

J. M. RICHARDSON.
DAVENPORT.
APPLICATION FILED DEC. 23, 1919.

1,383,485.

Patented July 5, 1921.

4 SHEETS—SHEET 1.

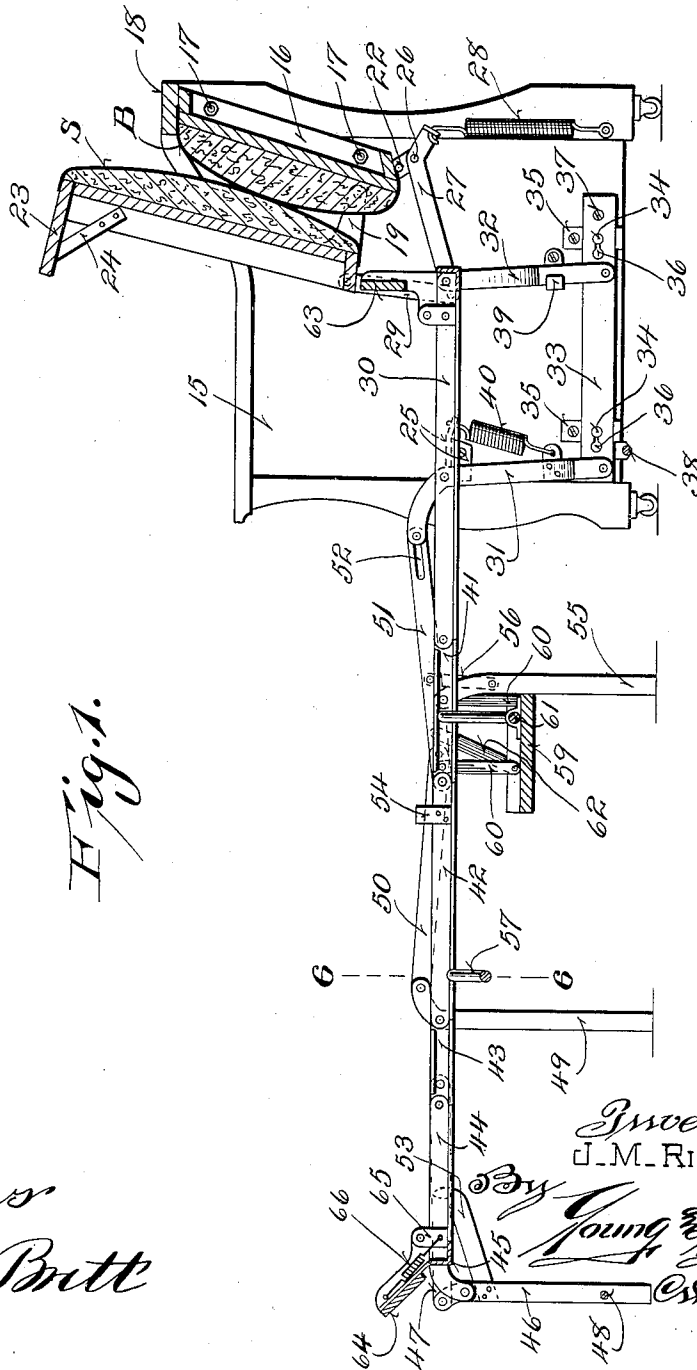


Fig. 1.

Witness
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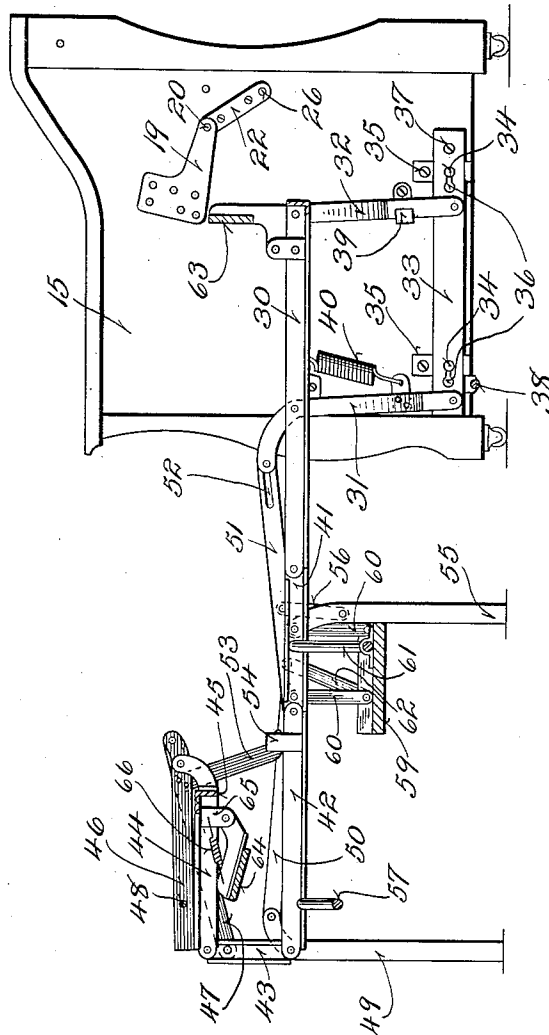
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

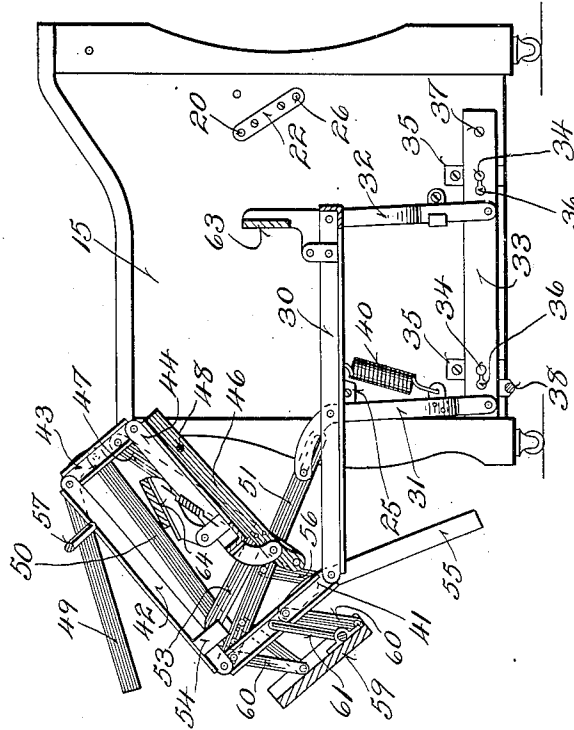
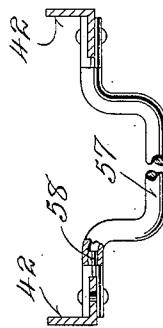


Fig. 6.



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4 SHEETS—SHEET 4.

Fig. 4.

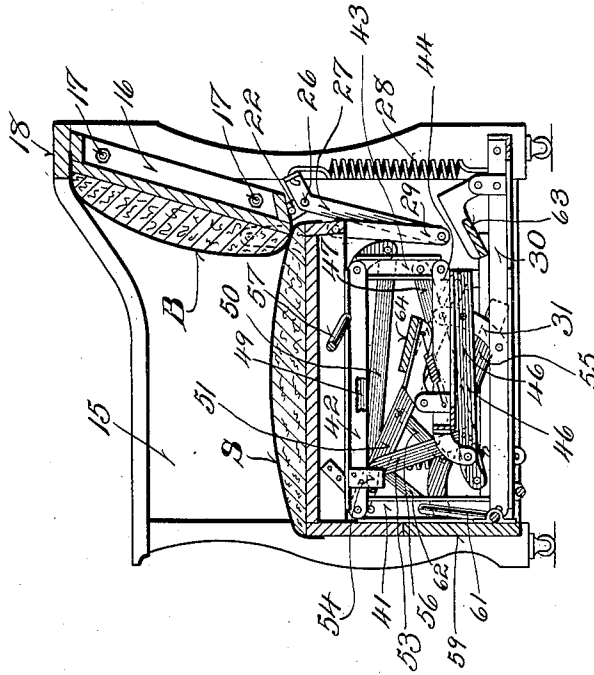
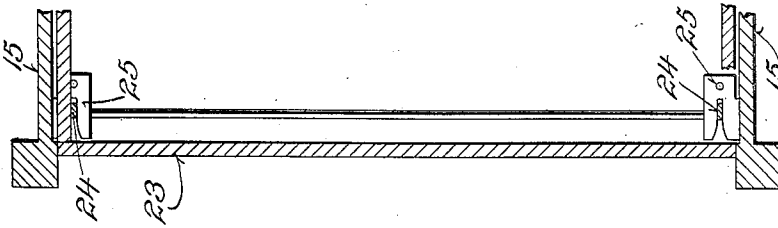


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DAVENPORT.

1,383,485.

Specification of Letters Patent.

Patented July 5, 1921.

Application filed December 23, 1919. Serial No. 346,954.

To all whom it may concern:

Be it known that I, JOHN M. RICHARDSON, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Davenport; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in foldable couch-beds or davenports, more particularly of that type wherein the seat member of the couch or davenport may be swung upwardly to permit the unfolding of a bed bottom frame which is housed beneath the seat in the couch forming relation of parts.

The primary object of my invention resides in the provision of an arrangement wherein an adequate expanse of bed surface may be foldably embodied in a davenport frame of minimum width, whereby the davenport frame may be readily moved through the restricted doorways of modern types of buildings and whereby the structure may occupy a minimum amount of space in the folded or couch forming relation of its parts, structures of this character having heretofore been made very ample with respect to the couch functions thereof so as to provide a sufficient amount of space within the frame to accommodate the bed structure.

It is more particularly my object to accomplish this compactness of the folded structure by the provision of a bed bottom frame formed in a maximum number of parts which are foldable to provide a definite roll of the mattress portion adapted to be carried thereby, and wherein said frame will occupy the entire space within the main frame under the seat in a manner permitting ready manipulation of the frame to procure its extended or bed forming position.

A further object with respect to ready portability of the davenport resides in the provision of a foldable bed structure comprising a unit which is detachably associated with the main frame whereby, to permit passage through an exceedingly restricted space, the main frame may be most readily disassembled.

A more detailed object resides in the provision of means for connecting the forward edge portion of the seat member with the

forward portions of the frame ends in the downward position of said seat member whereby to increase the strength and rigidity of the structure in its couch forming relation of parts.

A still further object resides in the provision of a counter-balancing spring arrangement for the seat member which is effective adjacent the limits of movement of the seat member to yieldably urge the seat member to such limits of movement.

A still further object resides in the provision of a head member for the bed frame which is effective to positively lock the seat member in raised position when the bed frame is extended.

With the above and other objects and advantages in view, which will be apparent as the description proceeds, my invention resides in the novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and defined by the appended claims.

In the accompanying drawings:

Figure 1 is a vertical sectional view through my improved davenport structure, with the parts extended in bed forming position.

Fig. 2 is a similar sectional view showing the first step in folding the bed frame structure, the seat member being removed in this figure.

Fig. 3 is a similar view illustrating the second step in folding the bed frame structure.

Fig. 4 is a vertical sectional view through the davenport in the folded couch forming relation of parts.

Fig. 5 is a detail sectional view showing the means for locking the seat member to the frame ends in its downward position, and

Fig. 6 is a detail sectional view through a cross brace member of the bed frame on a plane indicated by the line 6-6 of Fig. 1.

Referring now more particularly to the accompanying drawings, the main davenport frame in the present embodiment of my invention comprises a pair of end walls between the rear upper portions of which extends a back member B, said back member being provided at its ends with rearward flanges 16 through which are passed bolts 17 securing the back member to the end walls. The top rail 18 of the main frame is carried by the back member and

detachable therewith. The seat member S is pivotally mounted between the end walls by means of arms 19 which extend upwardly from its rear portion in seating position and which receive pintles 20 carried by bracket plates 22 secured to the end walls, said pintles being disposed between the end walls and the lower portion of the cushion of the back member B. The forward edge of the seat member S carries an upper facing plate section 23 which is connected at its lower end portions with the seat frame by diagonal brace bars 24. When the seat member is swung downwardly to its couch forming position, the ends thereof engage on a pair of bracket plates 25 secured to and projecting inwardly from the forward intermediate portions of the end walls 15, and said bracket plates are longitudinally slotted to receive the diagonal brace bars 24 whereby to provide a positive interlocking connection between the forward corners of the seat member and the forward portions of the side walls, thus materially increasing the strength of the general structure and preventing undesired looseness of parts.

The pivot brackets 22 secured to the frame end walls carry a second pair of pintles 26 at their lower ends on which are mounted a pair of levers 27, the rear ends of said levers being connected with contractile coil springs 28 which extend downwardly therefrom and are secured to the lower rear corners of the end walls. The other ends of the levers are pivoted to links 29 which are in turn pivoted to the normally rear lower corners of the seat member. As shown particularly in Fig. 4, when the seat member is disposed in seating position, the pivotal connections of the links 29 with the seat member are disposed rearwardly of the plane including the pivotal connection of the seat member with the main frame, and the pivotal connections of the links 29 with the levers 27. The resilient tendency of the springs in this relation of parts is thus exerted to hold the seat member down in its seating position. As the seat member is partially raised however, the pivotal connections of the links therewith move forwardly and the springs exert a positive counter-balance action, thus facilitating the raising of the seat member to its inactive bed forming position shown in Fig. 1. In this latter position, the springs serve to positively hold the seat member raised, particularly inasmuch as the gravity leverage of the seat member is reduced by the disposition of the member immediately above its pivotal connection.

The folding bed frame comprises an inner section 30 of angle iron bent in the form of a wide U, the sides of this inner section comprising inner side rail portions which are slightly lesser in length than the

entire width of the davenport frame. Pairs of forward and rear supporting legs 31 and 32 respectively are pivoted to the rear and intermediate portions of the inner side rail sections and are pivoted to bars 33 secured to the lower portions of the end walls. The outer and intermediate portions of the bed are carried by the inner section, and thus, by making the bars 33 detachable from the main frame, the entire bed unit may be removed. This detachable relation of the bars 33 is procured in the present instance by headed pins 34 carried on bracket plates 35 secured to the frame end walls, said pins being engageable in key-hole slots 36 formed in the bars 33, and a screw 37 is passed through each bar into the head frame to hold the pins in the restricted portions of the slots and thus secure the bed frame unit in place within the main frame. The lower forward corners of the frame end walls are connected by a brace rod 38 disposed below the bars 33. The upper portions of the pivoted support legs are inwardly offset whereby the inner bed frame section may be freely moved between the end walls of the frame, said inner bed section being at all times maintained in horizontal position. When lowered, the frame rests between the bars 33, with the support legs lying parallel to the sides of the frame, and when the frame is raised, it projects a slight distance forwardly of the main frame the support legs being slightly inclined forwardly in this raised position and the rear legs about stop members 39 carried by the frame end walls to limit forward movement of the bed frame. Counter-balance springs 40 are secured to the seat support brackets 25 and to the lower portions of the forward support legs 31, to assist in raising the bed frame structure.

Bed frame side sill sections 41 are pivoted to the inner side sill sections and are substantially equal in length to the vertical distance between the bottom of the seat member S and the plane occupied by the inner bed section 30 when in lowered position. Side sill sections 42 are pivoted to the ends of the sections 41 and are of slightly lesser length than the inner side sill sections. Side sill sections 43 of lesser length than the sections 41 are pivoted to the sections 40, and end side sill sections 44 of slightly lesser length than the sections 42 are pivoted to the sections 43, the outer ends of said sections 44 being connected by an end cross rail 45. A foldable bed bottom fabric and mattress (not shown) may be connected with the bed bottom frame in any suitable manner and thus the bed structure comprises five foldably connected portions adapted to fold in substantially a roll to procure a most compact structure. It being noted that the four outer portions are adapted to fold in substantially rectangular relation, with the

outermost portion in folded position lying adjacent the innermost bed bottom portion and spaced therefrom only a sufficient distance to accommodate the proper width of mattress. The outermost bed bottom section is supported in extended position of the bed by legs 46 pivoted thereto, the upper ends of the legs being extended past their pivotal connections with the bed frame and curved outwardly and pivoted to links 47 which are in turn pivoted to the next adjacent side rail sections 43 adjacent the pivotal connections of said sections 43 with the end sections 44. The lower ends of the legs 46 are connected by a bar 48, and thus by grasping said bar 48 and raising it, the outer bed frame section will be swung upwardly and the legs will be simultaneously swung inwardly to lie along the side rail sections. A pair of similar legs 49 are pivoted at the junctures of the side rail sections 42 and 43 and have their upper ends extended and pivoted to links 50 which are in turn pivoted to a pair of links 51, this latter pair of links being pivoted at the junctures of the sections 41 and 42 and having pin-and-slot connections 52 with the upper ends of the forward main support legs 31, said upper ends being continued past their pivotal connections and curved forwardly.

Taking now the first step in folding the extended bed bottom frame, exemplified in Fig. 2 of the drawings, the bar 48 of the outer legs is grasped and swung upwardly, swinging the two outermost sets of side rail sections to folded position, the sections 43 being thus disposed vertically, while the sections 44 are disposed horizontally over the section 42. The parts are locked in this position by latch-arms 53 carried in the present instance by the upper portions of the legs 46 and engageable in keeper sockets 54 on the inner end portions of the side rail sections 42. The second folding step, shown in Fig. 3, is then effected by lifting the bed portion including the side rail sections 42 and swinging the same upwardly and inwardly, subsequently lifting the sections 41, and it is noted that during the first portion of this movement, loose play is afforded between the links 51 and the main support legs 31 by reason of the pin-and-slot connections 52, thus permitting the inner bed frame section 30 to remain in raised position. As the folding movement continues however, the pin-and-slot connection reaches its limit of permitted movement and the links 51 exert a positive pressure on the forward support legs 31, causing them to rock rearwardly and thus lower the inner bed bottom section, the folding action of the outer bed frame portions continuing so that, as the inner section 30 reaches its lowermost position, all of the parts will lie in exceed-

ingly compact rectangular relation, the legs 49 being folded simultaneously with this action. An inner pair of floor engaging support legs 55 are pivoted to the side sill sections 41 and are connected by short links 56 with the links 51, whereby said legs 55 also fold simultaneously with this action.

The outer end portions of the sill sections 42 are connected by a cross brace rod 57, and to provide pivotal connections for the ends of this rod, whereby the rod may lie an ample distance below the mattress structure when said structure is in use and may fold inwardly when the structure is not in use the ends of the bar are offset and made hollow to receive pintles 58 carried by the side sill portions.

When it is desired to unfold the bed frame structure, the brace bar 57 is grasped to raise the entire bed frame structure on the main support legs 31 and 32 and the unfolding operation is then completed in an obvious manner, the proper position of the floor engaging support legs being all procured automatically by the link connections which effect their folding.

The intermediate side rail portions 41 carry a facing board 59 which conceals the bed frame in folded position, and this facing board is movable toward and away from the side rail sections in swinging movement thereof, whereby said board is spaced below the bed frame in extended position thereof so as not to interfere with free yielding movement of the mattress under the weight of a person lying thereon, and is disposed against the frame in folded position thereof so as to procure a maximum compactness of the folded structure. Thus, each end of said facing board is connected with the corresponding intermediate side rail portion by a pair of spaced links 60. The facing board 59 is also pivotally connected with the side rail portions 41 by the bent end portions of a shaft 61 which extends longitudinally of the facing board and is journaled in bearings thereon, said shaft bracing the facing board.

Movement of the facing board toward and away from the bed frame structure is effected by a pair of links 62 pivoted to the board and pivoted to adjacent portions of the actuator links 51. Thus, as the bed frame structure is placed in its final folded position, the facing board 59 will lie at the front thereof between the forward edge portions of the end walls of the main frame, and when the seat member is lowered, the upper facing board 23 carried by said seat member will abut on the upper edge of the facing board 59 to thus provide an attractive finish to the front of the davenport structure.

A head board 63 is carried by arms upstanding from the inner end of the inner

bed frame section 30, and when this section is raised, said head board is disposed immediately under the lower edge of the raised seat member S, thus positively preventing
 5 any possible accidental downward movement of the seat member. A foot board 64 is pivoted to ears 65 carried adjacent the outer corners of the bed frame, and contractile springs 66 are secured to the foot-
 10 board and to the frame, said springs being movable past the pivotal axis of the foot-board, whereby to hold the foot-board either in open position as shown in Fig. 1, or to
 15 hold the foot-board in inwardly swung position, in which latter position the foot-board is adapted to clamp the mattress and bedding to hold it in place during the folding operation.

I have thus provided a comparatively simple and readily manipulated davenport
 20 structure wherein all of the parts coact to procure a maximum compactness of structure in the folded position of the bed frame portions, and wherein a firm and adequate
 25 expanse of bed surface is afforded when the structure is extended.

While I have shown and described a preferred embodiment of my invention, it will be appreciated that various changes and
 30 modifications of structure may be employed to meet differing conditions of use and manufacture without departing in any manner from the spirit of the invention, as defined by the appended claims.

35 What is claimed is:

1. A structure of the class described comprising a main frame including end walls, a seat member pivoted at its rear portion in the main frame between the end walls and
 40 movable upwardly from its normal seat position, a foldable bed structure connected with the main frame and adapted to fold under the seat member, a facing plate member carried by and depending from the normally forward edge portion of the seat member,
 45 braces connecting said facing plate member and the seat member, and brackets carried by the end walls and provided with

recesses adapted to receive portions of said braces in normal seat position of said seat member. 50

2. A structure of the class described comprising a main frame including end walls, a seat member pivoted at its rear portion in the main frame between the end walls and
 55 movable upwardly from its normal seat position, a foldable bed structure connected with the main frame and adapted to fold under the seat member, a lever pivoted in the main frame, a link pivoted to the lever
 60 and pivoted to the seat member at a point remote from the pivotal connection of said seat member and main frame, and a counter-balance spring connected with said lever and adapted to urge said seat upwardly, the
 65 pivotal connection of said link and seat member being disposed past a line connecting the pivotal connections of the link and lever and seat member and main frame in normal seating position of said seat member whereby in such position of the seat member, the spring urges the seat member snugly to seating position.

3. A structure of the class described comprising a main frame including end walls, a back member extending between the rear portion of the end walls, a seat member, normally upwardly extending arms at the rear corner portions of the seat member pivoted between the lower end portion of the
 80 back member and the end walls, a foldable bed structure connected with the main frame and adapted to fold under the seat member, a lever intermediately pivoted under the back member, a link pivotally connected
 85 with one end of the lever and with the rear portion of the seat member, and a retractile spring connected with the other end of the lever and extending downwardly and secured to the main frame. 90

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee, and State of Wisconsin.

JOHN M. RICHARDSON.