(No Model.) 2 Sheets—Sheet 1.

E. C. ALEXANDER & D. LYNN.

FOLDING BED.

No. 390,640. Patented Oct. 9, 1888.

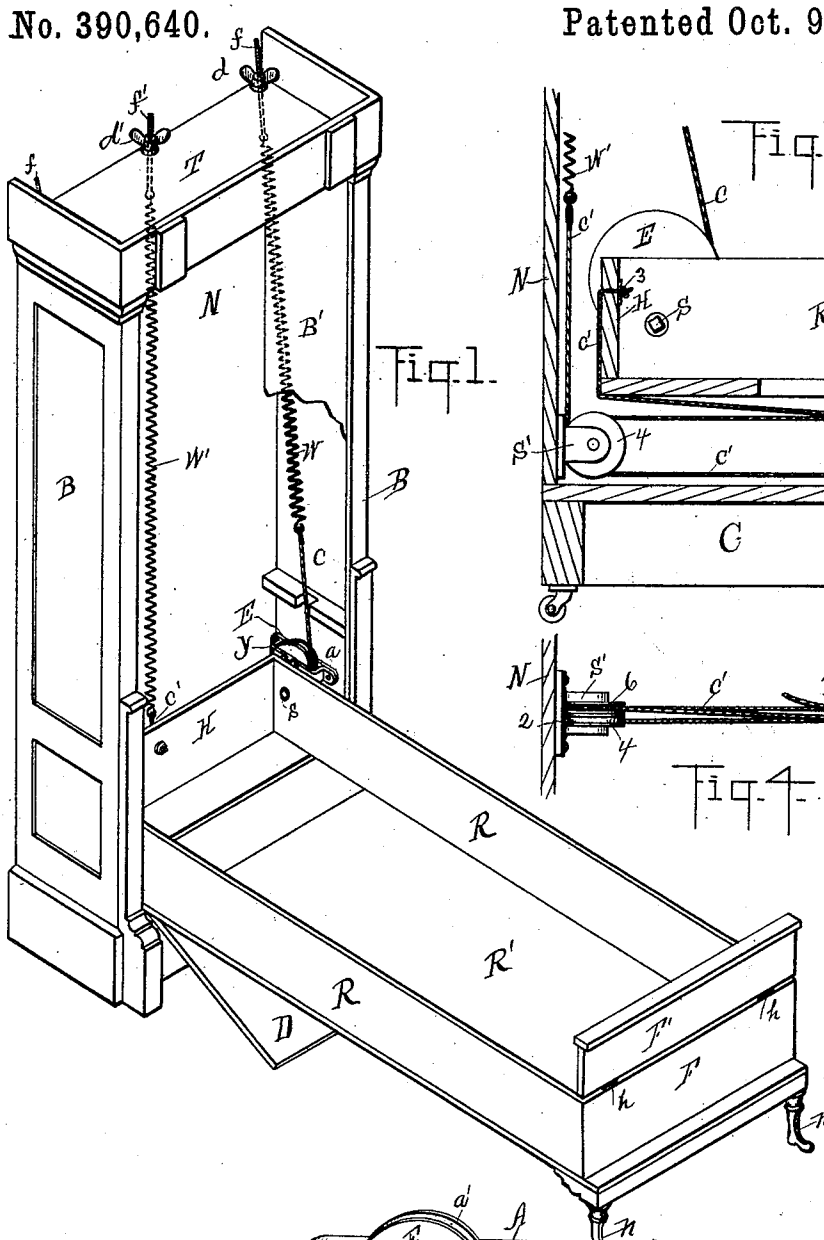


Fig. 1.

Fig. 3.

Fig. 4.

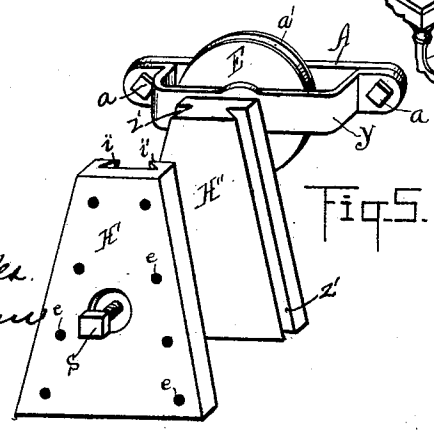


Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

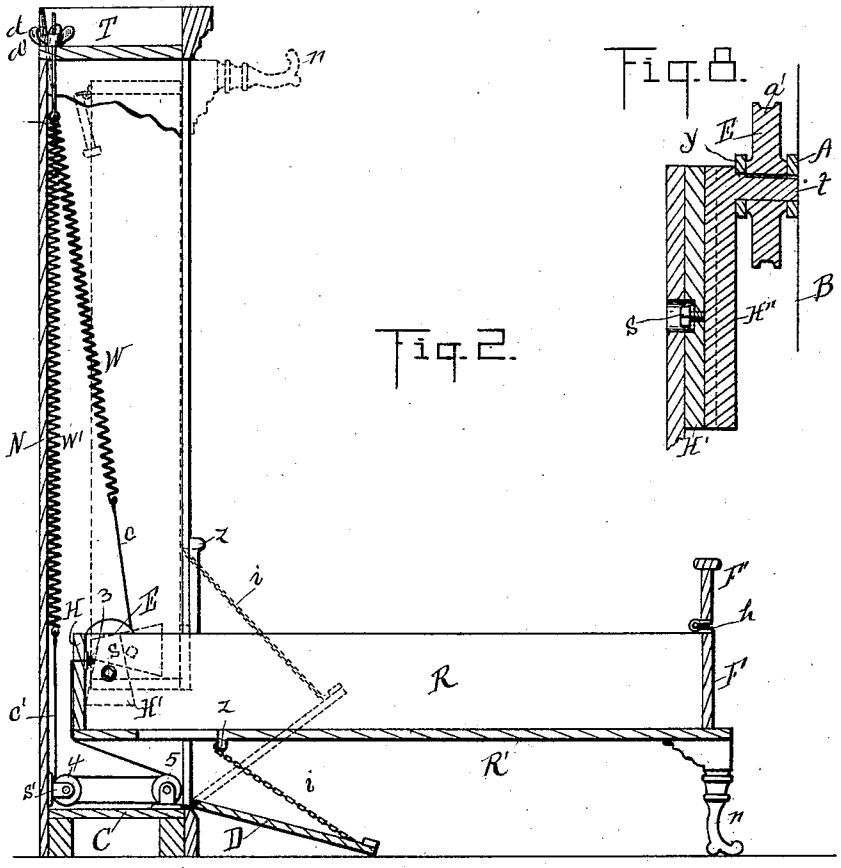


Fig. 8.

Fig. 7.

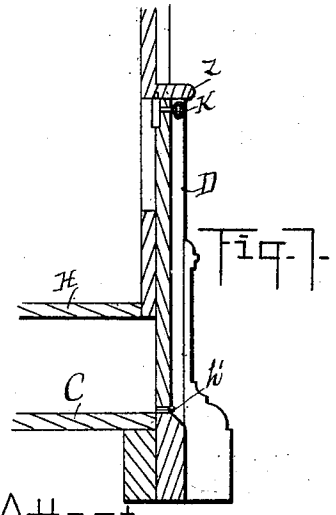
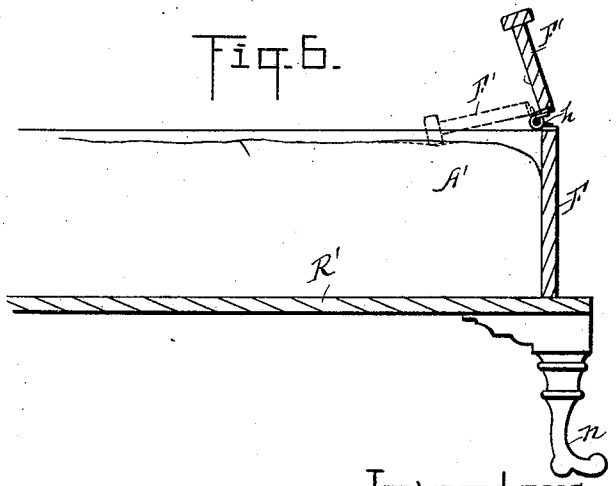


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWARD C. ALEXANDER AND DAVID LYNN, OF DETROIT, MICHIGAN.

FOLDING BED.

SPECIFICATION forming part of Letters Patent No. 390,640, dated October 9, 1888.

Application filed January 21, 1888. Serial No. 261,460. (No model.)

To all whom it may concern:

Be it known that we, EDWARD C. ALEXANDER and DAVID LYNN, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Folding Beds; and we do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to that class of beds known as "upright folding beds;" and it consists of the combination of parts, as hereinafter specified, and pointed out particularly in the claims.

The object of our invention is to construct an easy, light, and inexpensive device.

The swinging section of the bed is balanced by means of a series of coiled springs, which are coupled to the head end of the swinging section, and have adjusting rods and nuts, whereby the tension of said springs may be readily adjusted for a light or heavily loaded swinging section. Said springs are used in connection with the mechanism for coupling, so as to be detached, the swinging section to the upright section of the bed.

With reference to the drawings, forming a part of the specification, Figure 1 is an isometrical view of our improved device, showing the swinging section in a horizontal position. Fig. 2 is a central vertical section of Fig. 1, the parts being in the same position as in Fig. 1, showing also by dotted lines the swinging section in a vertical position. Figs. 3, 4, 5, 6, 7, and 8 are enlarged details, which will be hereinafter referred to.

The upright frame or case consists of the base C, sides B B, anxiliary or inner facing sides, B′, back N, top T, and door D, hinged to the front of said case. The swinging section consists of the side rails, R, head H, foot F F′, having legs *n*. To the outer face of the side rails, R, at the head or pivoted end, we secure by means of bolts or screws metal heads H′, as shown in Fig. 5. The screws pass through the holes *e* into the side rails. The outer face of the metal head is provided with two overhanging lips, *i′ i′*, and as the bottom of the metal head is wider than the top said lips stand on an incline. Said lips are made to register with and fill the inclined channels Z′ of the metal head H″, the said heads being locked together by forcing the set-screw S through the head H′ and against the face of the head H″, as clearly shown in Fig. 8.

The swinging section carrying the heads H′ is detached from the heads H″ by unscrewing the nuts S, and lifting up on the swinging section, thereby drawing the lips *i′* out of the channels Z′ of the heads H″.

Projecting from the outer face of the head H″ is a stem or journal, *t*. (See Fig. 8.) Said stem passes through the yoke Y, also through the pulley E, which is made fast to said stem. The outer end of the stem *t* is journaled in the metal bar A. Said bar and yoke are firmly secured to the side B of the upright frame by means of the bolts *a*. (See Figs. 1 and 5.)

We employ on each side of the upright case a metal head, H″, pulley E, and yoke Y. By this arrangement, when the parts are coupled, as in Figs. 1, 2, and 8, the swinging section is pivoted to the upright section or case.

The pulleys E, of which we employ two, are attached to the opposite sides of the upright frame, and have a channel, *a′*, in the periphery. (See Figs. 1, 5, and 8.) Attached to each pulley is a cord or cable, *c*, which passes one or more times around the pulley. The upper end of the cable is attached to a coiled spring, W. The upper end of each spring is coupled to a rod or eyebolt, *f*, which passes through the top T of the upright case, having the thumb-nuts *d* screw-threaded onto said rods or eyebolts. (See Figs. 1 and 2.)

We employ an auxiliary spring, W′, which acts as a governor. Said spring is located against the back N of the upright case, its upper end being attached to the rod *f′*, passing through the top T of the case, having a thumb-nut, *d′*, screwed onto the threaded upper end of said rod. The lower end of the spring W′ is attached to a cable, *c′*, which extends down to or near the base C of the upright case. At said point is attached a metal bracket, S′, carrying the independent pulleys 4 and 6. To the front edge of the case C is attached a like bracket, S′, carrying pulleys 5 and 7.

The cable *c′* passes under the pulley 4, then

up over pulley 5, then, crossing, passes down around pulley 6, then back under and up over pulley 7, then centrally along under the swinging section, having its opposite end firmly attached to the head-board H at 3. (See Figs. 1, 2, and 3.)

The operations are as follows: Raising the swinging section up at its free or outer end causes the metal heads H′ H″ to turn from a vertical to a horizontal position as the swinging section enters the upright section. (See dotted lines in Fig. 2.) The pulleys E being made fast to the journals or stems *t* of the swinging heads H″, said pulleys are caused to rotate backward, thereby paying out the cable *c*, which is drawn up by the force of the springs W, thereby lifting on the swinging section in its movements. As the swinging section moves from the horizontal to the vertical position the head end H drops, when the stress of the auxiliary spring W′ on the cable *c′* will cause the series of pulleys 4, 5, 6, and 7 to revolve as said spring draws upward on said cable. By this arrangement the united stress of the springs causes the swinging section to rise and fall gradually, the desired tension being given to said springs by means of adjusting the thumb-nuts *d d′*. As the swinging section leaves the upright frame in its downward descent, the side springs, W, balance it until it begins to assume a horizontal position, so that the pivoted end begins to rise. At this point a greater resistance is required, which is obtained by the force or stress of the auxiliary spring W. This is caused by the upward movement of the pivoted end of the swinging section, which, drawing upward on the cable *c′*, passing over the series of pulleys, causes the spring W′ to be lengthened or expanded.

The cable *c′*, passing over the various pulleys, offers a strong resistance to the downward descent of the swinging section at the time most desired, whereby the swinging section in its downward movement has the required resistance.

R′ represents the bottom of the swinging section, which, when said section is in a vertical position, forms the front of the bed.

When the bed is folded, the door D, hinged to the upright frame at *h′*, is swung upward, so as to allow its upper edge to pass under the ledge or apron Z, crossing the swinging section. The key K, being then turned, the door is locked in a vertical position. The ledge Z of the swinging section, pressing on the upper edge of the door, prevents the swinging section from careening forward and holds it in a vertical position.

Z′ is a chain, one end being attached to the door D, the other end to the swinging section, whereby, when the door is unlocked, it will swing forward to the dotted position of Fig. 2, and be brought gradually down as the swinging section assumes its horizontal position, the door being also lifted from the floor or carpet as the swinging section assumes a vertical position.

The foot-board is longitudinally divided and consists of two parts, the part F′ being hinged to the part F by means of spring-hinges *h*, which may be of any suitable style. Said hinges hold the upper section, F′, in a vertical line with the section F, and also hold the section F′ when pressed over onto the garments A′ of the bed, as shown by dotted lines in Fig. 6. The latter position prevents the garments from falling out of the swinging section when in a vertical position.

Having thus fully set forth our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a folding bed, the combination of the upright section, the swinging section, the metal heads H′ H″, coupled together, having the journals *t*, supported by the yokes Y, the heads H′ being attached to the swinging section, the heads H″, made fast to the upright section, to which the yokes Y are also attached, the pulleys made fast to the journals *t*, the cables attached to said pulleys, and the coiled springs attached to said cables at one end and having adjustable connection with the upright section at the opposite ends, as and for the purposes specified.

2. In combination with the upright section, the swinging section, the heads H′, made fast to the swinging section, the heads H″, having the journals *t* made fast thereto, said heads being detachably coupled together, the pulleys made fast to said journals, the yokes made fast to the sides of the upright section supporting the journals *t*, the cables attached to said pulleys, and the springs W, having their upper ends attached to the top of the upright section, as and for the purposes specified.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD C. ALEXANDER.
DAVID LYNN.

Witnesses:
JOHN T. DOAN,
R. B. WHEELER.