Sept. 29, 1942. E. E. WOLLER 2,297,602

SHIP BERTH

Filed Nov. 13, 1939 4 Sheets-Sheet 1

Fig. 2

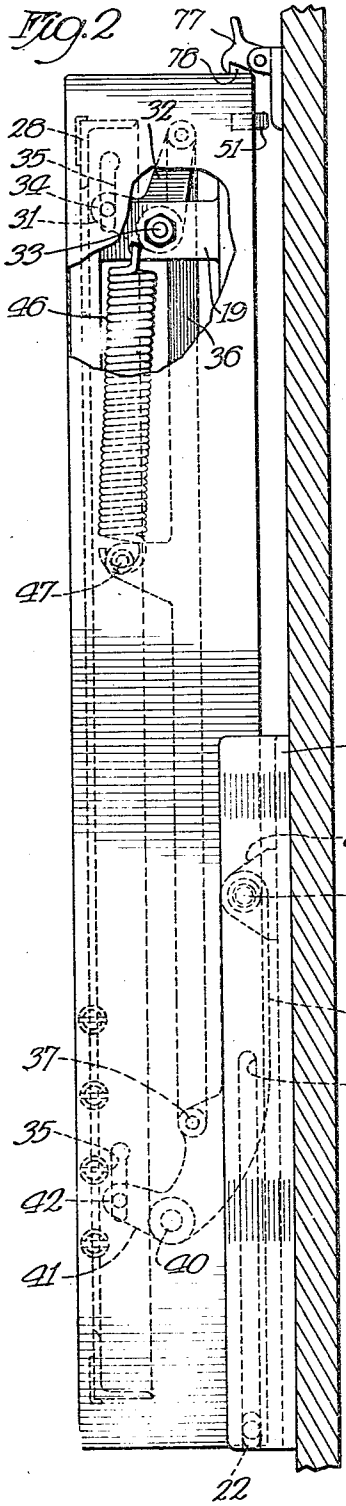


Fig. 1

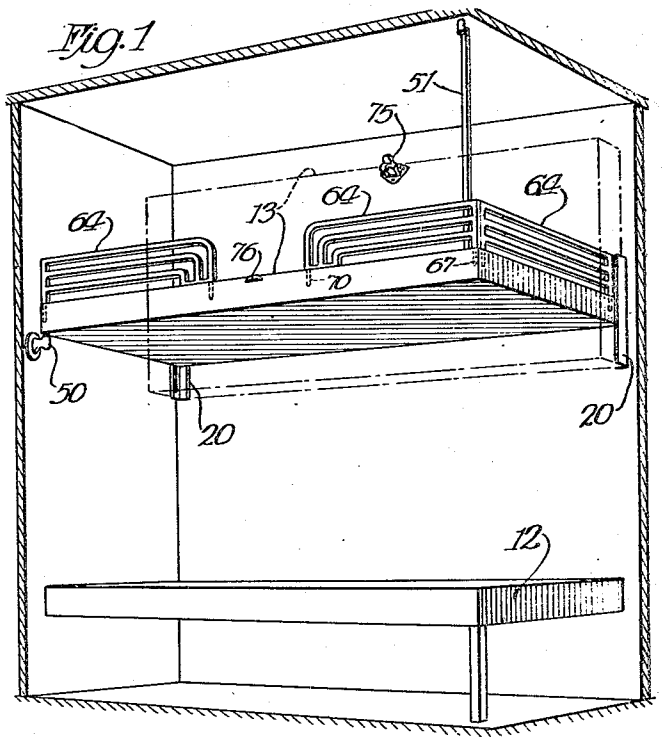


Fig. 3

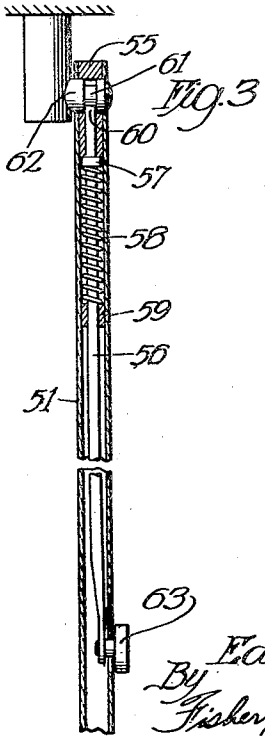
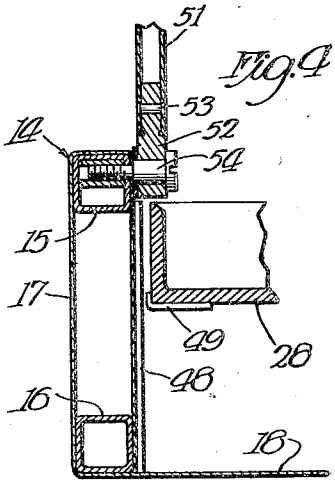


Fig. 4



Inventor:
Edward E. Woller
By Fisher, Clapp, Soans & Pond
Attys.

Sept. 29, 1942. E. E. WOLLER 2,297,602

SHIP BERTH

Filed Nov. 13, 1939 4 Sheets-Sheet 2

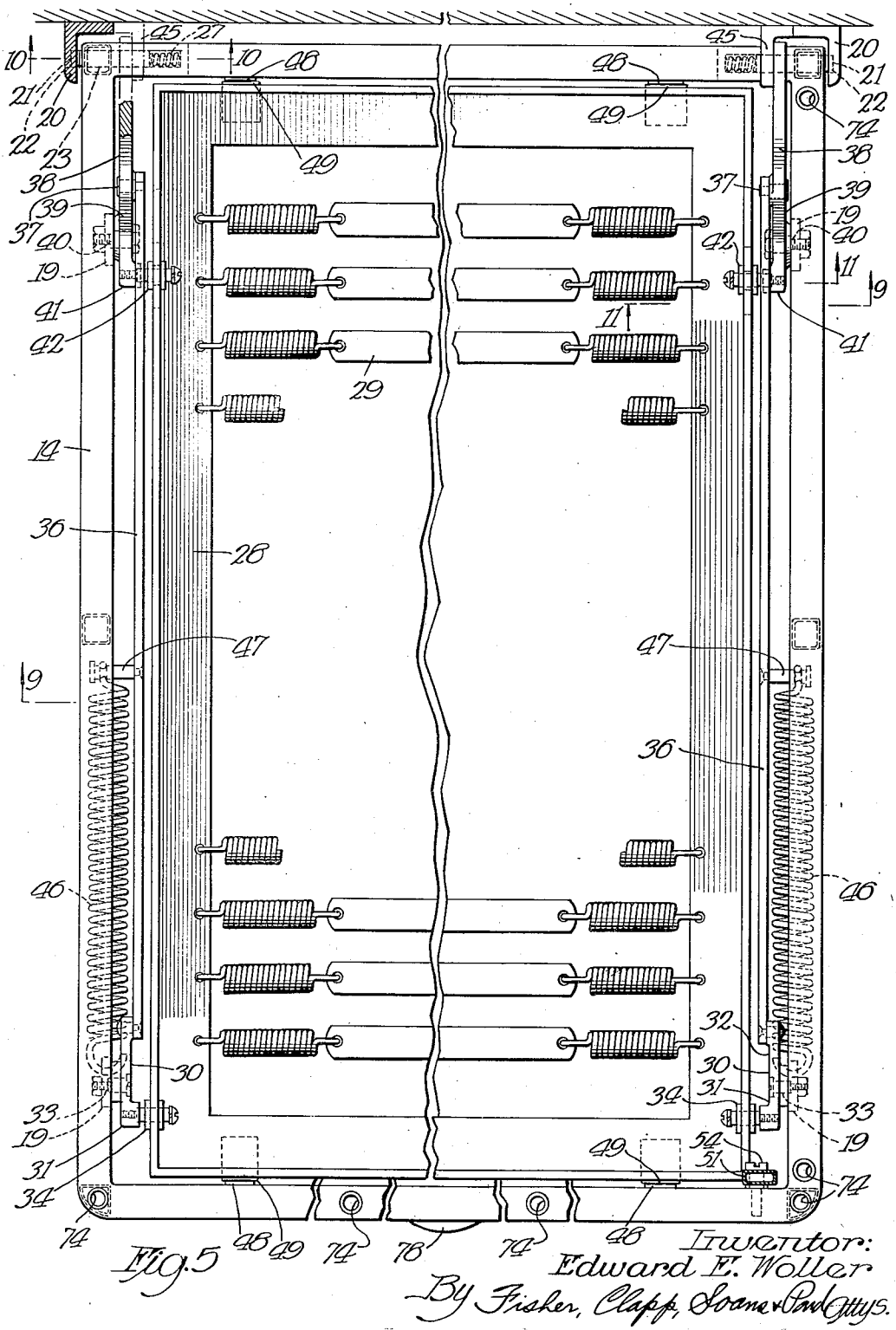


Fig. 5

Inventor:
Edward E. Woller.
By Fisher, Clapp, Soame & Pond Attys.

Sept. 29, 1942. E. E. WOLLER 2,297,602

SHIP BERTH

Filed Nov. 13, 1939 4 Sheets-Sheet 3

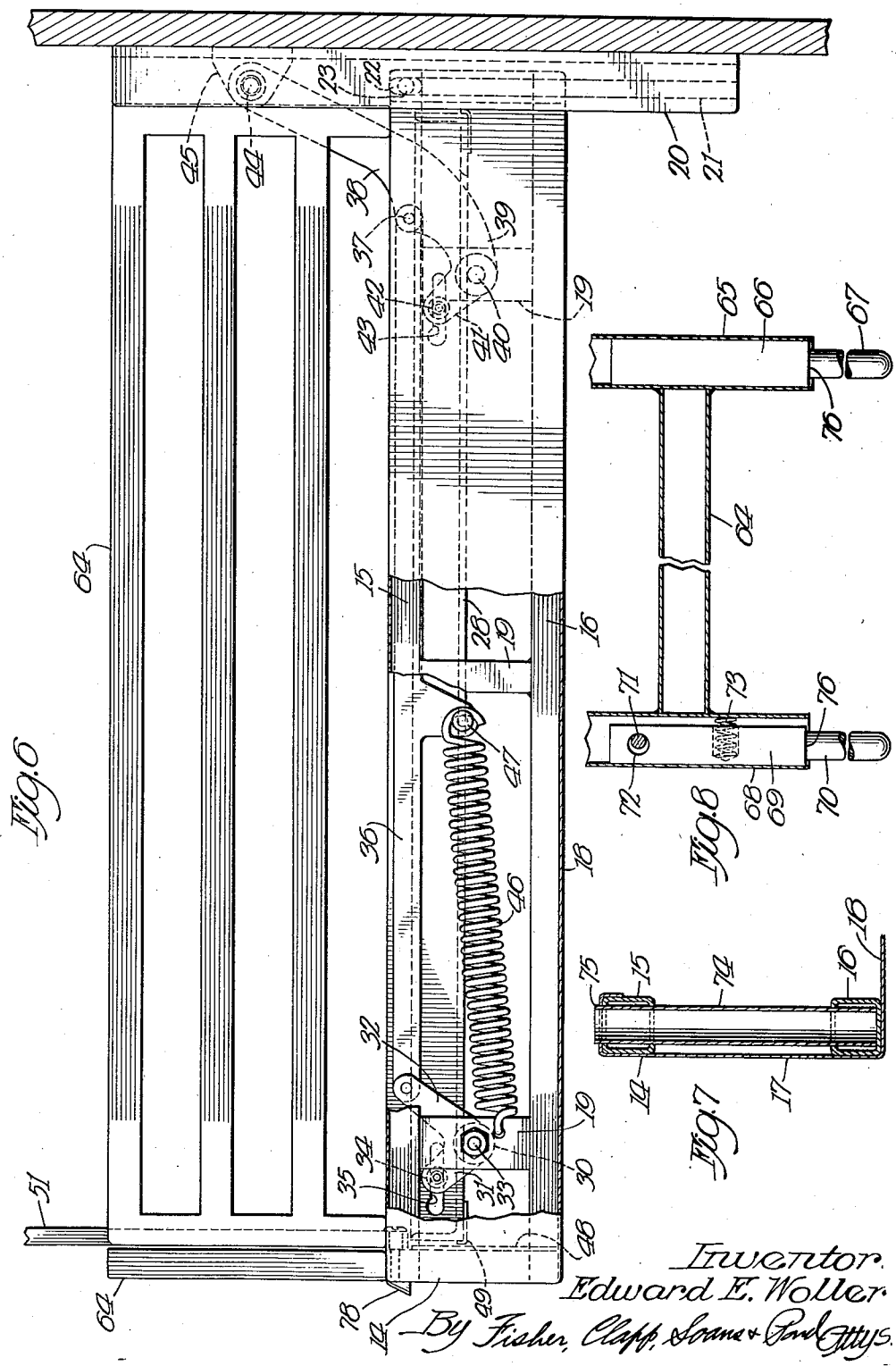


Fig. 6

Fig. 8

Fig. 7

Inventor.
Edward E. Woller.
By Fisher, Clapp, Soans & Paul Attys.

Sept. 29, 1942. E. E. WOLLER 2,297,602

SHIP BERTH

Filed Nov. 13, 1939 4 Sheets-Sheet 4

Fig. 9

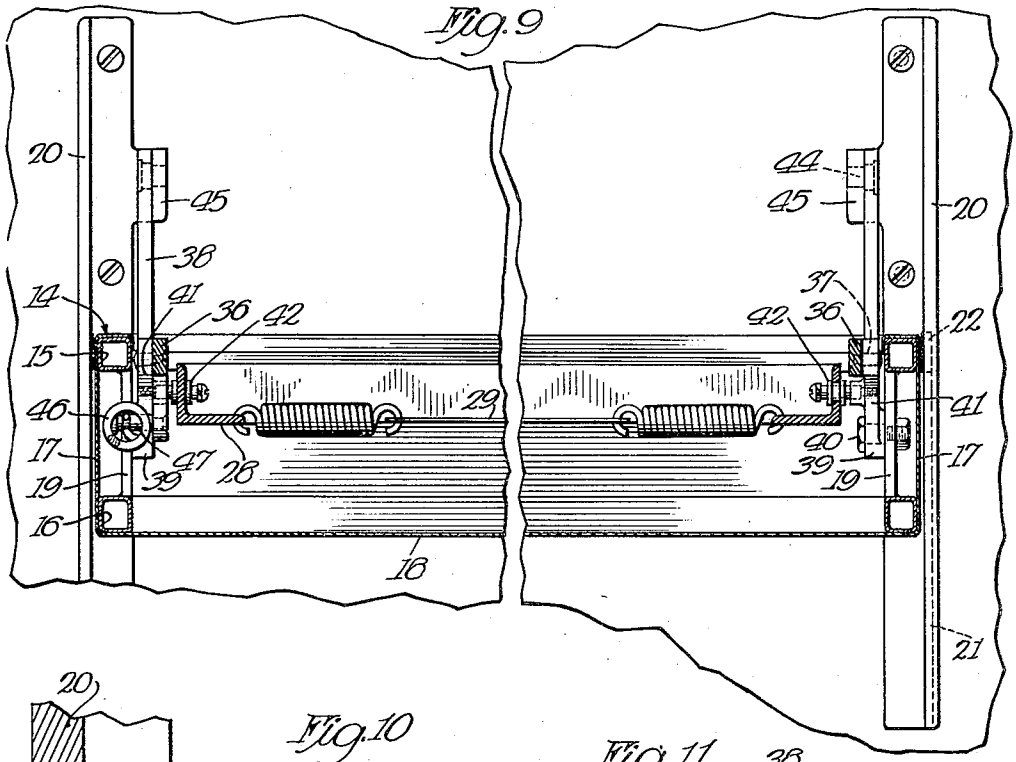


Fig. 10

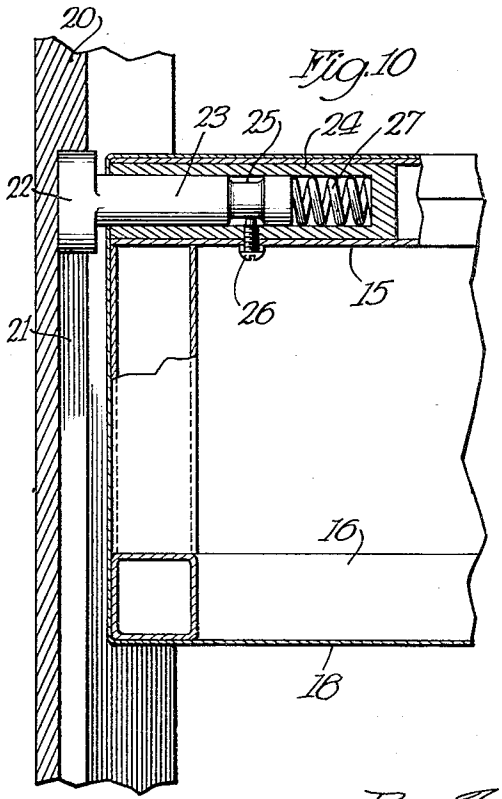
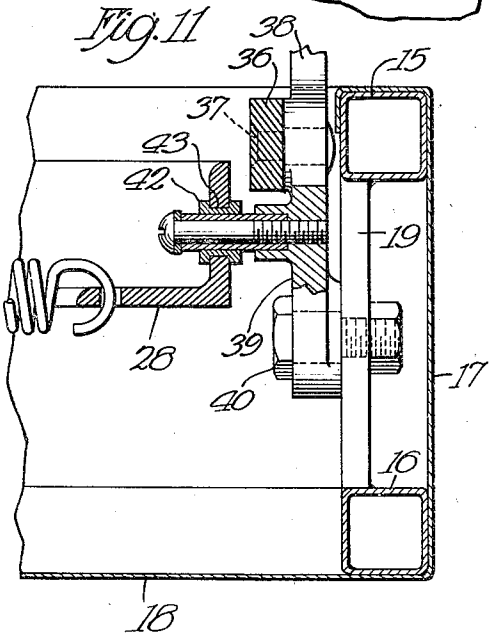


Fig. 11



Inventor:
Edward E. Woller
By Fisher, Clapp, Soans & Pond Attys.

Patented Sept. 29, 1942

2,297,602

UNITED STATES PATENT OFFICE

2,297,602

SHIP BERTH

Edward E. Woller, Kenosha, Wis., assignor to Simmons Company, New York, N. Y., a corporation of Delaware

Application November 13, 1939, Serial No. 303,933

9 Claims. (Cl. 5—3)

This invention relates to improvements in a ship berth and the main objects of the invention are to provide a folding berth which, when in unfolded, useable position, affords a comfortable bed and which when in folded position occupies a minimum of space; to provide a berth of the character indicated wherein the operative depth of the berth may be reduced when the berth is folded; to provide an arrangement in which the depth of the berth may be reduced automatically and preferably as an incident to the operation of folding the berth; and to provide a berth of the character indicated which will be of simple and relatively inexpensive construction but nevertheless rigid and durable so as to be well suited to the purposes indicated and in general, it is the object of the invention to provide an improved berth construction of the said character.

Other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawings (4 sheets), wherein there is disclosed a folding berth embodying a selected form of the invention.

In the drawings:

Figure 1 is a perspective illustrating one arrangement and application of the improved folding berth construction;

Figure 2 is an end elevation showing the berth in folded position;

Figures 3 and 4 are detail sections of a hanger construction;

Figure 5 is a plan;

Figure 6 is an end elevation showing the berth in unfolded and operative position;

Figure 7 is a detail section showing a preferred socket construction employed for mounting a lee rail;

Figure 8 is a detail section of a portion of a lee rail construction; and

Figures 9, 10 and 11 are sections on the lines 9—9, 10—10 and 11—11, respectively, of Figure 5.

Referring now to the drawings, there is illustrated in Figure 1 a corner of a stateroom or other sleeping quarters which, on a boat, often includes a lower berth or bunk 12 which is generally of fixed character and an upper berth or bunk 13 which is of a folding type. The present invention is concerned with the construction of the upper or folding berth 13.

The folding berth 13 comprises an outer frame or housing 14 which is preferably formed of upper and lower tubular frames 15 and 16, respectively, the latter being of metal construction and consisting of sides suitably joined at their ends by means of brackets, welding, or any other suitable construction. A sheet metal covering member 17 spans the space between the upper and lower frame members 15 and 16 and said sheet metal member is preferably continued across the bottom so as to form a bottom cover 18. The sheet metal covering member 17 and 18 may be secured to the frame work by spot welding or any other suitable fastening means. The frames 15 and 16 are rigidly held in spaced relation by means of a plurality of spacer bars 19 which may be welded or otherwise fastened at their ends to the upper and lower frames 15 and 16.

The housing or outer frame 14 is directly connected to a wall of the room by means of a vertically movable pivot arrangement. Said connection comprises vertically disposed angle brackets such as 20, 20, one leg of which is secured directly to the wall and the other leg of which extends forwardly therefrom. The extending or projecting leg of the angle bracket 20 is provided with a vertically extending slot or guideway 21 which slidably receives therein an elongated head 22 of a pivot pin 23. There is a pivot pin 23 at each end of the folding berth structure, such pivot pins being mounted in the upper frame member 15 through the agency of a socket 24 which slidably receives the stem portion of the pivot pin. The pivot pin is provided with a reduced diameter portion 25 which is adapted to cooperate with a screw 26 to retain the pin in the socket and a spring 27 is provided for normally urging the pivot pin outwardly so that the head 22 of the pivot pin remains in contact with the bracket 20 to thereby prevent rattling. It will be observed that the screw 26 serves also to lock the socket element 24 in place in the frame tube 15.

The folding berth structure is adapted to pivot on the pivot pins 23 and also to move downwardly as an incident to the vertical movability of the pivot pin head 22 in the bracket slot 21.

The bed bottom proper is positioned within the frame structure 14 and in this instance is illustrated as comprising an angle iron frame 28 which supports suitable bed bottom fabric 29. The bed bottom frame 28 is mounted for vertical movement within the frame 14 through the agency of pivoted arms at each end of the berth adjacent the front and rear sides thereof. In this instance, the bed bottom frame 28 is mounted adjacent its front side to the frame 14 through the agency of bell crank arms 30,

each comprising arms 31 and 32. The common ends of the arms 31 and 32 are pivotally mounted as indicated at 33 on one of the vertical spacers 19. The free end of the arm 31 is provided with a peripherally grooved roller 34 which is seated in a slot 35 in the vertical flange portion of the bed bottom frame 28. The slot 35 is provided with an enlarged end opening as indicated in Figure 6.

To permit assembly of the peripherally grooved roller 34 with the slot, the slot is so positioned that when the berth is in operatively assembled condition the roller does not at any time enter the enlarged end portion of the slot.

The other arm 32 of each bell crank 30 has its free end connected as indicated at 37 by means of a link 36 to an arm 38 of another bell crank 39 which is pivoted as indicated at 40 on another of the spacers or risers 19 of the outer frame structure. The bell crank 39 includes another arm 41 which has its free end provided with a peripherally grooved roller 42 mounted in a slot 43 in the bed bottom frame 28 substantially in the same manner as already explained for the arm 31.

The arm 38 of each bell crank 39 is extended and has its free end pivotally connected as indicated at 44 to a bracket 45 which may be formed as an integral part of the adjacent angle bracket 20.

A coil spring 46 is stretched between one of the brackets 19 and an anchoring pin 47 carried by an ear or other portion of the link 36, and said spring normally urges the bell cranks 30 and 39, respectively, to rock in a counter-clockwise direction as viewed in Figure 6. It will thus be seen that the tendency of the spring is to effect lowering of the bed bottom structure within the outer frame 14.

Assuming that the structure is in the extended or operative position illustrated in Figures 1 and 6, the berth may be folded to its folded or closed position as shown in dotted lines in Figure 1, and in full lines in Figure 2, by the application of relatively light lifting force to the outer or front edge of the outer frame structure 14. Incident to such lifting force, the berth will pivot on the pivots 23 and 40, the pivot 23 moving downwardly in the slot or guideway 21 while the pivot 40 rocks downwardly and toward the wall about the axis of the pivotal connection 44 between the bell crank arm 38 and bracket 45.

Incident to such rocking movement, the outer end of the bell crank arm 41 will approach the bottom of the outer frame structure 14, thereby incidentally effecting lowering or retraction of the bed bottom structure to a storage position within said outer frame or housing 14 when folded against the wall as shown in Figure 2. The movement of the bell crank arm 41 is duplicated at the outer or front side of the structure by the bell crank arm 31 which moves in unison with the bell crank arm 41 incident to the described link connection between the front and rear bell cranks at each end of the structure. Since the spring 46 urges the bed bottom structure to move downwardly in the manner already explained, said force constitutes, in effect, a counter-balancing force for the weight of the berth, whereby the operation of folding or closing the berth is facilitated.

At the front and rear sides of the structure, there are provided suitable inter-engaging guides or buffers comprising vertically disposed guide strips 48 carried by the outer frame structure and buffer members 49 carried by the bed bottom structure. Because of the arrangement whereby the bed bottom structure resides in the outer frame 14 when the berth is folded, the depth of the berth when in folded position may be made considerably less than in conventional structures where the depth must, for practical purposes, be the equivalent of the depth of the mattress and bed bottom structure plus added depth in the outer frame or tray for permitting downward displacement of the bed bottom structure when the bed is occupied.

In the present structure, when the bed is in operative position, the bed bottom structure is substantially elevated from the bottom or closure 18 of the tray, but when the berth is in folded or closed position, the bed bottom structure is disposed in contact with or at least very closely adjacent the inside surface of the bottom cover 18, so that there is no waste space. It will be observed of course, that because of the receding bed bottom arrangement, the mattress which is normally positioned on the bed bottom structure will also be received within the depth of the outer frame or tray when the structure is closed.

It will be noted that in its unfolded or extended position as shown in Figure 6, the structure is supported by the bell crank arm portion 38 and the pivot 23, upward movement of which is limited by engagement of the head 23 thereof with the upper end of the guideway 21. To avoid excessive strains on the supporting elements mentioned, when the berth is occupied, additional supports are provided at the front side of the structure. Where the structure is so that one or both ends of the berth are adjacent a wall, a simple supporting bracket such as indicated at 50 (Figure 1) may be employed. Said bracket is suitably secured in proper position on the wall of the room and has its upper end provided with a cushion or other suitable finish for direct engagement with the bottom of the outer frame structure 14.

When the berth is so located in a room that simple supporting brackets may not be employed, a suspension link such as indicated at 51 may be provided. The suspension link 51 as herein shown (see Figures 3 and 4) comprises a tubular member provided at its lower end with a solid bracket part 52 suitably secured as by means of one or more rivets 53 to the tube 51, and pivoted as indicated at 54 to a portion of the upper frame member 15. The upper end of the tube 51 is provided with an inserted solid member 55 which has slidably mounted in it a rod 56. The rod 56 is provided with a collar 57 and a spring 58 mounted on the rod 56 between an inner end portion 59 of the member 55, and said collar 57 serves to normally move the rod 56 in an upward direction so as to cause its end portion 60 to project into an angular groove 61 in an anchoring pin 62 which is suspended from the ceiling of the room. The lower end of the rod 56 is provided with a suitable connection to an external button or hand piece 63 whereby the rod may be pulled downwardly to disengage its upper end 60 from the anchoring pin 62. The hanger 51 may be moved laterally sufficiently to disengage it from the pin 62 and it may be swung about its pivot 54 into parallelism with the upper member 15 of the outer frame structure 14. Hence the hanger 51 is adjustable to an out of the way position when the berth is to be closed or folded.

Lee rails such as 64 of suitable configuration

are provided, the same being removably mounted on the upper edges of the outer frame or tray 14. For the purpose of so mounting the lee rails which are preferably made of tubular metal, each lee rail has one vertically disposed leg such as 65 provided with an inserted post part 66 which has a depending pin 67. The inserted part 66 is, of course, suitably rigidly secured in place and the pin 67 is adapted to enter a suitable socket provided in the frame 14.

The other end leg 68 of each lee rail 64 is equipped with an adjustable member 69 having a depending mounting pin 70. The mounting member 69 is retained in assembled relation to the post part 68 by means of an anchoring pin 71 which fits freely in an opening 72 in the member 69 so as to permit a predetermined amount of lateral movement of the member 69. A compression spring 73 recessed into a portion of the member 69 serves to hold the member 69 in engagement with one wall of the post 68 to prevent rattling.

The sockets for receiving the posts 67 and 70 of the lee rail is preferably in the form of a metal tube 74 suitably seated and secured in the upper and lower frame members 15 and 16. The socket 74 preferably has its upper end projecting slightly above the top surface of the frame member 14 as indicated at 75, so that the upper end of said socket member is adapted to engage the lower ends 76 of the post members 65 and 69, respectively. By this means the upper edge of the frame 14 is protected from injury by engagement of the lower ends of the lee rail posts 65 and 68.

The adjustable mounting of the post parts 69 and 70 serves to facilitate mounting of the lee rails notwithstanding minor inaccuracies in the positioning of the sockets 74. Hence production is simplified by eliminating the requirement for an exceptionally high degree of accuracy in the matter of socket spacing. When the berth is to be closed, the lee rails are withdrawn from their respective sockets and positioned flatwise on the berth, suitably fastened in place if preferred, and the berth then folded as already explained.

For locking the berth in its closed position, a suitable latching device such as indicated at 77 may be provided for engagement with a projecting lug or ear such as indicated at 78.

In the foregoing description, the berth has been described particularly as one designed for use on boats but it will be understood that the device is not limited to such use. It may obviously be employed wherever it is desired to employ a folding berth with a minimum projection from the wall when the berth is in folded or closed position.

Changes in the described structure may be made without departing from the spirit of the invention, the scope of which should be determined by reference to the following claims, the same being construed as broadly as possible, consistent with the state of the art.

I claim:

1. In a folding berth of the class described, the combination of a frame, a bed bottom vertically adjustably mounted in said frame, means for foldably mounting said frame on a wall comprising a bracket adapted to be fixedly secured to the wall, a pivot secured to the wall, a pivot pin carried by and projecting from said frame and having a vertically adjustable connection with said bracket, and an arm pivotally connected at one end to said wall and having its other end pivotally connected to said frame at a point spaced inwardly of the frame from said pivot pin, said arm and pivot pin being adapted to permit the frame to be folded from a laterally extending bed position to a vertically folded position closely adjacent the wall, and means connected with said arm for effecting vertical movement of said bed bottom relative to the frame as an incident to said folding movement of the structure.

2. In a folding berth of the class decribed, the combination of a frame, a bed bottom vertically adjustably mounted in said frame, means for foldably mounting said frame on a wall comprising a bracket adapted to be fixedly secured to the wall, a pivot pin carried by and projecting from said frame and having a vertically adjustable connection with said bracket, and an arm pivotally connected at one end to said wall and having its other end pivotally connected to said frame at a point spaced inwardly of the frame from said pivot pin, said arm and pivot pin being adapted to permit the frame to be folded from a laterally extending bed position to a vertically folded position closely adjacent the wall, means connected with said arm for effecting vertical movement of said bed bottom relative to the frame as an incident to said folding movement of the structure, and counterbalancing means for facilitating folding and unfolding of the structure.

3. In a folding berth of the class described, the combination of a frame, a bed bottom vertically adjustably mounted in said frame, means for foldably mounting said frame on a wall comprising a bracket adapted to be fixedly secured to the wall, a pivot pin carried by and projecting from said frame and having a vertically adjustable connection with said bracket, and an arm pivotally connected at one end to said wall and having its other end pivotally connected to said frame at a point spaced inwardly of the frame from said pivot pin, said arm and pivot pin being adapted to permit the frame to be folded from a laterally extending bed position to a vertically folded position closely adjacent the wall, means connected with said arm for effecting vertical movement of said bed bottom relative to the frame as an incident to said folding movement of the structure, and spring means connected between said outer frame and a portion of said vertical adjusting means for normally urging said bed bottom to its lowered position and inwardly serving to counter-balance the structure to facilitate folding and unfolding thereof.

4. In a folding berth of the class described, the combination of an outer frame, a bed bottom disposed within said frame, means at each end of said bed bottom for mounting the same for vertical adjustment relative to the frame and comprising a pair of parallel arms each having one end pivotally connected to said bed bottom and its other end pivotally connected to said frame, connections between the arms of each pair for effecting simultaneous rocking movement thereof, means for pivotally mounting said frame on a wall, said means being such as to actuate said pairs of parallel arms so as to effect vertical adjustment of the bed bottom relative to the frame as an incident to folding movement of the latter.

5. In a folding berth of the class described, the combination of an outer frame, a bed bottom disposed within said frame, means at each end of said bed bottom for mounting the same for vertical adjustment relative to the frame

and comprising a pair of parallel arms each having one end pivotally connected to said bed bottom and its other end pivotally connected to said frame, connections between the arm of each pair for effecting simultaneous rocking movement, means for pivotally mounting said frame on a wall, said means being such as to actuate said pairs of parallel arms so as to effect vertical adjustment of the bed bottom relative to the frame as an incident to folding movement of the latter, and a counter-balancing spring connected between a portion of said frame and a portion of said arm-connecting means for facilitating folding and unfolding of the berth.

6. In a folding berth of the class described a housing having a bed bottom mounted therein so as to be adjustable from a storage position substantially within the housing to an operative, substantially elevated position relative thereto, means for hingedly mounting said housing with said bed bottom therein on a wall for folding movement from closed position flatwise against the wall to open position extending laterally from the wall, and means for effecting upward movement of said bed bottom relative to said housing as an incident to movement of said housing from closed position to open position.

7. In a folding berth of the class described a housing having a bed bottom mounted therein so as to be adjustable from a storage position substantially within the housing to an operative, substantially elevated position relative thereto, means for hingedly mounting said housing with said bed bottom therein on a wall for folding movement from closed position flatwise against the wall to open position extending laterally from the wall, means for effecting upward movement of said bed bottom relative to said housing as an incident to movement of said housing from closed position to open position, and counter-balancing means within said housing for facilitating opening and closing of the structure.

8. In a folding berth of the class described, a housing, a bed bottom, an arm having one end pivotally connected to said bed bottom and its other end pivotally connected to said housing for vertically movably mounting said bed bottom on the housing, and means for mounting the berth on a wall for folding and unfolding movement relative thereto, said means comprising a vertically movable but horizontally fixed pivotal connection between the wall and said housing, an arm having one end pivoted to the wall above said connection and its other end pivoted to said housing inwardly of said connection, and a link connecting said arms for effecting upward adjustment of said bed bottom relative to said housing as an incident to unfolding movement of the berth.

9. In a folding berth of the class described, a housing, a bed bottom, means for vertically movably mounting said bed bottom on the housing including an arm having one end pivotally connected to said bed bottom and its other end pivotally connected to said housing, means for mounting the berth on a wall for folding and unfolding movement relative thereto comprising an arm having one end pivoted to the wall and its other end pivoted to said housing, another connection between said wall and housing cooperating with said last mentioned arm for controlling folding and unfolding movement of the berth relative to the wall, and a link connecting said arms for actuating said first mentioned arm as an incident to unfolding movement of the berth to effect upward adjustment of said bed bottom relative to said housing.

EDWARD E. WOLLER.