at their outer ends are jointed at d^2 to castings c^{10} , rigidly secured by U-shaped bolts c^{11} to the side rails a , the casting and its attaching-bolt forming a cheap, light, and strong clip. The inner end of each link d is provided with a segment-gear d^3 , having its center at d' , to be engaged by a pinion d^4 on a short shaft 5, rotatable in a bearing 6 on the inner face of each of the sides c of the bed-support C. Each shaft 5 has fast thereon a worm-wheel d^5 in mesh with a worm d^6 , one at each end of a shaft d^7 , rotatable in bearings 7 on the support, one end of the shaft projecting beyond the side of the support, having secured thereto a crank-handle d^8 or other suitable device for rotating it.

Referring to Fig. 1, when the bed is in normal position for use the links d extend substantially horizontally from the pivots d' to the clips, but by rotation of the worm or actuating shaft d^7 in the direction of arrow 10 the links will be moved into upright position. (Shown in dotted lines and full lines, Fig. 2.) This raises the fulcrum d^2 of the bed to such a height that thereafter the bed can be turned easily into upright position, Fig. 2, and the worm-wheel and worm forming a part of the actuating mechanism to elevate the bed-fulcrum also acts as a self-locking device, dispensing with the use of a pawl and ratchet or other locking device.

The head-board or head of the bed comprises, essentially, corner-posts H, rigidly connected in usual manner, and to the inner side of each post we connect guide-rods h by top and bottom clips h^1 h^2 , respectively, the clip h^1 also acting as a limiting-stop, as will be described. Similarly the foot-board comprises connected corner-posts F and guide-rods f , attached at their upper and lower ends by clips f^1 f^2 to the corner-posts. One of the clips, as h^1 , is shown in Fig. 6, and it comprises a casting having a concavity 8 to fit the corner-post and ears 9 to receive the ends of the U-shaped bolt 12, tightened up by suitable nuts 13. The guide-rods are readily secured to the clips by reducing and threading their ends, extending them through the casting of each clip, and securing them by suitable nuts n .

Inasmuch as the corner-pieces A and B are alike in all respects save the downturned leg B' on the latter we will describe in detail but one of said corner-pieces, and refer more particularly to Fig. 4. Each piece comprises, essentially, vertical side and end webs b b' at right angles to each other, the web b' at its inner upper corner being extended at b^2 , downturned at b^3 , and having a slot b^4 therein forming a continuation of a slot b^5 in the corner b^2 of the web. The guide-rod attached to the adjacent corner-post is extended through the loop b^3 and occupying the position shown by full lines, Fig. 4, when the bed is in use, longitudinal movement of the guide-rod being feasible at such time. Such position is shown in full lines, Fig. 1, with the head and foot boards locked in position, the locking being effected by the engagement of an upturned finger g , (see Fig. 5,) attached to the corner-post, and a cooperating laterally-bent lug b^6 on the end web b' of the corner-piece, forming a seat.

The finger g forms part of a casting g^x , secured by a clip-bolt g' to the corner-post at one side of the guide-rod, said casting having at its upper and lower ends right-angled projections g^2 g^3 to bear against the end web when the bed is set up for use.

Referring to Fig. 1, when the bed is in use the lower ends of the corner-posts rest on the floor through the medium of usual casters 20, and the weight of the side rails, bedding, &c., forces the locking-fingers g firmly into the cooperating seats b^6 , the locking device and the connection between the guide-rod and top of the corner-piece preventing any tendency of the corner-post to twist. Now when the bed is raised toward dotted-line position, Fig. 1, sufficiently to bring the weight of the head-board into play the said board will drop until the connections h' , acting as stops, engage the bent portions b^3 of the corner-pieces, the fingers g withdrawing from their seats b^6 , releasing the head-board, so that it can be turned over parallel to the side rails. The guide-rods h then rest in the slots b^5 , and the head-board is run in to dotted-line position, Fig. 1, upon the mattress and bedclothing, and by then slightly lifting the foot of the bed the foot-board is unlocked in the same manner, and it in turn is turned over and run in, and a strap or detachable connection 30 is then applied to hold the head and foot boards in place. After this the lifting mechanism is operated to raise the fulcrum d^2 and the bed to dotted-line position, Fig. 1, a fixed auxiliary leg L at the foot of the bed preventing the latter from assuming too great an inclination. The foot of the bed is then grasped and lifted, turning the bed as a whole, upon its elevated fulcrum d^2 , up into vertical position, (shown in Fig. 2,) whereupon the support C and the bed can be pushed up against the wall.

To conceal the under side of the bed and its support when in folded or upright posi-

tion, we have provided a curtain C^x , (see dotted lines, Fig. 2,) mounted on a curved or bow-shaped curtain-rod m , upcurved at its ends, as at m' .

The side webs b of the corner-pieces B at the foot of the bed are extended downward, as at B', Fig. 4, and a right-angled ear B² is formed on each of said extensions, said ear being slotted in its two sides at B³. The hooked ends of the curtain-rod m are extended through the slots, and when the bed is in use the hooks m' hold the free ends of the rod in the ears, the rod being swung up under the bed and retained by a turn-button m^x ; but when the bed is turned up the curtain-rod is swung out at right angles to the bed and pushed in through the slotted ears B² until the rod end extends under projections or studs b^{20} on the side webs b , holding the rod in the position shown in Fig. 2, so that the curtain will hang down in front of and conceal the bed.

By the construction herein shown we obtain a very light yet strong bed, easily manipulated, and at a low cost, and by providing the corner-posts with guide-rods we avoid all marring or injury to the posts in using the bed, and the head and foot boards do not have to be specially constructed. The upper connections of said guide-rods when acting as stops effectually prevent the head or foot board from dropping down unduly when the bed is manipulated, and the self-locking actuating mechanism for moving the fulcrum of the bed into one or other position is at once simple, powerful, and easily operated. The projections g^2 g^3 assist in holding the head and foot boards rigid when in use and give greater firmness and strength to the bed.

Our invention is not restricted to the precise construction and arrangement shown, as the same may be modified without departing from the spirit and scope of our invention.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A bed-frame having head and foot boards, adapted to be folded inward thereupon, combined with a support, links pivotally connecting the frame thereto, segment-gears on the inner ends of the links, and self-locking mechanism cooperating with said gears, to raise the links and elevate the bed-fulcrum, whereby the bed may be turned up into vertical position, substantially as described.

2. A bed-frame having head and foot boards adapted to be folded inward thereupon, combined with a support, links pivotally connecting the frame thereto, and self-locking actuating mechanism to swing the links, substantially as described.

3. A bed-frame having rigidly attached corner-pieces, head and foot boards, guide-rods secured to said boards and having a sliding connection with the corner-pieces, and means for automatically locking the head and foot

boards in operative position to the bed-frame, substantially as described.

4. In a folding bed, a rigid bed-frame, up-
turned rigid corner-pieces thereon having
5 their upper corners outturned and slotted,
head and foot boards having offset guide-rods
attached to the corner-posts and extended
through the slotted corners, an upturned
locking-finger on each corner-post, and a coöper-
10 ating seat therefor on the end webs of the
corner-pieces to lock the head and foot boards
to the bed-frame, substantially as described.

5. In a folding bed, a rigid frame having
upturned, slotted corner-pieces, head and foot
15 boards, upright guide-rods, clips connecting
the upper and lower ends of said rods to the
corner-posts of the boards, and means to lock
the boards to the corner-pieces, lifting of the
bed-frame automatically unlocking the
20 boards, the upper guide-rod clips engaging
the tops of the corner-pieces to act as limit-
ing-stops, substantially as described.

6. A rigid bed-frame, corner-pieces secured
thereto, having upright end webs, an out-
25 turned slotted corner at the upper end of each,
and a latch-seat on the end web, combined
with corner-posts having offset guide-rods to
enter and slide in said corners, a locking-
finger, and projections above and below said
30 finger, on each corner-post, to bear against
the end web of the adjacent corner-piece,
substantially as described.

7. In a folding bed, a support, a rigid bed-
frame having corner-pieces, head and foot
35 boards permanently connected with said cor-
ner-pieces and adapted to be folded over upon

the frame, connections between the frame
and support, to raise and lower the bed-ful-
crum, and a curtain-rod pivotally connected
to the depending ends of the corner-pieces at
40 one end of the frame, substantially as de-
scribed.

8. A rigid bed-frame, combined with a sup-
port, links pivotally connecting the frame
thereto, segment-gears on the inner ends of
45 the links, and self-locking mechanism coöper-
ating with said gears, to raise the links and
elevate the bed-fulcrum, whereby the bed
may be turned up into vertical position, sub-
stantially as described. 50

9. A rigid bed-frame, combined with a sup-
port, links pivotally connecting the frame
thereto, and self-locking actuating mechan-
ism to swing the links, substantially as de-
scribed. 55

10. In a folding bed, a support, a rigid bed-
frame having corner-pieces, connections be-
tween the frame and support to raise and
lower the bed-fulcrum, and a curtain-rod piv-
otally connected to the depending ends of
60 the corner-pieces at one end of the frame and
adapted to slide longitudinally in said corner-
pieces, substantially as described.

In testimony whereof we have signed our
names to this specification in the presence of
65 two subscribing witnesses.

ANDREW F. ROBINSON.
ARTHUR B. DODGE.

Witnesses:

JOHN C. EDWARDS,
AUGUSTA E. DEAN.