H. ACKERMANN.

COLLAPSIBLE BED.

APPLICATION FILED JULY 7, 1909.

986,117. Patented Mar. 7, 1911.

3 SHEETS—SHEET 1.

Fig. 1

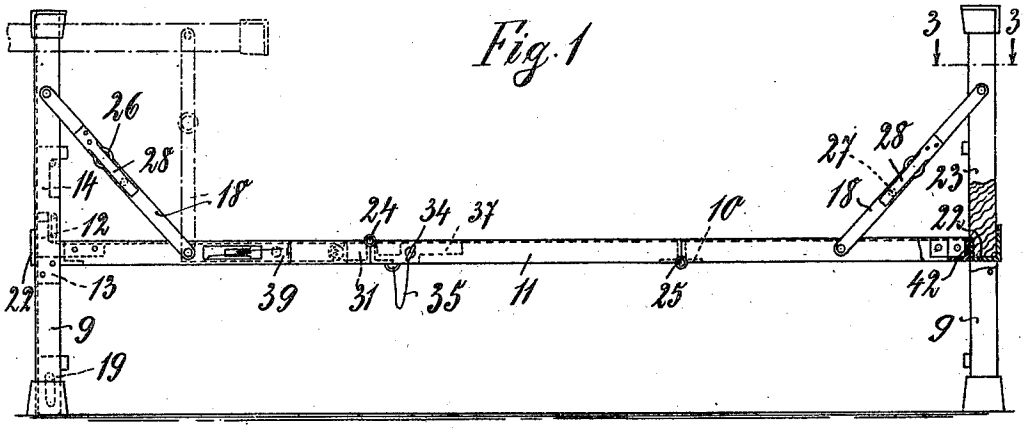


Fig. 2

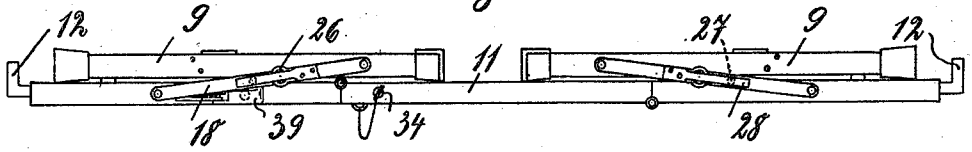
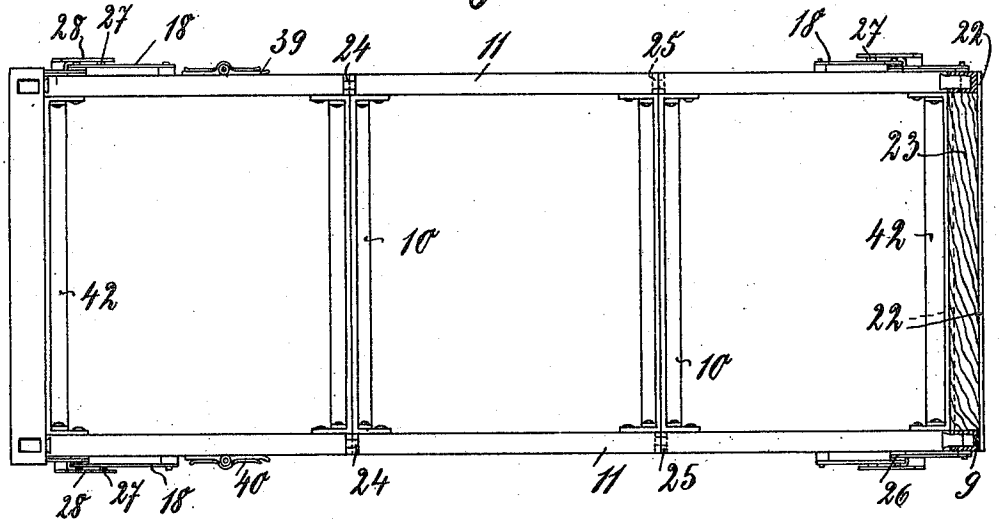


Fig. 3



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3 SHEETS—SHEET 2.

Fig. 4

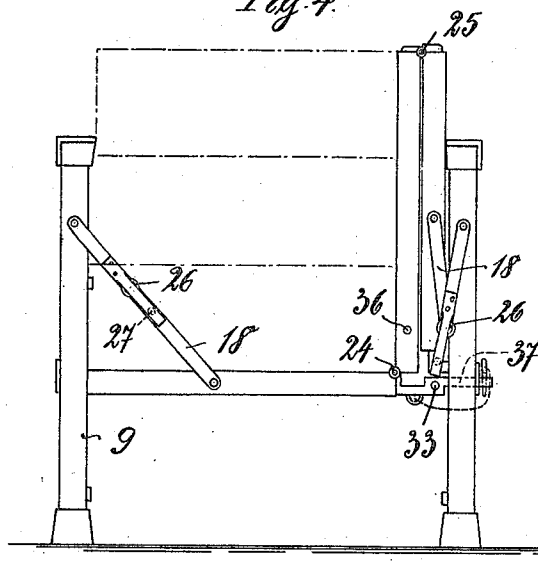


Fig. 5

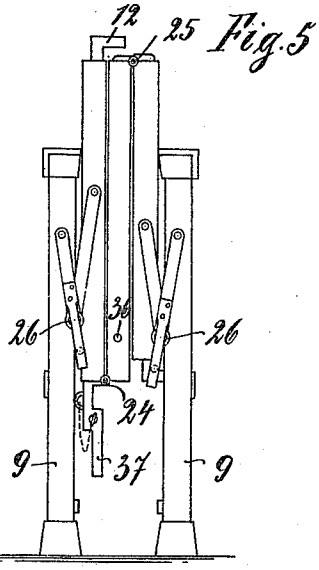


Fig. 6

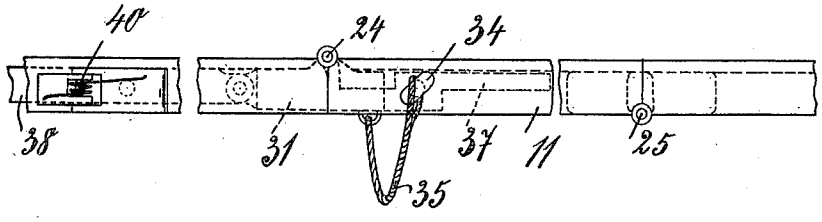
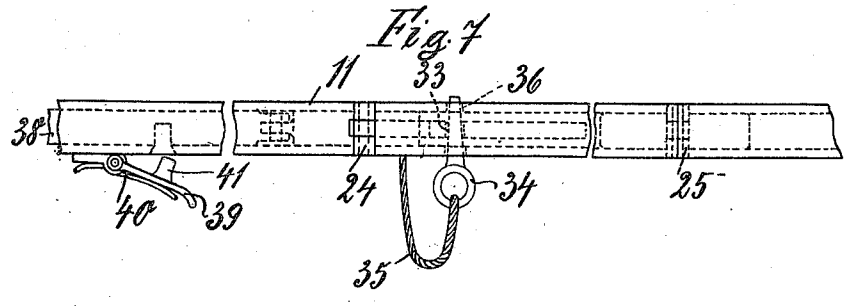


Fig. 7



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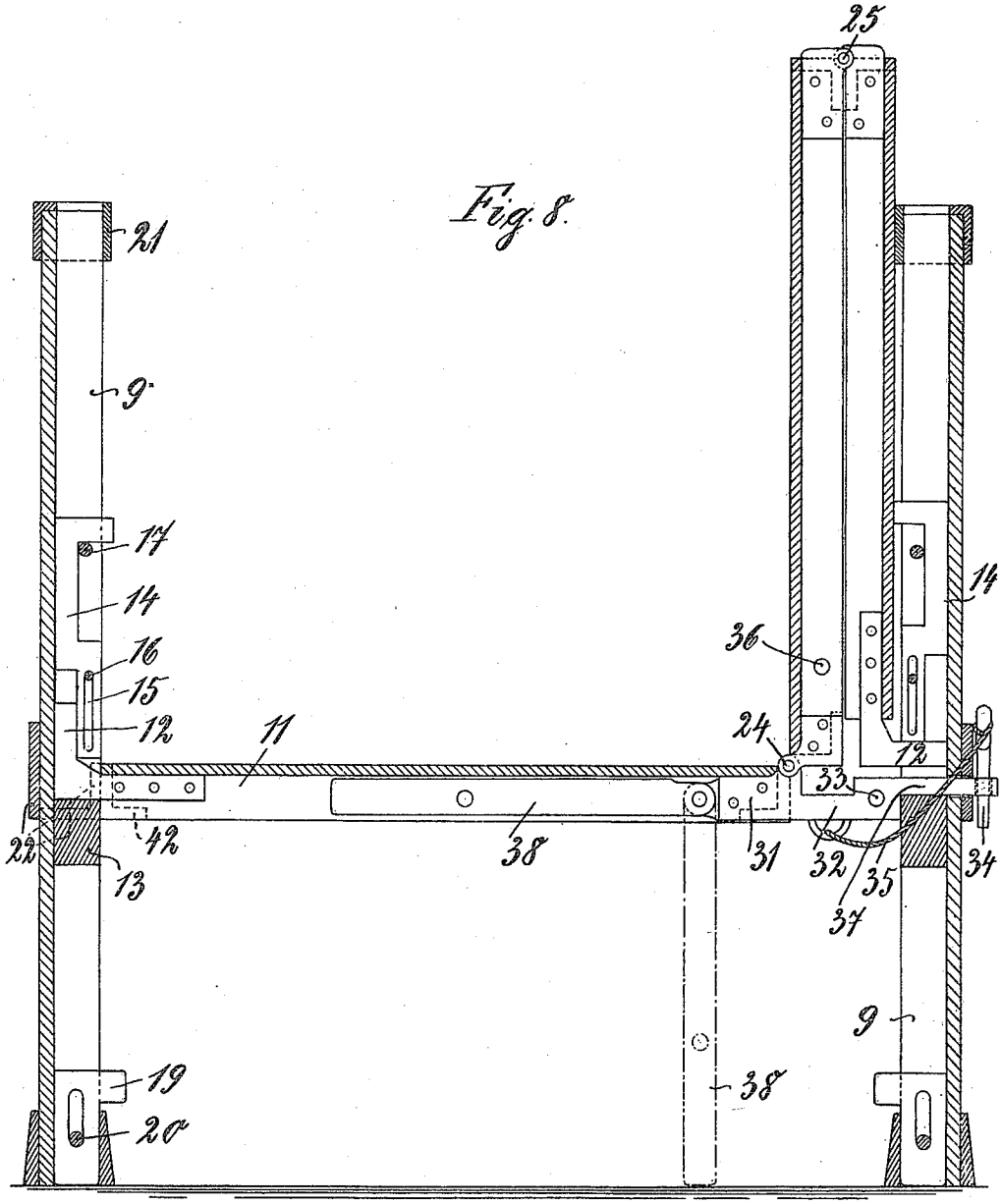
3 SHEETS—SHEET 3.

Fig. 8.



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UNITED STATES PATENT OFFICE.

HEINRICH ACKERMANN, OF BERLIN, GERMANY.

COLLAPSIBLE BED.

986,117. Specification of Letters Patent. Patented Mar. 7, 1911.

Application filed July 7, 1909. Serial No. 506,385.

To all whom it may concern

Be it known that I, HEINRICH ACKERMANN, a subject of the King of Prussia, and resident of 43/44 Warschauerstrasse, Berlin, German Empire, have invented certain new and useful Improvements in Collapsible Beds, of which the following is a specification.

This invention relates to a collapsible bed composed of profile irons and is especially applicable for beds used in military barracks and large institutions.

The object of the present invention is to provide a strong structure of a collapsible bed which may be stored in a compact space when not in use and may be transported in a compact condition.

The novelty of the present invention will be more readily understood from the following detailed description of the form illustrated in the accompanying drawings.

In these drawings, Figure 1 is a side elevation with the right-hand end partly in section of a bed-stead according to the present invention, Fig. 2 illustrates the bed-stead in the collapsed position which it occupies during transport, Fig. 3 is a plan of the bed-stead illustrated in Fig. 1, the right-hand post being shown in section on the line 3—3 of Fig. 1, Fig. 4 illustrates the bed-stead shown in Fig. 1 in another collapsed position suitable for storing when the bed is not in use, Fig. 5 shows the bed-stead in yet another collapsed position, Fig. 6 is a detail side elevation shown to a larger scale than that given in Fig. 1 and showing the arrangement of the hinges of the side bars of the mattress frame, Fig. 7 is a plan of the parts shown in Fig. 6, Fig. 8 is an enlarged sectional view of the bed in the collapsed position illustrated in Fig. 4. The diagonal links hereinafter described have been omitted in Fig. 8.

In carrying the invention into effect according to the form shown the vertical end posts 9 are of U-section, the parallel flanges of which face toward the bed. The mattress frame 10 has side bars 11 provided with hooked ends 12. In the form shown the hooked ends 12 are upwardly bent and the heel or angles of the hooked ends rest on blocks 13 which are fixed between the parallel flanges of the vertical bed posts. Arranged to slide between the parallel flanges of the bed posts there are bolts 14, see Fig. 8, which are provided with slots 15 engaging over pins 16. The bolt 14 is also guided by a pin 17. The bolt 14 engages over the upwardly hooked end 12 of the side bars 11.

The side bars 11 are connected to the vertical posts 9 by means of diagonal links 18 which are pivoted both to the side bars 11 and the vertical posts 9. Arranged at the bottom of the vertical posts 9 there are slidable bolts 19 which are guided between the parallel flanges of the vertical bed posts and also by means of a pin 20 engaging in an elongated slot in the said bolts. The upper ends of the bed posts are provided with caps 21 and these caps 21 are provided with openings of a size sufficient to admit the bolts 19. In this way when it is desired to arrange the beds in tiers one above the other the bolt 19 sinks into the opening in the cap 21 and thereby the two beds are sufficiently well held together.

Between the two vertical bed posts at one end of the bed there is arranged about the same level as the mattress frame a cross channel iron 22 of U-section. The channel iron 22 has its parallel flanges vertical and the flange next to the interior of the bed is smaller than the flange on the exterior. Within the channel iron 22 there is supported the end board 23 of the bed. In this way by arranging the front flange of the channel iron 22 smaller than the rear flange the end board 23 may be readily removed, so as to gain access to the irons for cleaning.

When it is desired to collapse the bed into the form shown in Fig. 2 the bolts 14 at one end of the bed are raised by hand and the bed posts are then swung around into the position shown in dotted lines in Fig. 1, after which the end posts are laid on the mattress frame in the manner shown in Fig. 2. This form of collapsing is exceedingly useful for transport purposes in railway wagons. When storing the beds however in barracks or other institutions it is frequently desirable to provide other methods of collapsing.

According to the present invention therefore the side bars of the mattress frame are divided into sections which are hinged together. In the form illustrated three sections are provided and in Fig. 1 it will be seen that the extreme left-hand section is hinged to the center section at 24. This hinge being at the upper side of the side bars. The center section is again hinged at 25 to the extreme right section, the hinge in

this case being on the lower side of the side bars. This arrangement of the hinges enables the center section to be rotated upwardly into a vertical position while the extreme right section is rotated in a clockwise direction to assume a parallel position as seen in Fig. 4. The mattress in such a bed is divided into three sections corresponding in length to the sections into which the side bars are divided. The three sections of the mattress may now be piled one on the top of the other as shown by the dotted lines in Fig. 4. The whole bed is then in an exceedingly compact form for storing in any suitable store room.

In order to enable the end section to be folded in the manner described the diagonal link 18 is hinged at 26 near its center. To one of the parts of the diagonal link 18 there is fixed a flat spring having a projection 27, see Fig. 3, which is adapted to engage in a recess in the other part of the link 18. In this way the link 18 is held firmly in the position shown in Fig. 1. When however it is desired to fold the bed into the position shown in Figs. 4 or 5 the operator pulls the flat spring 28 outward so as to disengage the projection 27 with the lower part of the link 18 whereby the link 18 is free to fold about the hinge 26.

Owing to the fact of the hinges 24 and 25 of the side bars 11 being arranged one 25 below and the other 24 on the top side of the side bars, it will be seen that the hinge 25, when a load is placed on the side bars from above, does not tend to bend downward, owing to the two ends of the sections in the neighborhood of the said hinge butting against one another. The hinge 24, however, being arranged at the top side of the side bars is not adapted to resist a force applied from above on the side bars. It becomes necessary therefore to provide a locking device. In the form illustrated the block 31 of the hinge 24 is provided with an extension 32, see Fig. 8, having a hole 33 therein. The center section is also provided with a hole which in the folded position comes opposite the hole 33 in the extension 32. For holding the sections firmly together it is only necessary to insert a pin 34, which may be suspended from the extension 32 by a cord 35, through the hole 33 and the holes 36 in the center section. In order to enable the parts to be held firmly in the collapsed position illustrated in Figs. 4 and 8 the extension 32 is provided with a part 37 which is adapted to pass through an opening in the end post and the said part 37 is provided with a hole through which the pin 34 may be inserted. During collapsing of the bed into the position illustrated in Figs. 4 and 8 it is advisable that the extreme left section of the side bar is maintained in a horizontal position. This is effected by providing a foot 38 which is hinged to the block 31. The side bars are composed preferably of U-iron and the foot 38 is usually nested between the parallel flanges of the U-iron of the side bar. The foot 38 is held in this position by means of a trigger 39 controlled by a spring 40. The nose 41 of the trigger is adapted to engage in a suitable opening in the foot 38. When the foot is to be used the trigger 39 is pressed outward into the position shown in Fig. 7, whereby the foot 38 is free to swing about its hinged connection with the block 31.

It is advisable not only to stiffen the hinged connection 24 as described but also to provide stiffening means for the connection between the hooked ends of the side bars and the vertical posts 9. The bolts 14 are not sufficient for this purpose and therefore I provide a cross angle iron 42 which is adapted, as can be seen in Figs. 1 and 3 to butt against the inner flange of the channel iron 22. The construction is thereby considerably stiffened because of the considerable bearing surface between the angle iron 42 and the channel iron 22.

I claim:—

1. A bed comprising vertical posts of U-section, a mattress frame having side bars supported from said vertical posts, hooked ends on said side bars, said hooked ends passing between the parallel flanges of the vertical posts and diagonal links pivoted to said side bars and vertical posts.

2. A bed comprising vertical posts of U-section, a mattress frame having side bars engaging between the parallel flanges of said U-shaped posts, a block fixed between said parallel flanges and on which said side bars rest, upwardly hooked ends on said side bars, a bolt slidable in said U-shaped posts and engaging over said upwardly hooked ends and diagonal links pivoted to said posts and side bars.

3. A bed comprising vertical posts of U-section, a mattress frame having jointed side bars supported from said vertical posts, hooked ends on said side bars and passing between the parallel flanges of the vertical posts and diagonal links pivoted to said side bars and vertical posts.

4. In combination in a bed, vertical posts of U-shaped section, side bars engaging between the parallel flanges of said U-shaped posts, a cross U-shaped channel iron between said posts, said channel iron having its parallel flanges upwardly directed and its inner flange shorter than its outer flange and an end board resting in said channel between said upwardly turned flanges.

5. In combination in a bed, vertical posts of U-shaped section, blocks between the parallel flanges of said posts, horizontal side bars, hooked ends on said side bars engaging between the parallel flanges on the bed posts, said ends resting on the blocks be-

tween the said parallel flanges and said hooked parts being upwardly directed, a movable bolt guided vertically between said flanges and engaging over said upwardly hooked end, a cross piece between the vertical posts at about the level of said blocks and an angle iron cross piece connecting the ends of said side bars and adapted to butt against the said cross piece on the bed posts.

6. In a bed, vertical bed posts of U-shaped cross section, a mattress frame supported from said posts, a cap having a hole therein over the upper end of said U-sectioned posts, a slidable bolt loosely arranged at the lower end of said posts and of a size to fit the hole in said cap for the purpose set forth.

7. A bed comprising in combination, vertical posts, side bars divided into three sections, hinges on the upper side between one of the end sections and the center section, hinges on the lower sides between the center sections and the other end sections, hooked ends on said end sections engaging with said vertical posts, means for stiffening said sections of the side bars, diagonal links pivoted to the vertical posts and to the side bars, said diagonal links being jointed about their mid-points and means for stiffening said jointed diagonal links.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HEINRICH ACKERMANN.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.