(No Model.) 2 Sheets—Sheet 1.

H. S. HALE.

FOLDING BED.

No. 454,121. Patented June 16, 1891.

FIG. 1.

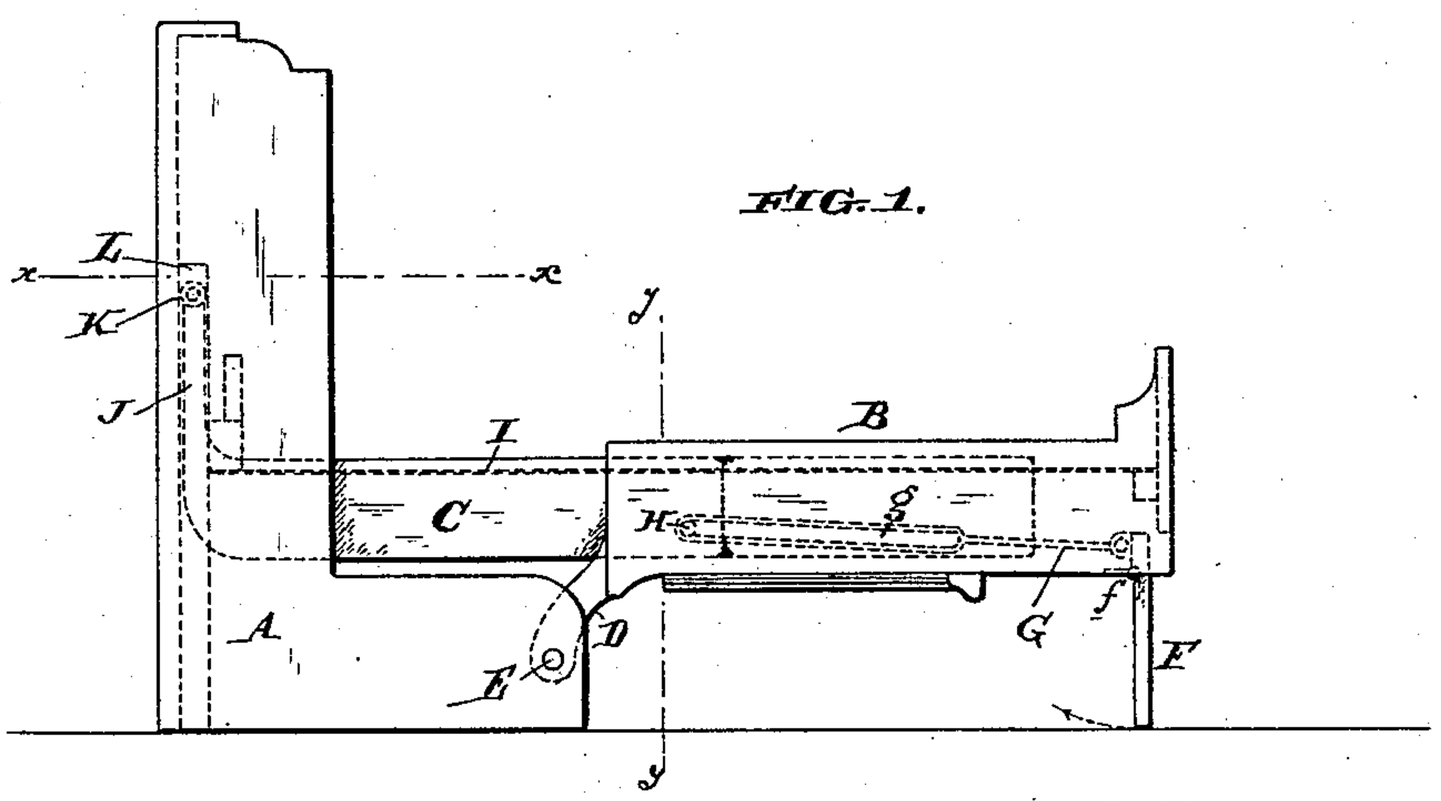


FIG. 2.

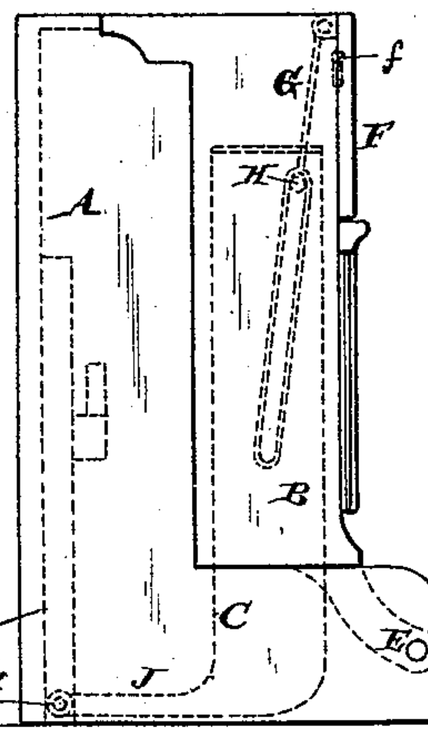


FIG. 3.

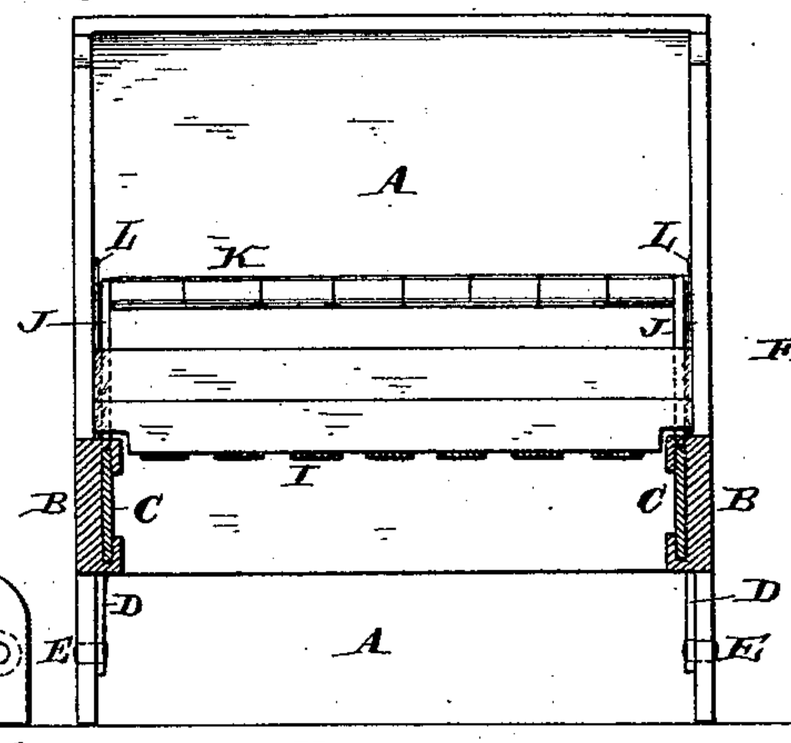


FIG. 4.

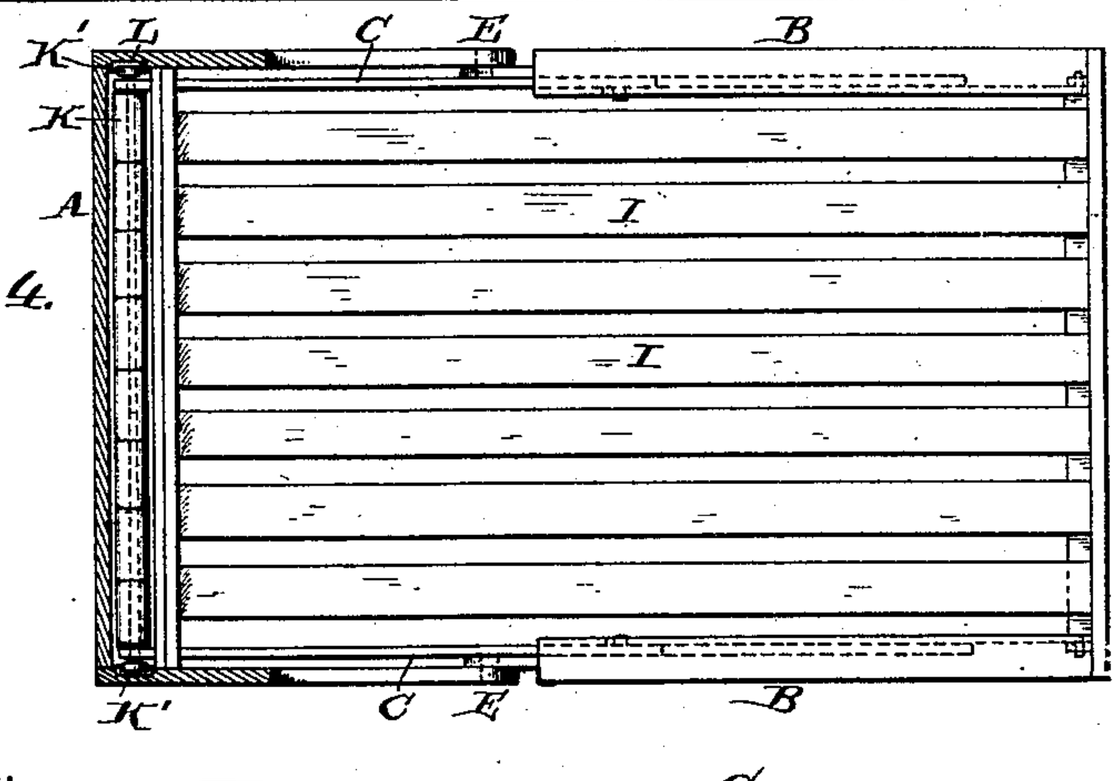
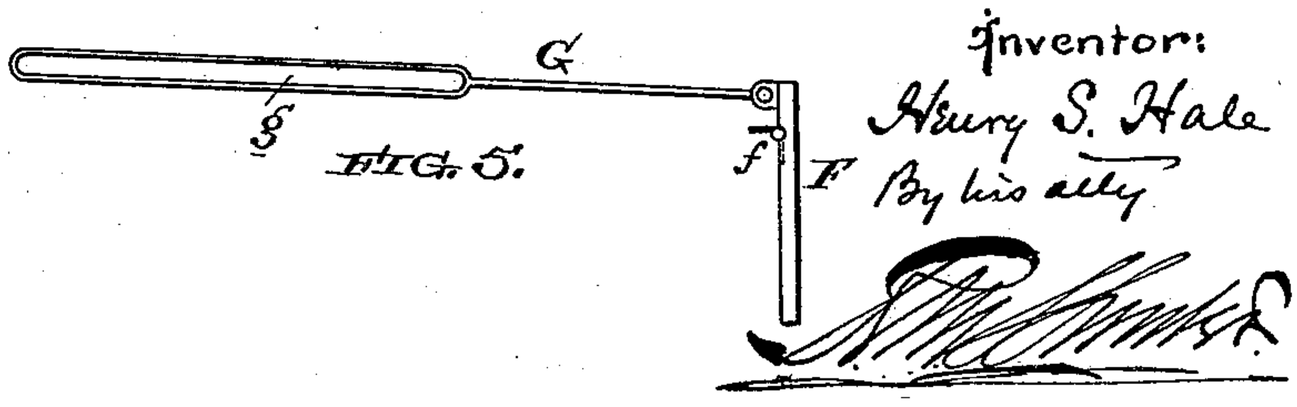


FIG. 5.



Witnesses:

Harry Drury

A. J. Quinn

Inventor:

Henry S. Hale

By his atty

(No Model.) 2 Sheets—Sheet 2.

H. S. HALE.

FOLDING BED.

No. 454,121. Patented June 16, 1891.

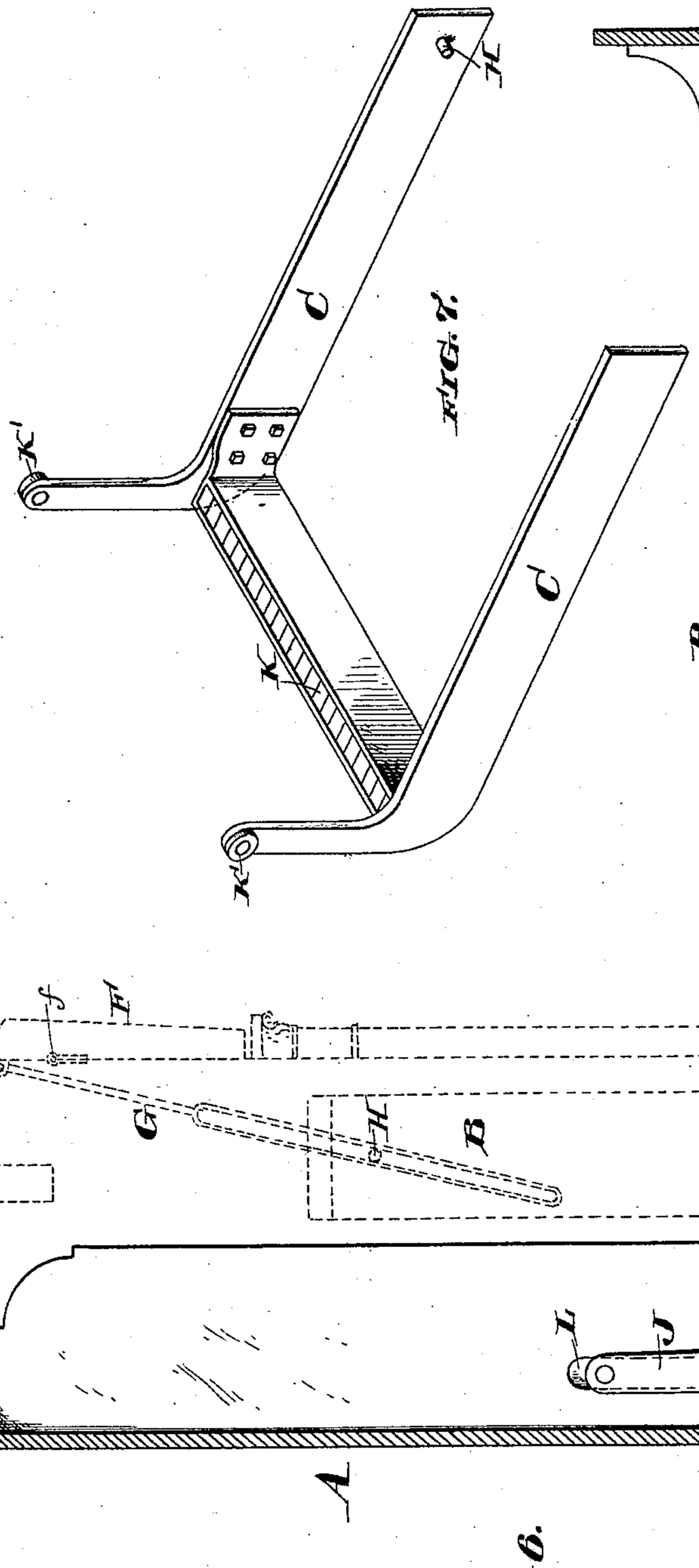


FIG. 7.

FIG. 6.

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By his atty
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UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE HALE & KILBURN MANUFACTURING COMPANY, OF SAME PLACE.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 454,121, dated June 16, 1891.

Application filed August 23, 1890. Serial No. 362,860. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HALE, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Folding Beds, of which the following is a specification.

My invention has reference to folding beds; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to construct a folding bed which shall have when folded small height and permit a greater and more artistic variety of designs to be made of it as a piece of furniture.

In carrying out my invention I provide a stationary part and combine therewith a hinged or movable part hinged or pivoted to said stationary part at a considerable distance from the head-board or back thereof, and arrange between said movable part and stationary part an extensible portion corresponding to the side rails of the bed. The said extensible portion slides in suitable grooves or guideways on the movable part, and is connected with the stationary part in such a manner as to permit its being tilted with the movable part, but not materially moved in a horizontal direction. This construction enables me to form a bed of the full length when open from a low piece of furniture when closed. Furthermore, in my construction the counter-weights are so carried by the extensible portion that the leverage is greatest when the most power is required in moving the movable part and least when the least power is required. In conjunction with the construction above specified I provide hinged legs or supports for the movable part when down, said legs or supports being automatically operated by suitable connecting devices, preferably leading to the extensible portion, as is more fully set forth hereinafter.

Referring to the drawings, Figure 1 is a side elevation of a folding bed embodying my invention when open. Fig. 2 is a side elevation of same when the bed is closed. Fig. 3 is a cross-sectional elevation of same on line *y y* of Fig. 1. Fig. 4 is a sectional plan view of same on line *x x* of Fig. 1. Fig. 5 is a detail view of one of the legs and the operating mechanism. Fig. 6 is a sectional elevation through my improved bed when opened, showing a different location of the counter-weights from that shown in Fig. 1, and Fig. 7 is a perspective view, showing the construction of the extensible portion.

A is the stationary or head part, and is made substantially L shape when looking at the side.

B is the movable or foot-board portion, and is hinged by metal extensions D to the stationary part A at the point E, said hinged point being at a greater distance from the head-board, so as to throw the foot-board as far from the head-board as possible when the bed is opened.

C is the extensible portion and forms two side rails, which fill the gaps between the parts A and B when the latter are lowered. These extensible portions C slide in suitable guideways on the movable part B, and their ends adjacent to the stationary part A are turned upward, as at J, and are provided with guide-rollers K′, which work in vertical guideways L on the sides of the stationary part A. It will be seen that by this construction the extensible portions C are carried by the movable part B and tilted with it, and are moved in and out of the guides on the movable part B by the action of the said movable part B and the guideway L in the stationary part A.

K represents weights, which are supported upon the upper ends of the extensions J of the extensible portion C, and counterweight the parts C and B.

I represents the spring-mattress, one end of which is connected to the stationary frame A and the other end to the foot-board of the part B. As shown, the mattress consists of a series of flexible or collapsible longitudinal bands upon which the woven mattress rests. Any other form of springs may be employed to support the upholstered mattress and bedding.

F are hinged legs, which are hinged at *f* to the movable part B. These legs have their upper ends connected by a link G, provided with a longitudinal slot *g*, with pins H on the extensible portions C, the operation being such that when the part B has been

lowered the pin H, acting upon the end of the slot, causes the leg F to be thrown open, and when the part B is raised the same pin H strikes the upper end of the slot and causes the leg to be automatically closed. The two positions of the leg and the operating mechanism are shown in Figs. 1 and 2. Any other form of automatic mechanism may be employed for operating the legs F, if desired.

In the construction shown in Fig. 6 the counter-weights K are located farther down than the level of the rollers K′, the object of which is to reduce the amount of leverage to a minimum when the part B is folded to the position shown in Fig. 2. It is quite evident that the location of these counter-weights might be more or less varied, so as to bring them nearer to or farther from the hinged point E, according as to what is found more desirable in the particular construction of any especial design of bed embodying the principles of construction set out in this application.

In the construction shown in Figs. 6 and 7 there will be no connection at the upper end of the arms J, and consequently the pillows can rest against the head part of the stationary part A, and this materially increases the available length of the bed over what would be had with the particular construction shown in Figs. 1 and 2.

I do not limit myself to the mere details of construction which are herein set out, as they may be modified without departing from the principles of my invention.

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

1. In a folding bed, a stationary upright portion, in combination with a movable portion pivoted thereto and an extensible portion connected to the stationary portion and extensible upon the movable portion.

2. In a folding bed, a stationary upright portion, in combination with a movable portion pivoted thereto and an extensible portion connected to the stationary portion and extensible upon the movable portion, a counter-weight carried upon the extensible portion, and a support for the mattress connected at one end to the stationary portion and at the other end to the movable portion.

3. In a folding bed, a stationary upright portion, in combination with a movable portion pivoted thereto, an extensible portion connected to the stationary portion and extensible upon the movable portion, pivoted or extensible legs carried by the movable portion, and operating devices connecting the legs with the extensible portion of the bed, whereby said legs are moved into operative or concealed position automatically upon opening or closing the bed.

4. In a folding bed, the combination of a stationary part, a movable part hinged thereto at a point in front of the face of the movable part, an extensible part connected to the stationary part by a connection movable vertically and extensibly supported in guides on the movable part, and counter-weights carried upon the movable part.

5. In a folding bed, the combination of a stationary part, a hinged movable part, an L-shaped extensible part carried upon the movable part by suitable guides and extensible thereon, and a movable connection between the free end of said extensible part and the stationary part.

6. In a folding bed, the combination of a stationary part, a movable part hinged thereto, an extensible part having one end carried by the movable part and having the other end free to move vertically and laterally with respect to said movable part, and counter-weights carried by said extensible part, whereby the leverage exerted by said counter-weights increases or decreases in accordance with the increase or decrease in the leverage of the movable part.

7. In a folding bed, a stationary upright portion, in combination with a movable portion pivoted thereto, an extensible portion connected to the stationary portion and extensible upon the movable portion, and flexible supports for the mattress, secured at one end to the stationary upright portion and at the other end to the movable portion.

8. In a folding bed, the combination of a stationary part having vertical guideways, a movable part hinged to the stationary part at its lower portion, and an extensible part carried by the movable part, with provision for movement thereon, and guiding-rollers carried by the free end of said extensible part working in the guideways of the stationary part.

9. In a folding bed, the combination of a stationary part having vertical guideways, a movable part hinged to the stationary part at its lower portion, an extensible part carried by the movable part, with provision for movement thereon, guiding-rollers carried by the free end of said extensible part working in the guideways of the stationary part, and counter-weights carried by the extensible part.

In testimony of which invention I hereunto set my hand.

HENRY S. HALE.

Witnesses:
R. M. HUNTER,
ERNEST HOWARD HUNTER.