May 17, 1932. W. J. DUVALL 1,858,543

FOLDING DAVENPORT BED

Filed March 25, 1931

Fig. 1.

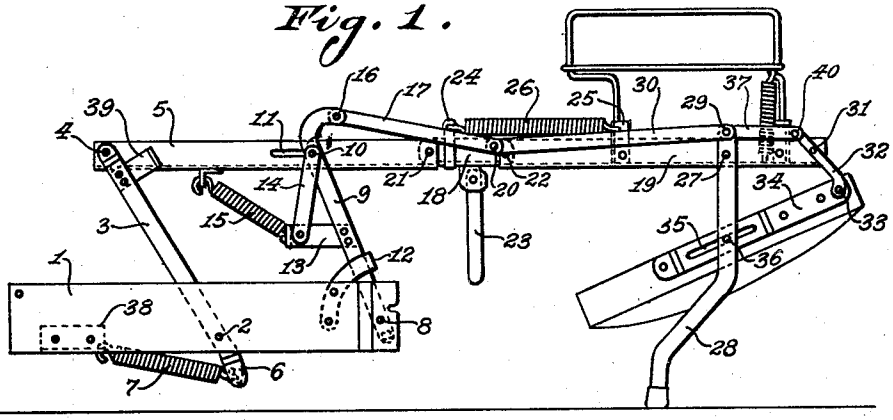


Fig. 2.

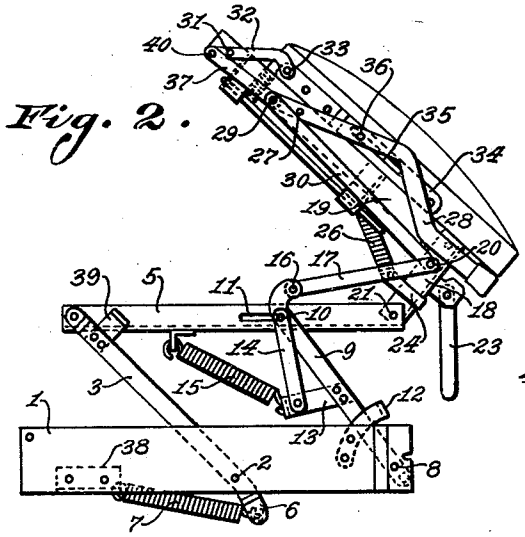


Fig. 3.

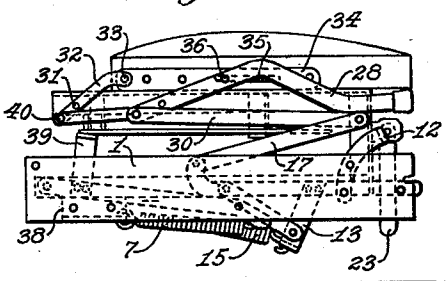
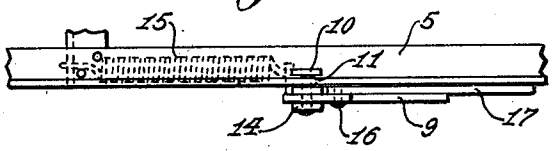


Fig. 4.



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UNITED STATES PATENT OFFICE

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FOLDING DAVENPORT BED

Application filed March 25, 1931. Serial No. 525,083.

This invention pertains to folding beds of the davenport type in which the bed frame may be folded up to a collapsed position within the frame of the davenport so that it may be used as a seat in the daytime.

One of the objects of this invention is to provide a bed structure of this type which will have simple mechanical movements.

Another object is to provide such a structure which will be securely braced or locked in its extended position so as to be capable of supporting the necessary weight.

Another object is to provide improved means whereby the seat frame may be moved from its normal position when the bed is folded to a lower position when the bed is extended so as not to interfere with the action of the bed springs.

Another object is to provide a bed construction which is simple to manufacture and which is rugged and durable in service.

Further objects will appear from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a end view of a bed frame and its support embodying this invention shown in extended position;

Figure 2 is a similar view showing the frame partly folded;

Figure 3 is a similar view showing the bed completely folded, and;

Figure 4 is a fragmentary plan view of a part of the inner bed frame and its connections.

Referring to the drawings, 1 designates a supporting plate which may be attached to the end member of the davenport frame. It will be understood that the drawings illustrate the mechanism at only one end of the frame and that this mechanism is duplicated at the opposite end. Pivoted at 2 on the plate 1 is an arm 3 which is pivoted at 4 to the end of the inner bed section 5. The lower end of the arm 3 has an extension 6 beyond the pivot 2 to which a spring 7 is attached whose other end is attached to a convenient fixture on the plate 1.

Pivoted at 8 on the plate 1 is a second arm 9 provided at its upper end with a headed pin 10 adapted to slide in a slot 11 in the frame 5. A stop 12 fixed to the plate 1 is arranged to limit the upward movement of the arm 9. Attached to the arm 9 is an offset bracket 13 braced by a brace 14, and connected by a spring 15 to the frame 5. The upper end of the arm 9 is offset relatively to the pin 10 and pivoted at 16 to a link 17.

The bed frame itself comprises three sections including the inner section 5, an intermediate section 18 and an outer section 19. The link 17 is pivoted at its other end at 20 to the intermediate section 18. This section is pivoted at 21 to the section 5 and at 22 to the section 19. The section 18 may be provided with a suitable truss bar 23.

The section 18 is provided with a bracket 24 and the section 19 with a similar bracket 25, these brackets being spaced from the pivot 22 connecting these two sections. The brackets 24 and 25 are connected by a tension spring 26 which is tensioned when the bed frame is in extended position.

Pivoted at 27 to the section 19 is a leg or foot 28. The upper end of the foot 28 extends beyond the pivot 27 and is pivoted at 29 to a link 30 whose other end is pivoted at 20 to the link 17 and the intermediate section 18. Pivoted at 31 on the outer frame 19 is a short arm 32 which is pivoted at 33 to a seat frame 34. The frame 34 is provided with a slot 35 in which a headed pin 36 on the foot 28 is adapted to slide. The upper end of the arm 32 beyond the pivot 31 is pivoted at 40 to a link 37, the other end of which is pivoted at 29 to the link 30 and the foot 28. The operation of this device is as follows. Assuming the bed is in extended position as shown in Fig. 1, the spring 26 is under tension while the springs 7 and 15 are nearly released. The arm 9 is drawn outwardly against the stop 12 and the pin 10 against the end of the slot 11. The foot 28 is held in its extended position by the link 30. The lower part of the foot 28 is offset inwardly so that when the weight of the bed rests on this foot the link 30 will be tensioned which tension will be transmitted thru the link 17 to the arm 9 so as to maintain said arm drawn outwardly against its stops. The weight on the intermediate section is thus supported by

the links 17 and 30 assisted by the frame 5 which is held in horizontal position by the arms 3 and 9.

In order to fold the bed the outer edge of the outer frame 19 is raised. This causes said frame to pivot at 22 on the intermediate frame. The movement is assisted by the spring 26 which helps to raise the weight of the outer section. As the frame 19 swings about the pivot 22 the link 30 forces the upper end of the foot 28 to the right, Fig. 1, so as to swing said foot inwardly to folded position, as shown in Figs. 2 and 3. During this movement the pin 26 slides in the slot 35 and carries the said frame 34 to a folded position against the frame 19. At the same time the link 37 swings the arm 32 about its pivot 31 so as to move the seat frame outwardly to its proper position on the bed frame as shown in Fig. 3.

When the outer frame 19 has completed its movement to a position substantially at right angles to the intermediate section 18, said latter section begins to pivot at 21 on the inner section 5. This movement causes the link 17 to swing the arm 9 to the left, Fig. 1, and carries the frame 5 to the left in response to the pivotal movement of the arms 3 and 9. During this movement the springs 7 and 15 are stretched and as their tension increases they assist in supporting the weight of the bed mechanism so as to enable the operator to close the bed gently. As the frame finally comes to rest in the position shown in Fig. 3, the frame 5 is supported on a bracket 38 on the plate 1. The frame 19 on the other hand is supported on a bracket 39 fixed to the arm 3.

It will be noted that the tensioning of the springs 7 and 15 partly supports the weight of the bed mechanism so that the opening movement is assisted thereby. This movement may be carried out by the operator grasping the rear of the outer section and raising it, after which the reverse of the above described operations takes place in unfolding the bed to extended position.

It will be noted that this invention provides mechanism of the utmost simplicity of construction and operation for accomplishing the folding and unfolding of a bed of this type. The parts will be securely supported in extended position and the seat frame is dropped to a position out of the way of the action of the bed springs and by a movement which completely controls said frame.

While this bed has been described as a unitary structure, it will be obvious that certain individual features or sub-combinations thereof may be useful alone without reference to other features or the rest of the structure. It is understood that employment of such individual features or sub-combinations is contemplated by this invention and is within the scope of the appended claims. It is further obvious that various changes may be made within the scope of the appended claims, in the details of construction and operation without departing from the spirit of this invention. It is, therefore, to be understood that this invention is not to be limited to the specific details shown and/or described.

Having thus described the invention, what is claimed is:

1. In a folding davenport of the character described, an end support, a folding bed frame having inner, outer and intermediate sections jointed for movement to extended and collapsed positions, means movably connecting said bed frame with said support, a supporting foot pivoted to said outer section, a link connecting said foot with said intermediate section adapted to lower said foot in extended position, a seat frame having means whereby it is lowerably mounted on the outer end of said outer section, means connecting said seat with said foot, and means connecting said link with said first means adapted to lower said seat frame in extended position.

2. In a folding davenport of the character described, an end support, a folding bed frame having inner, outer and intermediate sections jointed for movement to extended and collapsed positions, means movably connecting said bed frame with said support, a supporting foot pivoted to said outer section, a link connecting said foot with said intermediate section adapted to lower said foot in extended position, a seat frame, a suspension link connecting said seat frame with the outer end of said outer section, connections between said seat frame and said foot, and a link connecting said suspension link with said foot adapted to drop said seat frame in extended position.

3. In a folding davenport of the character described, an end support, a folding bed frame having inner, outer and intermediate sections jointed for movement to extended and collapsed positions, means movably connecting said bed frame with said support, a supporting foot pivoted to said outer section, a link connecting said foot with said intermediate section adapted to lower said foot in extended position, a seat frame, a suspension link connecting said seat frame with the outer end of said outer section, slidable connections between said seat frame and said foot, and a link connecting said suspension link with said first link adapted to drop said seat frame in extended position.

4. In a folding davenport of the character described, an end support, a folding bed frame having inner, outer and intermediate sections jointed for movement to extended and collapsed positions, an arm pivoted on said support and movably connected to said inner section for extending and collapsing the same and having an extension, a link con-

necting said intermediate section with said extension of said arm, a stop for limiting the outward movement of said arm, whereby said bed frame is locked against said stop in extended position, a supporting foot pivoted to said outer section, a link connecting said foot with said intermediate section adapted to lower said foot in extended position, a seat frame having means by which it is mounted on the outer end of said outer section means connecting said seat with said foot, and means acting in connection with said first means adapted to lower said seat frame as the bed frame is extended.

5. In a folding davenport of the character described, an end support, a folding bed frame having inner, outer and intermediate sections jointed for movement to extended and collapsed positions, an arm pivoted on said support and movably connected by a pin-and-slot connection to said inner section for extending and collapsing the same and having an extension, a link connecting said intermediate section with said extension of said arm, a stop for limiting the outward movement of said arm, whereby said bed frame is locked against said stop and the end of said slot in extended position, a supporting foot pivoted to said outer section, a link connecting said foot with said intermediate section adapted to lower said foot in extended position, a seat frame, a suspension link connecting said seat frame with the outer end of said outer section, slidable connections between said seat frame and said foot, and a link connecting said suspension link with said first link adapted to drop said seat frame in extended position.

In testimony whereof I affix my signature this 26th day of February, 1931.

WILLIAM J. DUVALL.