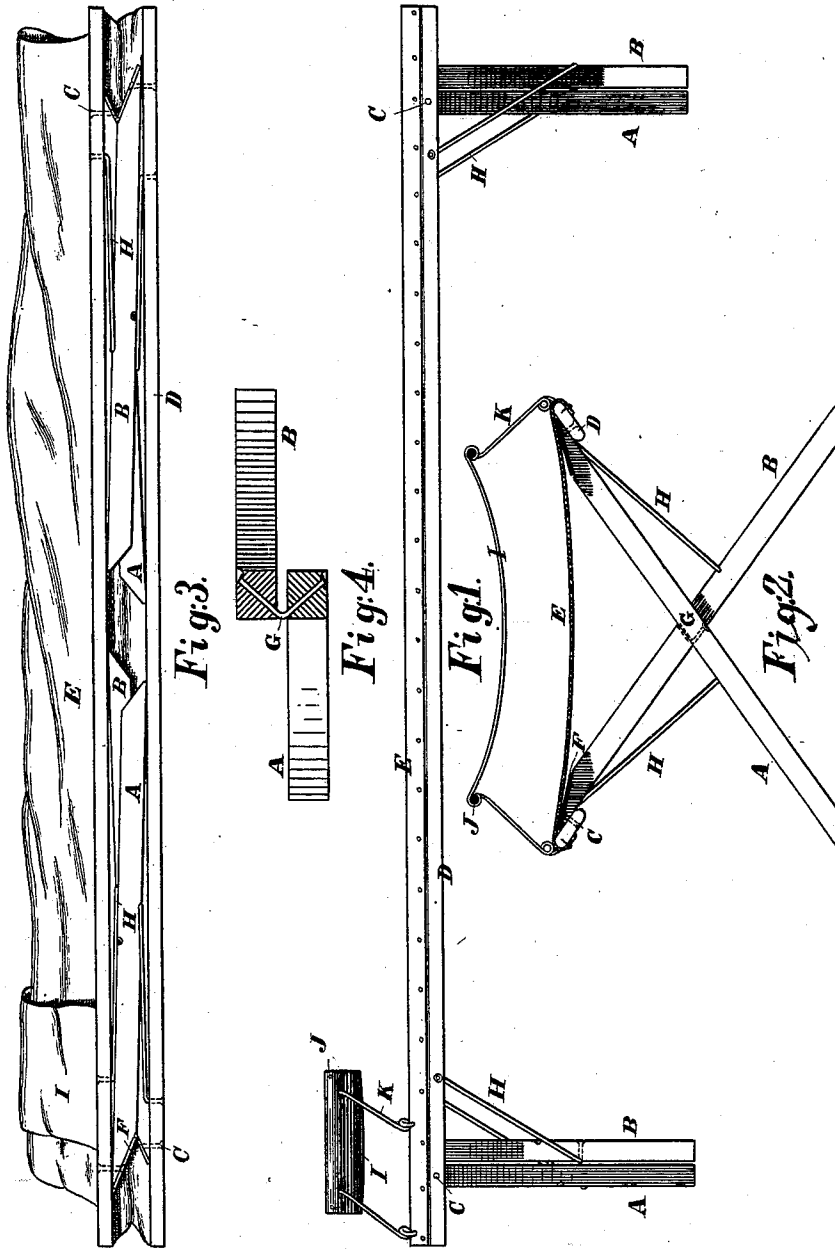


J. I. SPENCER.

FOLDING COT BED.

No. 254,244.

Patented Feb. 28, 1882.



Witnesses.
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 N. Frank

Inventor.
 James I. Spencer
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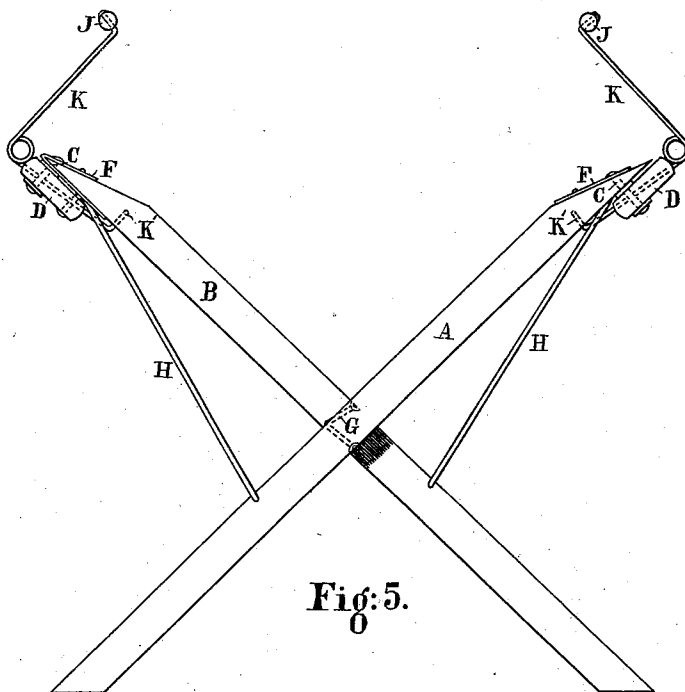


Fig: 5.

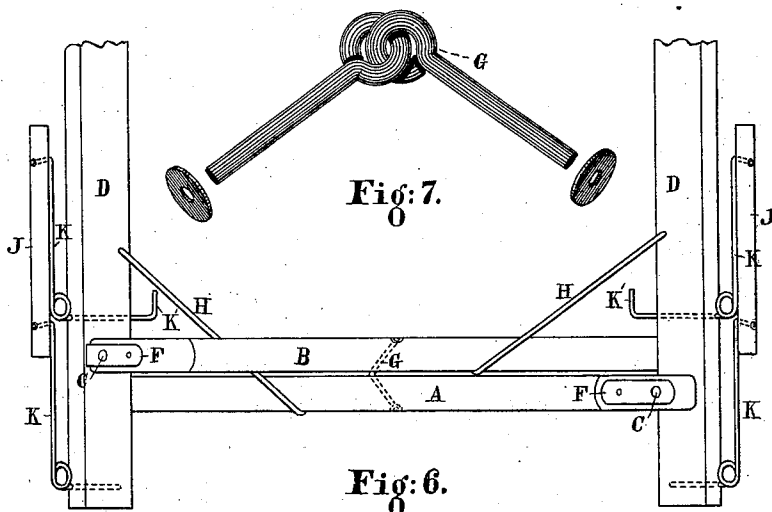


Fig: 6.

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UNITED STATES PATENT OFFICE.

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FOLDING COT-BED.

SPECIFICATION forming part of Letters Patent No. 254,244, dated February 28, 1882.

Application filed June 18, 1879.

To all whom it may concern:

Be it known that I, JAMES I. SPENCER, of Chelsea, Massachusetts, have invented certain Improvements in Folding Cot-Beds; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

The object of my invention is to simplify and cheapen cot-beds, and to render them more compact when folded, as well as more firm and convenient when spread for use, than those hitherto known. I accomplish these objects by bracing the legs to the side rails, and causing the rails to approach each other in folding, and the legs to fold inwardly and become parallel with the side rails.

I have also sought to facilitate the folding and unfolding of this class of beds, and my improvements relate particularly thereto.

The several features of my invention are specifically set forth in the appended claims.

The drawings represent a cot embodying my improvements, Figure 1 being a side elevation; Fig. 2, an end view; Fig. 3, a view of the frame folded; and Fig. 4, a horizontal section of the legs half folded, to show the construction and position of the bent connecting-bolt. Fig. 5 is an end view of the head of the frame without canvas or bolster; and Fig. 6, a plan of the same parts, the bolster-supports being folded. Fig. 7 is a detail view.

My improved cot is peculiar in construction and manner of folding, in that the crossing legs, pivoted to each other and to the side rails, are braced to the side rails, so as to give firmness and stability to the structure when spread for use, and yet are made to fold with the flexible top, and come into substantial parallelism with each other and with and between the side rails without disconnecting the braces. These peculiarities in the manner of bracing and folding are due to an original construction and arrangement of the braces and their pivots, and to the central joints of the leg-frames, which are hereinafter described.

In the drawings, A B represent the crossing folding legs, pivoted at C C to the side rails, D D, to which the flexible supporting-fabric E is securely attached by nailing or other equiv-

alent means. For greater security I fold the sides of the canvas E over the upper edges of the rails D D, glue them firmly to the outer side of the rails, and subsequently nail them thereto. The strains of use are therefore distributed throughout the fabric, instead of being concentrated where the nails are inserted. The strain is also materially lessened by friction of the canvas on the upper edges of the rails, and their sides may be entirely concealed by the canvas.

The rails D are flat and fastened by the pivots C C to the outer edges of the legs A B at their upper ends, from which it follows that when the legs are spread, as in Figs. 2, 5, and 6, with the cot open for use, the side rails stand obliquely to the horizon, each having its upper surface in the same plane as the outer face of the leg to which it is attached. This position of the rails is advantageous, because the strain upon them is nearly edgewise when the fabric E is depressed in the use of the cot, and also because at such time an occupant sitting upon one edge of the cot finds the fabric beneath him supported by the broad side of the rail placed obliquely and not vertically, as is customary.

In packing the cot in smallest compass the legs fold from head and foot inward toward the center, and are received between the rails D D, as seen in Fig. 3, when the canvas E may be wrapped around them and all made most compact.

The ends of the legs A B are beveled, as in Figs. 2, 3, and 5, at the bottom, to enable them to stand squarely on the floor when spread, and at the top to permit depression of the fabric E without contact with the legs. The pivots C, being so near the ends of the legs, are liable to split or tear away the wood if unsupported. I have remedied this difficulty by employing a metallic cap or plate, F, secured to and protecting the upper end of each leg; and by its tenacity affording suitable strength of material for the permanent attachment of the legs and frame, the pivot C serving to unite the parts.

The crossing legs are pivoted to each other in a novel manner by a bent bolt, G, which runs

diagonally and obliquely through each leg—that is, from corner to corner in a plane oblique to that of the length of the leg—and this bolt is bent at a right angle at the middle, each arm traversing a leg, as in Figs. 2, 4, 5 and 6. One end of this bolt has the usual head on it, and the other is provided with a nut or burr riveted down. In practice I pass the bolt while straight through the leg A up to the head, then bend it as shown, and slip the other leg on as far as it will go, and set the burr to hold it in position; but the bolt may be first bent and a washer subsequently riveted on each end. Each leg may thus turn upon its half of this peculiar bolt in folding, and both are held in place and caused to fold simultaneously with the side rails, by the position and character of their oblique bearings, continually at a right angle to each other, and by reason of the diagonal braces H, which will be more fully described. I have sometimes substituted for this bent pivot for the two legs two straight eyebolts, engaging at the eyes, and running, one through each leg, in the same diagonal and oblique manner as do the sections of the bent bolt G. In such cases, as indicated in Fig. 7, the two bolts may have a movement upon each other at the eyes, and need not turn in the legs which they serve to connect. I have also used an ordinary straight bolt running straight through both legs in place of the bolt G, in which case the legs will not fold simultaneously both at their centers and at the points of connection with the side rails; but the rails may be first brought toward each other, bringing the legs parallel with each other, but at right angles to the rails D. They will then fold on the pivots C, between the rails, after unhooking the braces.

A special feature of my present invention consists in the diagonal braces H, which connect the crossing legs to the side rails, stiffen the frame when spread for use, and, without unjointing or disconnecting from the frame, cause the legs to fold inwardly from head and foot toward the center when the side rails are made to approach each other. These braces are stiff metal rods, without joint, and are each permanently attached to the leg and rail which they serve to connect, being bent at each end to form pivots which enter perforations in the frame. Their action in causing the legs to fold, and the symmetry and compactness of the cot when folded, are due to the position of the several pivots with relation to the other parts of the frame. Figs. 3, 5, and 6 will serve especially to make clear this feature of my invention.

I believe I am the first to brace the crossed legs of a cot to the frame so that it will fold compactly without disconnecting or unjointing any of the parts.

The braces H run from points a little below the central pivot of the legs to points on the side rails about equally distant from the pivots C. At the points named the bent ends of the braces are secured in perforations extending somewhat diagonally through the legs and rails.

Each brace then forms one side of an irregular quadrilateral, another side of which is that portion of a rail, D, which lies between the brace-pivot and the leg-pivot C. The sum of these two sides is equal to that of the remaining sides—viz., the upper half of one leg from pivot C to bolt G, and the central part of the other leg of the pair from bolt G down to the lower pivot of the brace H. By reference to Fig. 3 it will be obvious that in folding the cot these irregular shapes collapse or flatten, the brace and rail coming nearly into a straight line, as do the parts of the legs just referred to. Their position when spread is shown in the other figures.

In order that the side rails may be at all times parallel, and that when folded the legs may lie side by side between the rails without projecting either above or below them, I locate the pivot C of the leg B, Figs. 5 and 6, near the upper edge of the side rail, and the corresponding pivot of the leg A near the lower edge of the other rail. The result of this arrangement is that when folded on these pivots the leg B lies above the leg A, each in the plane of its pivot, these planes being separated a distance equal to the thickness of a leg, and both legs occupying in width a space equal to the width of a side rail. In like manner the leg A is pivoted nearer the end of the rail than is the leg B, because the former stands outside of or farther from the center than the latter. Hence when spread for use with the legs in parallel planes, as seen in Fig. 6, the frame will stand square, with its ends in planes at right angles to the sides, and this true rectangular form is preserved when the structure is folded. (See Fig. 3.)

In my perfected cots I also provide a spring-bolster adapted, if desired, to fold with the frame and legs, and consisting of a flexible band or sheet, I, suspended between two bars, J, borne upon spring wire standards K K, pivoted in perforations of the rails D D, so as to turn slightly in folding. By elevating the head end of the frame somewhat above the foot in folding the weight of the bolster and bars J will ordinarily suffice to swing the spring-standards around in their sockets, or they may otherwise be swung around by hand into the same plane as the rails D, when the springs may be readily depressed, so as to lie with the bars J coincident with the side rails, while the bolster I lies in contact with the fabric E, and both may be wrapped around the legs and rails.

I sometimes extend the lower end of one of the spring-standards K at each end of the bolster through the side rail, and bend the wire so that the leg A or B in folding will engage with such bent portion K' and effect the folding of the bolster automatically.

The unfolding of the several parts of the cot is effected by reversing the movements of folding.

It is obvious that in using my cot the weight

of the occupant will spread the legs A B more widely at their ends, and that this movement will materially increase the tension of the bolster during such time as it is required as a head-rest, it being supported by standards mounted on the edges of the side rails. The coils of the springs resting upon the edges of the rails D D distribute the strain on the springs and prevent too great penetration of the standards into the rails.

I am aware of the Patent No. 204,222, granted May 28, 1878, to T. and O. Howe for bed-bottom, showing a permanent rectangular frame, not folding at all, and a horizontal flexible bolster supported above it by rests pivoted in cross-pieces of the frame. I am also aware that beds have heretofore been furnished with sloping head-sections having short bars pivoted to side rails and elevated by ratchet or braces, and with rigid bars used as spreaders. Neither of these devices is the equivalent of my invention, as I believe I am the first to produce a portable folding cot-bed with a bolster that is elevated horizontally above and parallel to the flexible covering in such a way that when the side rails approach each other in folding the bolster will slacken and fold compactly with the side rails and fabric top.

My bolster has the advantage of being cheaply constructed and much more agreeable than the former styles, owing to the yielding of the supports or movement of the side rails at every movement of the occupant. It forms an admirable substitute for a feather pillow.

My improved cots will be found convenient for camp and temporary use. I have aimed to produce a cot that can be quickly opened or closed and occupy little space when folded. I use continuous side rails, as they can be made cheaper, lighter, and stronger, and the cots are less liable to get out of order, and will occupy no more space when folded than if the rails were jointed. By using continuous side rails they can be made thinner and more elastic. This increased elasticity is very advantageous, as when a person is lying on the cot the sides will spring inwardly, permitting the canvas to yield and conform to the body of the occupant, which is far more comfortable than is a cot having rigid rails that hold the canvas taut.

I am aware of the patent on camp-beds granted to McDonough July 10, 1849, No. 6,588, and I disclaim the construction therein set forth.

Prior to my invention a folding cot was made having a flexible top secured to side rails, each rail being formed of two distinct parts united centrally by a link or hinge, all supported upon three pairs of crossing pivoted legs united to said rail-sections by swivel-joints and diagonal braces, so that on disconnecting the central pair of legs at their crossing-point and unfastening their braces the cot would fold into half-length and the legs and rail-sections approach each other and become nearly parallel.

Such central jointing, unfastening, and disconnecting, and such third set of legs and braces, I regard as a positive disadvantage, since a cot so made is not only more complicated and costly, but is not so quickly folded nor its operation so readily understood. The central legs and braces, while absolutely essential to support the middle of the cot, are objectionable, because they interfere with the yielding of the side rails to allow the sacking to conform to the body of the occupant, and because they prevent the cot from folding until disconnected. I therefore disclaim a cot having joints in its side rails requiring a third set of legs and braces to support them where jointed, and the disconnection of said legs and braces preparatory to folding, a distinguishing peculiarity of my cot being that it can be opened and closed automatically—that is, opened by simply spreading the sides apart, and closed by bringing them together without disconnecting any part whatever, or requiring to fold the legs separately after the sides are folded.

I claim as of my invention—

1. In a cot-bed provided with a flexible top, the combination of two pairs of crossed legs pivoted permanently to each other at their crossing-points, two side rails pivoted to said legs and extending without joint from head to foot of the cot, and diagonal braces permanently connecting said legs and rails, said flexible top and continuous side rails being wholly supported by the two pairs of crossed legs, the said rails adapted to yield and the whole adapted to fold, substantially as described, without disconnecting any of the supports or diagonal braces, for the purpose set forth.

2. The combination, substantially as described, of the frame with crossing legs pivoted thereto, united at their intersection by the bolt or rivet G, for the purpose set forth.

3. In a cot-bed provided with a flexible top, the combination of side rails supporting said top with crossing pivoted legs cut diagonally at their upper ends to avoid contact with said flexible top when it is depressed by the weight of the occupant, and metallic strengthening-pieces secured rigidly to the legs and pivoted to the side rails, so as to permit said legs to swing toward the longitudinal center of the bed when the sides approach each other, as set forth.

4. The combination, in a cot-bed, substantially as described, of a flexible bolster suspended from spring-standards erected upon the side rails, with a flexible top supported by said rails and crossing pivoted legs, whereby the spreading of the legs in the use of the cot increases the tension of the bolster, for the purpose set forth.

5. The combination of the folding bed or cot frame with folding bolster-supports connected with the side rails, substantially as described, so that upon the folding of the leg-frames the bolster may be automatically folded, as set forth.

6. In a cot-bed provided with a flexible top, the combination and arrangement of the side rails, D D, and crossing legs A B, united to said rails by pivots C C, one of such pivots of
 5 each pair of legs being located higher on the side rail and farther from its end than the other, substantially as and for the purpose set forth.

7. As a new article of manufacture, a cot-bed consisting of a flexible top and side rails
 10 which support said top, with a flexible bolster mounted on spring-standards in said side rails, and with pivoted crossed legs which fold into parallelism with the frame when the side rails
 15 approach each other, substantially as set forth.

8. In a cot-bed, the combination of a flexible top secured only to the side rails, with a flexible bolster mounted on spring-standards erected upon said rails, for the purpose set forth.

9. A folding cot-bed having a flexible bolster
 20 elevated horizontally above the side rails, as shown, and a flexible top secured only to said rails, in combination with supporting-legs adapted to fold into parallelism with the side rails when they approach each other, for the
 25 purpose set forth.

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Witnesses:

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 H. W. LADD.