United States Patent [19]

Driver

[11] **3,828,375**

[45] **Aug. 13, 1974**

[54] **STORABLE BEDS**

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[21] Appl. No.: **309,309**

[52] **U.S. Cl.** ..... **5/160 R,** 5/136, 5/164 C
[51] **Int. Cl.** **A47c 17/52**
[58] **Field of Search** ..... 5/133, 136, 137, 164 R, 5/164 C, 164 E, 165, 170, 159, 160, 6, 2 B

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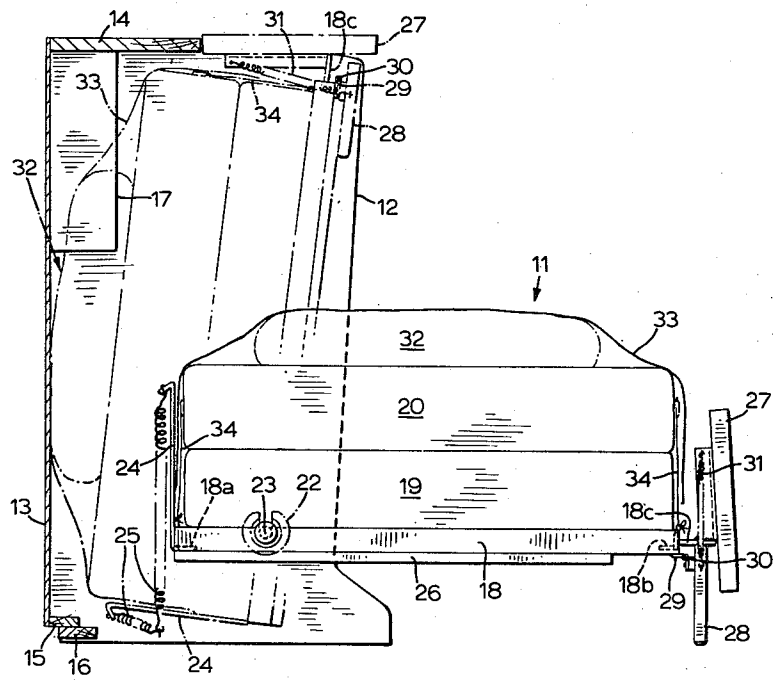
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Primary Examiner—Bobby R. Gay
Assistant Examiner—Kenneth J. Dorner
Attorney, Agent, or Firm—Stanley J. Rogers

[57] **ABSTRACT**

In a storable bed comprising a cabinet and a bed frame which is enclosed in the cabinet in a stored position, the frame has a front panel member fastened to its underside and a top panel member fastened to one longer edge, the top panel member constituting a bed side panel in the usable position, while it completes the cabinet top and determines the stored position of the frame in the stored position. A leg panel is pivoted to the bed frame and moves between stored and usable positions under its own weight; in the usable position thereof it constitutes a support leg for the frame extending alongside the bed side panel, while in the stored position it constitutes a front panel member of the cabinet enclosing the bed frame.

4 Claims, 6 Drawing Figures



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SHEET 1 OF 2

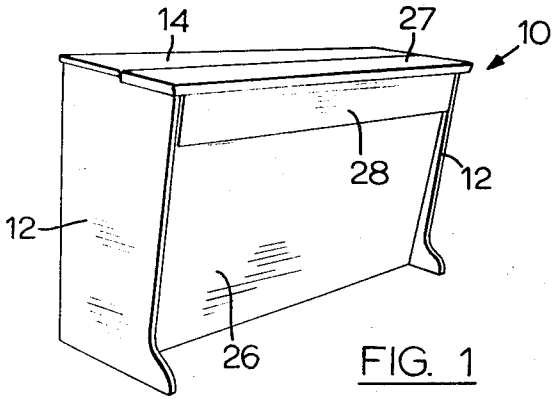


FIG. 1

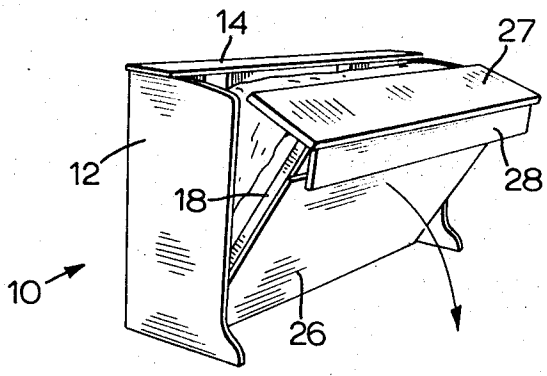


FIG. 2

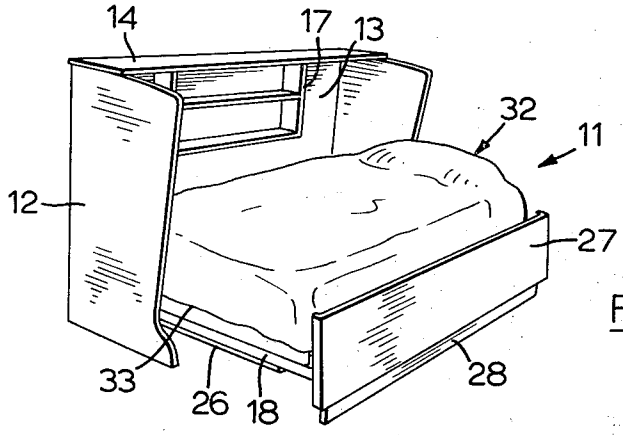


FIG. 3

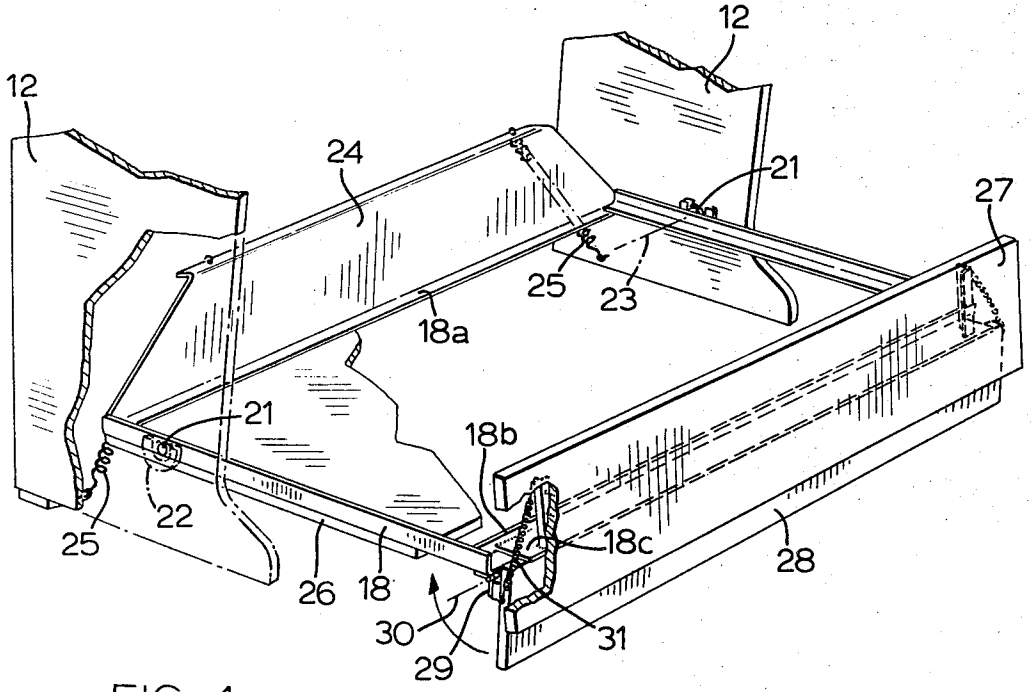


FIG. 4

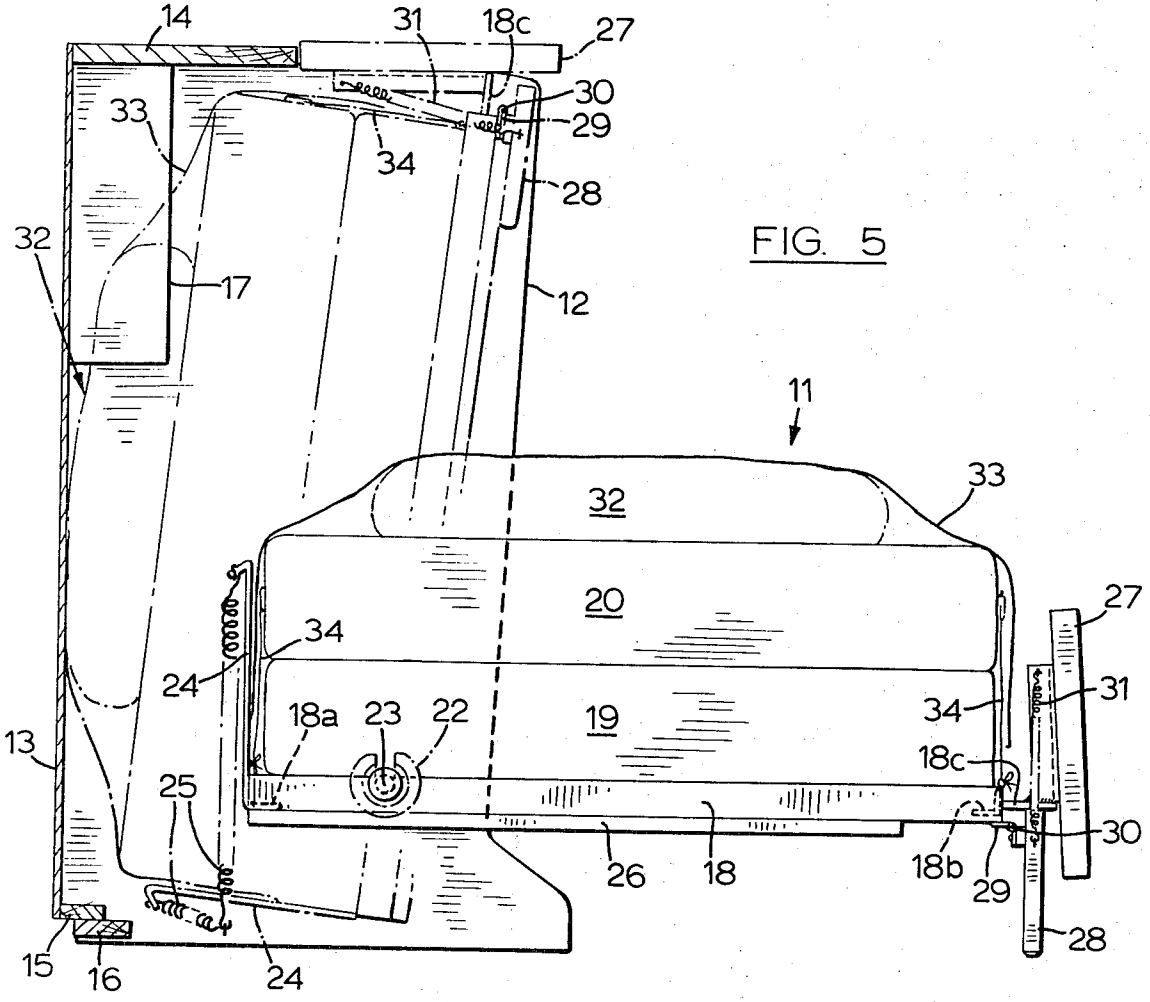

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18c
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18c
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18b
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FIG. 5

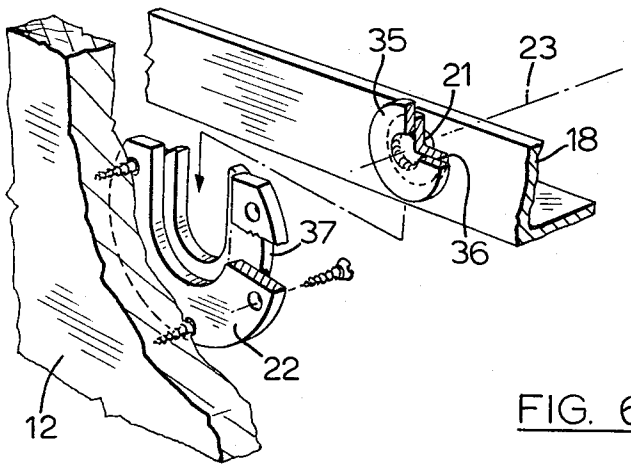

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FIG. 6

STORABLE BEDS

FIELD OF THE INVENTION

The present invention is concerned with improvements in or relating to beds of the storable type, that is to say of the type wherein the mattress or its equivalent is movable between a so-called "usable" position and a so-called "stored" position.

REVIEW OF THE PRIOR ART

A large number of proposals have been made hitherto for beds of storable type wherein the mattress (or its equivalent) and its supporting frame are movable between a horizontal usable position for sleeping and a vertical stored position for times when the bed is not required, to provide more usable space in the room in which the bed is located. Such beds are particularly useful in low-cost housing applications and in rental applications such as apartments and motels, wherein space is at a premium. One form of storage bed is for example the well-known bed-chesterfield, but such devices involve folding of the mattress for storage in the body of the chesterfield, preventing storage of the bed with the clothes thereof in "made-up" condition. Prior proposals in which the mattress is stored vertically, among them my own U.S. Pat. No. 3,464,070, have involved the provision of a special mechanism operable by movement of the bed frame for holding the bed clothes in place while the bed is stored.

DEFINITION OF THE INVENTION

It is an object of the present invention to provide a new bed of the storable type.

It is another object to provide a new storable type bed which in the stored position provides a completely enclosed structure of attractive external appearance.

In accordance with the present invention there is provided a bed of storable type comprising a cabinet for enclosing the bed in a stored position thereof, the cabinet having a top, opposite sides and a front, a rectangular bed frame carrying a box-spring and mattress or their equivalent and mounted by the cabinet for pivoting movement about a horizontal axis which extends close to and parallel to one of the longer frame edges, at least one spring connected between the bed frame and the cabinet and relieving the weight of the frame in its movement between usable and stored positions, a fixed top panel member constituting part of the cabinet top, another top panel member fixed to the other of said longer frame edges so as to extend approximately vertically as a bed side panel with the frame in usable position and to engage the fixed top panel member with the frame in stored position to complete the cabinet top and also to determine the stored position of the frame relative to the cabinet interior, a main front panel fastened to the underside of the bed frame and in the stored position constituting part of the cabinet front, and a leg panel member pivotally mounted to the other of the longer frame edges between the edge and the said another top panel and movable by its own weight between stored and usable positions corresponding to the said bed frame positions, the leg panel in the usable position extending vertically to engage the floor and support the corresponding edge of the bed therefrom, and also extending alongside the said another top panel, and the leg panel in the stored position

extending substantially parallel to the main front panel between it and the another top panel to complete the cabinet front.

DESCRIPTION OF THE DRAWINGS

A storable bed which is a particular preferred embodiment of the invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings wherein:

FIG. **1** is a perspective view showing the bed in its fully stored condition,

FIGS. **2** and **3** are similar views showing the bed respectively partly and fully in the usable position,

FIG. **4** is a perspective view to a larger scale with the bed-spring and mattress removed, and with parts broken away as necessary to show details of construction,

FIG. **5** is a side elevation with the nearest side removed to show the bed construction, the bed in usable position being shown in solid lines, and in its stored position being shown in broken lines, and

FIG. **6** is a perspective view of a detail of the pivot mounting for the bed frame.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The particular storable bed illustrated herein consists essentially of a cabinet, indicated generally by the reference **10,** and the bed, indicated generally by the reference **11.** The cabinet has two side walls **12,** a back wall **13,** a narrow top wall **14,** and bottom connecting cross-bars **15** and **16.** The particular cabinet illustrated also includes shelves **17** although these are not essential for operation of the invention and may be omitted or modified.

The bed consists of a rectangular metal frame **18** receiving a conventional rectangular box spring **19,** which in turn supports a mattress **20.** The two shorter frame sides are provided with respective coaxial protruding pins **21,** which engage in pivot bearing members **22** fastened to the inside faces of side walls **12** and mount the frame **18** for pivoting movement about a horizontal axis **23** parallel to the longer edges **18***a* and **18***b* of the frame. The axis **23** is closer to edge **18***a* than to edge **18***b* so that the unopposed wieght of the frame and its contents tends to move it to the horizontal usable position.

A rigid retaining panel **24** of truncated triangular shape is fastened to the edge **18***a* and extends at right angles to the general plane of the frame. Two bed-weight counterbalance tension springs **25** are fastened at their respective ends between the bottom edges of the cabinet side walls and the top shorter, horizontal edge of the panel **24.** It will be seen that the distance between the bottom ends of the springs is much greater than that between their top ends, so that the springs also extend toward one another, permitting the use of longer springs that will more readily give the required characteristic. These springs are sufficiently strong that they will hold the bed securely in the stored position by their tension, when it has been moved to that position by an operator, but are unable of their own action to cause movement of the bed from the usable position.

A decorative panel **26** is fastened to the underside of the frame **18** and extends the full length thereof, but not quite the full width. Another decorative panel **27**

is fastened rigidly to the frame edge **18***b* and, as will be seen from FIG. **5**, in the usable position of the bed is inclined inward from the vertical toward the mattress. A further decorative leg panel **28** is pivotally mounted to the edge **18***b* by hinges **29** and is movable about the resultant horizontal pivot axis **30** between a stored position, corresponding to the stored position of the frame, in which it co-operates with the panel **26** to complete a front wall for the cabinet **10**, and the usable position, in which it constitutes a leg for the bed frame, the panel being interposed between the floor and a web **18***c* fastened to the edge **18***b*, and supporting the frame from the floor in a substantially horizontal position. The leg panel **28** is retained in its alternative position by tension springs **31** which are connected to the leg panel below the pivot axis **30** and to the bed frame a substantial distance above that axis, and are arranged to operate in toggle manner to snap the panel to its alternative positions after it has moved toward those positions under its own weight and has passed through a dead centre position. Thereafter the springs retain the panel in the positions.

The complete bed comprises a pillow **32** or its equivalent, such as a cushion or bolster, and some form of sheet, bed spread or coverlet **33** which usually extends over the pillow. It is found desirable to fasten the mattress to the frame by light restraining ties **34**, passing around the usual handles provided on the mattress, since otherwise there is a tendency for the mattress and box spring to separate from the frame because of their inertia if the bed is moved too quickly from the stored position.

When the bed is opened to the usable position the leg panel **28** swings under the tension of the springs **31** and its own weight to the vertical position and engages the floor so that the bed is usable in the normal mannner. To store the bed the operator makes up the bed and places the pillow on the mattress under the bedspread and then swings the bed upwards, the force required being low enough for this to be done by a child or elderly person because of the action of the springs **25**. The position assumed by the bed in the stored position is set by the abutting engagement of the upper edge of the panel **27** with the outer edge of the top wall **14**, the two panels also co-operating to provide a continuous surface. In this position the bed is retained securely by the action of the springs **25**, the mattress and the box spring are retained by the panel **24**, while the upper face of the mattress is inclined at an angle to the back wall to form a space of downwardly-tapering cross-section. The bedspread and any other sheet-like bedclothes are tucked under the edges of the mattress to hold them neatly in place in either position. At the same time the leg panel **28** has swung under spring tension and its own weight to the position illustrated in FIG. **5**, in which it is substantially coextensive with the decorative panel **26** and completes the front panel of the cabinet with an appropriate decorative appearance, and so that the bed is completely enclosed.

As illustrated by FIG. **6**, the particular pivot construction provided comprises a washer **35** welded to the head of the pin **21**, which is in turn mounted in the bed frame **18**, while the slotted member **22** fixed to the wall has another slotted member **36** fastened to the front thereof. The washer **35** engages freely in the slot in member **22** but cannot pass through the slot in member **36**, so that the pin is held against endwise, downwards and sideways movement, but pivots freely and can readily be removed by lifting the bed frame when the springs **25** have been unhooked therefrom.

I claim:

1. A bed of storable type comprising a cabinet for enclosing the bed in a stored position thereof, the cabinet having a top, opposite sides and a front, a rectangular bed frame carrying a box-spring and mattress or their equivalent and mounted by the cabinet for pivoting movement about a horizontal axis which extends close to and parallel to one of the longer frame edges, at least one spring connected between the bed frame and the cabinet and relieving the weight of the frame in its movement between usable and stored positions, a fixed top panel member constituting part of the cabinet top, another top panel member fixed to the other of said longer frame edges so as to extend approximately vertically as a bed side panel with the frame in usable position and to engage the fixed top panel member with the frame in stored position to complete the cabinet top and also to determine the stored position of the frame relative to the cabinet interior, a main front panel fastened to the underside of the bed frame and in the stored position constituting part of the cabinet front, and a leg panel member pivotally mounted to the other of the longer frame edges between the edge and the said another top panel and movable by its own weight between stored and usable positions corresponding to the said bed frame positions, the leg panel in the usable position extending vertically to engage the floor and support the corresponding edge of the bed therefrom, and also extending alongside the said another top panel, and the leg panel in the stored position extending substantially parallel to the main front panel between it and the another top panel to complete the cabinet front.

2. A bed as claimed in claim **1**, wherein at least one tension spring is connected between the leg panel and the bed frame in toggle relation thereto for spring retention of the leg panel in the stored or usable position to which it has moved.

3. A bed as claimed in claim **1**, wherein the first-mentioned longer edge of the bed frame has vertically extending therefrom a member of truncated triangular shape for retaining the mattress or equivalent on the bed frame in the stored position thereof, and wherein two tension counter balance springs have corresponding ends fastened to the upper corners of the member and the other corresponding ends fastened into the lower junctions of the cabinet walls with the floor thereof, so that the springs are operative in angular relation to one another.

4. A bed as claimed in claim **2**, wherein the first-mentioned longer edge of the bed frame has vertically extending therefrom a member of truncated triangular shape for retaining the mattress or equivalent on the bed frame in the stored position thereof, and wherein two tension counter balance springs have corresponding ends fastened to the upper corners of the member and the other corresponding ends fastened into the lower junctions of the cabinet walls with the floor thereof, so that the springs are operative in angular relation to one another.

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