April 27, 1965

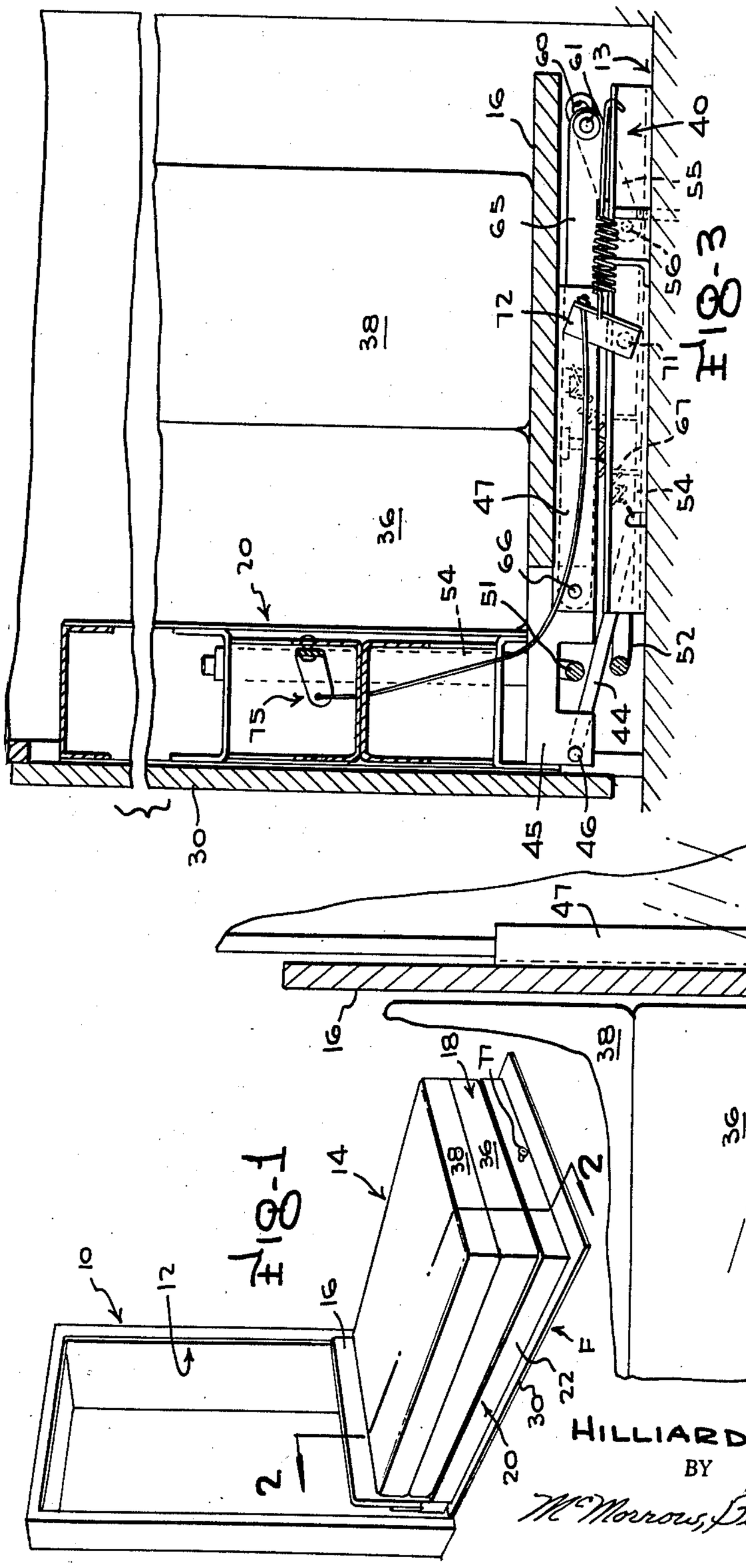
H. D. BENNETT

WALL BED STRUCTURE

3,179,956

Filed June 7, 1963

3 Sheets-Sheet 1



April 27, 1965

H. D. BENNETT

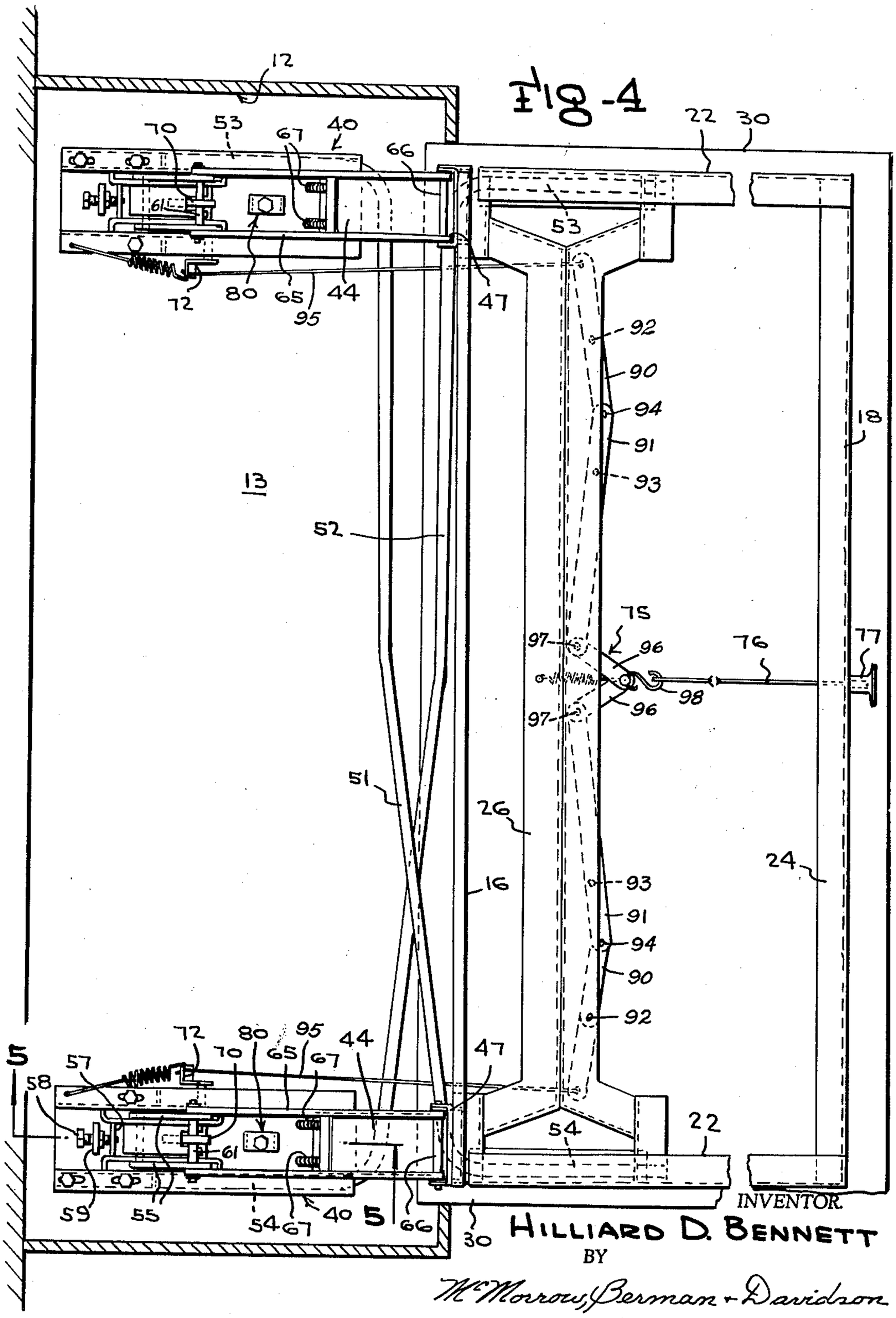
3,179,956

WALL BED STRUCTURE

Filed June 7, 1963

3 Sheets-Sheet 2

FIG-4



INVENTOR.

HILLIARD D. BENNETT

BY

McMorrow, Berman & Davidson

ATTORNEYS

April 27, 1965

H. D. BENNETT

3,179,956

WALL BED STRUCTURE

Filed June 7, 1963

3 Sheets-Sheet 3

Fig-7

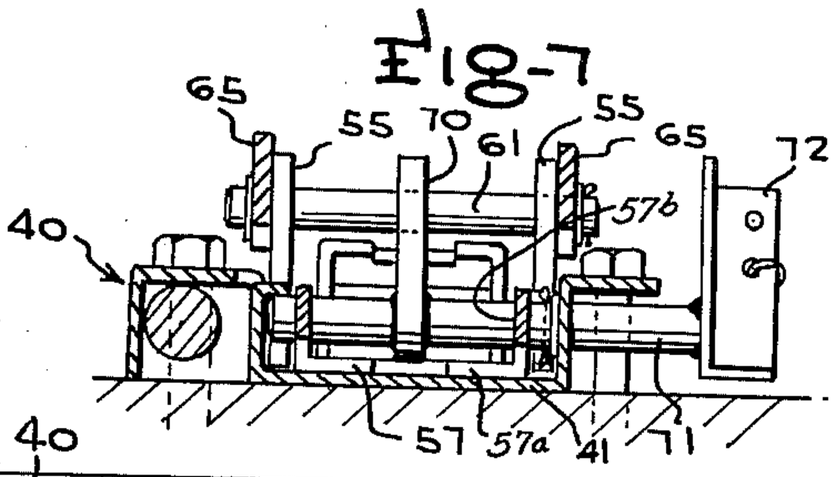


Fig-6

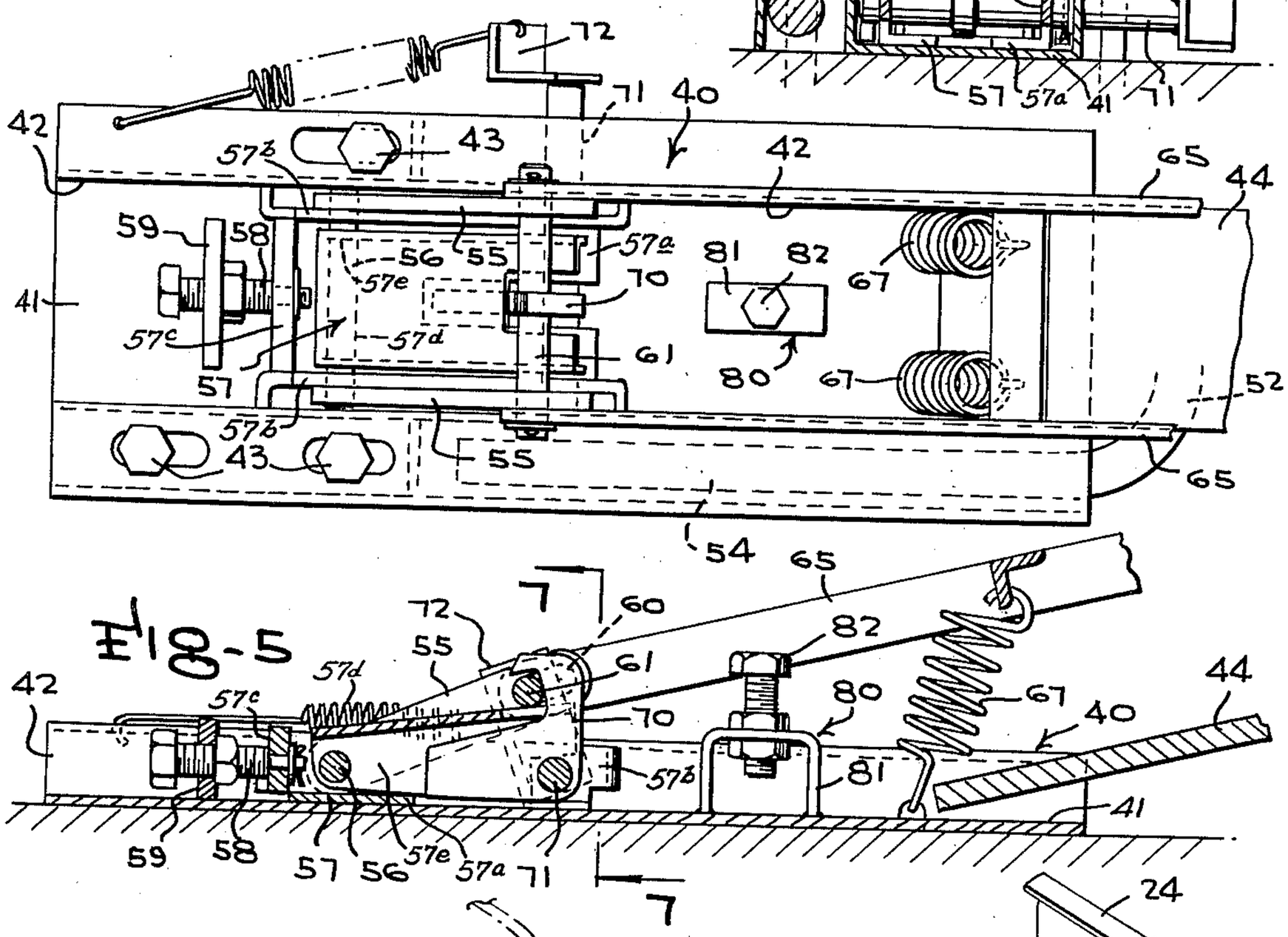


Fig-5

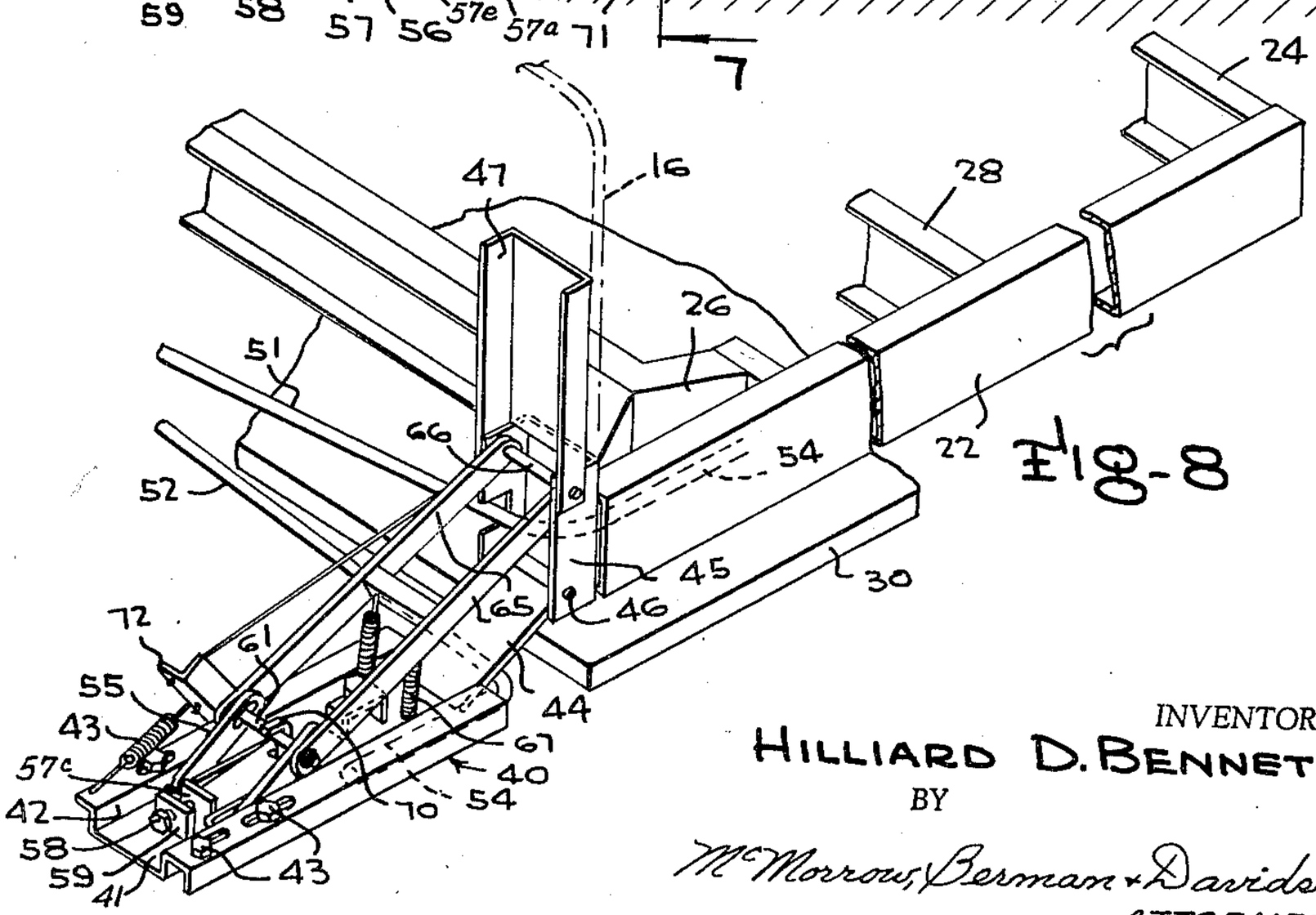


Fig-8

INVENTOR.

HILLIARD D. BENNETT

BY

McMorrow, Berman & Davidson

ATTORNEYS

United States Patent Office

3,179,956
Patented Apr. 27, 1965

3,179,956

WALL BED STRUCTURE

Hilliard D. Bennett, 1312 Central Ave., Hot Springs, Ark.

Filed June 7, 1963, Ser. No. 286,376
6 Claims. (Cl. 5—136)

This invention relates to a wall bed structure.

An object of the invention is to provide a wall bed structure wherein the bed assembly has associated therewith a torsion bar assembly which enables the bed assembly to be easily operated between a position of storage within a recess provided in the wall of a room, and a position of use resting upon the adjacent portion of the floor of the room.

Another object of the invention is to provide a wall bed structure wherein a locking means is provided which is actuable upon execution of the movement of the bed assembly to the use position to releasably hold the bed assembly in fixed position upon the adjacent portion of the floor.

A further object of the invention is to provide a wall bed structure wherein a releasing means is operatively connected to the locking means for retaining the locking means in the position releasably holding the bed assembly in the fixed position upon the adjacent portion of the floor and which releasing means is releasable at the will of the user of the bed assembly.

A still further object of the invention is to provide a wall bed structure wherein there is provided an adjustable rest means which engages and supports the bed assembly when moved to the position of storage within the wall recess.

Other objects and advantages of the present invention will become apparent from the following description taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a perspective view of a room showing the wall bed structure of this invention installed for movement into a wall recess, the bed assembly being shown in the position of use.

FIGURE 2 is an enlarged sectional view, with parts broken away, taken on the line 2—2 of FIGURE 1.

FIGURE 3 is a sectional view of the structure of FIGURE 2, but showing the bed assembly moved to the storage position.

FIGURE 4 is a plan view of the structure of FIGURE 2.

FIGURE 5 is an enlarged fragmentary sectional view taken on the line 5—5 of FIGURE 4.

FIGURE 6 is a plan view of the structure of FIGURE 5.

FIGURE 7 is a transverse sectional view taken on the line 7—7 of FIGURE 5, and

FIGURE 8 is a fragmentary perspective view, with parts broken away, illustrating a corner portion of the bed frame, the adjacent anchor frame, and the structure connecting the bed frame to the anchor frame.

Referring to the drawings, the illustrated wall bed structure comprises a wall 10 of a living area, the wall being formed with a recess 12 which extends from the floor F to a point spaced above the floor and which is of an area to receive a bed assembly when in upstanding position, the portion of the floor F within the recess 12 being indicated by the numeral 13. Disposed in a position of use is a non-folding bed assembly designated by the numeral 14, the assembly, as shown in FIGURE 1, extending along the floor F with a headboard or head 16 contiguous to and in alignment with the recess 12 and the foot 18 spaced longitudinally outwardly of and in alignment with the recess 12.

The bed assembly 14 comprises a bed frame 20 which has a pair of side frame members 22 connected together

at the inner complemental ends by an end cross-beam 26, and disposed rearwardly of and spaced from the cross-beam 26 are spaced cross-members 28, only one being partially shown, which is secured at their ends to the side frame members 22 and 24. Extending across the outer complemental ends of the side frame members 22 is an end cross-member 24. A wall panel 30 underlies and is fixedly carried by the bed frame 20 and is conformably shaped and constructed to concealingly close the recess 12 when the bed assembly is in storage position within the recess 12. Rising from the end cross-beam 26 is the headboard or head 16. Fixed to the cross-member 24 of the bed frame 20 and upon the wall panel 30 is the footboard or foot 18. Mounted upon the bed frame 20 is a box spring 36 and superimposed upon the box spring 36 is a mattress 38, the mattress being secured to the box spring 36 by cooperating releasing attaching means provided on the box spring 36 and the mattress 38, not shown.

Mounted upon and fixed to a portion of the floor F within the recess 12 and designated by the numeral 13 is an anchor frame 40. As shown in FIGURE 4, there are two of such frames, and since the structures thereof are identical only one of the frames 40 will be specifically described. The anchor frame 40 comprises an elongated base 41 having an upwardly-facing channel 42 extending longitudinally along each of its longitudinal edges from one end to the other end, the base being fixedly secured to the floor F by means of suitable fastening elements indicated by the numeral 43. A hinge leaf 44 extends in an upwardly-sloping direction from the front end of the base and has the rear end portion fixedly attached to the front end of the base 41. Fixedly attached to the cross-beams 26 of the bed frame 20 adjacent each of its ends is a complemental hinge leaf 45, each of the leaves 45 carrying a hinge pin 46. Rising from each of the hinge leaves 45 is an extension piece 47 which is secured to the back face of the head 16. The front ends of the hinge leaves 44 are pivotally connected to the hinge pins 46. This recited hinge construction constitutes the means connecting the bed frame 20 to the anchor frames 40 for movement of the bed assembly 14 between the use position as shown in FIGURE 1, and the upstanding position of storage within the recess 12, as shown in FIGURE 3.

A torsion bar assembly, generally designated 50, is provided for controlling and assisting in the movement of the bed assembly 14 between the use position and the upstanding position of storage within the recess 12, the torsion bar assembly being so constructed as to be under maximum load condition when the bed assembly 14 is in the use position, and under minimum load condition when the bed assembly 14 is in the storage position. The torsion bar assembly 50 comprises a pair of straight bars 51 and 52 arranged so as to extend in criss-cross relation with the adjacent ends secured to the complemental ends of the anchor frame 40 and the bed frame 20. As shown in FIGURE 4, the torsion bar 51 terminates at its ends, in oppositely-directed arms 53 and 54, which are initially disposed at right angles thereto. The arm 53 is stressed and is extended into and attached to the related side frame member 22 of the bed frame 20, and the arm 54 is stressed and extends along the base 41 of the adjacent anchor frame 40 and is suitably fixed to the base 41. The torsion bar 52 underlies the torsion bar 51, and also terminates at its ends in oppositely-directed arms 53 and 54 which are initially disposed at right angles thereto. The arm 54 of the bar 52 is stressed and extends along the base 41 of the adjacent anchor frame 40 and is suitably fixed to the base 41, and the arm 53 of the bar 52 is stressed and is extended into and attached to the related side frame member 22 of the bed frame 20.

Locking means is provided which is operatively con-

nected to the anchor frame **40** and the head **16** of the bed assembly **14** and which is actuable upon execution of the movement of the bed assembly to the use position, the locking means serving to releasably hold the bed assembly **14** in fixed position upon the adjacent portion of the floor F. Specifically, this locking means comprises a carriage **57** which includes a flat base **57***a* and rising from the opposed side edges of the base **57***a* are U-shaped side members **57***b*. Extending across and secured to the rear ends of the side members **57***b* is a backing **57***c*, and surmounting the carriage **57** is a hook element retaining plate **57***d*. The carriage **57** is disposed upon the frame **40** so that the flat base **57***a* rests upon the base **41** with the side members **57***b* extending along and the free ends of their legs bearing against the channels **42**, the backing **57***c* adjacent the inner end of the frame **40**, and the retaining plate **57***d* extending from the backing **57***c* forwardly along the side members **57***b*. A first pair of link bars **55**, FIGURES 6 and 8, arranged in lateral spaced relation are disposed above each of the anchor frames **40** and have one of the complemental ends pivotally connected to the adjacent anchor frame **40**, as by a horizontally-disposed pin member **56**, which is supported in the side members **57***b* of the carriage **57**, and the downwardly-extending flanges **57***e* on the retaining plate **57***d*, as clearly shown in FIGURES 5 and 6. A hand-operable adjustable means embodying a headed threaded bolt **58** is rotatably supported in an upright **59** rising from the base **41** and has an end engaging the backing **57***c*. Rotation of the bolt **58** in clockwise and counterclockwise directions effects the predetermined forward-and-backward movements of the carriage **57**. The other of the complemental ends of the pairs of link bars **55** are provided with like longitudinally-extending closed slots **60**, and a pivot pin **61** extends through and is slidably supported in the slot **60**, the purpose of such slits being to permit adjustment of the carriage **57** relative to a pair of link bars **65** which are connected to the link bars **55** and which will be subsequently described.

The second pair of link bars **65** arranged in lateral-spaced relation and of a length greater than the first pair of link bars **55**, are disposed between the head **16** of the bed frame **20** and each of the pairs of link bars **55** and has one of the complemental ends pivotally connected to the pivot pin **61**, the other of the complemental ends of the pair of link bars **65** being pivotally connected to the adjacent portion of the head **16** of the bed frame **20**. Specifically, the other of the complemental ends of each of the pair of link bars **65** is pivotally connected to an adjacent pin member **66** carried by each of the hinge leaves **45** on the end cross-beam **26** of the bed frame **20**. Spring means embodying upright coil springs **67** are operatively connected to each of the two pair of link bars **65** and the channels **42** of the adjacent anchor frame **40** and act to bias a second pair of link bars **65** toward their extended positions.

The bed assembly **14** is also provided with a releasing means which is operatively connected to each of the anchor frames **40** and the adjacent locking means and which is operable at the will of the user of the bed assembly to shift the locking means simultaneously out of the position releasably holding the bed assembly **14** in the fixed position upon the floor F. Such means comprises a hook element **70** which embracingly engages the pivot pin **61** when the first and second link bars **55** and **65** are in their extended positions, as shown in FIGURES 2 and 8, the hook element being pivotally connected to the side members **57***b* of the adjacent carriage **57** for movement out of the embracing-engagement position with the pivot pin **61**. Specifically, each of the hook elements **70** is fixedly secured to a pin member **71** which is rotatably supported in the side members **57***b* of the adjacent carriage **57**, an end portion of the pin **71** extending through and being freely supported in one of the channels **42** of the adjacent frame **40**. A spring-biased holding element

72 is carried by each of the pin members **71**, as shown in FIGURE 4, and means indicated generally by the numeral **75** and shown in FIGURE 4 connects both of the holding elements **72** to a pull cord **76** extending out of the foot **18** of the bed assembly **14**, as shown in FIGURE 1. The end of the cord exteriorly of the foot **18** carries a knob **77**.

The means **75** comprises a pair of links **90** and **91** disposed on opposite sides of the central point of the crossbeam **26**, the links being each supported intermediate their ends of the crossbeam **26** for free pivotal movement about a horizontal axis as at **92** and **93**, the adjacent ends of the links **90** and **91** being pivotally connected together as at **94**, the free ends of the links **90** being connected to an end of a pull cord **95** whose other end is connected to the adjacent holding element **72**. The free ends of the links **91** are pivotally connected to a pair of spring-biased levers **96** as at **97**. The levers **96** are, in turn, connected to the pull cord **76** by means of a hook **98** carried by the other ends of the levers **96**.

A manually-applied pull exerted upon the cord **76** through the medium of the knob **77** causes a simultaneous shifting of the hook element **70** out of embracing engagement with the respective pivot pins **61**. Release of the pull upon the knob **77** causes the simultaneous shifting of the hook elements into embracing engagement with the respective pivot pins **61** under the action of the springs associated with the holding elements **72**.

A vertical adjustable rest means is also provided on each of the anchor frames 40, such means being generally indicated by the numeral **80**. The respective rest means **80** on the anchor frames **40** serve to support the bed frame assembly **14** when the latter is in the position of storage. Specifically, each of the rest means **80** comprises a saddle **81** rising from the channel **42** of the base **41** of each anchor frame **40**, the saddle being located between the pivot pin **61** and the hinge leaf **44** and rotatably threaded in the saddle **81** is a flat headed threaded bolt **82**. Rotation of the bolt **82** in clockwise and counterclockwise directions adjusts the heads of the bolts **82** to the desired elevation with respect to the anchor frames **40**.

In operation, with the bed assembly **14** in the position of use, as in FIGURES 1 and 2, an outwardly-directed pull applied to the knob **77** causes the hook elements **70** to be simultaneously shifted out of embracing position with respect to the pivot pins **61**, permitting the bed assembly to be started upwardly by a gently-applied upward pull thereon to a point whereat the panel **30** can be pushed toward the recess **12** until the torsion bar assembly **50** and the weight of the bed assembly **14** take over and close the panel into place in the recess **12** with the bed frame **20** being supported upon the rest means **80**, the action being such that the risk of slamming the panel into place is minimal.

To shift the bed assembly **14** from the storage position to the position of use, the bed assembly is manually started out of the recess **12** until the weight of the bed assembly **14** overcomes the stress of the torsion bar assembly **50**, whereupon the weight of the bed assembly takes over and permits the bed assembly **14** to swing slowly and gently down to the position of use upon the floor F. As soon as the bed assembly **14** has executed its movement to the position of use, the locking means acts to releasably hold the bed assembly in fixed position with the hook elements **70** returning, under the action of the springs associated with the holding elements **72**, to embracing engagement with the pivot pins **61** and thereby retain the bed assembly in such position until the user is desirous again of restoring it to the position of storage.

What is claimed is:

1. In combination, a floor, a wall rising from said floor, there being a recess formed in said wall and extending from the floor to a point spaced above said floor, said recess being of an area to receive a bed assembly

when in upstanding position, a bed assembly arranged in a position of use disposed so as to extend along the floor with the head contiguous to and in alignment with the recess and the foot spaced longitudinally outwardly of and in alignment with the recess, an anchor frame lying upon and fixed to the portion of the floor within the recess, said bed assembly including a bed frame, and a wall panel underlying and fixedly carried by said bed frame and conformably shaped and constructed to concealingly close the recess when the bed assembly is in storage position within the recess, a torsion bar assembly connected to the head of said bed frame and to the anchor frame controlling and assisting the movement of said bed assembly between the use position and the upstanding position of storage within the recess, said torsion bar assembly comprising a pair of straight bars, each bar having arms at its ends extending at right angles thereto and in opposite directions, said bars being disposed so as to extend in criss-cross relation and having the adjacent arms secured to the complemental ends of said anchor frame and said bed frame head, and locking means operatively connected to said anchor frame and the head of said bed assembly and actuable upon execution of the movement of said bed assembly to the use position to releasably hold said bed assembly in fixed position upon the adjacent portion of the floor, said locking means comprising a first pair of link bars arranged in lateral-spaced relation disposed above said anchor frame and having one of the complemental ends pivotally connected to said anchor frame, a pivot pin extending through and supported in the other of the complemental ends of said link bars, and a second pair of link bars arranged in lateral-spaced relation and of a length greater than said first pair of link bars disposed between the head of the bed frame and said first pair of link bars and having one of the complemental ends pivotally connected to said pivot pin and having the other of the complemental ends pivotally connected to the head of the bed frame.

2. The combination according to claim 1 which includes in addition spring means operatively connected to each of said second pair of link bars and an anchor frame for biasing the second pair of link bars toward their extended positions.

3. In combination, a floor, a wall rising from said floor, there being a recess formed in said wall and extending from the floor to a point spaced above said floor, said recess being of an area to receive a bed assembly when in upstanding position, a bed assembly arranged in the position of use disposed so as to extend along the floor with the head contiguous to and in alignment with the recess and the foot spaced longitudinally-outwardly of and in alignment with the recess, an anchor frame lying upon and fixed to the portion of the floor within the recess, said bed assembly including a bed frame and a wall panel underlying and fixedly carried by said bed frame and conformably shaped and constructed to concealingly close the recess when the bed assembly is in storage position within the recess, a torsion bar assembly connected to the head of said bed frame and to the anchor frame controlling and assisting the movement of said bed assembly between the use position and the upstanding position of storage within the recess, said torsion bar assembly comprising a pair of straight bars, each bar having arms at its ends extending at right angles thereto and in opposite directions, said bars being disposed so as to extend in criss-cross relation and having the adjacent arms secured to the complemental ends of said anchor frame and said bed frame head, and locking means operatively connected to said anchor frame and the head of said bed assembly and actuable upon execution of the movement of said bed assembly to the use position to releasably hold said bed assembly in fixed position upon the adjacent portion of the floor, said locking means comprising a carriage superimposed upon said anchor frame and connected to said frame for forward-and-backward movement, a horizontally-disposed stub shaft carried by said carriage, a hand-operable adjustable means on said carriage for effecting the predetermined movement of said carriage, a first pair of link bars arranged in lateral-spaced relation disposed above said anchor frame and having one of the complemental ends pivotally connected to said stub shaft, the other of the complemental ends of said pair of link bars being provided with like longitudinally-extending closed slots, a pivot pin extending through and slidably supported in said slots, and a second pair of link bars arranged in lateral-spaced relation and of a length greater than said first pair of link bars disposed between the head of the bed frame and said first pair of link bars and having one of the complemental ends pivotally connected to said pivot pin and having the other of the complemental ends pivotally connected to the head of the bed frame.

4. The combination according to claim 1 which includes in addition a releasing means operatively connected to said anchor frame and to the locking means for shifting the locking means out of the position releasably holding the bed assembly in the fixed position, said releasing means embodying the hook element embracingly engaging said pivot pin when the first and second pairs of links bars are in their extended positions and pivotally connected to said anchor frame for movement of the embracing engagement with said pivot pin, and a spring-biased holding element carried by said anchor frame and operatively connected to the hook element for retaining the hook element in embracing engagement position.

5. The combination according to claim 4 which includes in addition a hand-actuable means operatively connected to said holding element for effecting movement of the hook member from the embracing position to out-of-embracing position.

6. The combination according to claim 3 which includes in addition releasing means operatively connected to said anchor frame and to the locking means for shifting the locking means out of the position releasably holding the bed assembly in the fixed position, said releasing means embodying a hook element embracingly engaging said pivot pin when the first and second pairs of link bars are in their extended position and pivotally connected to said anchor frame for movement out of embracing engagement with said pivot pin, and a spring-biased holding element carried by said anchor frame and operatively connected to the hook element for retaining the hook element in the embracing-engagement position.

References Cited by the Examiner

UNITED STATES PATENTS

215,134	5/79	Kiss	5—164
1,257,542	2/18	Singer	5—159 X
1,606,596	11/26	Peek	5—135 X
1,953,018	3/34	Lauterstein	5—136

FOREIGN PATENTS

1,561	1/13	Great Britain.

FRANK B. SHERRY, *Primary Examiner*.