Nov. 19, 1963 R. H. OSBORNE ETAL 3,110,911

FOLDABLE BACKREST CABINET FOR BEDS

Filed Nov. 7, 1960 2 Sheets-Sheet 1

Fig. 1

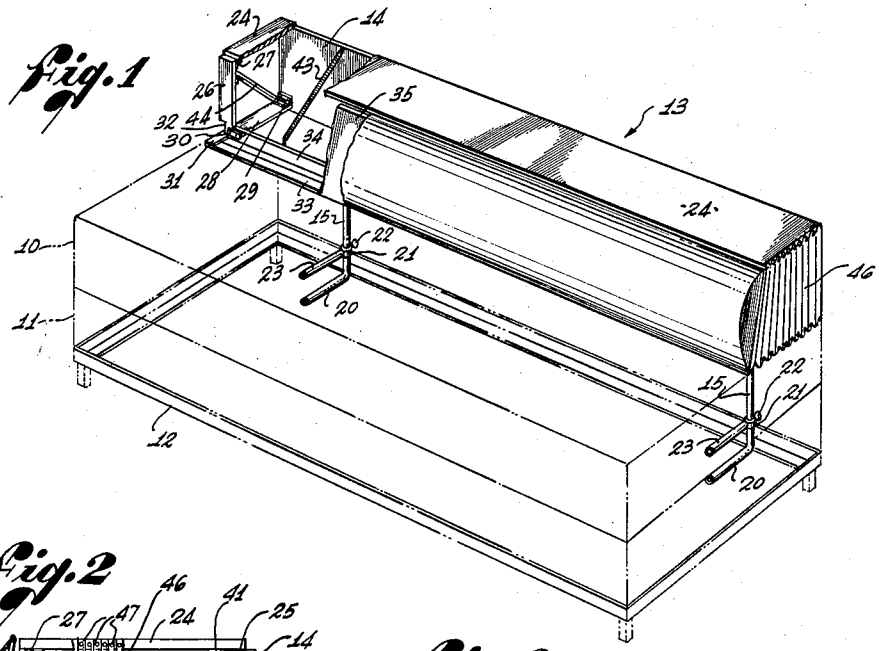


Fig. 2

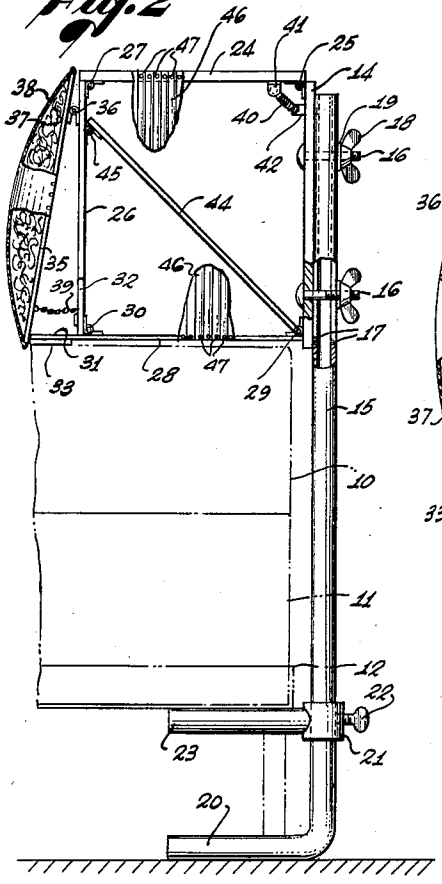


Fig. 3

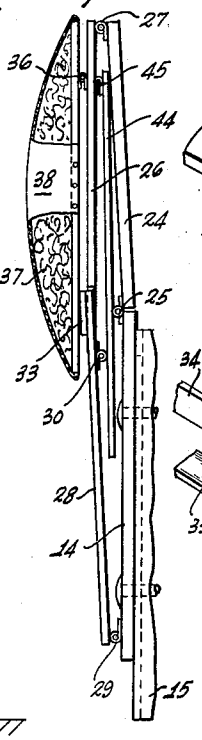
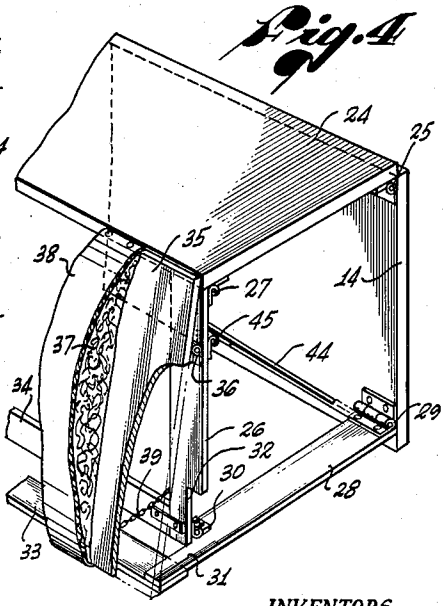


Fig. 4



INVENTORS
RALPH H. OSBORNE
CHARLES S. MILLER
BY Fulwider Mattingly & Hunter
Attorneys

Nov. 19, 1963 R. H. OSBORNE ETAL 3,110,911

FOLDABLE BACKREST CABINET FOR BEDS

Filed Nov. 7, 1960 2 Sheets-Sheet 2

Fig. 5

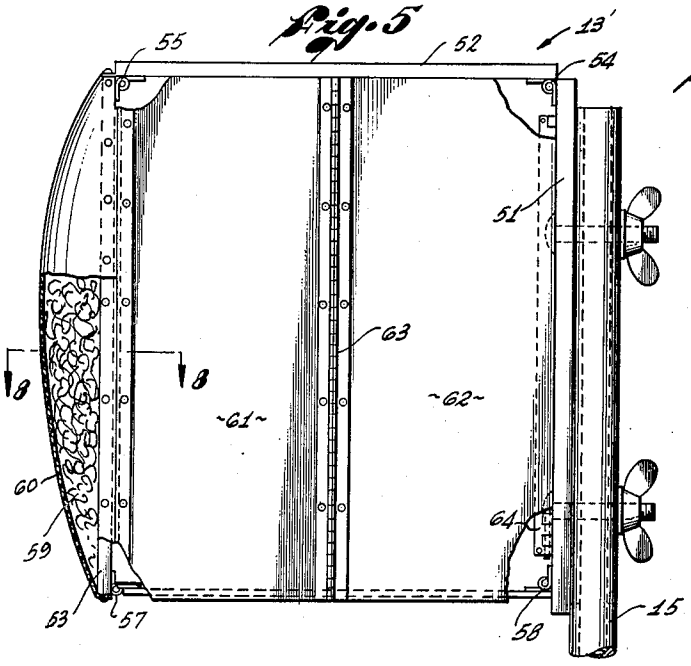


Fig. 6

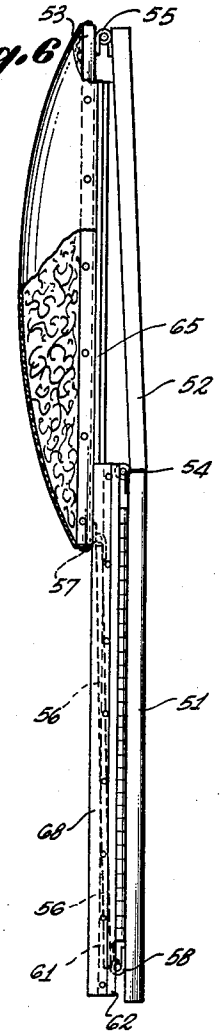


Fig. 7

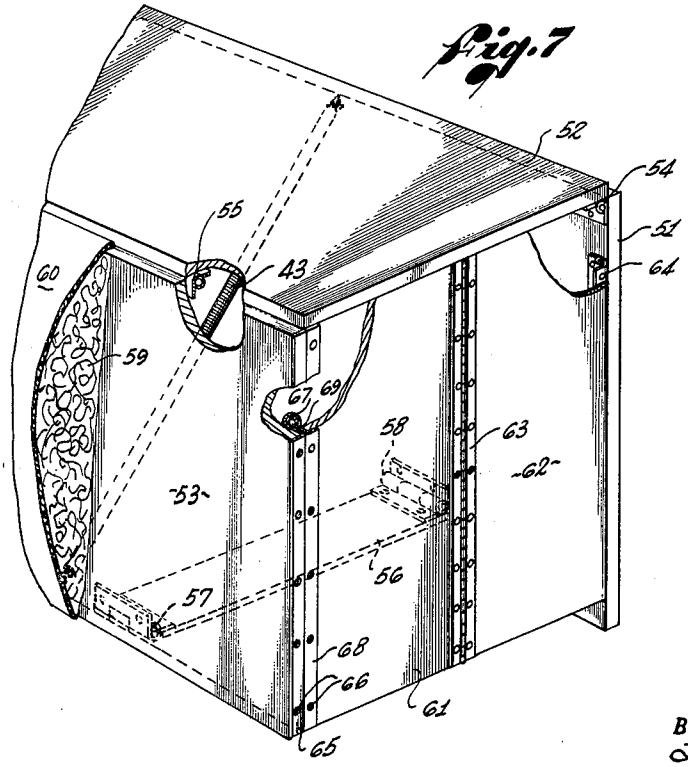
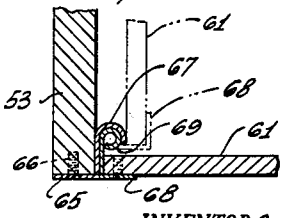


Fig. 8



INVENTORS
RALPH H. OSBORNE
CHARLES S. MILLER
BY Fulwider Mattingly & Huntley
Attorneys

United States Patent Office 3,110,911 Patented Nov. 19, 1963

3,110,911

FOLDABLE BACKREST CABINET FOR BEDS

Ralph H. Osborne, 2021 California Ave., and Charles S. Miller, 1670 Ocean Ave., both of Santa Monica, Calif.

Filed Nov. 7, 1960, Ser. No. 67,724
5 Claims. (Cl. 5—59)

The present invention relates generally to convertible sofa-bed furniture and more particularly to a foldable backrest cabinet for use with a conventional bed to allow daytime use of the bed as a sofa.

An important object of the invention is to provide a foldable backrest cabinet for converting an entirely conventional bed into a sofa.

Another object of our invention is to provide a backrest that in lowered position has sufficient width to reduce the horizontal depth of a twin size bed to that of a conventional couch but that can be folded into a very flat condition in which it no longer overhangs the bed.

A further object of the invention is to provide a foldable backrest cabinet of this type that in lowered position can be employed for the storage and concealment of articles of bedding and that can be raised to reveal such articles which can then be put into use on the bed.

The invention also has for an object the provision of a foldable backrest of this character with a greatly simplified construction, eliminating the very heavy framing and heavy springs usually associated with convertible sofa beds and, furthermore, achieving a very substantial reduction in the floor area occupied by convertible sofa bed furniture.

These and other objects and advantages of our invention will be apparent from the following description, when taken in conjunction with the attached drawings, wherein:

FIGURE 1 is a perspective view of a presently preferred embodiment of our foldable backrest cabinet shown in operative relationship to a conventional twin size bed, portions of the backrest cabinet being cut away to disclose interior details of construction;

FIGURE 2 is an end view taken of the backrest shown in FIGURE 1, with portions cut away;

FIGURE 3 is a partial end elevational view showing the folded configuration of the cabinet, the cover on the end of the cabinet having been removed for clarity;

FIGURE 4 is a partial perspective view of the backrest cabinet in lowered position, with parts being cut away and removed to show details of construction;

FIGURE 5 is an end elevational view of an alternative embodiment of our invention, portions being cut away;

FIGURE 6 is an end elevational view showing the configuration of the backrest cabinet in folded condition;

FIGURE 7 is a partial perspective view, portions being cut away to show interior details of construction; and

FIGURE 8 is a partial horizontal sectional view taken along the line 8—8 of FIGURE 5.

Referring now to the drawings for the general arrangement of the invention and in particular to FIGURE 1, a conventional twin sized bed is illustrated in phantom outline, comprising a mattress 10, a box spring 11, and a supporting bed frame 12. A foldable backrest cabinet embodying a presently preferred form of our invention is designated generally by the numeral 13 and can be rigidly secured to a wall or on supporting legs to overhang the rear of the bed. When the cabinet is in lowered position, the distance from the edge of the bed to the backrest then conforms to the comparable dimension on a sofa. At night, when it is desired to use the bed for sleeping, the cabinet 13 can be folded into the thin condition illustrated in FIGURE 3, thus exposing substantially the entire area of the mattress 10, so that the user need

not sleep beneath any overhanging portion of the backrest. Articles of bedding, such as pillows and blankets, may be normally concealed by the cabinet 13 when in lowered condition and, when the backrest is folded upwardly, such articles are exposed on the top of the bed and the bed can then be made up.

More particularly, the cabinet 13 has a vertically disposed, horizontally extending, elongated backboard 14 of rectangular configuration. While the backboard 14 may be rigidly secured to a wall, we prefer to mount it in the manner best seen in FIGURE 2 whereby to permit a limited range of vertical adjustability for the cabinet 13 as a whole so as to accommodate varying bed heights. Thus, a pair of vertical tube standards 15 are each secured to opposite ends of the backboard 14 by a pair of bolts 16. Each of the standards 15, in its upper end, has a pair of vertically spaced apart, vertically extending pairs of diametrically opposite slots 17 through which the bolts 16 are received, the threaded ends of the bolts protruding rearwardly through the tube standard 15. Suitable wing nuts 18, threadedly engage the exposed ends of the bolts 16 and bear against washers 19 to clamp the standard 15 against the rear of the backboard 14, after the cabinet 13 has been adjusted to the correct elevation for receiving the rear edge portion of the bed thereunder.

The standards 15 are of generally L-shaped configuration, being formed at their lower ends with horizontally projecting foot portions 20, positioned to extend forwardly beneath one side rail of the bed frame 12. A collar 21 is coaxially slidably mounted on the vertically extending portion of each standard 15 and has a radially tapped bore to threadedly receive a set screw 22. On the diametrically opposite side of the collar 21 from the set screw 22, a tubular arm 23 is rigidly secured in horizontally forwardly extending position to the collar, for engagement with the underside of the bedframe 12. The arm 23 and foot portion 20 can thus be clamped between the bedframe 12 and the floor surface of the room in which the bed is placed to firmly support the cabinet 13.

The cabinet 13 also has a topboard 24 which, like the backboard 14, is also of elongated rectangular configuration. Along a longitudinally extending rear edge, this topboard is connected by an elongated piano hinge 25 to the upper edge of the backboard 14. A pair of vertically disposed members 26 are connected at their upper ends by horizontal hinges 27 to the forward edge of the topboard 24, at opposite ends of the topboard. Another pair of members 28 have their rear ends connected by a pair of short horizontal hinges 29 to opposite ends of the lower edge portion of the backboard 14. The lower end of each member 26 is pivotally connected to a front end portion of a member 28 through the medium of another horizontal hinge 30.

Referring to FIGURE 2, it will be seen that the topboard 24 has a front to rear width substantially the same as the space between the hinges 30 and 29 and the vertical spacing between the hinges 27 and 30 is substantially the same as the vertical spacing between the hinges 25 and 29. With this arrangement, a parallelogram linkage is provided at opposite ends of the cabinet for movement of all parts except the backboard 14 between raised and lower positions.

Referring to FIGURE 4, it will be noted that each member 28 has an integral, forwardly protruding extension 31 and the lower end of each member 26 is formed with a notch 32, complementary in configuration to the extension 31. An elongated brace 33 is connected at opposite ends to the lower faces of the extensions 31 of the member 28 and the lower ends of the members 26 are similarly braced by another elongated brace 34. When the cabinet 13 is folded into raised position, the extensions 31 of the members 28 are received within the notches

32 of the members 26, and opposite ends of the brace 33 then abut forward surfaces of the members 26. As is shown in FIGURE 3, the members 26 and 28, when the backrest 13 is folded, assume very nearly coplanar positions to further reduce the overall width of the backrest in folded position.

A frontboard 35 of elongated, rectangular configuration is pivotally supported by a pair of coaxial horizontal hinges 36 that are affixed to the front faces of the members 26 near the upper ends of these members. As is shown in FIGURE 2, the frontboard 35 is supported in inclined position, its lower edge being slidably engaged by the extreme front ends of the extensions 31 of the members 28 and by the brace 33. The frontboard 35 is upholstered, being covered by padding 37 held in place beneath a sheet of cover material 38. To fold the cabinet 13 to raised position, a hand is placed under the lower edge of the frontboard 35 to lift the frontboard. In order to prevent clockwise pivotal movement of the frontboard 35 relative to the hinges 36 when this is done, a pair of chains 39, or the like, interconnect each of the vertical members 26 to confronting portions of the frontboard.

To yieldably retain the cabinet 13 in raised and folded position, a pair of torsion springs 40 are employed. One of these is shown in FIGURE 2, being held in place at one end by a bracket 41 secured to the lower face of the topboard 24 and, at its other end, by a bracket 42 secured to the front face of the backboard 14. When the cabinet 13 is in the lowered position, as in FIGURE 2, the pair of springs 40 do not have sufficient strength to fold the cabinet, but the springs 40 do have sufficient strength to retain the folded position of FIGURE 3. In order to assist manual folding, a coil spring 43 is provided, anchored at one end near the upper edge of the backboard 14 and at the other end to the rear face of the brace 34. It will be understood that the spring 43 is under tension when the cabinet 13 is in lowered condition.

It will be seen from FIGURE 2 that the cabinet 13 could be supported in the lowered position by engagement with the upper surface of the mattress 10. However, it is preferred to provide a rigid stop means for this purpose, in this case taking the form of a pair of members 44, each of which is connected at an upper end by a horizontal hinge 45 to the rear face of one of the vertical members 26. The lower free end of the stop member 44 is slidable along the upper surface of the member 28 during raising and lowering and comes into the corner of the hinge 29 to prevent further downward movement of the backrest 13. As is shown in FIGURE 3, when the backrest 13 is in raised and folded position, each stop member 44 hangs loosely from its hinge 45.

In order to conceal the interior mechanism of the cabinet 13, the opposite ends are covered by sheets 46 of fabric. As is shown in FIGURE 1, each sheet 46 is vertically pleated and is secured, at its upper edge, to the length of the topboard 24 and, at its lower edge, to the entire length including extension 31 of a member 28, upholstery tacks 47 or the like being used for such attachment. It will be appreciated that the vertical edges of the sheets 46 could be tacked instead of the horizontal edges, or that any opposite pair of edges could be supported by curtain rods. Nor is pleating considered necessary if material of sufficient elasticity be used. The use of the sheets 46 to close the opposite ends of the cabinet is advantageous since movement of the backrest between raised and lowered positions does not cause displacement of the sheets 46 out of their vertical planes. Thus, none of the material intrudes into the interior of the cabinet 13 nor does it protrude outwardly, as is the case with the use of end closures made of a rigid material.

An alternative embodiment of cabinet, designated generally by the numeral 13', is shown in FIGURES 5 through 8. As in the preferred embodiment of the invention, the cabinet 13' is also adapted for folding by a parallelogram linkage arrangement at the opposite ends. However, the cabinet 13' utilizes rigid members to close the opposite ends thereof and these rigid members also serve to define a stop to rigidly support the cabinet in lowered position.

The cabinet 13' has a backboard 51, a topboard 52 and a frontboard 53, all of which boards are of elongated rectangular configuration. The backboard 51 may be rigidly secured to the wall or, alternatively, can be supported by a pair of the standards 15 in the manner previously described in conjunction with the mounting of the cabinet 13. A piano hinge 54 is used to interconnect the upper edge or the backboard 51 and the rear edge of the topboard 52 and a similar piano hinge 55 interconnects the front edge of the topboard 52 and the upper edge of the frontboard 53. To complete the parallelogram linkage, a pair of short members 56 are mounted near but inwardly spaced from opposite ends of the cabinet 13'. Each of these members is secured at its front edge by a hinge 57 to the inside lower edge of the frontboard 53 and at its rear end, by a hinge 58, to the forward face of the backboard 51, along the lower edge of the backboard. The forward face of the frontboard 53 is upholstered with padding 59 held in place beneath a sheet of cover material 60.

Each of the opposite ends of the cabinet 13' is closed by a pair of substantially rectangular panels 61 and 62, the two panels being held together by a vertical piano hinge 63 interconnecting the adjacent longitudinally extending edges thereof. The panels 61 and 62 are substantially of the same vertical dimension as the vertical dimension of the frontboard 53. The rearmost panel 62 is in turn hingedly connected by a piano hinge 64 fixed to one vertical edge of the backboard 51, on the forward face of the backboard and in such manner that when the panels 61 and 62 are in coplanar positions, their exterior surfaces lie substantially flush with the ends of the backboard 51, topboard 52 and frontboard 53. Thus, in the lower position of the cabinet 13', the panels 61 and 62 serve as a rigid stop preventing further lowering movement. As in the case of the cabinet 13, the cabinet 13' is provided with a long spring 43 to aid in manual raising of the cabinet 13' and also provided with torsion springs 40 to yieldably maintain the cabinet in raised position.

Each of the opposite end vertical edges of the frontboard 53 is slidably and hingedly interconnected to the forward vertical edge of a panel 61 by the means best seen in FIGURE 8. Each end of the front board 53 has a co-extensive corner angle strip 65 affixed thereto, as with fastners 66, and the corner strip is formed with a substantially semi-cylindrical rolled edge 67, that lies on the rear face of the frontboard 53. The corresponding front edge of the panel 61 mounts a corner angle strip 68 of the same length as the panel, also held in place by suitable fasteners 66, and having a substantially cylindrical rolled edge 69 that is axially slidably and rotatably received within the rolled edge 67 of the other strip 65.

Assuming the cabinet 13' to be in the lowered position shown in FIGURES 5 and 7, it can be folded merely by manually applying upward pressure to the lower edge of the frontboard 53. As the result of such pressure, the corner strips 65 slide upwardly in the corner strips 67. Concurrently, the panel 61 and panel 62 fold inwardly, pivoting on the hinge 63, and the frontboard 53 and topboard 52 fold relative to one another to assume the positions shown in FIGURE 6.

While we have disclosed and described alternative embodiments of the invention, it is to be understood that we do not wish to be limited to the several details of construction set forth but only by the spirit and scope of the following claims.

We claim:

1. In a foldable backrest cabinet the combination comprising: a rectangular rigid back member fixed in vertical

horizontally elongated position; an elongated rectangular topboard hingedly connected along a longtudinally extending rear edge to an upper edge of said back member; a pair of spaced-apart vertically extending members, parallel to said back member, having upper ends hingedly connected to a forward edge of said topboard; a pair of spaced-apart lower members having forward ends hingedly connected to lower ends of said vertically extending members and having rear ends hingedly connected to the lower edge of said back member and in parallel relationship to said topboard; and a horizontally elongated backrest member having and depending from horizontal hinge axis connections to upper end portions of said vertically extending members, said lower members having portions projecting forwardly beyond said vertically extending members to slidably abut the rear surface of said backrest member and to hold said backrest member in inclined positon when said lower members are substantially horizontally disposed.

2. In a foldable backrest cabinet the combination comprising: a vertically disposed horizontally elongated rectangular backboard; an elongated rectangular topboard having a longitudinally extending rear edge hingedly connected to an upper edge of said backboard; a pair of vertically extending members of substantially the same vertical dimension as the vertical dimension of said backboard, each of which is hingedly connected at an upper end to one end of the front edge of said topboard; an elongated brace rigidly interconnecting the lower ends of said pair of vertically extending members; a pair of lower members, each of which is hingedly connected at a rear end to one end of the lower edge of said backboard, each of said lower members being hingedly connected at a location spaced rearwardly of the extreme forward end of said lower member to the lower end of one of said vertically extending members, said lower members being in parallel relationship to said topboard, each of said vertically extending members having a notch formed in the lower end for receiving portions of said pair of lower members that project forwardly beyond the plane of said vertically extending member; a horizontally elongated upholstered frontboard hingedly supported from upper end portions of said pair of vertically extending members and having said projecting portions of said pair of lower members in slidable engagement with lower edge portions of said frontboard whereby said frontboard is inclined relative to the vertical when said pair of lower members are in horizontally extending positions; a pair of rigid stop members each of which has an upper end hingedly connected to the rear face of the upper portion of one of said pair of vertically extending members, each of said stop members having a free lower end engageable in the corner between one of said pair of lower members and said backboard whenever said pair of lower members and said topboard are horizontally disposed, whereby to limit downward movement of said topboard beyond the horizontal; and a pair of fabric sheets having vertically extending pleats formed therein and each of which is secured to and along an upper edge of one end of said topboard and each of which has a lower edge secured to and along the entire length of one edge of one of said lower members.

3. A backrest cabinet for use with a twin size bed, said cabinet being foldable between a lowered position wherein it cooperates with said bed to define a sofa and a raised, collapsed position that permits said bed to be used for sleeping, comprising:

an elongated rectangular top member that closes the top of said cabinet when said cabinet is in said lowered position;

vertical support means defining a back for said cabinet and pivotally supporting said top member on a pivot axis along a horizontal longitudinally extending rear edge of said top member;

backrest means having an upper end pivotally connected to a longitudinally extending front edge of said top member;

a spaced pair of rigid members at opposite ends of said cabinet, each of said rigid members extending between a lower end of said backrest means and said vertical support means, with said vertical support means, said top member, said backrest means and said pair of rigid members forming a linkage means for moving said cabinet between said lowered and raised positions, said top member and said rigid members being disposed in horizontal position when said cabinet is in said lowered position and supporting said backrest means in vertically disposed and spaced relation forwardly of said vertical support means, the space between said rigid members providing an open bottom, with said cabinet when in said lowered position thereby providing concealed storage for articles of bedding normally supported on top of said bed, said articles being exposed when said cabinet is in said raised position, said cabinet being urged to said raised position by the manual application of a lifting force on said backrest means whereby said backrest means and said members are pivoted to a generally vertically extending position;

resilient means interposed between said vertical support means and one of said members that yieldably retain said cabinet in said raised position, with said resilient means having insufficient strength to move said cabinet to said raised position without manual assistance;

and foldable means operatively connected to the opposite ends of said cabinet for closing said ends when said cabinet is in said lowered position, said foldable means being automatically collapsed by movement of said cabinet to said raised position.

4. A backrest cabinet as set forth in claim 3 wherein each said foldable means comprises a sheet of collapsible material that is connected along its upper edge to an edge of said top member.

5. A backrest cabinet as set forth in claim 3 wherein each said foldable means includes a front panel and a rear panel, the rear vertical edge of said front panel being hingedly interconnected to the forward vertical edge of said rear panel, the forward vertical edge of one of said front panels being hingedly connected to one side of said backrest means and the forward vertical edge of the other front panel being hingedly connected to the opposite side of said backrest means, with the rear vertical edge of said rear panels being hingedly connected to the sides of said vertical support means.

References Cited in the file of this patent

UNITED STATES PATENTS

429,750	Alexander	June 10, 1890
570,208	Harry	Oct. 27, 1896
1,260,348	Dyke	Mar. 26, 1918
2,131,609	Alexander	Sept. 27, 1938
2,627,067	Rose	Jan. 27, 1953
2,709,817	Poyer	June 7, 1955
2,786,299	Cosgrove	Mar. 26, 1957
2,891,257	Posey	June 23, 1959
2,999,250	Rea	Sept. 12, 1961

FOREIGN PATENTS

672,019	Germany	Feb. 18, 1939