(No Model.) 3 Sheets—Sheet 1.

A. M. BRAINARD.

WARDROBE BEDSTEAD.

No. 482,159. Patented Sept. 6, 1892.

Fig. 1.

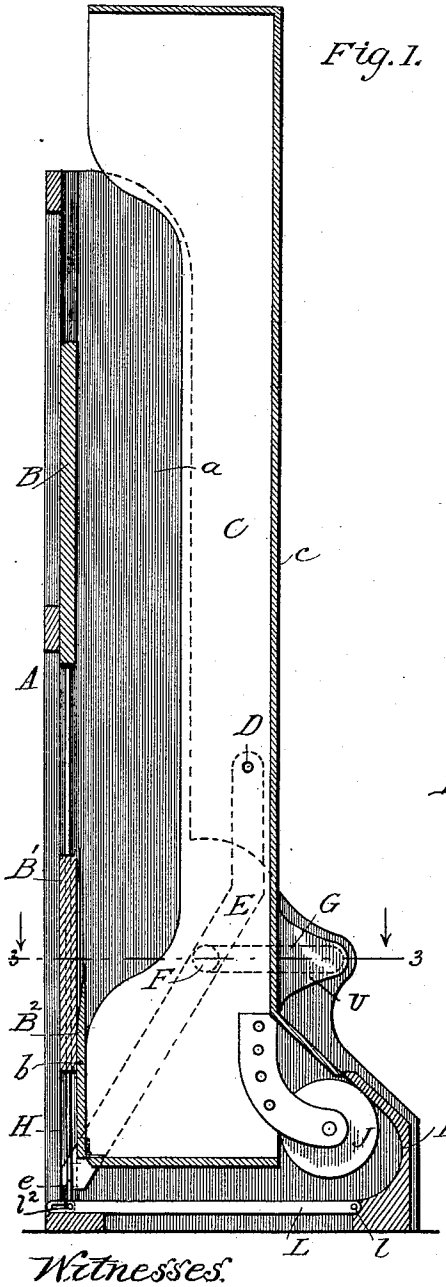
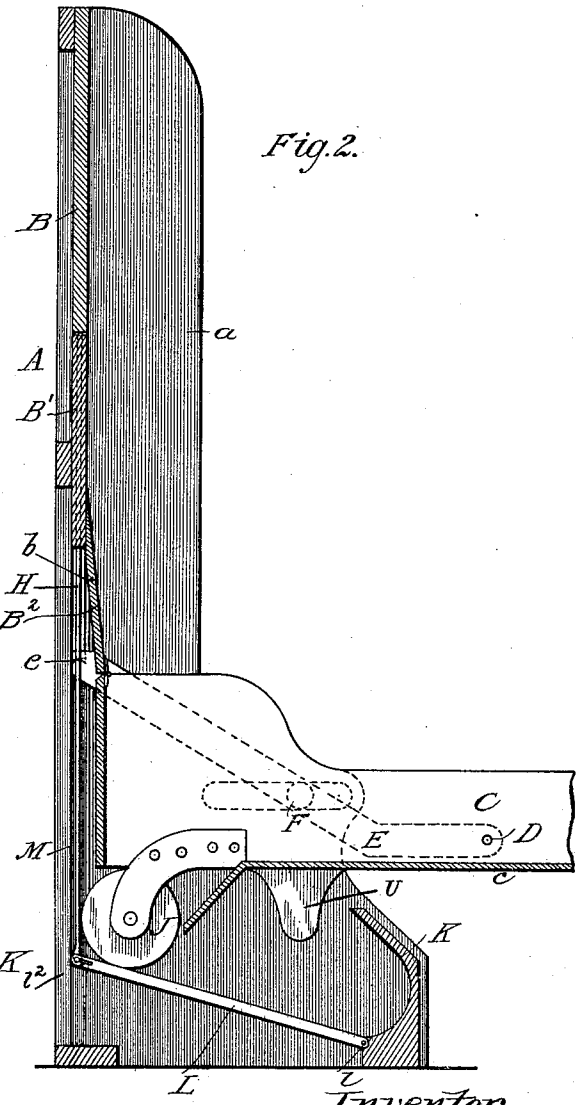


Fig. 2.



Witnesses.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

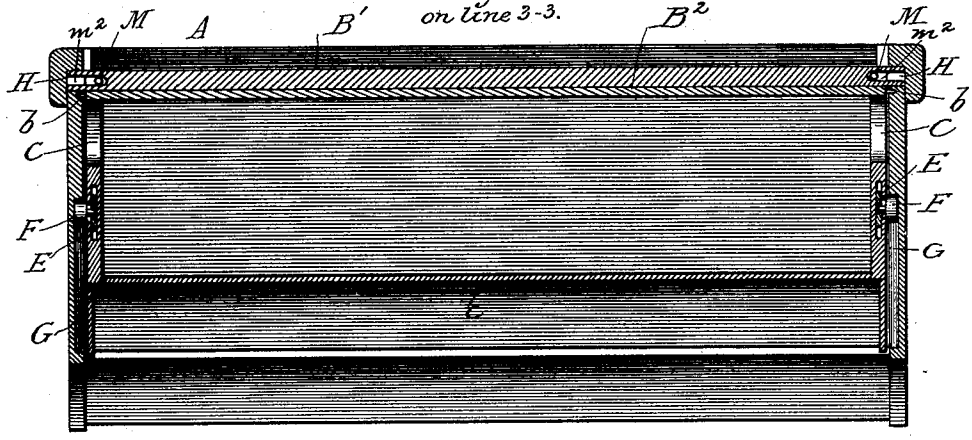
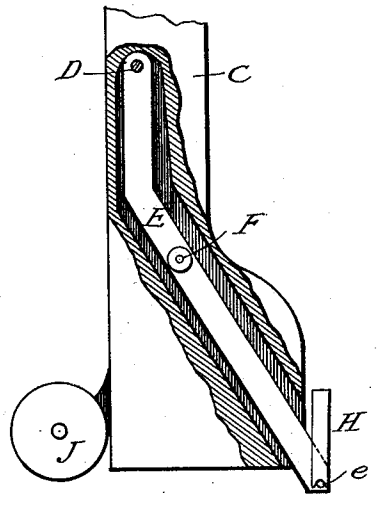


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

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WARDROBE BEDSTEAD.

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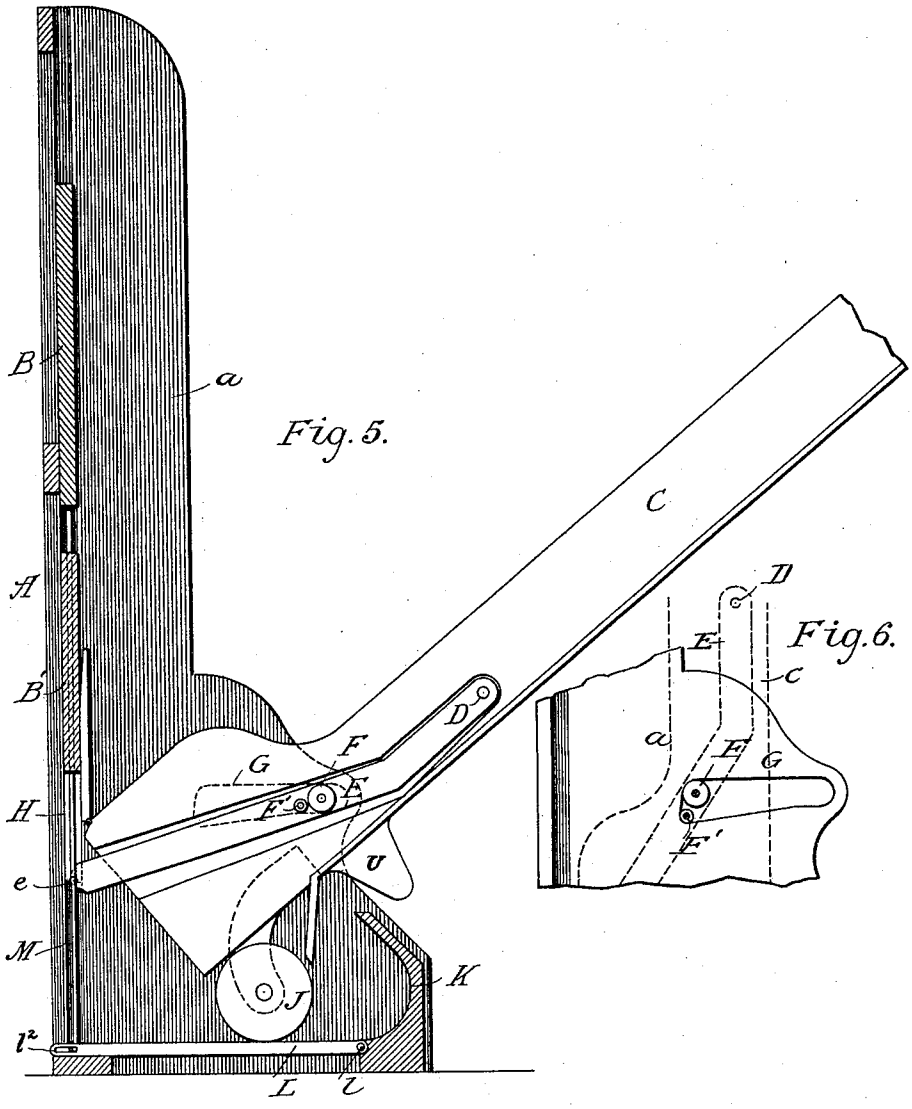

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

ADELBERT M. BRAINARD, OF CHICAGO, ILLINOIS.

WARDROBE-BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 482,159, dated September 6, 1892.

Application filed October 19, 1891. Serial No. 409,211. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT M. BRAINARD, of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Folding Beds, of which the following is a specification.

My invention has reference to what are generally known as "high folding beds," in which the bed-frame proper is jointed to the head-frame, commonly denominated the "casing," to turn bodily upward and downward. In this class of beds as commonly constructed it is necessary to use counter-weights ranging variously from two hundred to six hundred pounds.

It is one of the principal objects of my invention to do away with these expensive and cumbrous weights and at the same time to simplify the construction, reduce the size, and secure a perfect balancing action of the frame as it rises and falls.

In the accompanying drawings, Figure 1 is a vertical cross-section through my bed in its closed position. Fig. 2 is a like view showing the same extended for use. Fig. 3 is a horizontal section on the line 3 3, Fig. 1. Fig. 4 is a side elevation of one end of the bed-frame. Fig. 5 is a sectional view in elevation of the bed in an alternative form. Fig. 6 is a detail of such alternative form.

Referring to Figs. 1 to 4, A represents the stationary casing, which may be constructed in any form and manner adapted to sustain the operative parts, but which in the form shown consists, essentially, of the two side boards or standards *a*, rigidly united by cross-bars.

B B′ represent the head-board mounted to slide vertically in grooves in the casing, so that it may serve as a counter-weight, and preferably constructed, as shown, of two or more sections arranged to rise each against the next.

C represents the bed-frame intended to receive and carry the wire or spring mattrass and bedding, and consisting of the usual side and end rails rigidly connected and provided with a front or bottom *c*. This bed-frame, which is in itself a complete and rigid structure, is sustained at an intermediate point in its length by pivots D, mounted in the ends of bars or levers E. These levers are located in recesses in the side rails of the bed-frame and are each made of angular form and provided at an intermediate point in its length with a roller or stud F, mounted in a horizontal slot G in the casing, so that the studs F, traveling in the grooves, will serve as shifting centers or journals around which the levers E and bed-frame C may be swung upward and downward. The bed-frame C is allowed a limited pivotal motion in relation to the levers E upon or about the centers D. This motion may be limited by stops of any suitable character, but is best secured, as shown in Fig. 4, by seating the levers in recesses of suitable size in the sides of the bed-frame. The rear or head ends of the levers E are provided with studs *e* or otherwise formed to engage slides H, movable in vertical grooves in the casing. Each lever is thus supported by the horizontally-movable fulcrum F and guided by the vertically-movable slide H at its end.

At its head end and on the under side the bed-frame C is provided on each side with a rigid arm carrying a roller J, arranged to ride against a stationary curved track or surface K on the casing and thence along an underlying track-rail L. Each of these track-rails is mounted at its forward end on a pivot *l* and connected at its rear end by a rod M with the uppermost section B of the head-board. The bolts which connect the rods M with the track-rails pass through slots l^2 to permit the inward and outward movement incident to the rising and falling of the tracks.

When the bed is folded, the parts stand in the position indicated in Fig. 1. On drawing forward the upper end of the bed-frame C the upper ends of the levers E will swing forward and their supporting-journals F move outward in the slots G. As this occurs, and during the earlier part of the movement, the bed-frame C is allowed by the changing position of the levers and pivots D to move downward and forward, subject to the controlling influence of the rollers J, which ride beneath the guiding-surfaces K. As the bed-frame and its supporting-levers E approach a horizontal position the rollers J bear upon and travel rearward on the rails L, which receive and carry the greater portion of the weight of the bed-frame. As the downward motion of the frame continues the rear ends

of the levers E rise beneath the lower section B′ of the head-board, which, resting thereon and being elevated, thereby serves as a counter-weight. As the motion continues the lower section of the head-board rises against and lifts the upper section, which serves as an additional counter-weight. The motion being still continued, the head-board, acting through the rods M, which are connected therewith and pass through holes or grooves m^2, formed in the ends of the sections B′, lifts the track-rails L, giving them an upward inclination toward the head, as shown in Fig. 2, so that as the frame approaches its final or extended position the supporting-roller K is caused to ascend the rail, the effect of which is to still further increase the resistance to the fall of the frame. The result of the foregoing actions is that an almost perfect balance of the frame is maintained during its entire movement, so that without the employment of special counter-weights or other devices the operator is enabled to swing the bed-frame upward and downward with ease.

The grooves in which the rollers F travel may be horizontal throughout their length; but the best results are given when they have a downward inclination toward the head at one end, as shown in Figs. 5 and 6. It is manifest that they may be varied in form to a limited extent, as the amount and distribution of the weight in different bed-frames may demand.

Referring to Figs. 5 and 6, the construction therein shown will be found essentially the same as that in the preceding figures, with the addition of a second roller or stud in each of the stationary arms to come into play and give an increased leverage against the weight of the falling bed-frame. The casing A, head-board B B′, bed-frame C, levers D, and the sustaining-studs, slots, and rollers are all of the same construction as those already explained; but in addition to the roller on stud F each lever E is provided with a second stud or roller F′, located nearer the head end and of smaller diameter. When the bed is closed and during the earlier part of the opening action, the weight is carried on the rear rollers; but as the frames turn downward the forward rollers located nearer the foot end of the frame come into bearing, thus shifting the fulcrum outward and contributing toward a perfect balance of the parts. Of course the number of rollers may be increased, provided they are so located as to come into action successively as the frame changes position. A forward extension U on the bed-frame hides or covers the front ends of the slots or grooves G. This extension performs no mechanical function and its only purpose is to give the structure a sightly finish.

An important part of my invention lies in the employment of track-rails which are automatically adjusted to offer an increasing resistance to the falling bed-frame, and it will be apparent to those skilled in the art that this feature may be used not only with bed-frames sustained by levers in the manner herein shown, but also in connection with bed-frames jointed in any of the ordinary ways to the head-frame to turn up and down and that the connections between the bed-frame and rails may be varied in detail, provided only the rails are lifted as the frame approaches an operative position.

While I have referred in the foregoing description to but two sections B B′ of the head-board, I show in the drawings a third section B^2, which is hinged to the upper edge of the head-rail of the bed-frame and closes the space between the bed-frame and the section B′. It has in its ends horizontally-projecting pins *b*, which run in guide-grooves in the sides of the casing A and hold it in proper position.

Having thus described my invention, what I claim is—

1. In a folding bed, the combination of the casing, the arms or levers jointed thereto to turn upward and downward, the bed-frame jointed to the levers and provided with rollers, the rails whereon the rollers travel, and connections through which the rails are elevated at one end as the bed is extended.

2. In a folding bed, the casing and the rising and falling head-board therein, in combination with the lever jointed to the casing to turn upward and downward, the bed-frame jointed to the levers, the track-rails to sustain the end of the bed-frame, and the connection from the rails to the head-board, substantially as shown.

3. In a folding bed, a bed-frame mounted to turn upward and downward, in combination with track-rails against which the end of the bed-frame rides and connections between the head-frame and track-rails through which these rails are positively elevated to offer an increasing resistance as the bed-frame is turned downward.

4. The casing, the gravitating head-board, and the arms or levers having studs mounted in horizontal and vertical guides in the casing, in combination with the bed-frame pivoted to the arms, the pivoted rails arranged to sustain and guide the end of the bed-frame, and the connection between the head-board and rails.

In testimony whereof I hereunto set my hand, this 1st day of October, 1891, in the presence of two attesting witnesses.

ADELBERT M. BRAINARD.

Witnesses:
W. R. KENNEDY,
F. S. ELMORE.