Feb. 18, 1941. G. J. FISCHER 2,231,993

FOLDING COT OR BED

Filed March 9, 1940

Fig. 1.

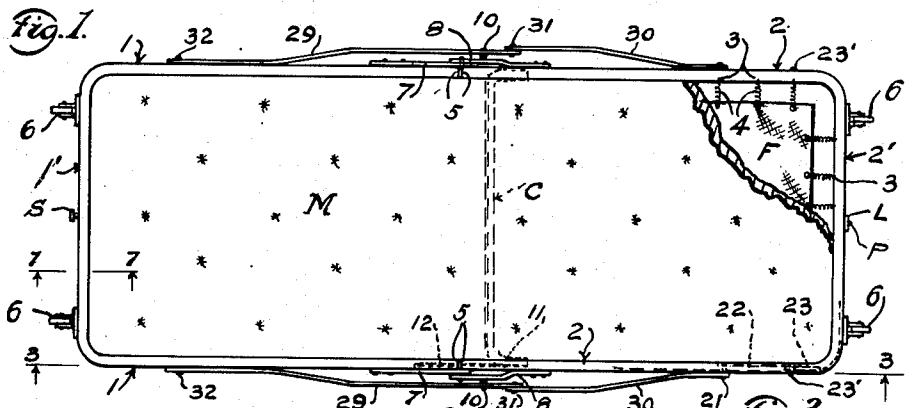


Fig. 3.

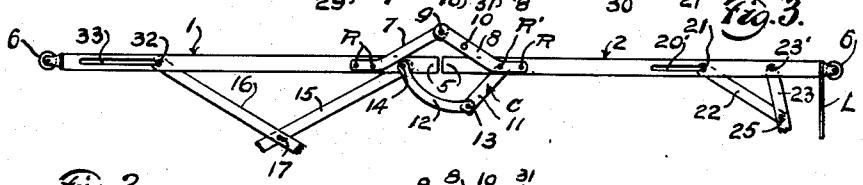


Fig. 2.

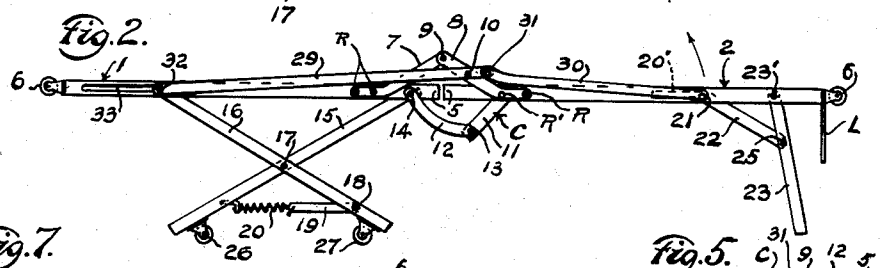


Fig. 7.

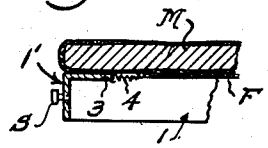


Fig. 4.

Fig. 6.

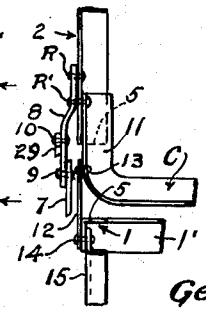
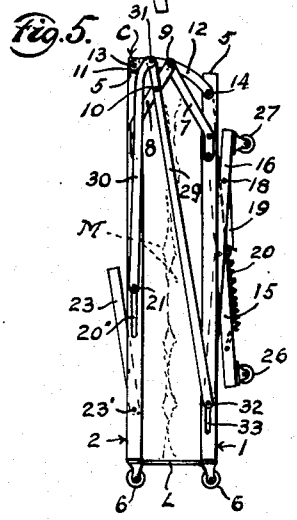


Fig. 5.



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FOLDING COT OR BED

George J. Fischer, Brooklyn, N. Y., assignor to Fischer Spring Bed Manufacturing Company, Inc., Brooklyn, N. Y., a corporation of New York

Application March 9, 1940, Serial No. 323,144

4 Claims. (Cl. 5—111)

The present invention relates to folding cots or beds and has for its principal object an improvement in such devices, whereby the bed may be manually opened to, or closed from, normal level bed operating position.

The foregoing noted function includes, amongst its objects of improvement, the construction of a foldable bed or cot frame, having a hinged, breaking point at or about its transverse mid-section, which breaking point is so constructed that it will automatically resist collapse when opened level for use, and is easily folded or closed into storage position, by merely lifting one end of one of the foldable sections, without separate manipulation of the other of its component, coacting parts.

Another advantageous feature of the present construction lies in the manner in which the foldable frame, which is provided with supporting legs when in open position, coacts, when opening or closing, to automatically extend or fold said legs during such opening or closing operations.

Another feature of advantage is in the construction of the movable legs, whereby when the bed is opened for use, with the legs in bed supporting position, the load superposed by the weight of the bed frame portion, or the weight of the user, automatically locks the hinged portion of the foldable frame against collapse, including the extended legs, during use of the device as an open bed or cot.

When folded, or collapsed, the present construction occupies only a small space and may be stored in a small space, when so folded. Such beds may also be piled, conveniently, when folded. They are light, strong and economical in manufacturing costs.

The foregoing and other features of advantage will be apprehended as the herein construction proceeds, and it will be obvious that modifications of the herein structure may be made, without departing from the spirit hereof or the scope of the appended claims.

In the drawing,

Fig. 1 is an opened, plan view of the present device, with a corner broken away to better show some structural details;

Fig. 2 is a side view of the frame of Fig. 1, in side elevation;

Fig. 3 is a side elevation of the frame taken from the line 3—3, Fig. 1, looking in the direction of the arrows, the control links being removed and parts of the legs being broken away for convenience;

Fig. 4 is a side view of the structure, in elevation, showing the bed structure in the partial act of folding;

Fig. 5 is a side view of the structure fully collapsed or folded;

Fig. 6 is an enlarged, fragmentary view, looking in the direction of the arrows 6—6, at or along and about the dash line 6—6, Fig. 4; and

Fig. 7 is an enlarged, fragmental sectional view taken on the line 7—7, Fig. 1, looking in the direction of the arrows.

In the present improvement the folding bed construction comprises two separate U-shaped, metal frame members, especially shown in Fig. 1, one of said members having sides 1—1 joined by an end member 1'. The other frame member comprising side members 2—2 joined by an end member 2'. These frames hereinafter will be generally referred to as frames 1 and 2.

The cut ends of the frame members are seen at 5—5 and 5—5, and may be slightly spaced apart, Figs. 1, 2 and 3, to permit of free folding and hinging action, as will be later described, in detail.

The frame members may be preferably formed of angle iron, as seen in Figs. 6 and 7, and there is located, on each of the outer end forming members 1' and 2', plural casters 6—6 and 6—6, these being suitably attached for desired operation.

Each of the side forming frame members 1—1 are provided with elongate slots 33 near their ends adjacent the end member 1', Figs. 2, 3, 4 and 5.

Each of the side forming members 2—2 are provided with elongate slots 20', Figs. 2, 3, 4 and 5.

The said slots are provided to act as guides for the sliding movement of the pivoted ends of certain folding control and leg forming members, as will be hereinafter described, in detail.

In slots 33 are located slidable pin pivots 32—32, these pivots acting to pivotally join the interiorly located ends of leg levers 16, the pivotal ends of which are slidably located on the inside face of one flange of the side forming angles 1—1, Fig. 3.

The pivotal ends of angle metal levers 16, as at 32, are pivotally joined to the ends of outer main flat metal control links 29, Fig. 2, said latter ends being slidably mounted on the outside faces of the slotted flange of angle iron sides 1—1. The pivots 32 thus join the leg lever or link ends of legs 16, just described, so that any link control movement of the members 29 is slidably transmitted to said leg members 16.

The angularly arranged metal angle iron leg forming members 16 are provided with casters 27

near their lower ends, which movably contact, normally, with the floor line, not shown, Fig. 2.

At suitable mid-points, the leg forming levers 16 are provided with a centrally located pivot 17, Figs. 2 and 3, which pivotally connect opposed, coacting angularly disposed coacting angle iron leg levers 15, the lower ends of which are provided with a floor contacting casters 26—26. The upper end of leg levers 15 are pivotally connected to the inside faces of the angle flanges of the side members 1—1, each by a fixed pivot 14, Figs. 2 and 3.

The angularly disposed and pivoted legs 15 and 16, in addition to being pivoted at point 17, are resiliently interconnected by a metal link member 19, pivotally attached to leg lever 16 by a pivot 18, the outer end of said pivoted link 19 being connected to the leg 15 by a resilient coil spring 20, Figs. 2, 4 and 5, so that, upon operation to open or close the cot, the legs 15—16 are tensionally operated for closing or opening operation.

The pivots 14 are fixedly attached through said flanges to pivotally mount one end each of curved, flat metal hinge levers 12, which are mounted on the exterior faces of the flanges of the side forming members 1—1. The pivots 14 thus commonly and fixedly mount the ends of leg levers 15 and hinge levers 12 for fixed, pivotal movement, only, in said flanges.

The lower ends of the curved, hinge forming levers 12, Figs. 2, 3 and 4 are provided with pivots 13, which are pivotally connected to a second set of hinge forming angle iron metal links 11, Figs. 1, 2, 3, 4 and 6. The links 11 are integrally connected to a traversing cross brace C, Figs. 1 and 6, which, as shown in Fig. 1, joins the open, U-shaped ends 5—5 of frame 2, and through the links 12—12, and their pivoted connections at points 14 to frame 1, act to stiffen, against collapse, the open ends 5—5 and 5—5 of frames 1 and 2.

The upper open ends of links 11—11, of brace C, are pivotally attached to the inner faces of the end flanges of frame ends 5—5, of frame 2, by pivots R', Figs. 2, 3, 4 and 6, said pivots R' also acting as rivets to partially affix fixed, offset hinge levers 8, the said last levers being also riveted to the open ends of frame 2 by additional rivets R—R.

The flat metal, offset riveted upper hinge forming levers 8—8 are pivotally joined to similar fixed, upraised, hinge forming levers 7—7, Figs. 1, 2 and 3, the ends thereof being raised above the frame levels of frames 1 and 2, as are also the fixed ends of hinge levers 8—8. The ends of levers 7—7—8—8 are pivotally connected by pivots 9.

The lower ends of levers 7 are fixedly riveted to the outer side members of frame 1 by fixed rivets R—R, Figs. 2, 3, 4 and 6. As thus disclosed, the raised levers 7 and 8 are pivoted to each other at 9, but are substantially fixed to the opposing legs 1—1 and 2—2 of frames 1 and 2, above said frame levels.

As shown at Figs. 1, 2, 4 and 5, the inner ends of control levers or links 29 and 30 are connected by pivots 31, the inner ends of links 30 being slightly upwardly extended, Figs. 2 and 4.

As previously described, the inner ends of control links 29 and 30 are connected to each other by pivotal connections 31 and, also at pivots 21, Figs. 1, 2, 3 and 4, to leg control links 22, Figs. 2, 3, through the slots 20' in the leg extensions of frame 2.

The upper pivoted ends of leg links 22 are located on the inner faces of the frame legs 2, and are thus adapted, through slots 20', to be movably controlled by links 30—30.

The angularly arranged flat metal leg links 22, are pivoted at their opposite ends by pivots 25 to foldable leg support members 23, these legs being pivotally attached to the opposed legs of frame 2 by pivots 23', Figs. 2, 3 and 4.

When the cot is folded, as shown in Fig. 5, the transverse member 1', of the frame 1 is provided with a fixed, shouldered latch pin S, Figs. 1 and 7, while the transverse member 2' of frame 2 is provided with a registering, pivoted latch bar L, pivoted at P, Fig. 1, the lower outer end of which is notched, not shown, to engage with the latch pin S. This locking engagement is shown at L, Fig. 5 is operable when the frame members 1 and 2 are folded and the cross members 1' and 2' are brought into adjacent positions, when folded as shown in Fig. 5.

The control levers 29, as shown in Figs. 2, 4 and 6 are pivotally attached at 10, near their ends to the fixed hinge elements 8, whereby as will be explained, folding or opening movement of the pivotally connected frame members 1 and 2 are suitably controlled, further, to obtain the desired closing, opening and automatic locking operations, as desired.

The frame members 1 and 2, as shown, in Figs. 1 and 7, may have spaced perforations 3 therein, with coiled springs 4 connected thereto, and between the edges of a flexible fabric mattress support F, upon which a suitable stuffed mattress M may be fixedly mounted in such a manner that the support F and the mattress M may be folded, when the cot is folded, without disturbance of the fabric or mattress when the cot is open or closed.

In operation of the herein disclosed foldable cot, presuming that the device is in the open cot or bed operating position, as shown in Figs. 1, 2 and 3, with the legs 15, 16 and 23 in operative cot supporting position, as shown in Fig. 2, the end member 2' of frame 2 is seized by hand and moved upwardly in the general direction of the arrow A, Fig. 4, to close the bed. This operation, through the action of the various pivoted linkages, as above described, the side links 29 and 30, as interconnected to each other and the leg and hinge links, causes operative action of all of said links to cause them to move from the positions of Fig. 3 to the intermediate positions shown, in Fig. 4, and then to the final closed position illustrated in Fig. 5.

In closing the device, the frame 2 is first folded upon frame 1, and latched into locked position, the bed being permitted to rest upon the legs 15, 16 and their casters 26—27. When the sections 1 and 2 are latched by their appurtenant latch means L—S, with all legs collapsed by the folding or closing operation, the closed assembly is then further lifted and turned until the closed assembly then rests upon the casters 6—6 on the ends of frame sections 1'—2', as shown in Fig. 5, wherein the assembly is shown fully collapsed and up-ended, with all leg supports retracted, this retraction being accomplished by the folding action.

As will be noted from the foregoing description and also, as shown in the open cot or bed construction in Figs. 2 and 3, the fixed hinge linkages 7 and 8 are pivoted at 9 above the planes of the bed folding frames at 2 and, conversely the linkages C and 12 which are pivoted at points 14 and R' are connected to each other at pivot

point 13 which is located below the frame planes 1 and 2. Furthermore, as seen in Fig. 2 the sliding link 29 which is pivoted at 31 to sliding link 30, is connected by a pivot 10 to upper fixed hinge link 8 so that when the bed or cot is in open position the hinge linkages 7 and 8 and the lower linkages 12—11 are locked against collapse by said pivot connection 10 between the sliding control linkages 29 and 30 by said pivot 10.

As described above the linkages 7—8, 12—13, 29—30 act as a locking fulcrum to prevent the collapse of the frame members 1 and 2, when in open position, but also are freely and automatically released from the locking fulcrum when section 2 of the bed frame is lifted, as indicated in Fig. 4, the lifting of which said frame releases the fulcrum lock, automatically, when said frame 2 is lifted, to cause the folding of the bed construction, as indicated in Fig. 5.

Having thus described the invention what is claimed is:

1. A folding cot or bed, including a frame forming portion comprising two angle iron sections of U-form, the ends of said sections being normally free of direct contact with one another, a set of pivotal supporting legs attached to each of said sections to normally support said sections in open cot or bed forming position, pivoted linkage means slidably connected between said frame sections and pivotally attached to said legs, and being pivoted to one another, pivoted hinged levers mounted near the respective ends of said sections and pivoted to said means, said levers and said means being above the plane of the bed when it is in open position whereby, when one of said sections is manipulated by lifting, said sections are folded together and the said legs are retracted into folded position substantially flat against said frames.

2. A folding cot or bed, comprising a frame forming portion including two angle iron sections of U-form having unconnected but abutted ends, said sections being hingedly connected together above the top plane of said frames when opened, pivotal supporting legs attached to each of said sections to normally support said sections in open cot or bed forming position, linkage means slidably connected between said frame sections and said legs and pivoted means normally connecting said linkage above the plane of said frames, hinged means fixedly connected between said frames and said linkage means whereby when one of said sections is manipulated by lifting, said sections are caused to be folded together and the said legs are retracted into folded position substantially flat against said frames.

3. A folding cot or bed, comprising a frame forming portion including two angle iron sections of U-form having unconnected but substantially abutting ends, a set of pivotal supporting legs attached to each said sections to normally support said sections in open cot or bed forming position, linkage means slidably connected to said frame sections and pivotally connected to said legs, and pivoted means normally connecting said linkage above noted, hinged means connected between said frames and said linkage means located above the plane of said frame portion when it is in open position whereby when one of said sections is manipulated by lifting, the connecting and hinged portions of said sections are automatically released and folded together and the said legs are retracted into folded position substantially flat against said frames.

4. A folding cot or bed, including a frame forming portion comprising two sections of U-form, said sections being preferably of angle iron, a set of pivotal supporting legs attached to each of said sections to normally support said sections in cot or bed forming position, pivoted linkage means connected between said frame sections and said legs, fixed hinged means pivotally connected between the ends of said frames and said linkage means, said hinged means and said linkage means being above the plane of the bed when it is in open position to lock said leg hinged means and frame sections in open position and whereby, when one of said sections is manipulated by lifting, said sections, linkage, leg and hinged means are folded together and the said legs are retracted into folded position substantially flat against said frames, a pivoted, transverse separating brace located between the ends of one of said frame members, said brace being pivotally attached to said frame member and being further attached to the opposite frame member by a pivotal lever.

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