(No Model.) 3 Sheets—Sheet 1.

W. ZIMMERMAN.

FOLDING BED.

No. 260,346. Patented June 27, 1882.

Fig. 1.

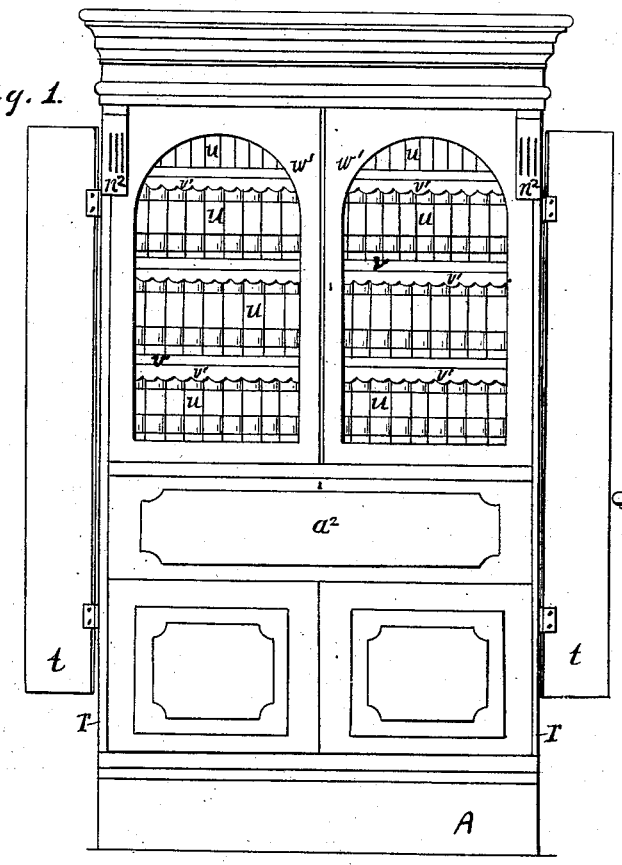
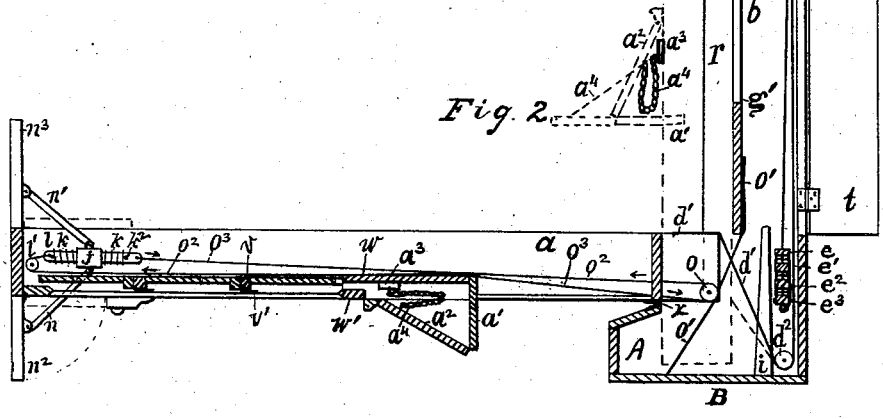


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

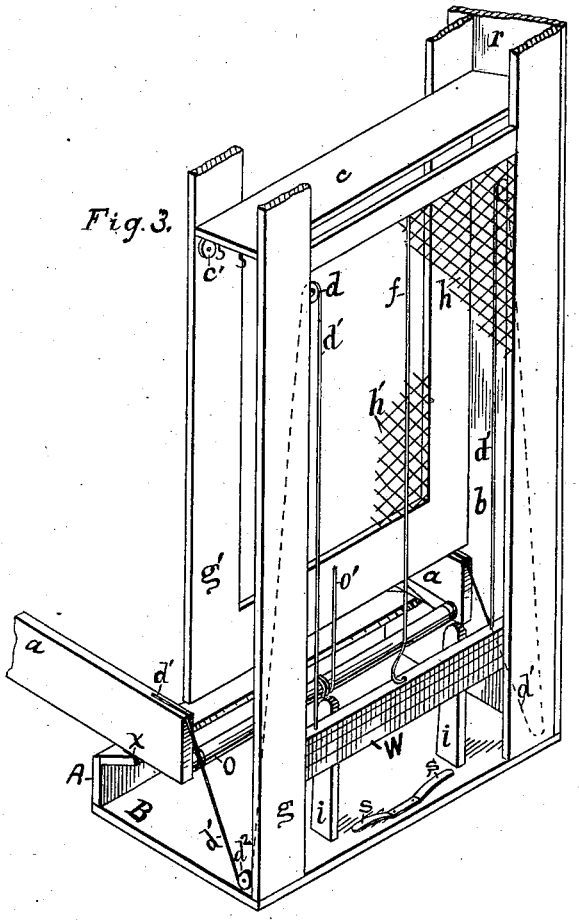
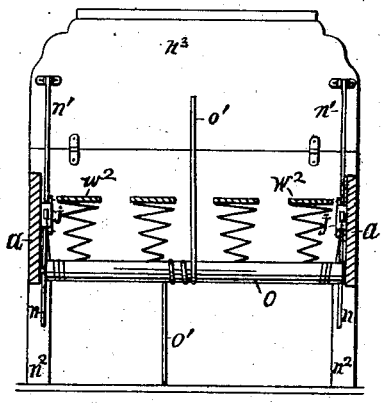


Fig. 4.



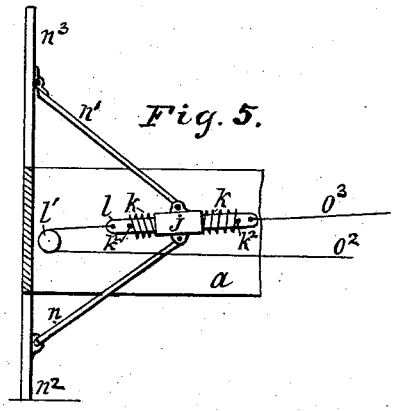


Fig. 5.

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FOLDING BED.

No. 260,346. Patented June 27, 1882.

Fig. 6.

Fig. 7.

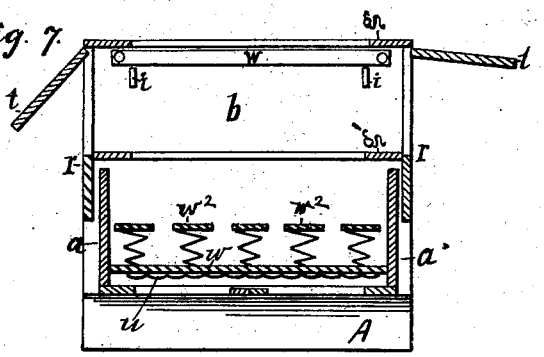


Fig. 8.

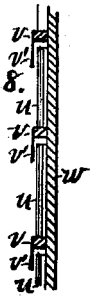
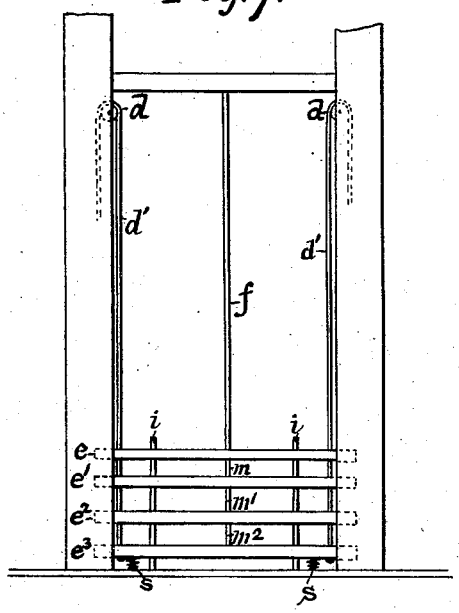


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM ZIMMERMAN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO MARTIN C. BURT, OF SAME PLACE.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 260,346, dated June 27, 1882.

Application filed January 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ZIMMERMAN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Folding Bedsteads; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention relates to make and use the same, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 represents a front view, and Fig. 2 a side view in elevation. In the latter the bed is shown down, and in dotted outline the position it occupies when up or folded, and the near side board and side of the upright removed so as to show its internal mechanism. Fig. 3 represents a perspective view of the wardrobe with the near walls removed, showing the frame-work and continued mechanism for operating the folding bed, of which only a part of the side rails are shown, the slats and springs are removed; and Fig. 4 represents an end view of the bed and its attached mechanism as removed from the wardrobe part. Fig. 5 represents the outer end of the side boards with the mechanism for operating the folding board n^3 and leg n^2. Fig. 6 represents an enlarged view of part j and rods n n' as seen from the end. Fig. 7 represents a plan view of a cross-section of the whole apparatus, taken anywhere between clothes-hooks and above the top of the desk-lid, showing slats w^2 and springs. Fig. 8 represents an enlarged side sectional view of the bed-bottom w, with the shelves, books, and curtains shown. Fig. 9 represents a rear view of the wardrobe, with the weights, cords, and springs operating the folding bed in position when the bed is folded up.

Like letters of reference indicate like parts.

The object of my invention is to construct a folding bed combined with a wardrobe to which access may at all times be had, and from and into which articles of clothing, &c., may be placed and withdrawn therefrom readily and conveniently; also, in combination therewith, a writing-desk and book-case, the latter more properly as an adornment; and it also further consists in a novel arrangement whereby the foot-board and legs thereunder are automatically raised or folded, and also in the arrangement and automatic adjustments of the weights and cords whereby the bed is raised and lowered.

In the drawings, A represents the complete bed, as shown in Fig. 1. The desk-lid a^2 is closed. The wardrobe-doors t on each side are open.

u represents the books in the book-case, and v' the curtains hung from the shelves v, so as to cover or hide the tops of the books and back or bottom w from view.

w' represents the glass doors of the book-case, and n^2 the legs of the bedstead folded in place and representing ornamental brackets.

From the rear of the base B rises a frame, g, inclosing a wire screen, h, and securely held in place by side boards r. At a distance of about a foot or less is another frame, g', provided with a screen, h', held in place by the board r, and which only extends down to the top of the side rails a. Between said frames g g', near the top, is placed a board, c, on rollers c', one under each corner, upon which the board c runs in and out, and which is provided on its under side with hooks, as shown. The part above the board c is finished so as to represent a book-case, as shown, or as otherwise preferred. The rails a are hinged at x to the projecting part of the wardrobe, so that the boards may project over into the lower part and that their ends may just about be under the frame g', as more clearly seen in Fig. 3.

On the upper edge of the rails a, and at about a foot from their ends, are fastened cords d', laid in a groove cut into the edge of the boards, which are then passed down under the pulleys d^2, thence up to the upper end of the wardrobe b, over pulleys d, and down again, to which are then hung the weights W. The weight W is formed of a series of four or more weights, e e' e^2 e^3, the lower one of which rests on the knots or ends of the cords d', but the cords pass freely through corresponding holes in all the weights above the lower one.

To a cross-bar in the upper part of the frame g is fastened a cord, f, the lower end of which

is fastened to the upper bar, *e*, of the weight W, and which is made of such a length that the weight *e* will be suspended from said cord when the rails *a* have risen to an angle of, say, about thirty degrees, for then a proportionally less weight will be required to balance the bed.

Between the weights *e* and *e'* is a short cord, *m*, so adjusted that after the bed has raised to an angle of, say, forty-five degrees that weight will hang on the cord *m* and both weights, *e* and *e'*, on the cord *f*. Then, after the bed has raised another ten or fifteen degrees, the weight e^2 will hang on the cord *m'* and all on the cord *f*, and so on until the bed is up. As the weight of the bed itself will tend to keep it in place, since it is hinged at the back edges of the rails *a*, it will require but a small part of the last weight, e^3, and in order to prevent too much weight pulling on the cords *d'* springs *s* begin to lift the weight e^3 with gradually-increasing resistance. When the bed is lowered, as shown in Fig. 2, the weight e^3 becomes gradually heavier, as the bed moves out, until it reaches the weight e^2, and then as it descends still farther to the horizontal and needs more weight the weight *e'* and finally *e* are added in succession, so that when the bed is down the weights form one solid weight, W, as shown in Fig. 3. The weights are held between the frame *g* and guides *i*, where they operate freely. The doors *t*, when closed, hold the shelf *c* in position.

Between the extreme inner and lower corners of the rails *a* is placed a roller, *o*, and around the middle of it is attached a cord, *o'*, wound two or three times around said roller, one end of which cord is fastened to the frame *g'* and the other to the base B, as shown. The ends of the cord *o'* should be elastic or fastened to a spring, so as to compensate to the varying distances as the roller *o* moves in a circle centered on the hinge *x*.

On each end of the roller *o* are wound cords with ends o^2 o^3, one end, o^2, of which passes around a pulley, *l'*, attached to the foot-board, and is fastened to a strip, *l*, which passes freely through a block, *j*, and to the other end thereof, o^3, of the cord.

Near the ends of the strip *l*, and attached to it, are studs k^2, and between them and the ends of the block *j* spiral springs *k* are wound around the strip *l*. To the block *j* are hinged strips *n'* and *n*, one of which passes down through the bottom of the bed and is hinged to the hinged leg n^2, and the other to the hinged foot-board n^3. The bottom *w* is fastened about two inches from the lower edge of the side boards or rails *a*, to which are fastened shelves *v*, upon which are placed dummy book-backs *u*. Said book-backs are shallow blocks covered and lettered to represent the backs of books, and are fastened to the bottom *w*, and from the shelf above hang curtains to hide the tops of the books and bottom *w*, which necessarily is close to the glass, and which, without the curtains, would destroy materially, if not entirely, the desired effect. The books are inclosed with glazed doors, as shown.

Below the book-case is a writing-desk formed of a table, *a'*, to which is hinged a lid; a^2, to each end of which is fastened a cord or chain, a^4, provided with an adjustable stud which works in a socket-piece, a^3, which may thereby be so adjusted as to hold the lid a^2 level or more or less inclined.

Upon the table *a'* are made vertical pockets for stationery, &c., of which the sides close against the bottom *w* by the force of springs, so as to clamp and hold their contents from falling out; also an inkstand swinging in gimbals.

The wire screens are covered with muslin; or the wire may be dispensed with and the frames covered with canvas, so as to keep articles hung between them in place and at the same time from dust, and also afford ventilation for the bed when closed up. On the inner or bed side the frame *g'* may be hung with curtains or other ornamental tapestry.

The roller *o* may be operated by means of a spur-wheel operating into the segment of an internal gear in place of the cord *o'*, and the cords may be fastened to the foot-board arranged to slide up and down vertically into its proper position. The object of the springs *k* is to take up any excess of motion and always hold the parts firmly in their place. When the bed is raised to the vertical position the roller *o* is caused to turn and move the ends of the cords, as indicated, which, by the mechanism before described, will cause the end board, n^3, and leg n^2 to assume the position indicated in dotted outline. The weights *e e'* e^2 e^3 may be suspended from elastic cords *m* *m'* m^2, so as to more completely shade the change of the weights.

What I claim is—

1. In a folding bed, the combination, with the rails *a*, hinged at *x*, of the cords *d'*, pulleys *d*, weights *e* *e'* e^2 e^3, and cords *f* *m* *m'* m^2, substantially as specified.

2. In a folding bed, the combination, with the rails *a*, hinged at *x*, of the cords *d'*, pulleys *d*, weights *e* *e'* e^2 e^3, cords *f* *m* *m'* m^2, and springs *s*, substantially as specified.

3. In a folding bed having side rails operating pivotally around a fixed point located between their ends, and provided with roller *o*, constructed to turn by mechanism operated by the motion of the side rails, the block *j* and mechanism constructed to operate the parts n^2 n^3, substantially as specified.

4. In a folding bed, the combination, with the block *j*, provided with hinged rods *n* *n'*, operating the hinged parts n^2 n^3, pulleys *l'*, and cords o^2 o^3, of mechanism arranged to operate said parts by the motion of the rails *a*, substantially as specified.

5. In a folding bed, the rails *a*, provided with writing-desk and adjustable lid a^2, in combination with the chain a^4, provided with

adjustable stud and socket-piece a^3, all constructed substantially as and for the purpose specified.

6. In a folding bed, the hinged rails *a* and ventilated frame *g'*, in combination with the frame *g* and board *c*, forming closet *b*, and sides *r*, provided with doors *t*, substantially as specified.

7. In a folding bed, the hinged rails *a*, in combination with the frames *g g'*, forming a closet, *b*, extending the entire length of the rails *a*, and movable board *c*, substantially as specified.

WILLIAM ZIMMERMAN.

Witnesses:
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W. H. JAYNE.