July 24, 1928. 1,678,441

E. E. McGREW

FOLDING CAMP BED

Filed Sept. 2, 1924 4 Sheets-Sheet 1

Fig. 2

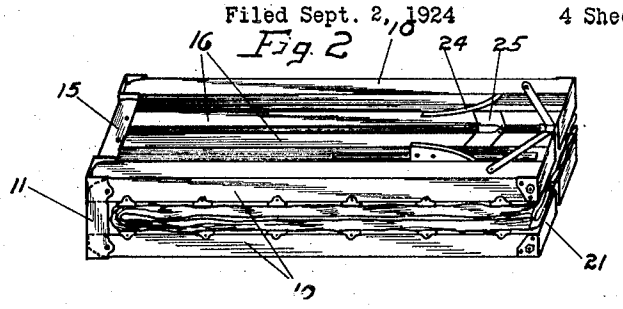


Fig. 16

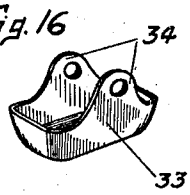


Fig. 1.

Fig. 11.

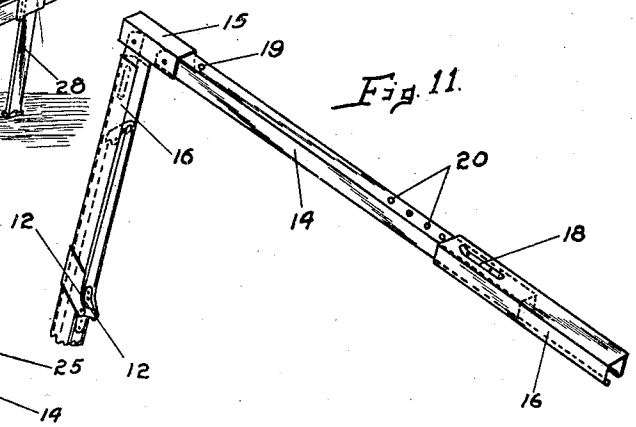
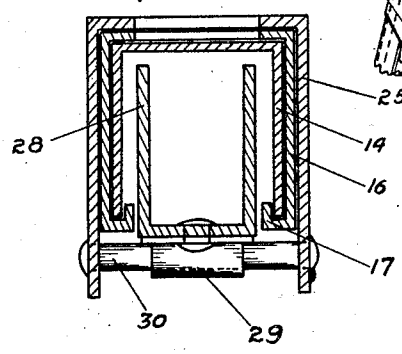


Fig. 12



E. E. McGREW. INVENTOR.

BY Emil F. Lange

ATTORNEY.

July 24, 1928. 1,678,441

E. E. McGREW

FOLDING CAMP BED

Filed Sept. 2, 1924 4 Sheets-Sheet 2

Fig. 3.

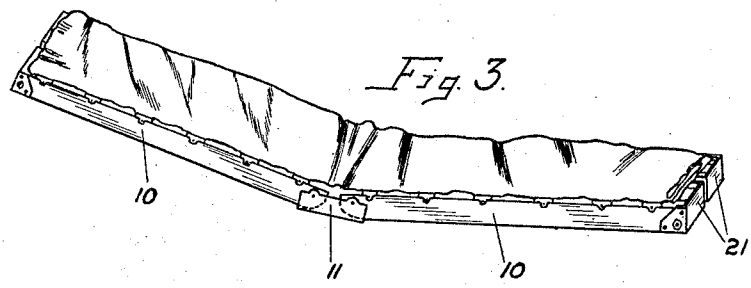


Fig. 4.

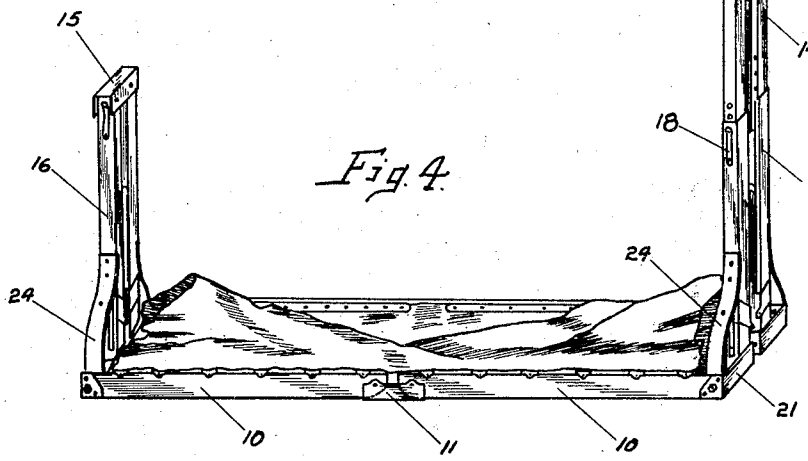
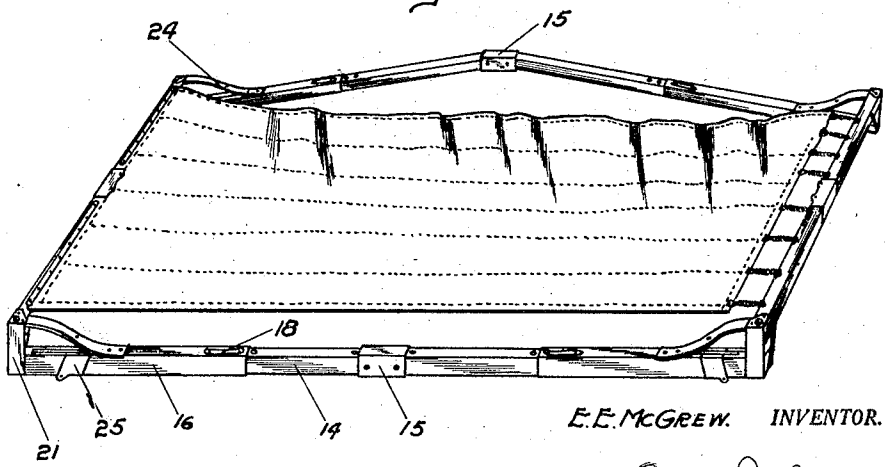


Fig. 5.



E. E. McGREW. INVENTOR.

BY Emil F. Lange

ATTORNEY.

July 24, 1928. 1,678,441

E. E. McGREW

FOLDING CAMP BED

Filed Sept. 2, 1924 4 Sheets-Sheet 3

Fig. 6.

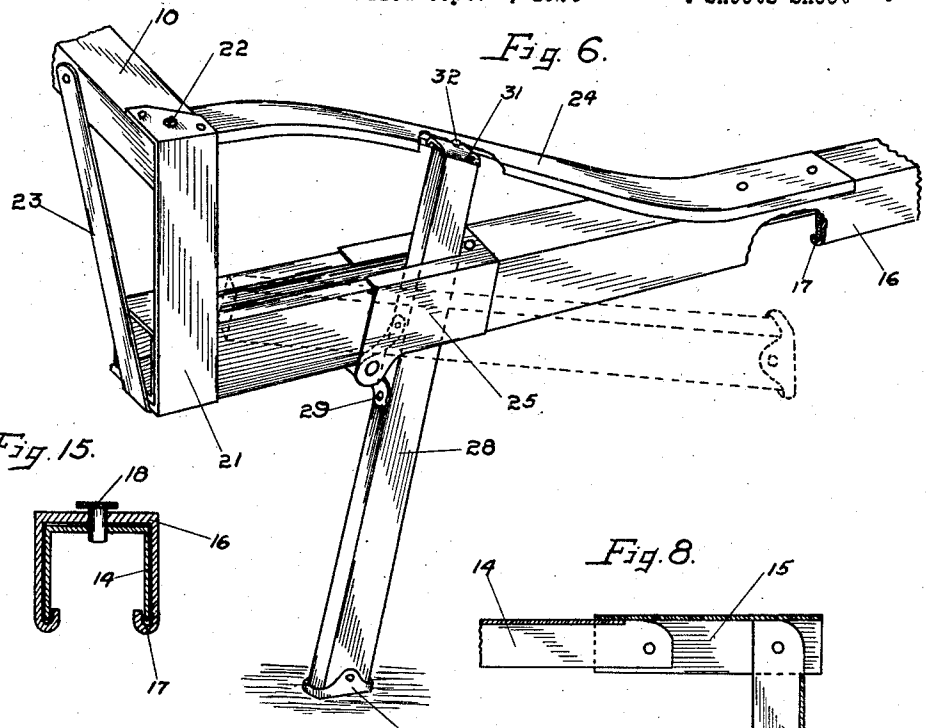


Fig. 15.

Fig. 8.

Fig. 9.



Fig. 10.

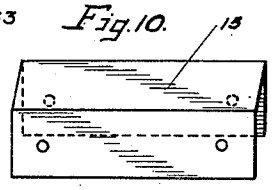


Fig. 13.

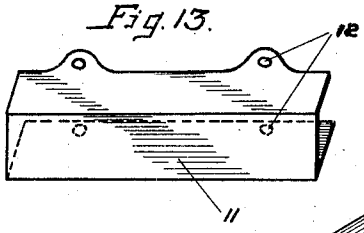


Fig. 14.

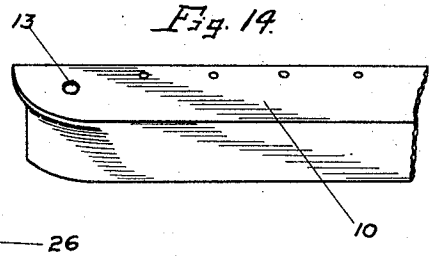
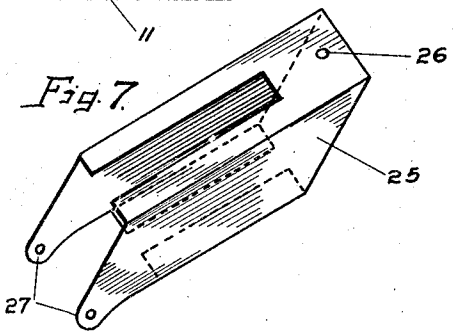


Fig. 7.



E. E. McGREW. INVENTOR.

BY Emil F. Lange

ATTORNEY.

July 24, 1928. 1,678,441

E. E. McGREW

FOLDING CAMP BE D

Filed Sept. 2, 1924 4 Sheets-Sheet 4

Fig. 17.

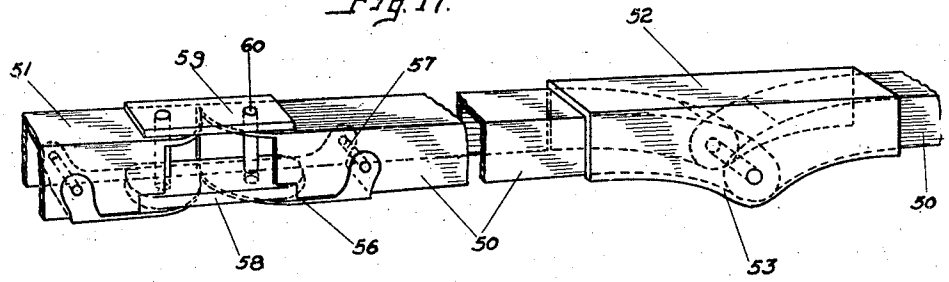


Fig. 19.

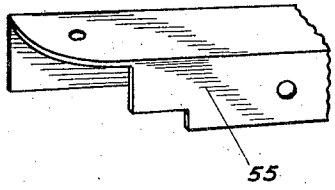


Fig. 20.

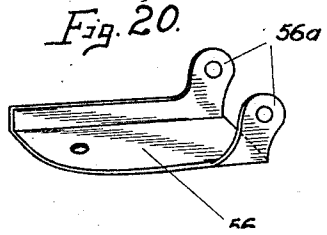


Fig. 21.

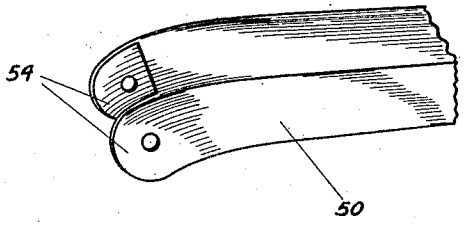
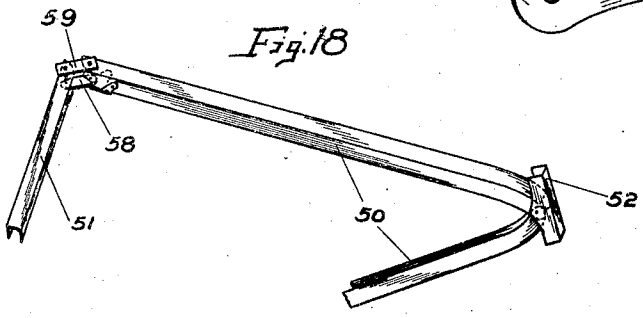


Fig. 18



E. E. McGREW. INVENTOR.

BY Emil F. Lange

ATTORNEY.

Patented July 24, 1928. 1,678,441

UNITED STATES PATENT OFFICE.

EARL E. McGREW, OF LINCOLN, NEBRASKA, ASSIGNOR TO McGREW MACHINE COMPANY, OF LINCOLN, NEBRASKA, A CORPORATION OF NEBRASKA.

FOLDING CAMP BED.

Application filed September 2, 1924. Serial No. 735,513.

My invention relates to folding camp-beds of the type disclosed in my prior application, Serial Number 600,412, filed November 11, 1922. The primary object of my present invention is the provision of such a bed which may be more compactly folded than any prior bed, the bed however retaining all of the advantageous features of the bed of my prior application. Many of these features have been materially improved in greater or less degree. The improved features will be fully described and their objects will be pointed out in the following description.

Referring now to the drawings accompanying this specification,

Figure 1 is a view of the bed as seen when set up.

Figure 2 is a view of the bed when completely folded.

Figures 3, 4 and 5 illustrate the entire bed in various successive stages of the folding or unfolding operation.

Figure 6 is a view of the bed corner construction.

Figure 7 is a view of the device which is secured to the side rail and which is adapted to support the leg.

Figure 8 is a lengthwise sectional view of a portion of the side rail showing the middle joint.

Figure 9 is a view of the inner extremity of a side rail section.

Figure 10 is a view of the channeled abutment at the middle of a side rail.

Figure 11 is a view of the greater portion of a side rail, showing the middle joint, the telescoping extensions and the leg support.

Figure 12 is a sectional view on the line 12—12 of Figure 11, showing particularly the structure for locking the leg in its folded position.

Figure 13 is a view of the channeled abutment at the middle of an end rail.

Figure 14 is a view of the inner end of one of the end rail sections.

Figure 15 is a sectional view of the latch for the telescoping sections of the side rails.

Figure 16 is a view of one of the feet.

Figures 17, 18, 19, 20 and 21 are views of a modified form of side rail, Figures 19, 20 and 21 showing detached parts thereof.

With the exception of the sectional views in Figures 8, 12 and 15, all views are perspective.

The end rails are sectional and foldable. Referring to Figures 1, 13 and 14, numeral 10 designates the sections forming the end rails. The sections 10 are formed from angle iron by cutting one of the angle iron walls in the form shown in Figure 14 and by bending the other wall into similar form. The cut edge includes both a rounded portion and a straight portion, the inner extremities of the end rail sections being similar to the inner extremities of the side rail sections, and for reasons which will be more fully explained in the description of the side rails. The end rail sections are equal in length but they are formed in rights and lefts. The head rail sections differ from the corresponding foot rail sections only in the fastening devices for the bed top.

Each pair of end rail sections 10 is pivotally secured to a channeled abutment 11 by means of a pivot pin passing through the aligning apertures 12 of the channeled member 11 and through the aperture 13 of the end rail section 10. The lower edge of the channeled member 11 is straight but the upper edge is provided with a pair of ears as shown in Figure 13, the remainder being cut away to afford clearance when folding and setting up the bed.

In the form shown in Figures 1 to 16 inclusive, the side rails are formed of four sections each, having both a telescoping and a pivotal relationship, the middle connection being pivotal. All four sections are made from channeled material. The inner sections 14 are both pivoted at their inner ends to the channeled abutment 15 as shown in Figure 8. The shape of the inner ends of the sections 14 is similar to the shape of the inner ends of the sections 10 and is such that when the section 14 assumes a position at right angles to the member 15 its limit of inward movement is reached. The importance of this feature resides in the fact that if one of the pair of sections 14 moves first, the moving force is automatically applied to the other when the

first section has reached its folded position, thus greatly facilitating the folding operation of the bed. It also assists in maintaining the proper relation between the sections when the bed is in its folded position. The abutment 15 offers only two fixed positions for the sections 14. The sections 14 are in alignment when the bed is set up and they are parallel in the folded bed.

The sections 14 telescope into the sections 16, and to make the telescoping relation secure the sections 16 are provided with inturned lips 17 as shown in Figure 12. At the inner end of each section 16 there is secured a spring latch 18 having a pin which is adapted to enter an aperture 19 when the bed is folded or into any one of a series of apertures 20 when the bed is set up. The purpose and advantages of this arrangement will be more fully pointed out in connection with the description of the folding and setting up operations of the bed, but it will be apparent that the construction just described affords a convenient method of properly adjusting the tension of the bed top.

The side and end rails are secured together at the corners of the bed as shown in Figure 6. They are held spaced apart by means of the strap 21 and are maintained in pivotal relation by means of the pivot pin 22. Straps 23 and 24 brace the end and side rails respectively at the corner. The corner construction is similar to that of my prior application.

Near the outer end of each section 16 is secured a box like device 25 as shown in Figures 6 and 7. It is provided with an aperture 26 whereby it may be secured in fixed position on the section 16 by means of a rivet or other suitable fastening device. A portion of its base is cut away and both its base and top are slotted, the slots registering with a similar slot in the section 16. At its lower and outer edge it has a pair of depending ears 27 which project below the lower edge of the section 16. The leg 28 has secured thereto a clip 29, the leg being pivotally secured to the box 25 by a pivot pin 30 passing through the clip 29 and through the ears 27. The upper end of the leg 28 slides in the channeled brace 24, the leg being provided with a shoe 31 which is rounded to facilitate sliding. The brace 24 and shoe 31 are further interlocked by means of a projection 32 engaging a depression when the leg is in its operative position.

At the lower end of the leg 28 is a foot 33 having the form shown in Figure 16. It has four sides and a bottom, all of which are rounded or dished outwardly, the edges at the bottom being also rounded. It has a pair of upwardly projecting ears 34, the ears being apertured for the reception of a rivet for securing it to the leg. This foot construction leaves no rough edges which would tend to mar the furniture and to tear the carpets when the bed is used in the home. Tents at the present time are made with canvas floors which are frequently injured by the rough feet of the prior camp beds. Such injury is entirely avoided by the use of the feet 33.

When the bed is to be set up for use, the bundle is placed on the floor or on the ground in the position as shown in Figure 2. The first unfolding operation is about the channeled member 11 as a pivot as indicated in Figure 3. When the end rail sections 10 of each pair are in alignment, the folds of the canvas bed top are lifted at the edges and the folded side rails which in the Figure 3 position are under the canvas, are lifted about the pivots 22 to the position shown at the left in Figure 4. The telescoping sections 14 are then drawn out of the sections 16 as shown at the right in Figure 4. This is done by first unlatching the latch 18 from engagement in the aperture 19 and then drawing the sections 14 out until the latch 18 automatically engages the proper aperture 20. It should be here noted that the latch 18 and the apertures 20 afford means of extreme convenience for adjusting the tension of the bed top. When the bed is new the first of the notches 20 receives the pin of the latch for the proper tension for average conditions, and the latch pin automatically falls into the first aperture when the sections 14 are drawn out. When however it is desired to increase the tension, as when the canvas has become stretched, the latch pin is allowed to enter one of the apertures 20 other than the first, to obtain the desired tension in the bed when set up.

After the sections 14 on both sides have been drawn out, the end rails 10 are drawn apart as in Figure 5. The drawing apart of the end rails alone will not align the sections of the side rails because of the dead center relation between the bed top and the sections of the side rails. The joints 15 will still be somewhat above the level of the bed top as shown in the upper portion of Figure 5, but they may be forced down by downward pressure on the channeled members 15. The joints pass their dead center when they are slightly below the level of the bed top, after which they snap into place into the position shown in the lower portion of Figure 5.

If then the corners of the bed are lifted in succession, the legs 28 drop out of their sheaths and they can be quickly and easily swung into operative position, the bed when ready for its occupants appearing as shown in Figure 1. When in this position all parts are securely locked against accidental displacement. The end rails are held with their sections in alignment under the length-

wise tension of the bed top. In the case of the pivotal connections on the members 15, the tension of the bed top is exerted on the ends of the side rails and above the side rails, the result being that the joints can be broken only by moving the members 15 upwardly. Such movement is never likely to be accidental. It should also be noted that the greater the weight of the occupants the greater the tension on the bed top and the greater the locking action of the toggle latches at the middle points of the side rails. Accidental telescoping of the side rails is effectively prevented by the latches 18.

The legs are also securely held when the bed is set up, and even more securely held when the bed is occupied. As shown in Figure 6, the weight of the bed and occupants presses the leg against the reinforced abutment formed in the section 16 and the box 26, and obviously the greater the weight of the occupants the more tightly the leg will be held in position. The leg can be folded only by moving it away from its supporting position but this movement is yieldably resisted by the latch 32 which also assists the reinforced abutment in holding the leg in its operative position.

The arrangement for adjustably tensioning the bed top is of extreme simplicity and of great importance. In prior beds the adjusting operation is separate and distinct from the setting up operation. If the bed top was found to be slack it was necessary to first fold or at least partly unfold the bed and then to remove and adjust several bolts or similar fastening devices. This in even the best of the beds involved the expenditure of some time and considerable trouble, and when the adjustment was found to be still incorrect it involved repeating the operation. In my bed the adjustment of the tension is made as nearly automatic as possible and is made part of the setting up operation. When the bed has reached the setting up stage shown in Figure 4, the sections 14 are drawn out of the sections 16 until the latch pin falls into the proper aperture 20, and as the tension diminishes through use the more remote apertures 20 are selected for the reception of the latch pin.

In the folded position of Figure 2 the bed is so small and compact that it can be carried in the box of the smallest sizes of roadsters or coupés. The exterior of the bundle is metal at all points, the canvas bed top being entirely enclosed and protected. The protection is especially great at the edges and the corners. Since the unfolding of the bed must pass through the successive stages shown in Figures 3, 4, 5 and 1 respectively, the various parts are held against accidental displacement when in the folded condition of Figure 2. This is especially true of the legs which in the folded bed are entirely within the channels of the sections 16 and are locked in their folded position by the telescoping sections 14 which close the slots in the sections 16 and boxes 25 respectively as shown in Figure 12.

In Figures 17 to 21 inclusive I show a modification of the side rail only. This modification is characterized by the fact that the telescoping features are entirely eliminated from the side rails and that folding features are substituted therefor. The side rail in this instance consists of two inner sections 50 and of two outer sections 51, only one of the sections 51 being shown in my drawings. All of these sections are made from channeled material and are so positioned that the channel openings are at the bottom of the side rail when the bed is set up. The inner sections 50 have inner ends as in Figure 21 and outer ends as in Figure 19. The inner ends are downcurved and a portion of the channel iron wall is cut away to form the ears 54 which are apertured. The channel pivot box 52 also has depending ears 53 which are also apertured. The two sections 50 are connected with each other at their inner ends by means of a pivot pin which passes through the apertures of the ears 54 of both sections, the pivot pin also passing through the apertures of the channel pivot box 52. The sections 50 of the pair thus have only two fixed positions with relation to each other. They are in alignment when the bed is set up and they are parallel to each other when the bed is folded.

The plate 56 shown in Figure 20 has one of its edges upturned and it is provided with a pair of apertured ears 56ª on its opposite edges. The base of the plate 56 is also provided with an aperture and the end edge of the plate is rounded concentric with the aperture. The plate 56 is rigidly secured to the section 50 by means of a rivet 57 or other suitable fastening device. The upper wall of the section 50 is also rounded on its edge and is provided with an aperture at the center of the arc, the arrangement being similar to that of the plate 56. The pivot plate 58 is positioned immediately above the plate 56 and a similar pivot plate rests on the upper surface of the sections 50 and 51 at their junction. The pivot pins 60 extend through both pivot plates 58 and 59, through the plate 56 and through the wall of the channel iron section 50 or 51.

The manner of folding the side rail is indicated in Figure 18. The two sections 50 lie closely in contact with each other while together they fold against the sections 51, the two pivotal movements being in planes which are perpendicular to each other.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. In combination with the side rail of a bed, said side rail including a pair of tele-

scoping sections of channel iron, the open sides of said channel iron sections being at the bottom side of the side rail, a leg pivoted at an intermediate point to the outer of the two sections to swing through an arc greater than a quadrant, the outer only of said two sections being provided with a slot in its upper surface for the upper portion of said leg, said leg being foldable on its pivot into the outer of said channel iron sections so that when the inner section is telescoped into the outer section the inner section will cover the slot in the outer section to thereby prevent the pivotal movement of the leg.

2. In a folding bed, a side rail having a pair of telescoping sections, a leg pivotally secured to one of said sections and foldable therein, the other of said sections being adapted to slide over the pivot of said leg to prevent pivotal movement thereof when the bed is folded.

3. In a folding bed, a side rail having four sections which are adapted to be locked in extended relation in alignment and which may be retracted substantially into the length of a single section, legs pivotally secured intermediate their extremities to the end sections adjacent the extremities of said side rail, said legs being foldable into the end sections of said side rail into parallelism with said end and intermediate sections in a manner such that said end and intermediate sections will overlie the pivots of said legs when said side rail is retracted.

4. A foldable bed including a pair each of end rails and side rails, said end rails each comprising a pair of sections and a link, each of said two sections being pivotally secured at its inner extremity to said link, and pivots connecting said end and side rails at their extremities at the corners of said bed, said side rails being formed from a plurality of sections which are collapsible to a length which is substantially equal to the length of one of the sections of said end rails.

5. A folding bed comprising a pair each of end rails and side rails, said end rails being positioned above said side rails and being secured to said side rails at the corners of the bed by means of vertical pivot pins, each of said end rails being formed of two sections which are secured to each other at their inner extremities by means of vertical pivots, and each of said side rails being formed of four sections connected in end to end relation, the inner of the sections of the side rails being telescopically slidable into the outer of the sections and being secured together by means of horizontal pivot pins at substantially the middle points of said side rails.

In testimony whereof I affix my signature.

EARL E. McGREW.