(No Model.) 2 Sheets—Sheet 1.

F. H. WALKER.

FOLDING BED.

No. 385,736. Patented July 10, 1888.

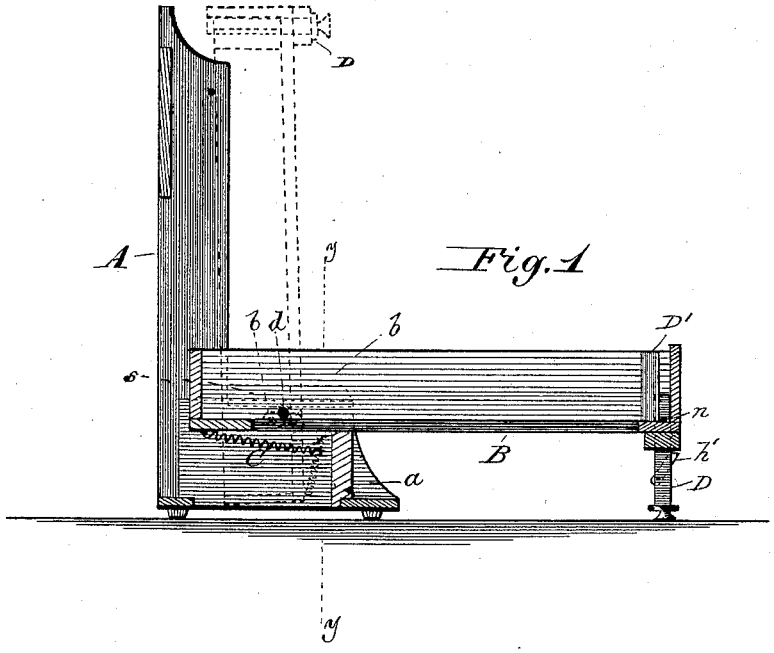
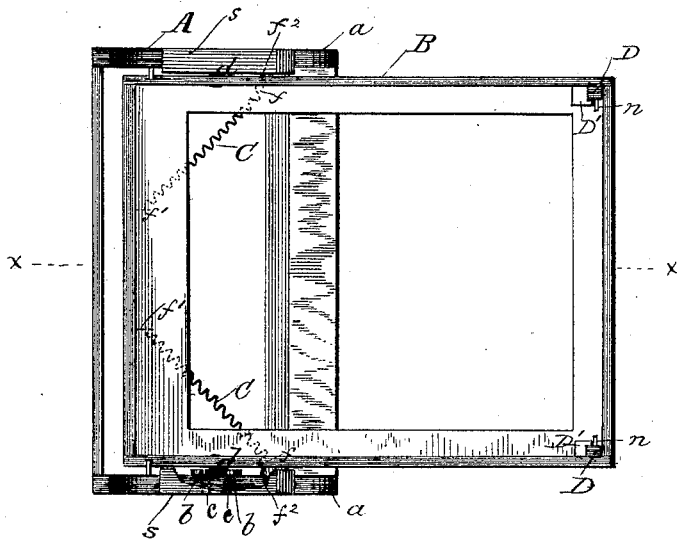


Fig. 1.

Fig. 2.



Witnesses:
B. L. Fenwick.
J. P. Theo. Lang.

Inventor
Francis H. Walker
by his Attys
Mason, Fenwick & Lawrence

(No Model.) 2 Sheets—Sheet 2.

F. H. WALKER.

FOLDING BED.

No. 385,736. Patented July 10, 1888.

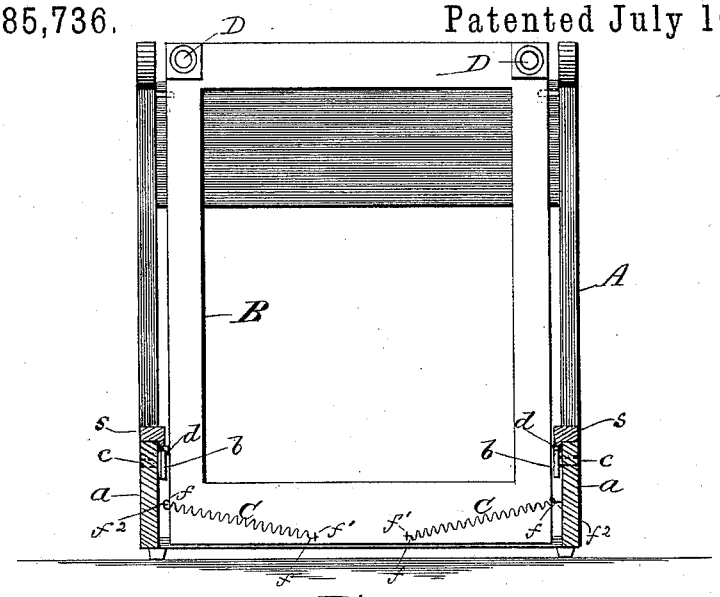


Fig. 3

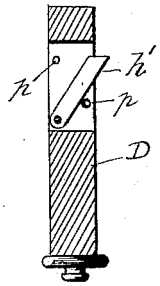


Fig. 4.

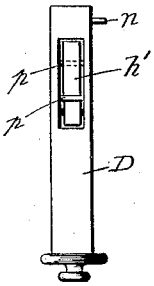


Fig. 5.

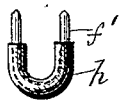


Fig. 6.

Fig. 7.

Fig. 8.

Witnesses:
R. C. Fenwick.
J. P. Theo. Lang.

Inventor:
Francis H. Walker
by his attys
Mason, Fenwick & Lawrence

UNITED STATES PATENT OFFICE.

FRANCIS H. WALKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO M. M. WALKER, OF SAME PLACE.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 385,736, dated July 10, 1888.

Application filed September 10, 1886. Serial No. 213,220. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. WALKER, 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 hereby 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.

My invention consists in certain constructions, arrangements, and combinations of parts, as will be hereinafter described and specifically claimed, whereby an improved folding bed of wardrobe or other suitable form is produced.

In the accompanying drawings, illustrating one mode of carrying out my invention, Figure 1 is a vertical section in the line *x x* of Fig. 2 of the wardrobe folding bed unfolded and folded, it being shown by full lines unfolded and by dotted lines folded. Fig. 2 is a top view of the bedstead unfolded, a portion of one of the capping-strips of the framing being broken away on one side to show parts below. Fig. 3 is a vertical transverse section of the wardrobe-frame forward of the springs, the other parts being shown in front elevation. Figs. 4 and 5 are detail views showing the construction of the respective legs of the bedstead; and Figs. 6, 7, and 8 are detail views showing a hook, a staple, and the hooked end of a spring covered with rubber or other yielding material at their points of connection or bearing, for preventing unpleasant creaking sounds when the bedstead is being folded or unfolded.

A in the drawings represents a portion of a suitable outer frame or casing with its usual front cover or cap left off, so as to expose the working parts, and B is a suitable bed supporting frame, which is applied to said frame or casing A, and adapted to fold into and swing out of the same. On the inner side of each side piece, *a a*, of the frame, which in this instance is of wardrobe form, friction wheels or rollers *b b* are hung on fixed axial pins *c c*, secured in said side pieces. The said rollers or wheels are set a short distance apart, and they may be formed with the pins, so that they and the pins shall revolve together. Between these rollers or wheels, and under capping-strips *s* of the frame A and above their axial pins, the pivot-journals *d d* of the bed-supporting frame B are placed, the rollers forming an anti-friction rolling bearing for the bed-supporting frame B to swing upon in folding in and out of the wardrobe-casing. This construction gives a very easy movement and reduces the friction upon the journals *d d*.

To the bottom side of the bed-supporting frame B, and to the inner sides of the base of the wardrobe-frame near the front, spiral springs C C are connected by means of hooks *f*, formed on the ends of the springs, and staples or hooks *f' f²* are inserted, respectively, into the bed-supporting frame and base of the wardrobe-frame, as shown. The hooked ends *f* of the springs, as well as the hooks or staples *f' f²*, may be covered with a rubber or other analogous yielding sheathing, *h*, for the purpose of preventing unpleasant creaking sounds produced by metallic contact between the hooks of the springs and their supporting-connections when the bed-supporting frame is folded into and swung out of the wardrobe-like frame or casing. The spiral springs C C are arranged to lie, respectively, inclined to a horizontal position, and occupy an oblique position with respect to the front vertical side of the wardrobe-frame A, as shown, when the bed-supporting frame is folded within the wardrobe-like frame. The spiral springs, by lying in an inclined position and standing diagonally or obliquely with respect to the front of the wardrobe-frame A, in the manner described and shown, pull against the bed-supporting frame B below the journals *d d* with just sufficient power to keep it folded within the wardrobe-like frame, and they act with a gradually-increasing resistance when the bed-supporting frame, with its load of bedding, is being swung out of the wardrobe-frame, thereby preventing a sudden fall of the same upon the floor; but while this is the case these springs assume, as shown, a diagonal and nearly-horizontal position when the bed-supporting frame is resting upon the floor, and thus cannot act with sufficient force to cause the bed-supporting-frame to fold back into the wardrobe-frame while it is resting upon the floor, nor with a force tending to pull over the

wardrobe-frame. The action of the springs when the bed-supporting frame is resting upon the floor is so slight that the weight of said frame keeps it down to its unfolded position, this being due to the fact that the points of connection for the springs on the bed-supporting frame are such that the springs lie and exert their strain nearly on a plane with the journals *d d* when the said frame is unfolded, and thus cannot overcome the greater weight forward of said journals.

In folding the bed supporting frame within the wardrobe frame the springs, after their points of connection with the bed-supporting frame are moved downward beyond the irposition illustrated in Fig. 2, (which position is nearly a horizontal plane,) begin to exert their greatest power, and thereby aid in the folding operation, and when the bed-supporting frame is fully folded within the wardrobe-frame they (the springs) act with a force to keep it in its folded position because their points of connection with the bed-supporting frame stand below the journals *d d* and forward of the same, while their points of connection with the outer frame or casing, A, stand forward of their points of connection with the frame B, and thus the frame B is made to afford a leverage upon which the power of the springs is exerted for the purpose of aiding in folding the bed-supporting frame and for holding it folded. By arranging the springs diagonally they can be made of greater length or volume in a given distance.

I am aware that springs and weights have been used for balancing an upright or folding bed-support, and my invention is designed to overcome the tendency of the springs to pull over the wardrobe-frame when made strong enough to balance the bed supporting frame proper, B, when unfolded or adjusted ready for use.

By my construction the power of the spiral springs is so adjusted as to substantially take away the downward pull or strain when the bed-frame proper is unfolded, at the same time to have these springs in a position ready for use when the bed-supporting frame is to be raised or lowered. This is accomplished by having one end of the spiral springs fastened to the wardrobe-frame at a point as far above the bottom of the said frame and sufficiently low down to be out of the way of the under side of the bed-supporting frame proper when unfolded or in use, while the other ends of the spiral springs are fastened to the under side of the head end of the bed-supporting frame, as shown. This arrangement of the springs causes them to stand nearly parallel with the vertical front side of the wardrobe-frame when the bed-supporting frame is folded, said springs running up and down diagonally or obliquely (more or less) from right to left or left to right, as may be necessary by the length of the springs required for proper and easy working of the folding bed-frame.

The springs are kept out of sight when the wardrobe frame is provided with an ordinary front cover or cap. (Not represented in the drawings.) When the bed-supporting frame is unfolded or lowered, the springs follow one arc of a circle, straining more and more until the said frame is fully down or adjusted for use, at which stage the springs will have assumed a diagonal or oblique position and lie nearly on a horizontal plane to and parallel with the bottom side of the bed-supporting frame. The springs in this position produce a strain forward and back instead of up and down, and the tendency is to hold the supporting-frame unfolded or down without straining or pulling over the wardrobe-frame. By my invention I am enabled to use much heavier springs than heretofore without harm to the wardrobe-frame, inasmuch as when the strain is heaviest there is less strain up and down, and, as there is little or no strain when the bed-supporting frame is folded within the wardrobe-case, the springs can be easily detached or attached. The spiral springs may be placed parallel, or nearly so, with the sides of the bed-supporting frame and answer a good purpose, and when so placed they will run straight up and down when the bed-supporting frame is folded within the wardrobe-frame.

The legs D of the bed-supporting frame are arranged to slide in and out in guides D′ of said frame, instead of to swing as heretofore. They are slotted and provided, respectively, with a self-adjusting dog, *h*, which is pivoted to the leg so as to swing in and out in the slot, as shown. Each leg is fitted in a passage provided in a corner of the bed-supporting frame, and at each of these passages the guide D′ is provided, as shown, and in the leg a stop-pin, *n*, is inserted for controlling the extent of its outward movement, its inward movement being controlled by an ornamental knob-like termination on its outer end. Stop-pins *p p* are also applied in front and in rear of the dog *h′*, for controlling its swinging movements. The outer ends of the legs are made ornamental, so that when the legs are forced inward these ends shall give a neat finish or appearance to the wardrobe-frame. With these legs there is no hand adjustment necessary when the bed-supporting frame is unfolded or lowered, for the legs move outward by their gravity, and the dogs by their gravity assume the locking position represented. When the bed-supporting frame is folded, the legs are forced in by hand and stand concealed, excepting that their knob-shaped ends appear as ornamental projections on the front of the wardrobe-frame.

I contemplate making the wardrobe-frame with an open front, and covering the front when the bed-supporting frame is folded up with a hanging curtain, thus making a lighter structure and securing a handsome ornament.

What I claim as my invention is—

1. The combination, with the frame A, provided with pivot-journal bearings, and the

swinging and folding bed-supporting frame B, provided with pivot-journals, of the spiral springs C, arranged diagonally beneath the bed-supporting frame B, and connected, respectively, to staples near the head end of said frame and to staples on the inner walls of the outer case, A, said springs standing inclined to a horizontal plane and oblique with respect to the front vertical side of the outer case when the bed-supporting frame is folded, and occupying a nearly-horizontal and diagonal position when the bed supporting frame is lowered, substantially as and for the purpose described.

2. The combination, with the frame A, provided with pivot-journal bearings, and the swinging and folding bed-supporting frame B, provided with pivot-journals, of the spiral springs C, arranged beneath the bed-supporting frame B, and connected, respectively, to staples near the head end of said frame and to staples on the inner side walls of the outer case, A, said springs standing inclined to a horizontal plane and oblique with respect to the front wall of the case A when the bed-supporting frame is folded, and occupying a nearly-horizontal position when said frame is lowered, substantially as and for the purpose described.

3. The folding bedstead having its respective bearings for the pivot-journals *d d* of its bed-supporting frame B formed of the wheels or rollers *b b*, pins *c c*, and capping-pieces *s s* and the side base portions of the frame A, substantially as and for the purpose described.

4. The combination, with frame A, of the bed-supporting frame B, pivoted to the frame A, and provided with sliding legs D, having dogs *h'* arranged diagonally in slots of the legs between stops, and pivoted by one of their ends to the legs, and acting to fold or adjust themselves within the legs and to adjust themselves partly outside the legs, accordingly as the bed-supporting frame is folded or unfolded, substantially as and for the purpose described.

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

FRANCIS H. WALKER.

Witnesses:
E. R. WALKER,
MELLO F. DOONEBOSCH.