G. FISCHRUPP.

FOLDING BED.

APPLICATION FILED JULY 8, 1915.

1,306,756.

Patented June 17, 1919.

3 SHEETS—SHEET 1.

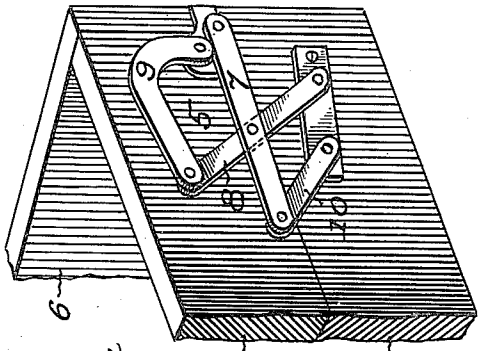


Fig. 1a.

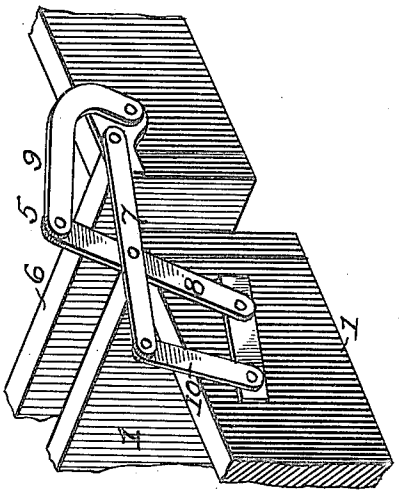


Fig. 1b.

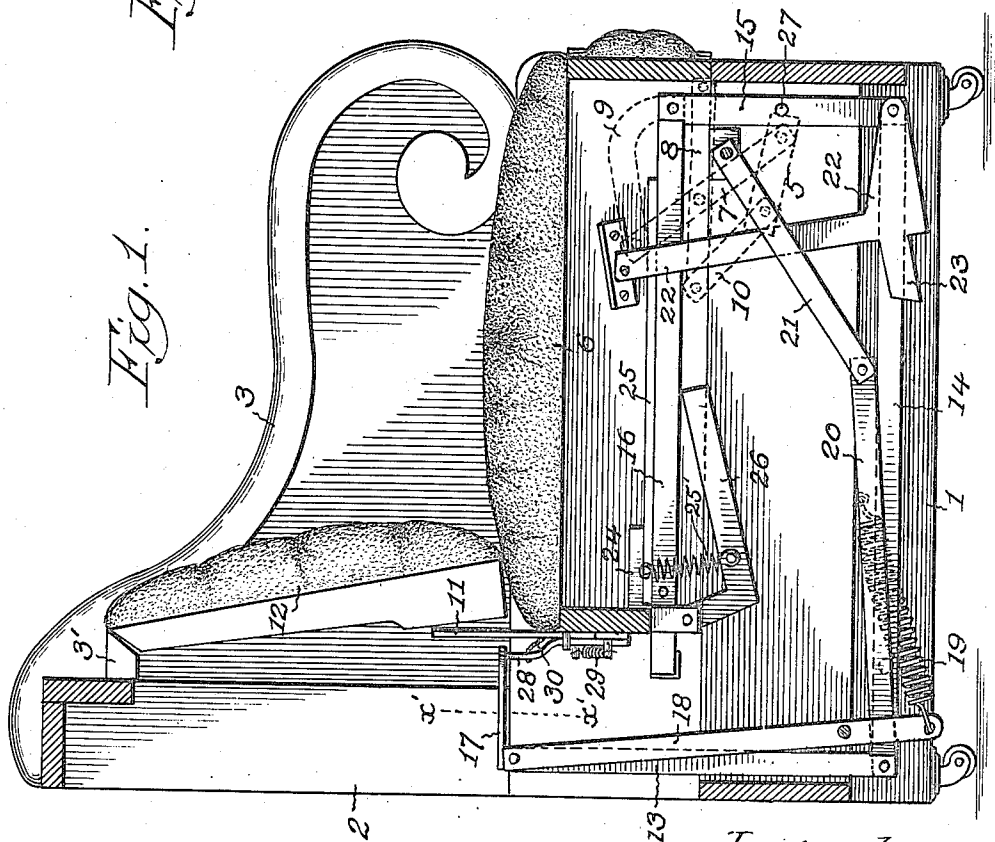


Fig. 1.

Inventor:
George Fischrupp,
by Robert H. Burns.
Atty.

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Fig. 2a.

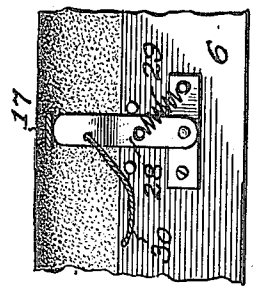
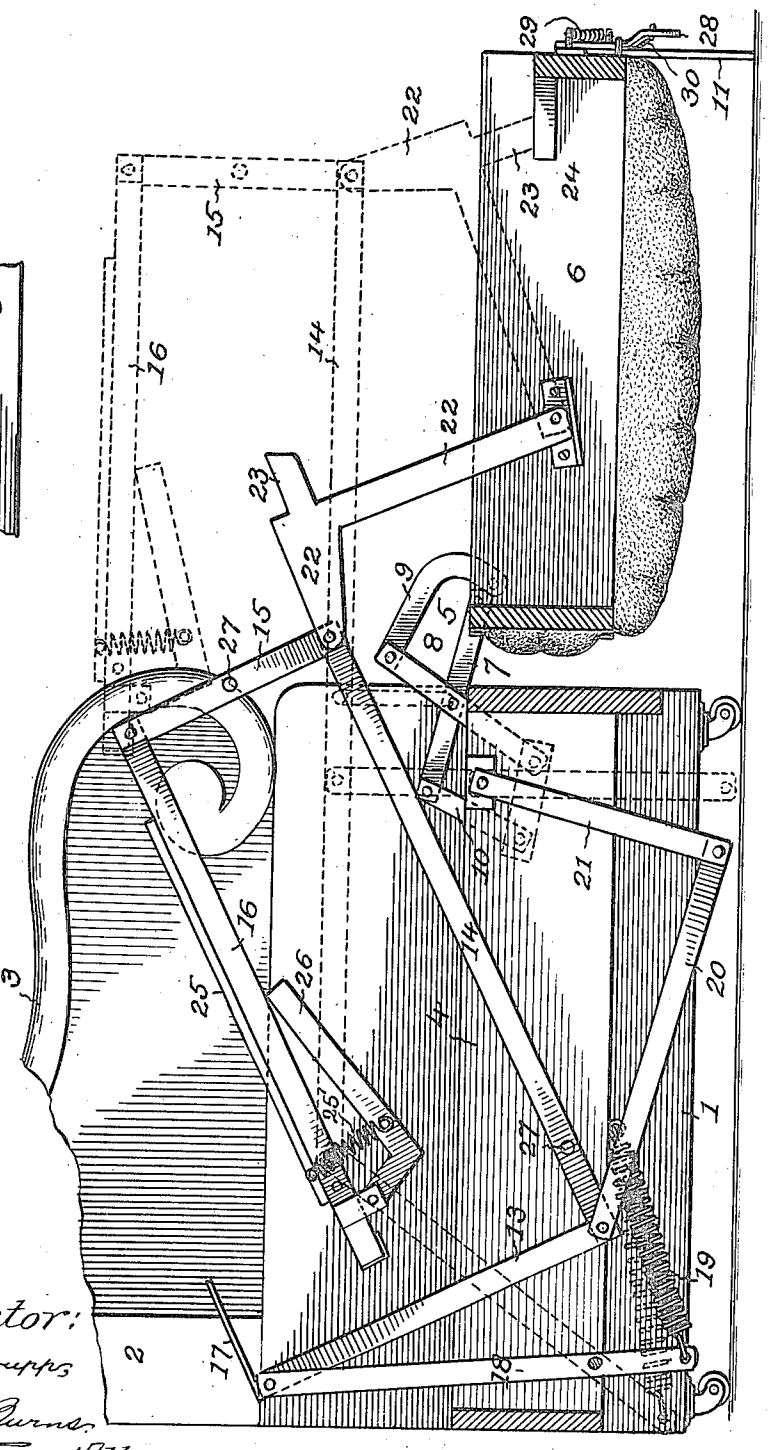


Fig. 2.



Inventor:
George Fischrupps
by Robert Burns.
Atty.

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3 SHEETS—SHEET 3.

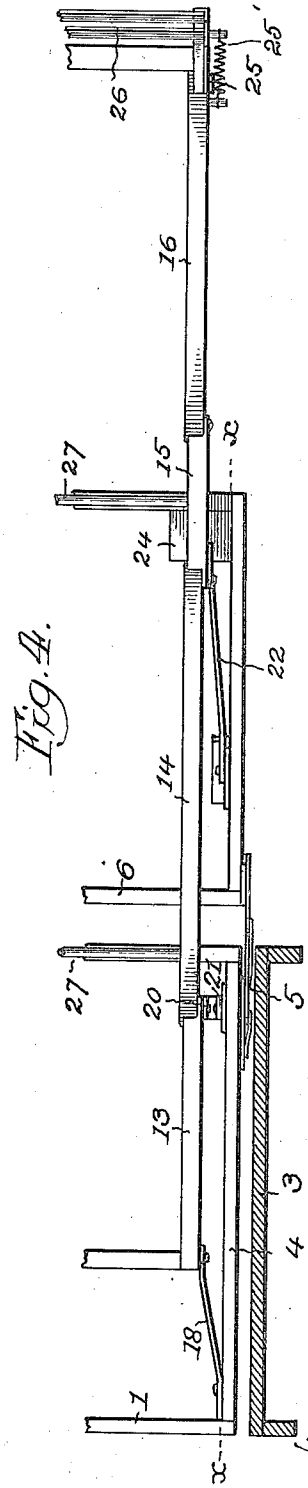


Fig. 4.

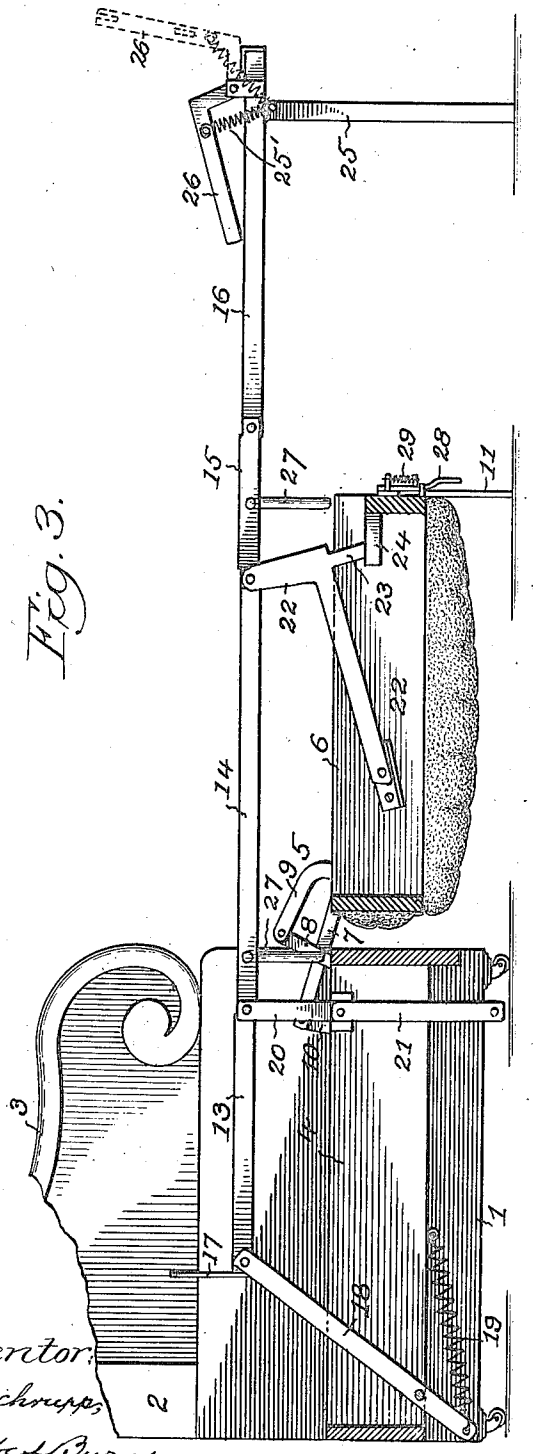


Fig. 3.

Inventor:
Geo. Fischrupp,
by Robert Burns.
Atty.

UNITED STATES PATENT OFFICE.

GEORGE FISCHRUPP, OF CHICAGO, ILLINOIS.

FOLDING BED.

1,306,756. Specification of Letters Patent. Patented June 17, 1919.

Application filed July 8, 1915. Serial No. 38,656.

To all whom it may concern:

Be it known that I, GEORGE FISCHRUPP, a citizen of the United States of America, and a resident of Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Folding Beds, of which the following is a specification.

This invention relates to that type of folding beds in which a series of bed-sections are pivotally connected together and to the main frame and are adapted to unfold outwardly from the said main frame, an example of which structure constitutes the subject matter of my prior Letters Patent No. 1,078,909, dated Nov. 18, 1913.

And the present improvement has for its object to provide a structural formation and association of parts, adapted to effect a balancing action of the parts in their folding and unfolding movements, so that said movements may be effected with a minimum effort on the part of the operator, all as will hereinafter more fully appear.

In the accompanying drawings:—

Figure 1, is a longitudinal sectional elevation on line x—x Fig. 4, illustrating the present construction in a closed or folded condition.

Figs. 1^a and 1^b are companion detail perspective views of the duplex hinge connection between the main frame and the seat section of the bed, in the respective folded and unfolded condition of the parts.

Fig. 2, is a longitudinal sectional elevation illustrating the parts in a series of partly unfolded conditions.

Fig. 2^a, is a detail transverse sectional elevation on line x'—x', Fig. 1, of the latching of the seat member of the bed.

Fig. 3, is a longitudinal sectional elevation, illustrating the parts in a fully unfolded condition.

Fig. 4, is a sectional plan view of one side of the bed, in an unfolded condition.

Similar reference numerals indicate like parts in the several views.

Referring to the drawings, 1 designates the main frame of the present bed-structure of the usual box form and provided with the usual transverse back frame 2 and end arms 3, and in the present structure said end arms 3, will have spaced relation to the adjacent parallel rails or members 4 of the main frame 1 to provide working spaces for the duplex hinge members 5 by which the seat member 6 is pivotally connected to the forward end of the base portion of the main frame 1 in a manner which imposes an outward longitudinal movement on said seat member 6, simultaneous with its pivotal movement, to provide ample clearance of the surface tufting, etc., with which the parts are usually finished. With the seat member in its folded position, the aforesaid hinge members 5 are wholly within the main frame 1, and an objectionable projection of the same at the front of the structure is avoided. To such end each duplex hinge member will comprise a detail construction, as follows:—

7 and 8 designate counterpart hinge bars associated in crossed relation and pivoted together at their midlengths, with one end of one hinge bar pivoted to the main frame 1, and with one end of the companion hinge bar pivoted to the seat member 6.

9 and 10 designate radius links pivotally connecting the opposite ends of the hinge bars 7 and 8 with the main frame 1, and with the seat member 6, respectively. In the construction shown, the hinge bar 8, which is pivoted in a direct manner to the main frame 1, will be connected by the radius link 9 to the seat member 6; while the hinge bar 7, which is pivoted in a direct manner to the seat member 6, will be connected by the radius link 10 to the main frame 1. The pivot axis of the above described hinge bars and radius links will have spaced relation on the main frame 1 and on the seat member 6, as shown more particularly in Figs. 1^a and 1^b, and in addition the radius link 9 will have an angular or curved form as shown, so as to clear the adjacent pivot end of the hinge bar 7, in the folding and unfolding movement of the parts.

A material part of the present invention involves the pivotal attachment of the aforesaid link members 8 and 10 in an approximately horizontal line, to the main frame 1, as by such arrangement the vertical rise of the seat member 6 is reduced to a minimum, thus reducing the stress required to be exerted in an initial opening of the folding bed members. At the same time the proper forward travel of said seat member 6 is attained in a manner which affords proper clearance between the upholstery finish on

the adjacent parts of the main frame 1 and seat member 6 aforesaid.

11 designates a supporting foot secured to the seat member 6, and adapted to provide a support for the free end of the same, when said seat member is in the unfolded condition illustrated in Figs. 2 and 3.

12 designates the usual upholstered back of the folding bed, pivoted at its upper end to the transverse connecting rail 3′ of the end arms 3 aforesaid, and adapted to be swung up out of the way, in the folding and unfolding operations of the bed parts.

13, 14, 15 and 16 designate a series of four bed members or sections pivotally connected one to the other, and adapted when unfolded to constitute a flat bed surface for the mattress and the other accessories of a bed. And when in a folded condition said bed members constitute a rectangular frame which forms within the main frame 1, a containing cavity for the mattress and bed clothing, and to such end the aforesaid bed members or sections will have a detail structural formation as follows:—

The rearmost bed section or member 13 is provided with a fixed angularly disposed latch bar 17 at its rear end, and when the bed parts are in an unfolded condition. At said rear end the bed member 13 is pivotally connected to the upper ends of approximately vertical radius links 18, which are in turn pivoted in the lower portion of the main frame 1. In the final opening movements of the bed parts said radius links 18 are adapted to have a forward swing against the stress of springs 19 attached to depending portions of said radius links 18, with a normal tendency to return said links to a vertical condition. At the front or end opposite to that above described, the bed member or section 13 is pivotally connected to the next adjacent bed member or section 14, and adjacent to such point of connection, is connected to the main frame 1 by means of supporting links 20, pivotally connected at one end to said bed section 13, and at the other end to the lower and free ends of the swing links 21. The upper ends of the said swing links 21, are pivotally connected to the main frame 1, and the arrangement is such that when the bed parts are in a fully opened condition, the links 20 and 21 will assume a vertical position and provide a substantial support to the bed members 13 and 14 against a downward sagging in use.

The intermediate bed member or section 14 above referred to is pivotally connected at its forward end to the next adjacent intermediate bed member or section 15, and adjacent to such point of connection is also connected to the seat member 6 aforesaid, by links 22, of an angular form, and which have at their angular portions extensions or knees 23 adapted to rest upon ledges 24 in the interior of said seat member 6, to support in a substantial manner the bed members 14 and 15 against a downward sagging in use.

The intermediate bed member or section 15 above referred to, is pivotally connected at its outer end to the outer or forward bed member or section 16. This bed member or section 15 controls the height of the receiving or storage cavity for the mattress, etc., when the bed sections are folded together, and accordingly will vary in size to suit different requirements.

The outer or forward bed member or section 16 above referred to, is provided at its outer end with a folding leg or legs 25 pivoted to said bed section 16, and with a companion folding foot board 26 also pivoted to said bed section 15, with the pivots of the parts in spaced relation as shown.

25[1] designates a tension spring connected at its respective ends to the leg 25 and foot board 26 aforesaid, and adapted to move and hold said parts in their fully opened and fully closed positions after the usual manipulations of said parts by the operator.

27 designates transverse stay rods extending between side rails of the bed members or sections 14 and 15 and adapted to maintain the same in proper spaced relation in actual use. The stay rods 27 are of the usual hasp or flattened C shape, so that their main portions may lay a distance below the sag point of the usual resilient webs carried by the respective bed sections. In the case of the intermediate bed section 15 aforesaid, its stay rod 27, provides a convenient hand grip for manipulating the bed parts as set forth in the operation of the parts.

28 designates a movable latch bar pivoted to the rear face of the seat member 6, and adapted to movement in a transverse plane, in one direction under the influence of a spring 29, and in the other direction under the influence of a pull-cord 30. The said movable latch bar 28 is adapted to have engagement beneath the fixed latch bar 17 of the rearmost bed member 13, to latch the series of bed members in their folded condition, as illustrated in Figs. 1 and 2[a].

The operation of the present folding bed structure is as follows:—

Assuming the parts to be in the folded condition shown in Fig. 1, the operator first swings the sofa back 12 into an up position out of the way. After this the pull-cord 30 is manipulated to release the latch mechanism 17, 28, and the seat section or member 6 is then swung outward into the inverted position shown in Figs. 2 and 3.

The main part of the above described unfolding movement takes place without any movement of the other bed parts and accordingly can be effected with a minimum effort on the part of the operator. In its descent, mainly by gravity, into its fully unfolded

condition, the said seat section 6, through its link connections 22, with the series of bed sections, will draw the said bed sections, still in their unfolded condition, into the inclined position illustrated in full line in Fig. 2 of the drawings.

The operator by a pulling action on the stay rod 27 of the intermediate bed member 15, moves the series of bed sections, in a still folded condition except as to the rearmost bed section 13, into the horizontal and forward position shown in dotted lines in Fig. 2. After which the bed sections 14, 15 and 16, are serially unfolded into the fully opened condition of the parts, illustrated in Fig. 3.

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

1. In a folding bed, the combination of a main frame, a reversible seat member, and pivotal means intermediate of said parts and adapted to impose a pivotal and a simultaneous longitudinal movement on said seat member, the same comprising a pair of crossed bars pivoted at their intersection with an end of the respective bars pivoted directly to the main frame and to the seat member, the pivot connections to the main frame being on an approximately horizontal plane, and radius links connecting an opposite end of the respective bars to the seat member and main frame, one of said radius links having an angular formation, adapted to span the pivotal connection of a companion link on said seat member and have its individual pivotal connection at a point beyond that of said companion link.

2. In a folding bed, the combination of a main frame, a reversible seat member hinged thereto, a bed member comprising a series of sections pivotally connected end to end, a vertically disposed radius link pivoted in the lower portion of the main frame and connected to one end of the rearmost bed section, a link pivoted at its upper end to the main frame near the front portion of said frame, and a companion link pivotally associated with the bed sections at a point adjacent to the pivotal connection between the rearmost and next adjacent bed sections, the said links being pivotally connected together at their free ends with the first mentioned link adapted to assume a vertical position in an open condition of the bed parts and provide a substantial suspension support for the companion link and bed parts to which it is attached.

3. In a folding bed, the combination of a main frame, a reversible seat member hinged thereto, a bed member comprising a series of sections pivotally connected end to end, a vertically disposed radius link pivoted in the lower portion of the main frame and connected to one end of the rearmost bed section said radius link having a depending portion below its pivot, a tension spring associated with said depending portion, a link pivoted at its upper end to the main frame near the front portion of said frame, and a companion link pivotally associated with the bed section at a point adjacent to the pivotal connection between the rearmost and next adjacent bed sections, the said links being pivotally connected together at their free ends with the first mentioned link adapted to assume a vertical position in an open condition of the bed parts and provide a substantial suspension support for the companion link and bed parts to which it is attached.

4. In a folding bed, the combination of a main frame, a reversible seat member hinged thereto, a bed member comprising a series of sections pivotally connected end to end, a vertically disposed radius link pivoted in the lower portion of the main frame and connected to one end of the rearmost bed section, and an angularly formed link member pivotally connected to the seat member aforesaid and to an intermediate bed section, with its angular portion having abutment upon the seat member in an open condition of the bed parts.

5. In a folding bed, the combination of a main frame, a reversible seat member hinged thereto, a bed member comprising a series of sections pivotally connected end to end, a vertically disposed radius link pivoted in the lower portion of the main frame and connected to one end of the rearmost bed section a pair of links pivoted together at one end and individually pivoted to the main frame and to the rearmost bed section, and an angularly formed link connecting the seat member to an intermediate bed section, with its angular portion having abutment upon the seat member in an open condition of the bed parts.

6. In a folding bed, the combination of a main frame, a reversible seat member hinged thereto, a bed member comprising a series of sections pivotally connected end to end, a vertically disposed radius link pivoted in the lower portion of the main frame and connected to one end of the rearmost bed section, and an angularly formed link member pivotally connected to the seat member aforesaid and to an intermediate bed section the angular link having a knee extension at its bend and the seat member having a ledge for the abutment of said knee extension.

7. In a folding bed, the combination of a main frame, a reversible seat member hinged thereto, a bed member comprising a series of sections pivotally connected end to end, the rearmost of said bed sections having a fixed latch bar, a movable latch bar pivoted on the seat member and adapted for engagement with the fixed latch bar aforesaid, a pull cord for moving the movable latch bar in one

direction, and a spring for effecting a movement of said latch bar in the opposite direction.

8. In a folding bed, the combination of a main frame, a bed member foldably connected with said frame, a supporting leg pivoted to the outer end of said bed member, a companion foot board pivoted to said bed section with its pivot in spaced relation to that of the pivoted leg, and a tension spring connected at its respective ends to said leg and foot board and adapted to hold the footboard either extended or folded when the leg is extended and to hold both leg and footboard folded upon the bed member.

Signed at Chicago, Illinois, this 3rd day of July, 1915.

GEORGE FISCHRUPP.