May 27, 1958 J. C. VON EHR 2,835,904

CABINET BEDS

Filed March 28, 1955 2 Sheets-Sheet 1

Fig. 1

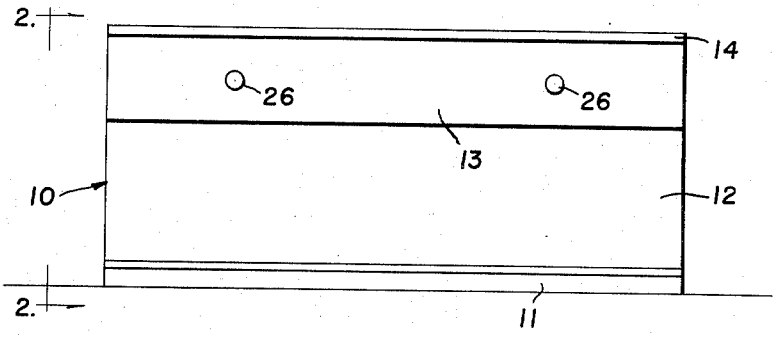



Fig. 2

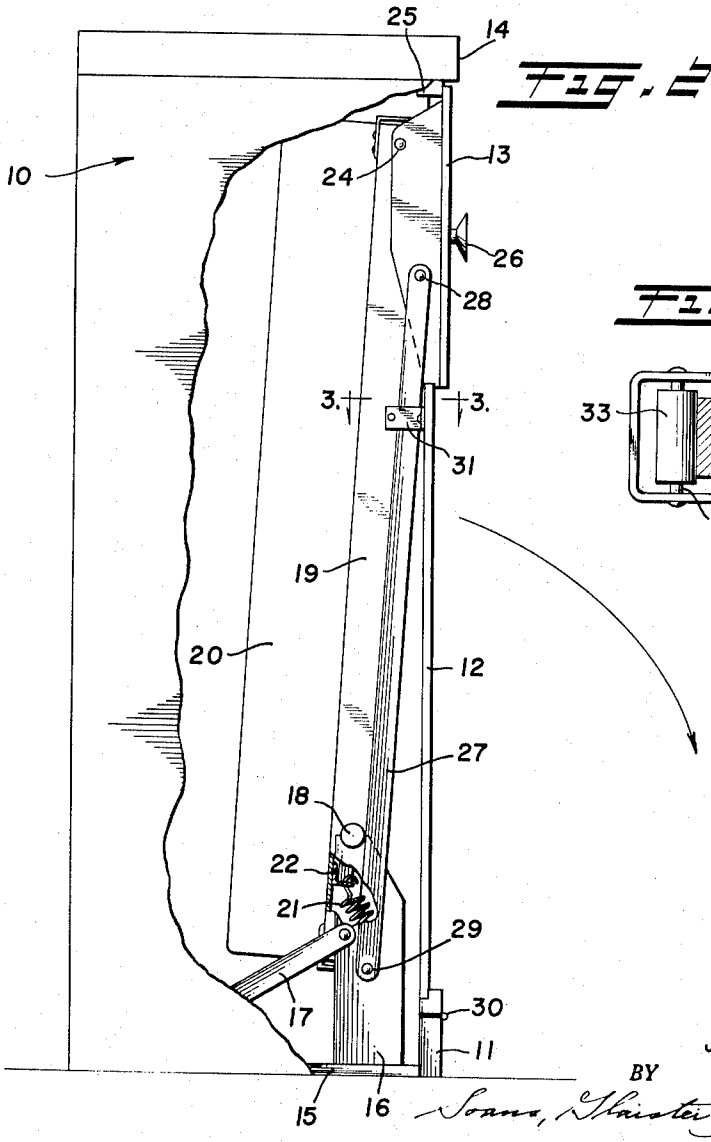
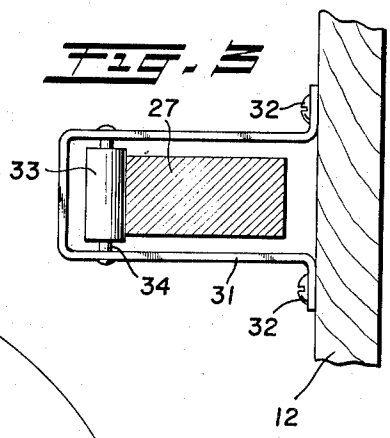



Fig. 3




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May 27, 1958 J. C. VON EHR 2,835,904

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Filed March 28, 1955 2 Sheets-Sheet 2

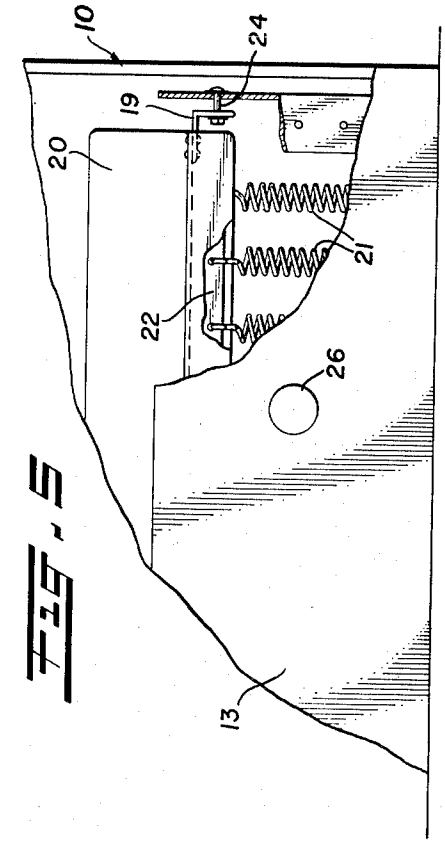



FIG. 5




FIG. 4

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# CABINET BEDS

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Application March 28, 1955, Serial No. 497,140

3 Claims. (Cl. 5—136)

The invention relates to improvements in cabinet beds and relates to a type of folding bed structure which can be stored with the sleeping surface in a substantially vertically extending position in the recess of a wall or cabinet, when not in use for sleeping purposes, and for sleeping purposes may be swung down into a horizontal position outside of the recess.

A folding bed of the character described is one of the oldest types of folding beds, and it is believed that it dates back to colonial days. Such beds have frequently been of such construction that they have required separate doors, usually of the side-opening type, for closing the recess so as to conceal the bed structure and, in addition, the outer edge or front side of the extended bed has usually presented a somewhat undressed or otherwise unsatisfactory appearance when used for sleeping purposes.

Attempts made to overcome these difficulties have usually resulted in a structure having sundry other objectionable features.

The principal object of this invention is to provide a cabinet bed of the general class described in which no separate recess-closing door or doors need be opened prior to the unfolding of the bed structure and which is so designed that the bed will not detract from the appearance of the room when it is stored in the cabinet or in the wall of the room, and which will also present a satisfactory appearance when it is extended into sleeping position.

An additional object is to provide a mechanical structure which is simple in design and not difficult to operate while at the same time the structure is stable in each position and which structure will accommodate a bed bottom and mattress designed to provide the ultimate in sleeping comfort.

In the drawings which illustrate a preferred embodiment of the invention,

Fig. 1 is a front elevation of the front boards or panels which normally close the bed-receiving recess,

Fig. 2 is a side elevation of the structure, certain parts being broken away to reveal certain working parts,

Fig. 3 is a section taken on the line 3—3 of Fig. 2,

Fig. 4 is a side elevation of the folding bed structure when it is in extended or sleeping position, certain parts being broken away to disclose some of the working parts, and

Fig. 5 is a section taken on the line 5—5 of Fig. 4, certain parts being broken away.

Generally, the folding bed structure will be installed in a recess occupying a space designed by the architect for the purpose, and which may be made deep enough so that the back of the recess will serve as a closet for storing clothing. However, it may also be in the form of a separate cabinet or wardrobe which can be placed in any part of the room. In each case, the folding bed structure may be the same. In the present instance, the recess is shown as being that provided in the interior of a cabinet designated as a whole **10**. As shown, the front



of the cabinet is composed of a lower stationary rail **11** to the top of which there is hinged a lower movable panel section **12** and above that there is an upper panel section or board **13** which closes the space between the upper end of the lower panel **12** and the stationary top rail **14**.

The two sides of the folding bed structure, which usually constitute the head end and the foot end of the sleeping surface in a bed of the type shown, are each equipped with similar operating connections or linkages. Only one of these need be described. As shown in the drawings, behind the stationary rail **11** there is located a bracket having a base plate **15**, a standard **16**, and a brace **17**. In the top of the standard **16** there is a bearing arranged to support a pivot pin **18** which is secured to the end member **19** of the frame of the bed bottom. The bed bottom **19** is provided with any desired type of spring arrangement, the mattress being designated as **20**.

When the bed structure is in the position shown in Fig. 2, it is maintained securely in that position by means of a series of coiled tension springs **21** the upper ends of which are hooked in holes formed in a transverse angle iron member **22** (see also Fig. 5) formed as a part of the bed frame **19**, while the lower ends of the springs are hooked into holes in the upwardly extending flange of an angle iron member **23** (see Fig. 4) extending between and carried by the base plates **15** on the opposite sides or ends of the recess.

Describing now the linkage for automatically controlling the position of the various parts when the bed is unfolded or extended, it will be observed that when in folded position the upper board or panel **13** is suspended from a pivot pin **24** carried by one of the upper corners of the bed frame **19**, the position of the pivot pin **24** being such that the upper end of the panel **13** nicely clears the underside of the rail **14**. A stop **25** may be provided on the underside of the rail member **14** to limit the inward movement of the folding bed structure when it is in the recess. As will be seen the lower end of the board **13** slightly overlaps the upper end of the lower panel section **12** when in folded position.

Desirably, the springs **21**, three or more in number on each end or side of the folding bed structure, are as long as possible and of as many turns as possible so that there will not be too much difference in the tension of the springs in their two positions. When the folding bed structure is upright in the recess as shown in Fig. 2, there will still be enough tension left in the springs to securely hold the bed structure with the upper end of the leg board **13** in firm engagement with the stop **25**, while at the same time the tension of the springs when the structure is in the position shown in Fig. 4 will not be so excessive as to interfere with the stability of the bed in its extended position.

In order to open the bed, the occupant of the room grasps one or both of the knobs **26** and pulls forwardly whereupon through pivot **24** the main bed structure **19** will move outwardly with the top board **13** until it finally assumes the position shown in Fig. 4. Since the board **13**, which serves as a leg when the structure is in sleeping position, should assume a substantially vertical position, it is found desirable in such a structure that some means should be provided to assure this vertical position of the front board and this is effected by means of a separate controlling link **27** which, when in folded position, occupies a position substantially parallel with the end member **19** of the bed bottom frame. The upper end of the controlling link **27** is pivoted to a pin **28** carried by the leg board **13** and the lower end of the controlling link **27** is pivoted on a pin **29** mounted on the stationary standard **16**. The distance between pivots **24** and **28**

is preferably substantially equal to the distance between the pivots 18 and 29 so that a parallel motion effect is obtained as shown by comparison of Figs. 1 and 4.

Returning now to the lower panel section 12, it will be seen that the lower end of the same as shown in Fig. 2 is equipped with hinges 30 enabling it to swing outwardly from the top of the fixed bottom rail 11. The upper end of the lower panel member 12 is equipped with a rectangular bail or bracket 31 (see also Fig. 3) secured to the upper end of the panel 12 by suitable screws 32. The limbs of the bail or bracket 31 extend out far enough to accommodate a small anti-friction roller 33 on a pivot pin 34 extending across the arms of the bail 31, the roller 33 being located a sufficient distance from the panel member 12 so as to freely accommodate the cross section of the controlling link 27. As will be seen by inspection of Fig. 4, the bail 31 serves as a hanger which serves to support the outer end of the lower panel section 12 while permitting sliding movement of the side panel relative to the folding bed structure. Although the panel 12 possibly might be supported from the frame 19 in certain cases, I prefer to suspend it from the controlling links 27.

It will be understood that the hanger or bail connection 31 has a double purpose. In the extended position of the bed, as stated it supports the lower panel section 12 from the link 27 and, secondly, when the bed is folded, it raises the front panel section 12 into its outer or front position as shown in Fig. 2.

I claim:

1. A cabinet having a front opening and a recess rearwardly of said opening, a folding bed structure in said recess comprising a bed frame pivoted in the recess on a horizontal axis near the lower end of said opening so that the bed frame when swung down and outwardly through about a right angle will move into a substantially horizontal sleeping position, a front board pivoted to the bed frame on a horizontal axis and hanging from said frame so as to form a leg for supporting the outer edge of the frame when the frame is in sleeping position, and a link connecting a point on said front board spaced from the board pivot with a point within the recess so spaced from the frame pivot that the board will assume a substantially vertically hanging position when the bed frame is folded, and in such position will form a panel section closing the upper part of said opening and will also control the movement of the board into leg position when the frame is extended into sleeping position, a panel section for closing the lower part of said opening, hinged to the front of the cabinet on a horizontal axis near the lower end of the opening, and means connecting said lower panel section to said link so as to swing the said lower panel section from a position under the bed structure, which said lower panel occupies when the frame is in sleeping position to a substantially vertical front position closing the lower part of said opening when the frame is folded.

2. A cabinet having a front opening and a recess rearwardly of said opening, a folding bed structure in said recess comprising a bed frame pivoted in the recess on a horizontal axis near the lower end of said opening so that the bed frame when swung down and outwardly through about a right angle will move into a substantially horizontal sleeping position, a front leg board pivoted to the bed frame on a horizontal axis and hanging from said frame so as to form a leg for supporting the outer edge of the frame when the frame is in sleeping position, and a link connecting a point on said front leg board spaced from the board pivot with a point within the recess so spaced from the frame pivot that the board will assume a substantially vertically hanging position when the bed frame is folded, and in such position will form a panel section closing the upper part of said opening and will also control the movement of the board into leg position when the frame is extended into sleeping position, a panel section for closing the lower part of said opening, hinged to the front of the cabinet on a horizontal axis near the lower end of the opening, and a hanger connecting said lower panel section to said link so as to swing the said lower panel section from a position under the bed structure which it occupies when the frame is in sleeping position to a substantially vertical front position closing the lower part of said opening when the frame is folded.

3. A cabinet having a front opening and a recess rearwardly of said opening, a folding bed structure in said recess comprising a bed frame pivoted in the recess on a horizontal axis near the lower end of said opening so that the bed frame when swung down and outwardly through about a right angle will move into a substantially horizontal sleeping position, a front leg board pivoted to the bed frame on a horizontal axis and hanging from said frame so as to form a leg for supporting the outer edge of the frame when the frame is in sleeping position, and a link connecting a point on said front leg board below the board pivot with a point within the recess so spaced downwardly from the frame pivot that the board will assume a substantially vertically hanging position when the bed frame is folded, and in such position will form a panel section closing the upper part of said opening and will also control the movement of the board into leg position when the frame is extended into sleeping position, a panel section for closing the lower part of said opening, hinged to the front of the cabinet on a horizontal axis near the lower end of the opening, and means connecting said lower panel section to said link so as to swing the said lower panel section from a position under the bed structure which said lower panel occupies when the frame is in sleeping position to a substantially vertical front position closing the lower part of said opening when the frame is folded, while permitting sliding movement of said lower panel relative to said bed structure.

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