

(No Model.)

2 Sheets—Sheet 1.

W. B. NOYES.
FOLDING BED.

No. 483,724.

Patented Oct. 4, 1892.

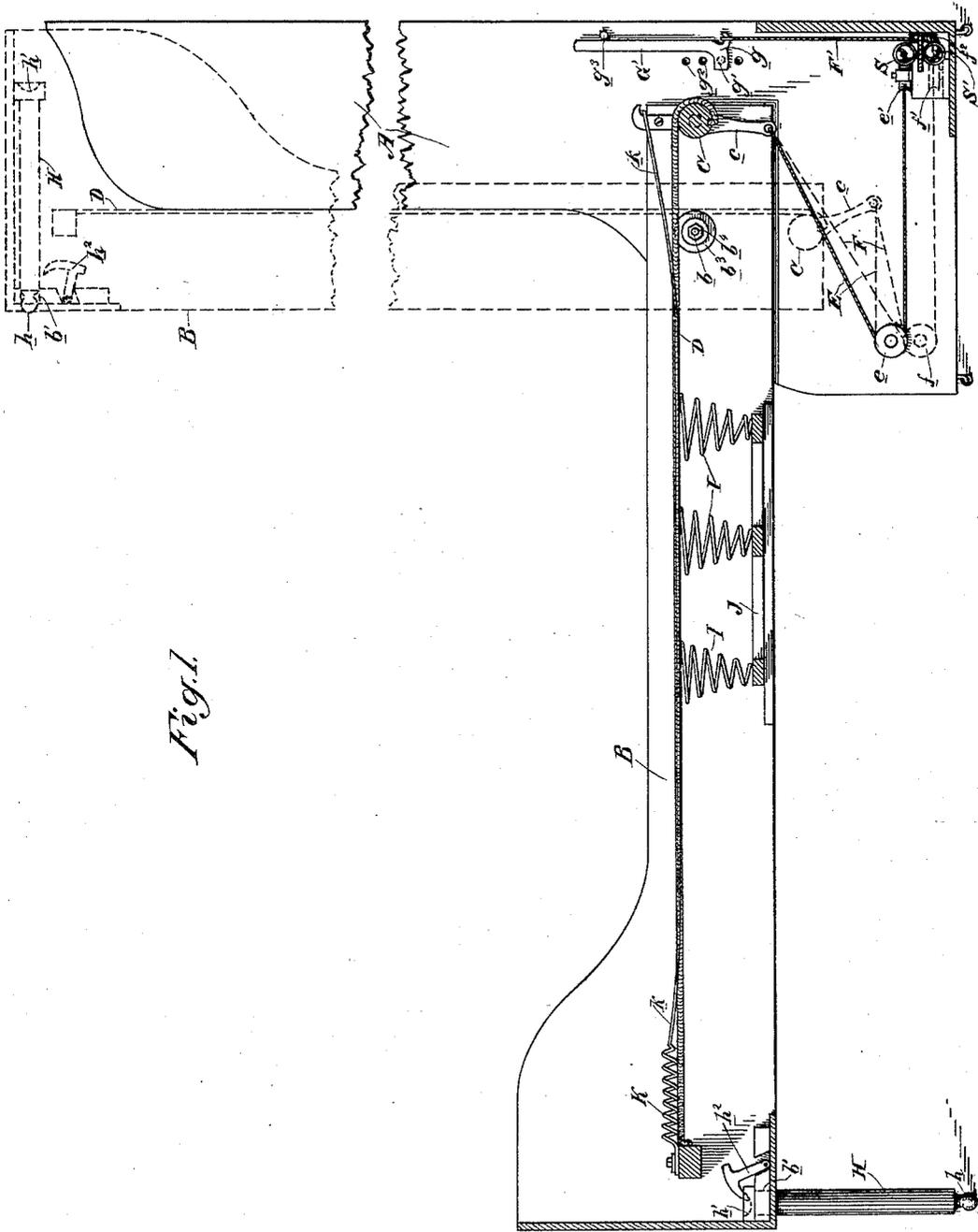


Fig. 1.

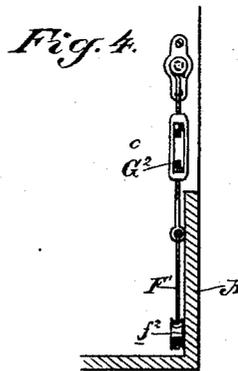
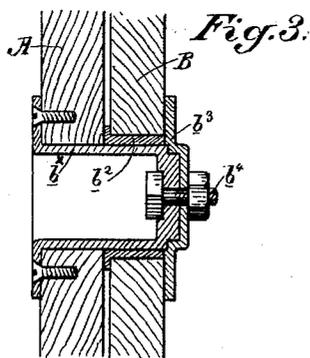
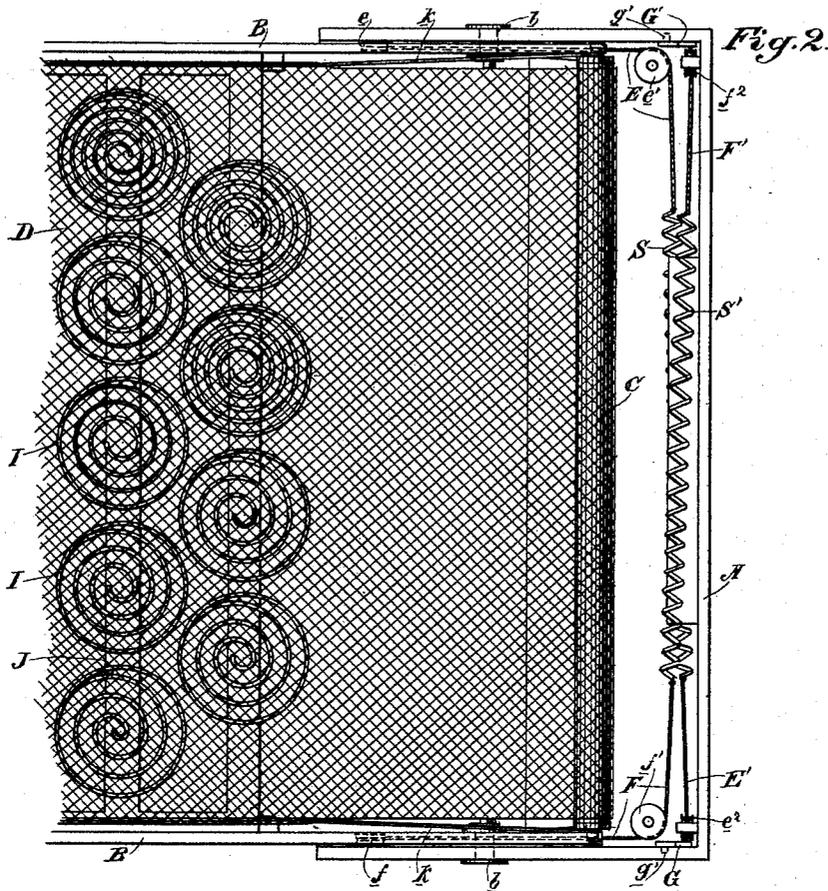
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UNITED STATES PATENT OFFICE.

WALTER B. NOYES, OF SAN FRANCISCO, CALIFORNIA.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 483,724, dated October 4, 1892.

Application filed February 17, 1892. Serial No. 421,857. (No model.)

To all whom it may concern:

Be it known that I, WALTER B. NOYES, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Folding Beds; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of folding beds in which the mattress-frame is pivoted to a fixed frame and is adapted to turn from a vertical or closed position to a horizontal position for use.

My invention consists in the novel connection between the mattress-frame and the main frame, whereby the former is accurately balanced, in the novel supporting-leg for the outer end of the mattress-frame, the novel means for supporting the woven-wire fabric, and other details of construction and arrangement, as will be hereinafter described, and specifically set out in the claims.

The principal object of my invention is to provide a folding bed in which the mattress-frame can be easily opened and closed by reason of a spring connection with the main frame, which accurately balances it.

Other objects will be set forth in connection with the description of the several features of improvement.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical longitudinal section of my bed, the dotted lines showing the swinging mattress-frame raised to a closed position. Fig. 2 is a plan of the head portion of the bed. Fig. 3 is a detail section of the pivot *b*. Fig. 4 is a modification in the connection between the balancing-cable and the fixed frame A.

A is the main frame of the bed, and B is the mattress-frame. The latter is pivoted to the former at *b* by a connection the character of which I shall presently describe. The connection is such as to enable the mattress-frame to be raised to a vertical position and to be lowered to a horizontal position, turning about its pivots at *b*.

The means for balancing the mattress-frame in its movement are as follows: Journaled in

the upper portion of the head of the mattress-frame is an oscillatory roller C, to which one end of the woven-wire fabric D is secured, the other end being secured to the foot of the frame B. The roller C is provided at each end with a crank-arm *c*. To one of these arms is attached a cable E, which passes around a guide-pulley *e* in the lower front portion of the main frame A and thence backwardly along the inner side of said frame to and around a horizontal guide-pulley *e'* in the lower back portion of the frame and thence horizontally in the lower portion of the head of the frame. It is attached to a strong spiral spring S, the other end of said spring being attached to a cable E', which is guided upwardly around a vertical guide-pulley *e''* to a hand-lever connection G, secured to the side of the main frame A and of a character presently to be described. Secured to the other crank *c* of the roller C is a cable F, which extends to and around a guide-pulley *f* in the lower front of the frame A, thence horizontally backwardly to and around the horizontal guide-pulley *f'* in the lower back of the frame A, and thence horizontally in said back, being attached to a spring S', the other end of which is connected with the cable F', which is guided upwardly by a vertical pulley *f''* to a hand-lever G' above and secured to the side of the main frame A. Thus the connections from opposite sides cross each other in the head portion of the main frame and are secured thereto at opposite sides. Now it will be seen that the mattress-frame B is controlled in its swinging connection with the main frame A by means of springs which serve to balance the mattress-frame in its movement about its pivotal points *b*. As this frame B is lowered from a vertical toward a horizontal position, it is evident, because of the position of pivots *b*, that the roller C rises to a higher place, and being held by the woven-wire fabric D, which is attached to it, tends to carry its crank-arms *c* upwardly and backwardly; but this movement of the roller and the tendency of the crank-arms are controlled and sufficiently resisted by the cable and spring connection described to cause the latter to balance the descending mattress-frame B and at the same

time to tighten the mattress D itself by effecting a slight axial movement of said roller. In raising the mattress-frame B the reverse operation takes place, the mattress slackening and the roller moving and turning back to its normal position. Thus a perfect balance of the swinging mattress-frame B is had.

The hand-levers G and G' on each side of the main frame B are constructed and located as follows: Each has a cross-foot *g*, to one end of which the respective cables E' and F' are attached. The other end of the cross-foot is pivoted by a removable pin *g'* in any of a vertical series of holes *g²*, made in the main frame. The upper end of the lever bears against and is limited by a fixed stop *g³* in the main frame. It will now be seen that the tendency of the cables F' and E' is to pull the levers G and G' over and backwardly about their pivotal pins, which movement is met and resisted by the stops *g³*, so that the levers are held firmly in position. They thus effect an important object by reason of their construction and mounting, in that by being long and bearing against the fixed stops *g³* in the main frame they serve to hold down the main frame against the tendency of the swinging frame B, due to its weight, to tilt it. Consequently the connection described not only balances the swinging frame B, but at the same time holds down and balances the main frame against the weight of the swinging frame. The levers G and G', being adjustable in any of the series of holes, can regulate the tension of the springs S and S'. As a modification of these hand-levers, as far as their function of holding the cables and springs is concerned and the adjustment of the same, I have, as shown in Fig. 4, a turn-buckle connection (represented by G²) with which the cables are connected. This connection is secured to the main frame, and by turning up the buckle the tension of the springs may be regulated.

The legs which support the outer end of the folding frame B are as follows: They consist of pieces H, having an ornamental projection *h*. These pieces are mounted in sockets *b'* in the end of the frame B and are adapted to be moved in and out of the frame in said sockets. The leg is provided with a recessed head *h'*. Pivoted in the bottom of the frame B is a retaining-hook *h²*, one end of which is adapted to fit down into the recessed head of the leg H. When the frame B is in a vertical position, the retaining-hook *h²* drops by gravity back away from the head of the leg, and said leg may therefore be pushed inwardly into the frame by hand. When the frame B is lowered to a horizontal position, the leg H drops out of the frame by gravity and at the same time the retaining-hook *h²* drops by gravity into the recessed head of the leg and the weight of the frame is then suspended upon said hook.

The pivotal connection heretofore men-

tioned between the swinging frame B and the main frame A is shown in detail in Fig. 3. It consists of a sleeve *b^x*, which is secured to and extends from the main frame A. About this sleeve is fitted a turning sleeve *b²*, which is secured to the swinging frame B, and these sleeves are held together by a cap-piece *b³*, held by a bolt *b⁴*.

The woven-wire fabric D is supported by means of ordinary spiral springs I, having their upper ends connected with it and their lower ends supported and connected with a framework J, which slides back and forth upon guides on the frame B to accommodate the slight movement which the fabric has in stretching and slackening.

In order to prevent the sagging of the sides of the woven-wire fabric, I have the following construction: Secured to the foot of the frame B is a spring K, one on each side, each of which is extended into a rod *k*, passing through the side loops or eyes on the sides of the mattress and secured at its other end to the head of the frame B. This will allow the mattress to stretch and yield and at the same time will prevent the sides from unduly sagging.

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

1. In a folding bed, and in combination with the main frame and the swinging mattress-frame pivoted thereto, the oscillating roller with crank-arms and carried by the swinging frame, the mattress fabric connected with said roller and with the other end of the swinging frame, and spring connections between said crank-arms and the main frame, whereby the swinging frame is balanced, substantially as herein described.

2. In a folding bed, and in combination with its main frame and swinging mattress-frame pivoted thereto, the oscillating roller carried by the swinging frame and having crank-arms, the mattress fabric connected with said roller and with the other end of the swinging frame, the cables connected with said crank-arms and with the fixed frame, and the springs let into said cables, substantially as herein described.

3. In a folding bed, and in combination with its main frame and its swinging mattress-frame pivoted thereto, the oscillating roller carried by the swinging frame and having crank-arms, the mattress fabric connected with said roller and with the other end of the swinging frame, the cables connected with the crank-arms of the roller, said cables being guided forward and back in the sides of the main frame across the end thereof in opposite directions and secured to the main frame, and the springs let into said cables, substantially as herein described.

4. In a folding bed, and in combination with its main frame and swinging mattress-frame pivoted thereto, the oscillating roller carried

by the swinging frame and having crank-arms, the mattress fabric secured to said roller and to the other end of the swinging frame, the cables connected with said crank-arms, the springs let into said cables, and the hand-levers with which said cables are connected, said levers being pivoted to the main frame and bearing backwardly against fixed stops thereon, substantially as herein described. 10

In witness whereof I have hereunto set my hand.

WALTER B. NOYES.

Witnesses:

S. H. NOURSE,
H. F. ASCHECK.