(No Model.)

H. S. HALE.

FOLDING BED.

No. 454,122. Patented June 16, 1891.

FIG. 1.

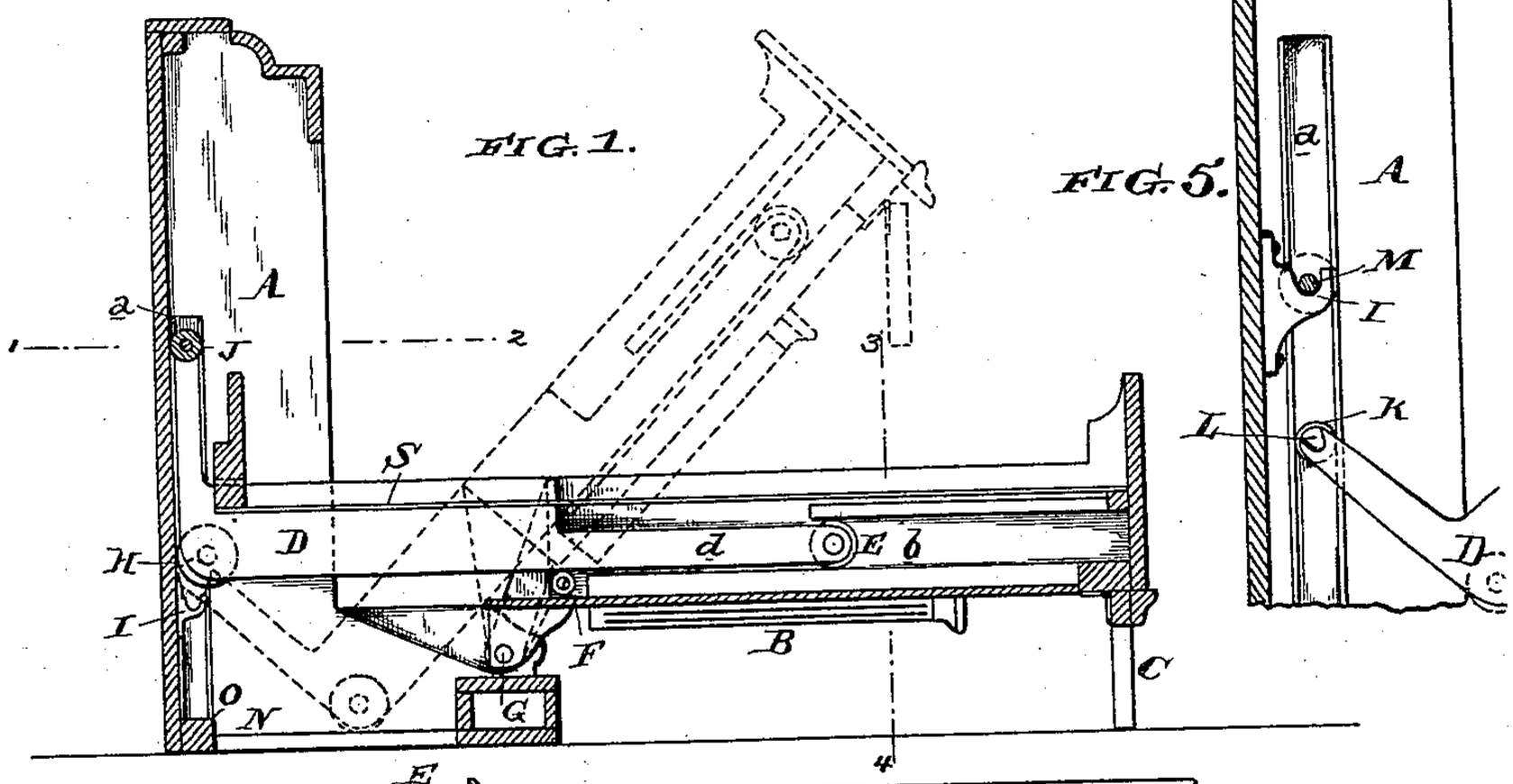


FIG. 5.

FIG. 2.

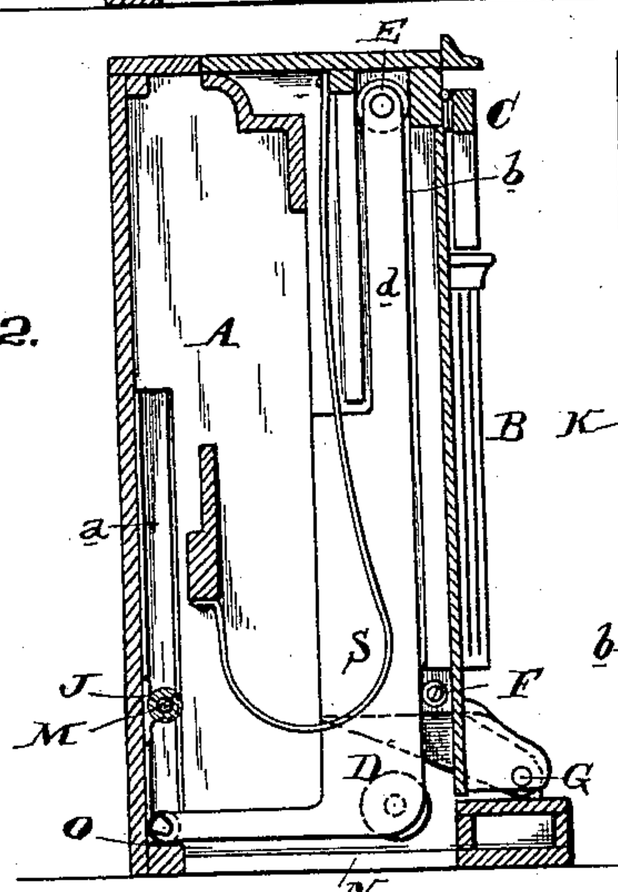


FIG. 3.

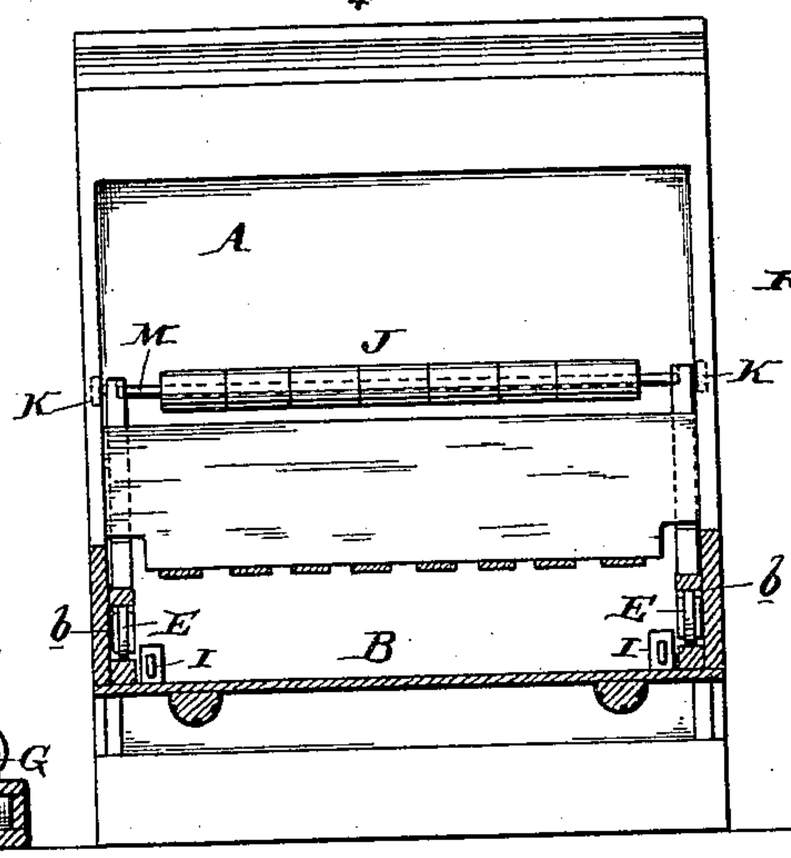
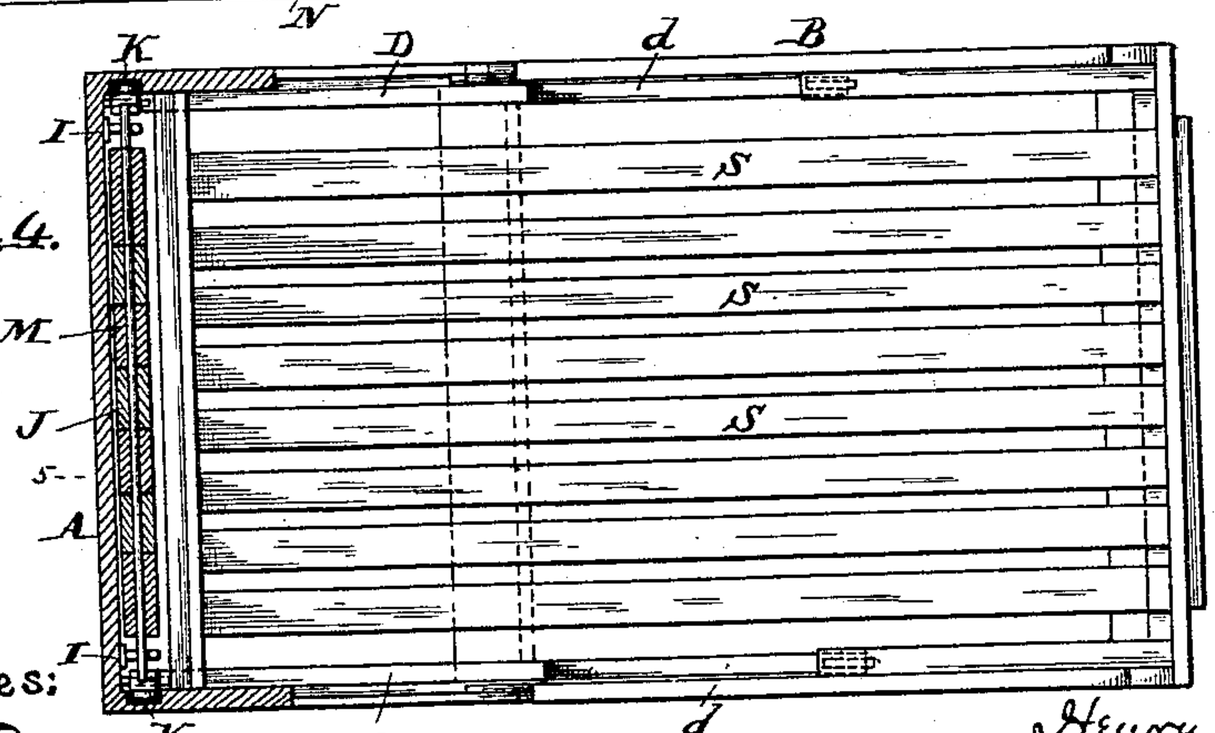


FIG. 4.



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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. 454,122, dated June 16, 1891.

Application filed November 6, 1890. Serial No. 370,496. (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.

My improvements set out in this application refer to a construction of folding bed such as is set out in my application, Serial No. 362,860, filed August 23, 1890, in which a stationary part is combined with a movable part and an intermediate extensible part carried by the movable part and connected to the stationary part and so operated as to be extensible upon the movable part to keep the side rails of the bed continuous when the bed is opened.

My present application comprehends improvements upon the construction set out in my aforesaid application, and said improvements are fully disclosed in the accompanying drawings, in which—

Figure 1 is a sectional elevation on line 5 6 of Fig. 4, showing my improved bed opened. Fig. 2 is a similar section showing the bed closed. Fig. 3 is a cross-section taken on line 3 4 of Fig. 1. Fig. 4 is a sectional plan view taken on line 1 2 of Fig. 1, and Fig. 5 is an enlarged view illustrating one portion of the structure of my improved bed.

A is the stationary part, and B is the hinged or movable part, being hinged to the stationary part at G as far forward as is possible, so as to enable the bed when closed to be short or low.

C is the hinged leg portion carried upon the upper and outer end of the hinged part B. Carried upon the hinged part B are the two extensible side rails D, having extended narrow arms *d*, carrying upon their ends rollers E, which work in a groove or guideway *b* on the part B, of a length equal to the extensible movement of the side rails D.

F are rollers carried upon the part B, against which the under parts of the rails D rest to reduce the friction of said parts D when sliding into and out of the part B. The guideway *b* extends only a portion of the length of the hinged part B, so as to enable the wide part of rail D to slide into the part B when closing the bed, as indicated in Fig. 2. The side rails D are in the same plane with the upper edges of the side rails of the hinged part B, so that when the bed is opened the upper edges of the side rails of the bed as an entirety are continuous. The side rails D are made L-shaped, and their ends adjacent to the stationary part A extend at right angles to the lower part of the rail and are connected with said stationary part A by means of rollers K, which work in vertical grooves or channel-ways *a* in the sides of the part A. The ends of these arms of the side rails D are cup-shaped, as at L, (best shown in Fig. 5,) to receive the transverse rod M, upon which are strung the counter-weights J. The hinged portion B in its movement from being fully down to the position indicated in dotted lines in Fig. 1 is counterweighted by the weights J; but in a further movement of the part B and its rail D the rod M is received upon the brackets I, secured to the stationary part A, and the final closing of the movable bed portion is accomplished by its own weight—a possible result owing to the forward location of the hinge G. This removal of the counter-weights just prior to the closing of the bed in a great measure avoids the banging of the part B against the part A in closing the bed—a defect which is experienced in a large measure in some makes of beds. When the part B reaches the position indicated in dotted lines in Fig. 1, the ends of the side rails D are brought to such a position that the rollers or wheels H upon their inner ends are received upon a guide-rail N, secured to the frame A, and in the final closing of the bed the said side rails travel over the guide-rail N. Just prior to the complete closing of the bed the ends of the extensible rails D adjacent to the guide-rollers K are received upon stops O on the main frame A, and this converts the side rails D into a lever acting against the closing of the part B, which action, being opposed to the tendency of the part B to close, counteracts what would otherwise be a slamming action of the part B

against the part A. The more forward the hinged point G is placed the greater is this tendency to slam and the more desirable it is to employ the weight of the extensible side rails D to counteract it. By employing this guide-rail N and the roller H a great deal of the friction of the side rails D upon the movable or hinged part B is removed and the bed more easily operated.

It is evident that the brackets I may be located higher up or farther down, as desired, as the particular location would be more or less varied with different designs of the bed. S are the springs upon which the mattress is supported, and are connected at one end to the hinged part B and at the other end to the stationary part A. It is also evident that, if desired, the brackets I may be dispensed with and the rod M and counter-weights J permanently secured to the side rails D.

The details of construction may be varied 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, the combination of the stationary part, the hinged part having guideways *b*, and side rails carried by said hinged part and extensible thereon, provided with the extended narrow arms *d*, guided in the guideways *b*.

2. In a folding bed, the combination of the stationary part, the hinged part having guideways *b*, side rails carried by said hinged part and extensible thereon, provided with the extended narrow arms *d*, guided in the guideways *b*, and rollers on the ends of said arms *d*, working in said guideways *b*.

3. In a folding bed, the combination of the stationary part A, a hinged part B, side rails extensible on the hinged part B, connected to the stationary part A with provision for vertical movement, counter-weights acting upon side rails, rollers arranged upon the lower parts of the side rails where they extend into the stationary part, and guide-rails against which said rollers run after the hinged part has been partly raised.

4. In a folding bed, the combination of the stationary part A, a hinged part B, side rails extensible on the hinged part B and connected to the stationary part A with provision for vertical movement, counter-weights acting upon said side rails, rollers arranged upon the lower parts of the side rails where they extend into the stationary part, guide-rails against which said rollers run after the hinged part has been partly raised, and a support upon which the side rails rest, secured to the stationary part, whereby said side rails act as a counter-weight to the hinged part.

5. In a folding bed, the combination of the stationary part, the hinged part, guide-rails extensible upon the hinged part, a movable connection between the side rails and the stationary part, whereby the former may move up and down upon the latter, a counter-weight detachably supported by said side rails, and brackets or supports for receiving the counter-weight when the hinged part has been partly raised.

6. In a folding bed, the combination of the stationary part, the hinged part, guide-rails extensible upon the hinged part, a movable connection between the side rails and the stationary part, whereby the former may move up and down upon the latter, a counter-weight detachably supported by said side rails, brackets or supports for receiving the counter-weight when the hinged part has been partly raised, rollers arranged upon the under parts of the side rails, and guide-rails secured to the stationary part, against which the roller runs when the hinged part has been partly raised.

7. In a folding bed, the combination of a stationary part having a vertical guide, a hinged part, side rails made L-shaped and extensible on the hinged part and guided in the vertical guides on the stationary part, a detachable counter-weight carried by said side rails, brackets for supporting said counter-weights when the bed is partly closed, and supports against which the side rails rest just prior to the bed being fully closed, whereby the side rails may act as counter-weights to the hinged part.

In testimony of which invention I have hereunto set my hand.

HENRY S. HALE.

Witnesses:
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