Nov. 3, 1970 S. E. GORDIN 3,537,115

HANGER ELEMENT FOR SUPPORTING A SPRING FRAME

Filed July 23, 1968 2 Sheets-Sheet 1

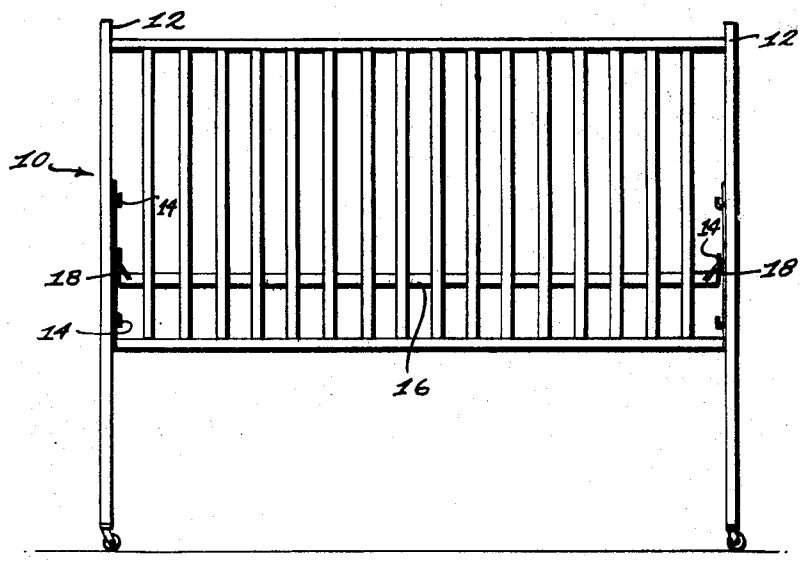


Fig. 1

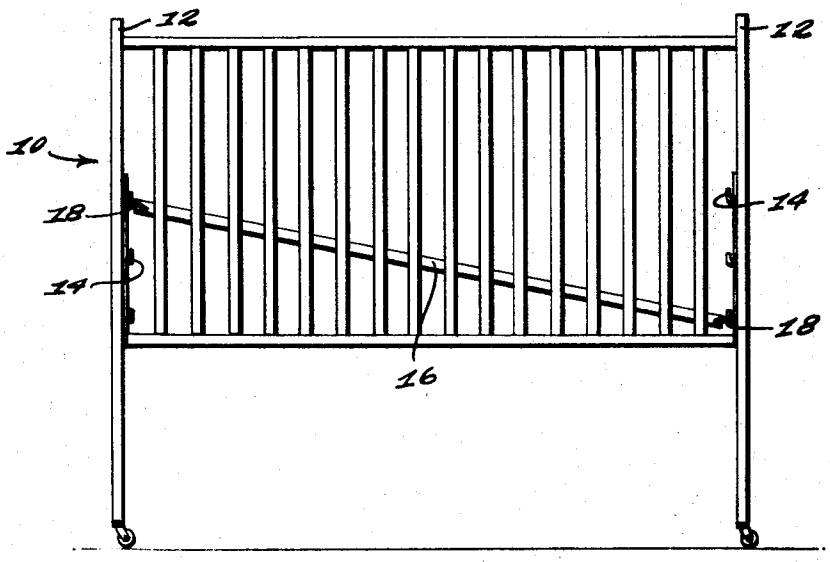


Fig. 2

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Fig. 3

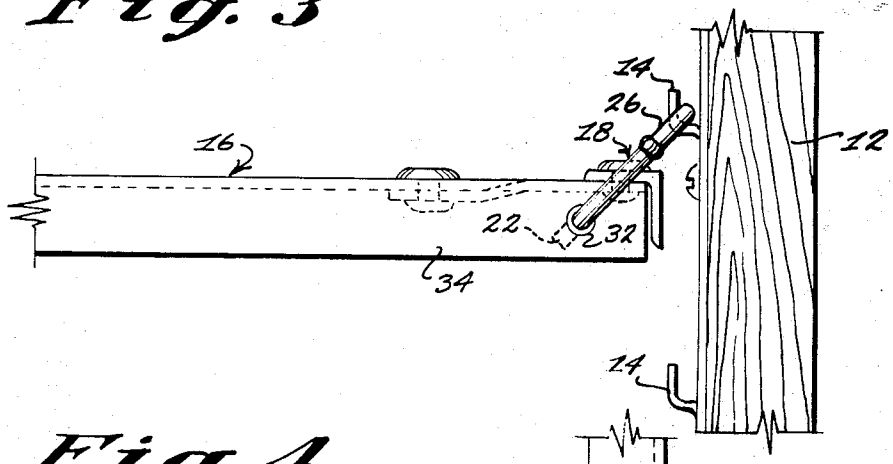


Fig. 4

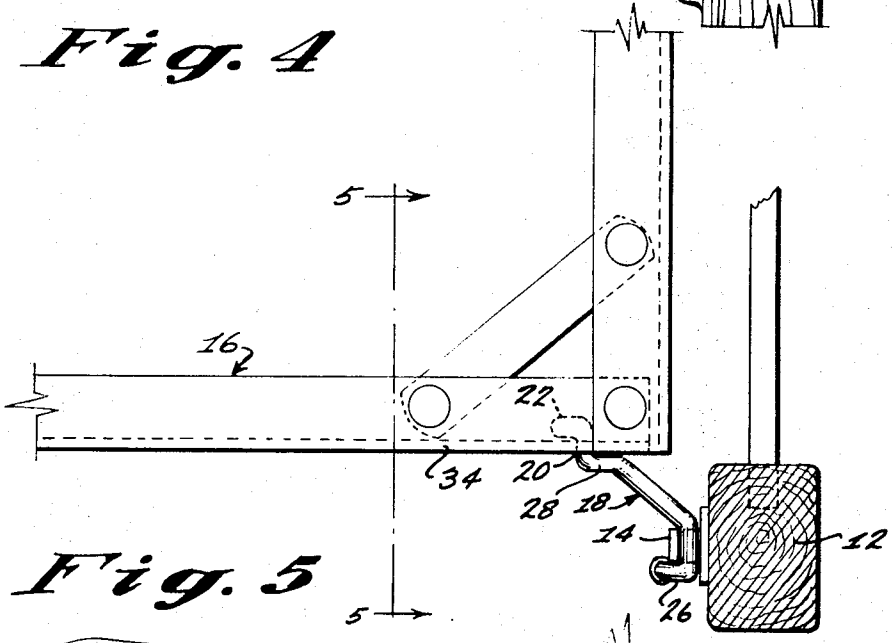
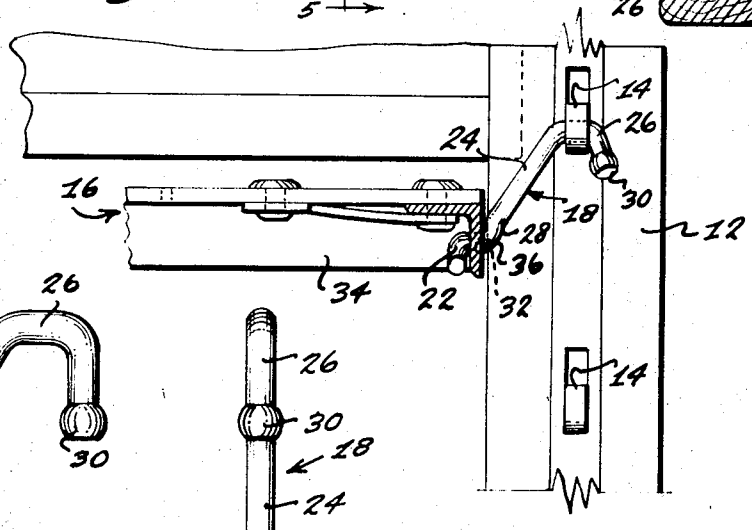


Fig. 5



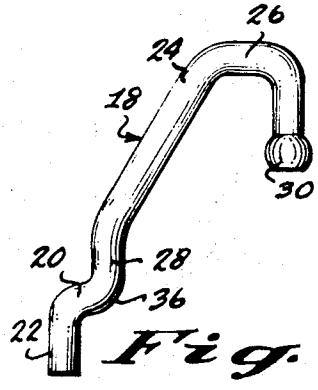


Fig. 6

Fig. 7

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HANGER ELEMENT FOR SUPPORTING A SPRING FRAME

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Int. Cl. A47c 19/00
U.S. Cl. 5—207 4 Claims

ABSTRACT OF THE DISCLOSURE

A hanger element for attaching a spring frame to a crib structure, the hanger element including an intermediate portion for extension in supporting relation through an aperture in a thin plate-like portion of the spring frame, including a first end portion formed for attachment with the crib structure and formed with a connecting segment extending perpendicularly from the intermediate portion, and including an opposite end portion extending perpendicularly from the intermediate portion oppositely with respect to a connecting segment of the first end portion, the opposite end portion being proportioned to pass through the spring frame aperture to install the hanger element on the spring frame and to retain the hanger element in assembly therewith. Also, the opposite end portion and the connecting segment of the first end portion are disposed for extension along opposite sides of the adjacent spring frame portion to prevent lateral shifting of the spring frame when it is supported by the hanger element.

BACKGROUND OF THE INVENTION

Crib structures almost universally include a horizontally disposed spring unit that is carried at the end post of the crib frame by a mounting arrangement which permits the elevation of the spring unit to be selectively changed to increase or decrease the effective confining depth of the vertical side and end panels of the crib frame. Usually, this mounting arrangement includes a fixed bracket carried at each end post of the crib to present a plurality of vertically spaced projections, and a connecting element associated with the spring unit adjacent each of the four corners thereof that can be detachably hung from the bracket projections.

This spring unit connecting element has generally taken the form of either a plate member welded or otherwise fixed at each end face of the spring unit to provide hook formations at the corners of the spring unit for engaging the end post bracket projections, or a hanger element which is fixed to the spring unit adjacent each corner thereof for mounting the spring unit on the end post brackets.

The plate member arrangement is relatively expensive, and it may limit the load-carrying capacity of the spring unit unless the connection thereto is made extremely strong. On the other hand, the hanger elements heretofore known have provided a reasonable degree of load-carrying capacity, but they have increased the burden imposed on the manufacturer in packing the spring unit for shipping because of their loose projection from the corners of the otherwise generally rectangular-shaped spring unit. In an effort to overcome this difficulty, some manufacturers have shipped the spring unit with the hanger elements detached, and the ultimate user of the spring unit then assemblies the hanger element on the spring unit. However, since safety considerations dictate that the hanger element must be securely held against detachment from the spring unit while in use, hanger elements of this type have heretofore been connected

to the spring unit in a manner which requires the person assembling the parts to use tools and to have at least some mechanical know-how. While this assembly technique provides little difficulty to an ordinary assembleman, it may be a substantial drawback if the ultimate user of the spring unit is a person with little or no mechanical aptitude (i.e., a housewife). For example, in U.S. Pat. No. 2,895,144, issued to Feldman, a washer must be fitted onto the hanger element and a cotter pin installed to secure the hanger element to the spring unit, and in U.S. Pat. No. 2,297,963, issued to Kroll, one end of the hanger element must be pressed into a hole drilled into the spring unit, presumably with a hammer or similar implement.

By the present invention, a hanger element is provided which can be readily assembled on the spring unit without requiring any tools or mechanical ability, and which will be securely retained in assembly with the spring unit while stabilizing it against swaying.

SUMMARY OF THE INVENTION

The hanger element of the present invention comprises a generally elongated rod having a first end portion thereof shaped for attaching the hanger element to the crib post bracket, having a short intermediate portion which seats in an aperture formed in a plate-like portion of the spring frame to support the spring frame thereat, and an opposite end portion that is proportioned for insertion through this aperture and that extends angularly from the intermediate portion to retain the hanger element in assembly with the spring frame when the latter is supported in the crib frame by the hanger element. Preferably, the opposite end portion extends perpendicularly from the intermediate portion so that it will be disposed along the adjacent spring frame portion to prevent lateral inward shifting of the spring frame with respect to the hanger element, and the attaching end portion includes a connecting segment that extends perpendicularly from the intermediate portion for disposition along the adjacent spring frame portion to prevent laterally outward shifting of the spring frame with respect to the hanger element.

Thus, by virtue of its unique construction, the hanger element of the present invention can be readily installed without any tools by simply manipulating the hanger element to pass the retaining end portion thereof completely through the spring frame aperture until the intermediate portion of the hanger element seats in the aperture, and then mounting the attaching end portion of the hanger element to the crib post whereupon the retaining end portion will assume a position along the adjacent portion of the spring frame to prevent removal of this retaining end portion back through the aperture whereby the hanger element will be positively retained in assembly with the spring frame as long as the latter is supported in the crib structure by the hanger element. Thus, since this extremely simple installation procedure can be readily carried out by the ultimate user of the crib structure, packing of the spring frame for shipping is greatly facilitated because the hanger elements need not be preassembled at the corners of the spring frame.

Moreover, once the hanger element is installed in place, its particular shape acts to preclude lateral shifting of the spring frame with respect thereto so that the spring frame will not sway from side to side in the crib structure, and this shape also adds to the effective holding capability of the hanger element because any tendency of the hanger element to deform at the spring frame load bearing portion thereof will not eliminate the retaining characteristic of the retaining end portion of the hanger element.

Finally, after the hanger element has been assembled with the spring frame, the attaching end portion of the

hanger element can still be pivoted outwardly with respect to the spring frame to facilitate attachment of the hanger element to the crib post of a crib structure having a greater-than-average width.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of a crib structure in which a spring unit is supported at an intermediate elevation by hanger elements according to the present invention;

FIG. 2 is a side elevation corresponding to FIG. 1 and illustrating the spring unit with one end thereof supported at a raised elevation and the other end supported at a lower elevation;

FIG. 3 is a detail side view of a portion of a crib structure illustrating the hanger element supporting the spring unit from an end post attachment projection;

FIG. 4 is a plan view of the portion of the crib structure illustrated in FIG. 3;

FIG. 5 is a sectional view of the crib structure taken along line 5—5 in FIG. 4;

FIG. 6 is a side view of a hanger element according to the present invention; and

FIG. 7 is an end view of a hanger element according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in detail to the accompanying drawings, FIGS. 1 and 2 illustrate a crib structure **10** having end posts **12** provided with vertically spaced projections **14** from which a spring frame **16** is hung using hanger elements **18** installed in the spring frame **16** at each corner thereof and engaging selected projections **14**. To raise or lower the spring frame **16** from its middle position in the crib structure **10** as shown in FIG. 1, the hanger elements **18** are disengaged from the center projection **14** at each crib post **12**, and engaged in either the upper or lower projection **14**, FIG. 2 illustrating the spring frame **16** attached at a lower projection **14** and a higher projection **14** to demonstrate an intermediate position of the spring frame as it is being raised to the upper projections **14** or lowered to the bottom projections **14**.

As best illustrated in FIGS. 6 and 7, the hanger element **18** of the present inventon comprises an elongated rod having a short intermediate portion **20** from which a retaining end portion **22** extends in perpendicular relation thereto, and from which an attaching end portion **24** extends generally oppositely with respect to the retaining end portion **22**, the attaching end portion **24** being formed with a generally U-shaped segment **26** and with a connecting segment **28** that extends substantially perpendicularly from the intermediate portion **20**. The extreme end of the attaching end portion **24** is provided with a spherical cap member **30** of suitable material for covering the rough edges thereat and for facilitating handling of the hanger element as it is manipulated during installation thereof.

To install the hanger element **18** in place, it is first mounted in the spring frame **16** by passing the retaining end portion **22** longitudinally through an aperture **32** formed in a thin plate-like flange **34** of the spring frame **16** whereupon the hanger element **18** is then manipulated to dispose the retaining end portion **22** along the inside wall of the flange **34** with the intermediate portion **20** seated in the aperture **32**, it being noted in this regard that the retaining end portion **22** is proportioned to be easily inserted through the aperture **32**. Next, after a hanger element **18** has been mounted at each corner of the spring frame **16**, the U-shaped segments **26** of the hanger elements **18** are placed about selected projections **14** on each of the four crib posts **12** in a manner illustrated in FIGS. 3, 4 and 5.

With the spring frame **16** supported by the hanger elements **18** in this manner, it will be noted that the disposition of the retaining end portion **22** along the inside surface of the flange **34** not only acts to retain the hanger element **18** in assembly with the spring frame **16** because it cannot pass back through the aperture **32**, but it also acts to prevent lateral inward shifting of the spring frame **16** with respect to the hanger element **18**. Likewise, since the length of the intermediate portion **20** is only slightly greater than the thickness of the flange **34**, the connecting segment **28** of the attaching end portion **24** is disposed along the outside surface of the flange **34** to prevent lateral outward shifting of the spring frame **16** with respect to the hanger element **18**. Therefore, any tendency of the spring frame **16** to sway from side to side in the crib structure **10** is effectively eliminated by the hanger element **18**.

A further feature of the hanger element **18** of the present invention is its ability to withstand a large load without danger of deforming to an extent which will cause it to become disassembled from the spring frame **16**. Thus, looking particularly at FIG. 5, it will be observed that even if the load carried by the intermediate portion **20** should become large enough to cause partial straightening of the hanger element **18** at the bend **36** therein, the retaining end portion **22**, by virtue of its angular extent from the intermediate portion **20**, would still positively retain the hanger element **18** in assembly with the spring frame **16**. When the hanger element **18** is formed of five gauge low carbon wire, actual tests have indicated that the four hanger elements **18** can withstand a load of at least 200 pounds repeatedly dropped onto the supported spring frame **16** without disassembly of the hanger elements **18**.

An additional feature of the hanger element **18** is its ability to permit the attaching end portion to be pivoted away from the spring frame **16** after assembly therewith so that the U-shaped segment **26** can, if necessary, be placed about a crib post projection on a crib structure having a greater-than-average width. Thus, again looking at FIG. 5, if the crib post **12** were located to the right of its usual illustrated position, the hanger element **18** could pivot outwardly from the spring frame **16** to permit the U-shaped segment **26** to reach the projection **14** on the crib post **12** while still maintaining substantially the same disposition of the hanger element **18** with respect to the spring frame **16**.

The present invention has been described above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined by the appended claims. For example, it is to be understood that while the hanger element of the present invention has been described above for use in a crib structure, this hanger element could be used in a similar manner to support spring frames in a variety of other support structures, as, for example, to support a spring frame in a car bed.

What is claimed is:

1. A spring frame hanger element for suspending a spring frame from a crib structure or the like, said spring frame having a thin plate-like portion with an aperture therein for receiving said hanger element, said hanger element comprising an elongated rod having an attaching end portion, an intermediate portion extending from said attaching end portion, and a retaining end portion extending from said intermediate portion oppositely of said attaching end portion, said attaching end portion being attachable to said crib structure for support of said hanger element therefrom, said intermediate portion being seatable in said spring frame aperture for suspension support of said spring frame thereat and being relatively short to dispose said end portions oppositely and closely adjacent said spring frame portion, said retaining end portion being insertable through said spring frame aperture for seating of said intermediate portion therein, said attaching end portion and said retaining end portion extending from said intermediate portion angularly with respect thereto for retention of said hanger element in assembly with said

spring frame when the spring frame is supported by the hanger element in the crib structure and for stabilization of said spring frame against swaying.

2. A hanger element as defined in claim 1 and further characterized in that said retaining end portion extends generally perpendicularly from said intermediate portion for disposition along said spring frame portion to prevent lateral inward shifting of said spring frame with respect to said hanger element.

3. A hanger element as defined in claim 2 and further characterized in that said attaching end portion extends in a direction generally opposite to the direction of extent of said retaining end portion.

4. A hanger element as defined in claim 2 and further characterized in that said attaching end portion includes a connecting segment extending from said intermediate portion in substantially perpendicular relation thereto for disposition along said spring frame portion to

prevent lateral outward shifting of said spring frame with respect to said hanger element.

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U.S. Cl. X.R.

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