

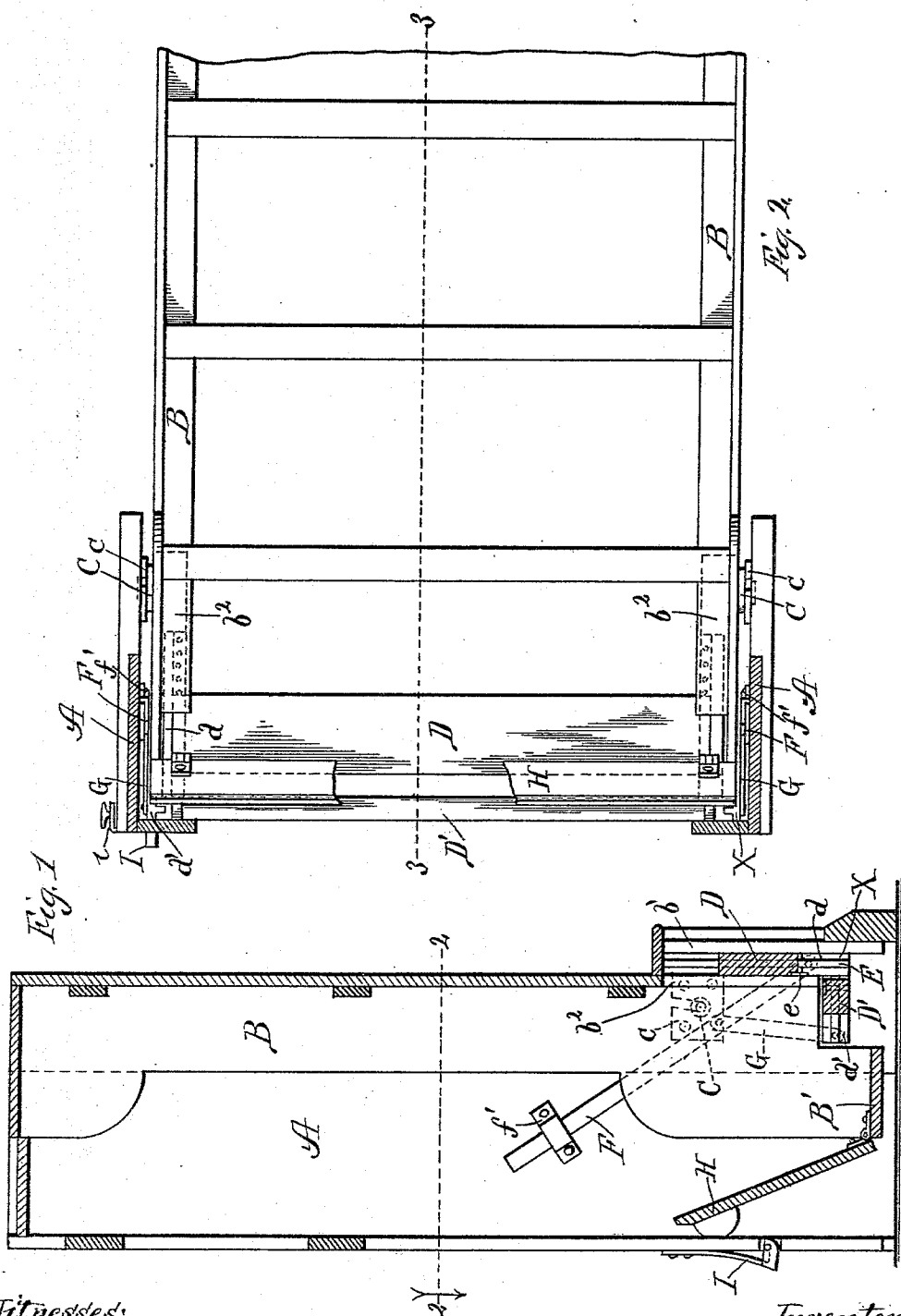
(No Model.)

3 Sheets—Sheet 1.

M. J. HAFGAR.
FOLDING BED.

No. 514,547.

Patented Feb. 13, 1894.



Witnesses:

W. C. Corlies

Jos. A. Christianson

Inventor:

Magnus J. Hafgar
By Louis K. Felson
His Attorney.

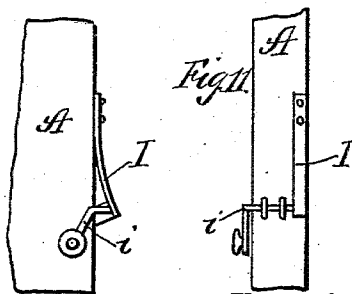
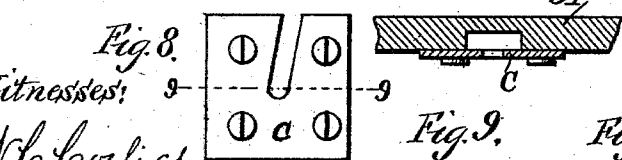
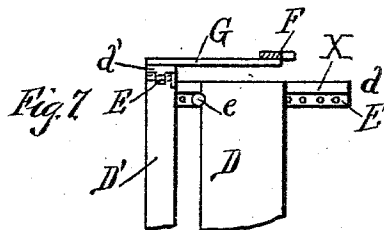
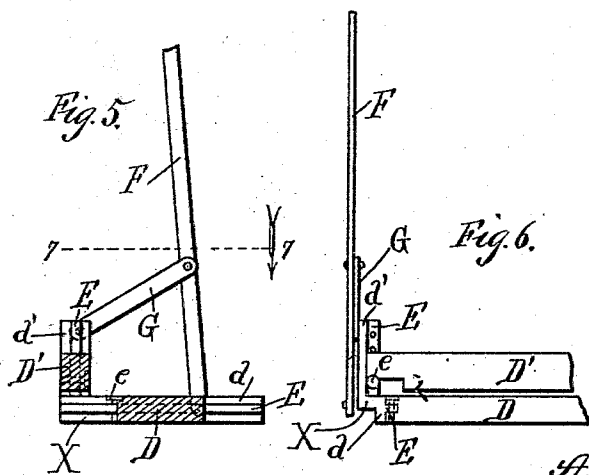
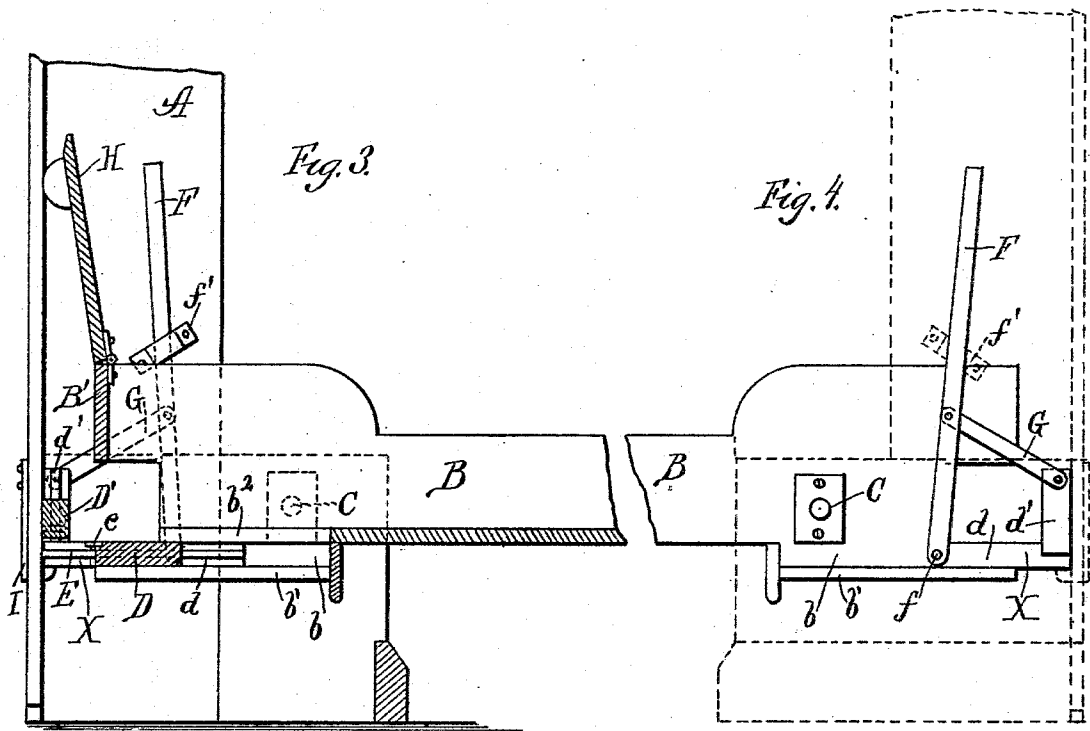
(No Model.)

3 Sheets—Sheet 2.

M. J. HAFGAR.
FOLDING BED.

No. 514,547.

Patented Feb. 13, 1894.



Witnesses:

W. C. Corlies
Jno. A. Christianson

Fig. 10.

Inventor:
Magnus J. Hafgar
By Louis A. Gibson
His attorney.

UNITED STATES PATENT OFFICE.

MAGNUS J. HAFGAR, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
F. HERHOLD & SONS, OF SAME PLACE.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 514,547, dated February 13, 1894.

Application filed November 13, 1893. Serial No. 490,772. (No model.)

To all whom it may concern:

Be it known that I, MAGNUS J. HAFGAR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Folding Beds; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to folding beds.

Its object is to so attach the counter weights to the bed as to render them automatically adjustable, whereby they are increasingly effective as the bed descends.

It consists of such a disposition of the weights, and of means for their automatic adjustment, that they offer no resistance to the initial movement of the bed frame in opening, but are automatically shifted as it descends so that as its line of direction is removed from its pivotal point they are carried away from that point in the opposite direction, and relatively to a greater degree.

It also consists of further parts and arrangement of parts as hereinafter set forth.

In the accompanying drawings: Figure 1, represents a vertical longitudinal section of my folding bed; Fig. 2, a plan section on the line 2—2 of Fig. 1, the bed being open; Fig. 3, a vertical longitudinal section on the line 3—3 of Fig. 2; Fig. 4, a side elevation of a part of the bed frame. Figs. 5 and 6 are details of the weight carrying and shifting mechanism. Fig. 7, is a plan section on the line 7—7 of Fig. 5. Fig. 8, is an elevation of the hinge plate. Fig. 9, is a plan section of a portion of the standard taken through the hinge plate on the line 9—9 of Fig. 8. Figs. 10 and 11, are details of a locking device for holding the bed open. Fig. 12, is a vertical longitudinal section showing a modification of the device. Fig. 13, is a transverse vertical section on the line 13—13 of Fig. 12. Fig. 14, is a sectional view on the line 14—14 of Fig. 12.

The standard or case is shown at A, and the bed frame at B. Pivot pins C, are set in each

side rail of the bed frame and a slotted hinge plate *c*, is attached to the inner surface of each side of the case or standard A, to receive these pins. The slot in the plates *c*, extend downwardly from the upper edge so that the two main portions of the bed may be separated by lifting the pins C, out of these slots.

In order to prevent the pivot pins C, from falling out of their bearings should the sides of the standard become spread by warping or from other cause, these pins are preferably headed and the walls of the standard are chambered beneath the hinge plates *c*, to accommodate these heads, as shown in Fig. 9. Two counter weights are shown, being marked respectively D and D', and extend across the bed frame from one side rail to the other. These weights are carried by supporting bars X, one at each end, which have two arms *d*, *d'*, perpendicular to each other. Each of these arms is provided upon its inner face with a longitudinal rib E, and the ends of the counter weights are grooved to receive these ribs so that the weights may slide longitudinally upon the arms *d*, *d'*, of the carrying bars. The ribs E, have a series of transverse apertures within which stop pins *e*, may be placed for the purpose of fixing the counter weights upon the carrying bars. The carrying bars are so disposed that one of their arms *d*, lies along the side rail of the bed frame and on a level with its lower edge, the other arm *d'*, extending upwardly at its head end. The carrying bars X are adapted to slide in ways longitudinal with the bed frame. These ways are formed of the bottom, *b*², of the bed frame, B; a downward projection, *b*, of the bed rail and plates, *b'*, attached to the projection and being parallel to the bed bottom, *b*². In practice it will be advisable to extend across the bed frame these plates, *b*, so as to form a front to cover the weights. The movement of the carrying bars within the ways thus provided brings the counter weights nearer to, or removes them from the pivotal point of the bed frame.

The automatic shifting of the counter weights is accomplished by means of the levers F, pivoted one at each side of the bed frame, between its head and the pivot pins C, and below the latter, as shown at *f*, and ex-

tending upwardly through, and playing freely in, a guide loop f' , secured to the inner surface of the side of the standard A. A link G, attached to each of the levers F, between the point of its attachment to the bed frame f , and the loop f' , is also connected with the upper end d' , of the carrying bar X, upon that side of the bed, so that the angular movement of the lever F, incident to the swinging of the bed frame causes the carrying bar to reciprocate within the way provided for it as heretofore described, the loop f' , serving as the fulcrum for the lever. The point of attachment of the link G, being brought near to the pivotal point of the bed frame when the latter is in a perpendicular position, the counter weights are brought near to the pivot pins C. This point of attachment being carried away from the pivotal point of the bed frame when the latter is lowered the counter weights are carried away from the pivot pins C. This shifting of the weights varies their efficiency to a more marked degree than the effective weight of the bed frame is varied by its angular movement and permits of the easy adjustment of a bed provided with a comparatively small counter weight, and allows the bed frame to move easily through the upper part of the arc in which it swings.

30 If desired the case may be in two sections as shown in Figs. 12 and 13—a standard A^2 , and a vertically movable top A' . The lever F, is pivotally attached to the movable part A' , as shown at f^2 , so that that part of the case is raised by the lowering of the bed frame and hence serves as a counter weight. The pivotal attachment of the lever F, to the case is by means of the pins f^2 , and a slot running in from the end of the lever. The depth of this slot is such that the movable part, A' , of the standard rests upon the fixed part A^2 , until the bed frame has moved some distance in opening. This construction is not intended to wholly dispense with the counter weights D, D' , and the mechanism described for carrying them, but to admit of these weights being smaller than would otherwise be required.

For the purpose of locking the bed frame when it is in its lower position a spring catch I, is secured to the rear wall of the standard

A, being so located as to engage the angle of one of the carrying bars X. Any simple means for releasing this catch may be provided, such as the spindle i , extending through the side of the standard and having an outer crank arm or handle, and an inner crank arm bearing against the catch.

I claim as my invention—

1. In a folding bed the combination with a standard A, and a frame B, pivoted to the standard, of counter weights carried by and adapted to slide longitudinally upon the bed frame, and mechanical connection between the weights and standard whereby the former are caused to reciprocate by the movement of the bed frame, substantially as described and for the purpose specified.

2. In a folding bed the combination with a standard A, and swinging frame B, of pins for pivoting the frame to the standard, counter weights carried by the bed frame, ways in and longitudinal with the bed frame, within which the weights are adapted to move, levers F, pivoted to the sides of the bed frame back of its pivotal points and to the standard, links G, connecting the levers F, with the counter weights whereby the weights are shifted, relatively to its pivotal points, by the swinging of the bed frame, substantially as described and for the purpose specified.

3. In a folding bed the combination with a standard or case, a bed frame pivoted to the standard, counter weights carried by the bed frame and adapted to move longitudinally thereon, mechanical connection between the weights and the standard whereby the descent of the bed frame causes the weights to shift away from its pivotal points and a latch for locking the bed in its open position, said lock being carried by the standard and adapted for automatic engagement by the weights, substantially as described and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

MAGNUS J. HAFGAR.

Witnesses:

L. K. GILLSON,
SPENCER WARD.