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Nowell

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[54] **ADJUSTABLE BED-FRAME**

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[73] Assignee: **Harris-Hub Co., Inc.**, Harvey, Ill.

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Related U.S. Patent Documents

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[51] **Int. Cl.**[2] **A47C 19/04**
[52] **U.S. Cl.** **5/181**; 5/201
[58] **Field of Search** 5/82, 114, 119, 181–185, 5/200, 201, 207, 285, 354; 403/107, 108

[56] **References Cited**

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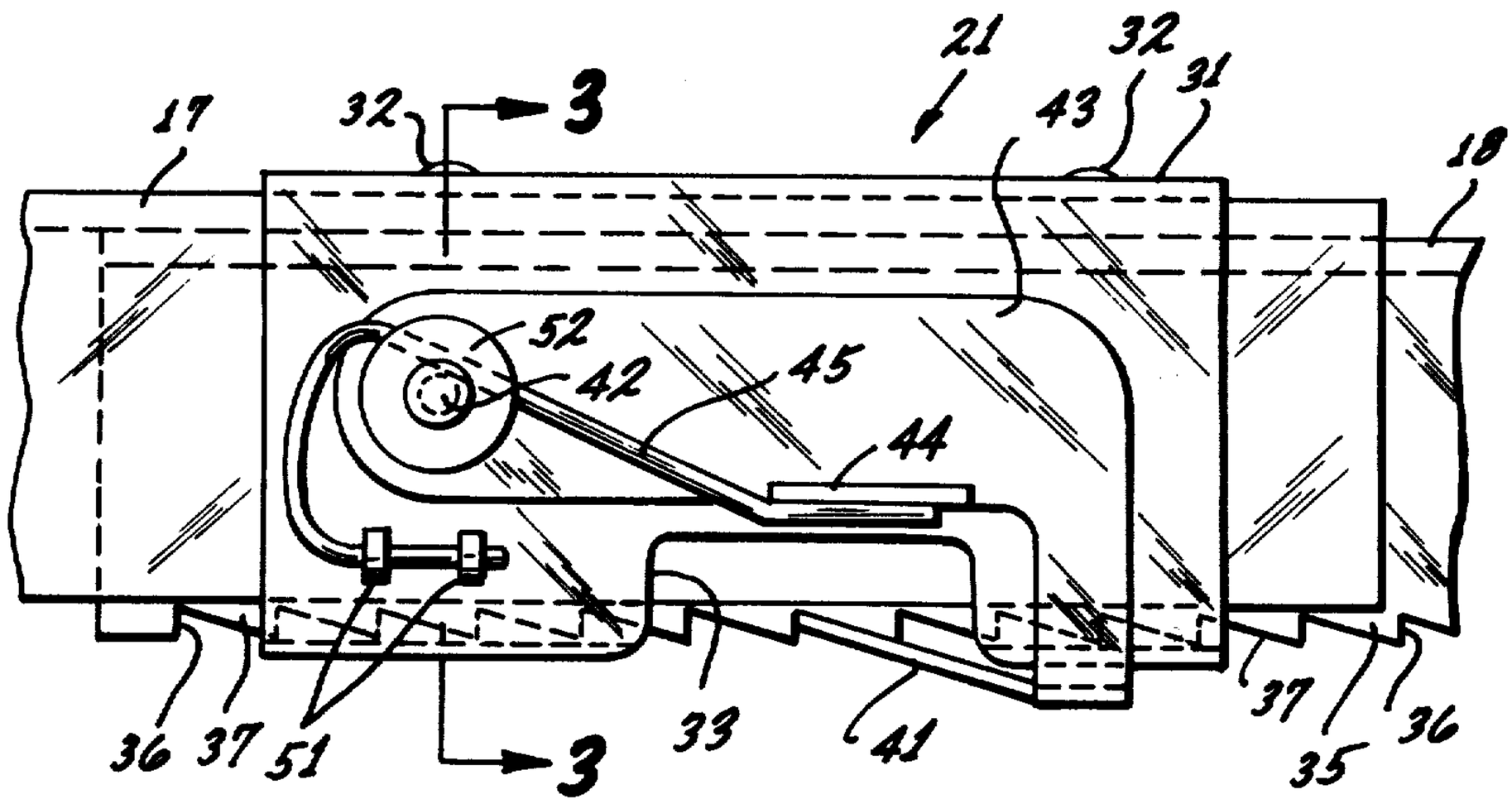
Attorney, Agent, or Firm—Dressler, Goldsmith, Clement, Gordon & Shore, Ltd.

[57] **ABSTRACT**

A pair of improved adjustable cross-frame members are incorporated with a pair of side frame members to form a bed frame readily adjustable to a wide variety of widths. Each improved cross-frame member has a first and second elongated elements, each of which is pivotably connected to respective side members in a standard manner. The first element is provided with a pawl mounted near its free end and the second element is provided with a pluralitv of teeth. The teeth are shaped to allow for easy movement when the side frame members are moved toward each other and to allow for resistance when the side frame members are being pulled apart from each other.

12 Claims, 7 Drawing Figures



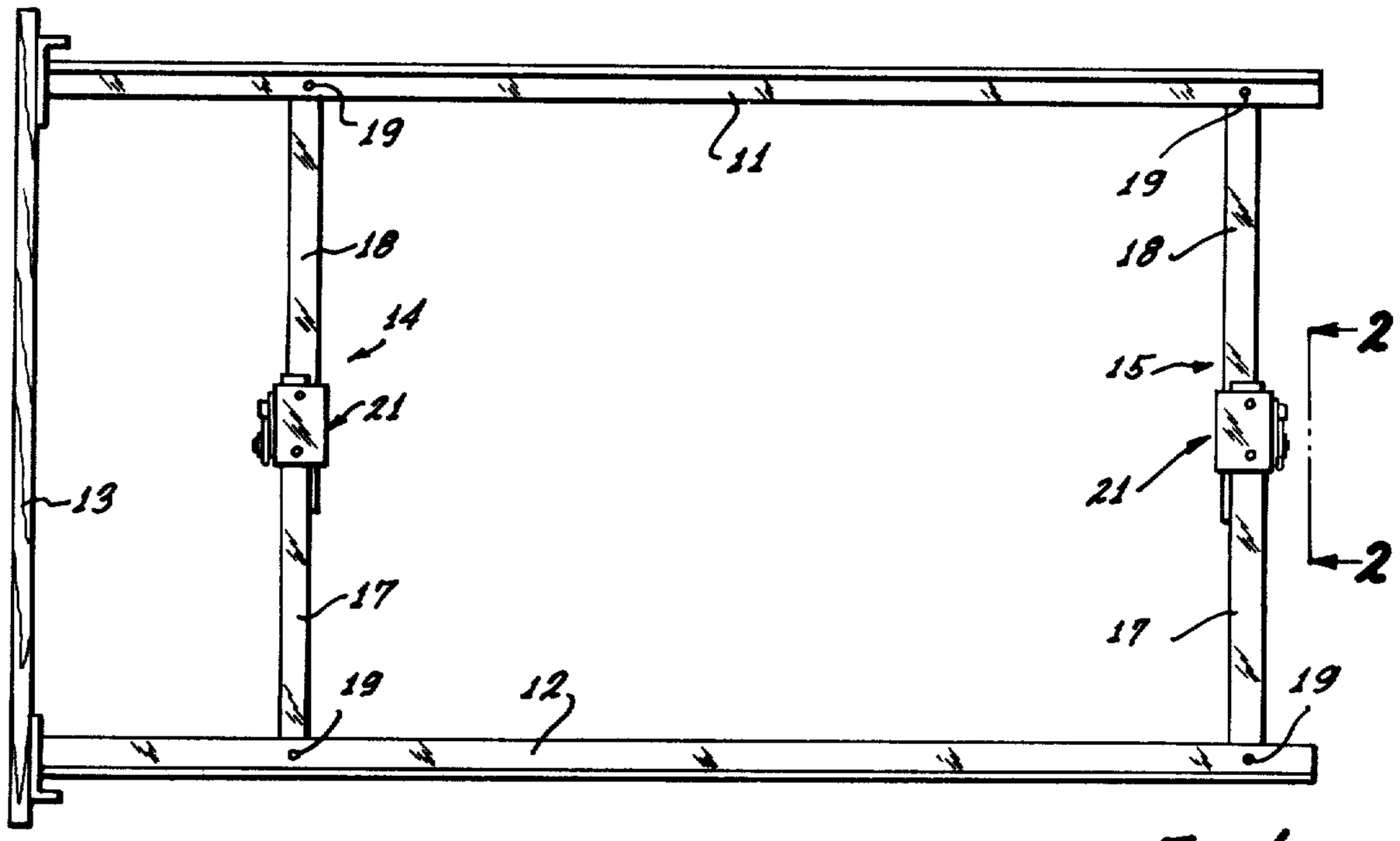


FIG. 1

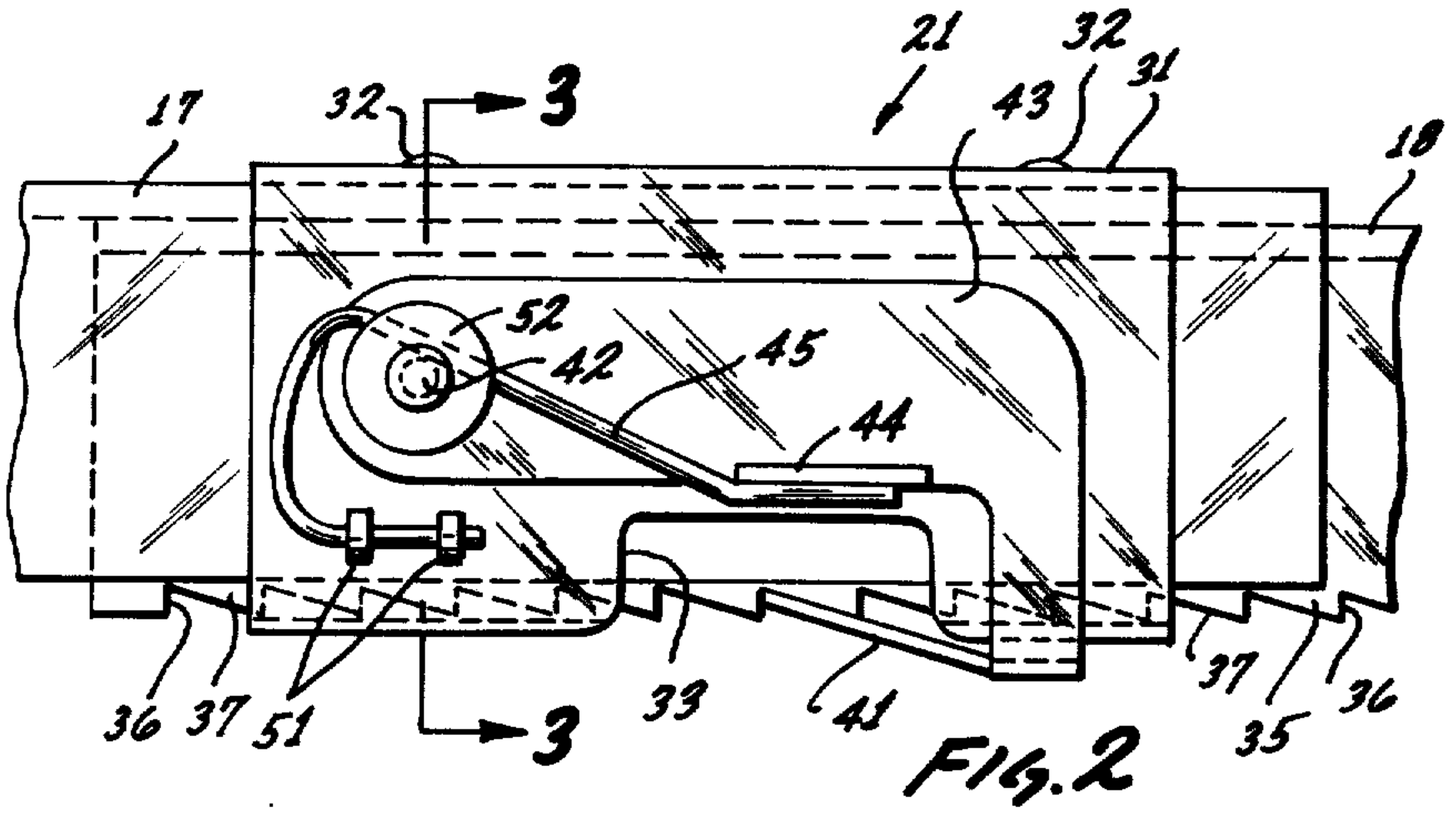


FIG. 2

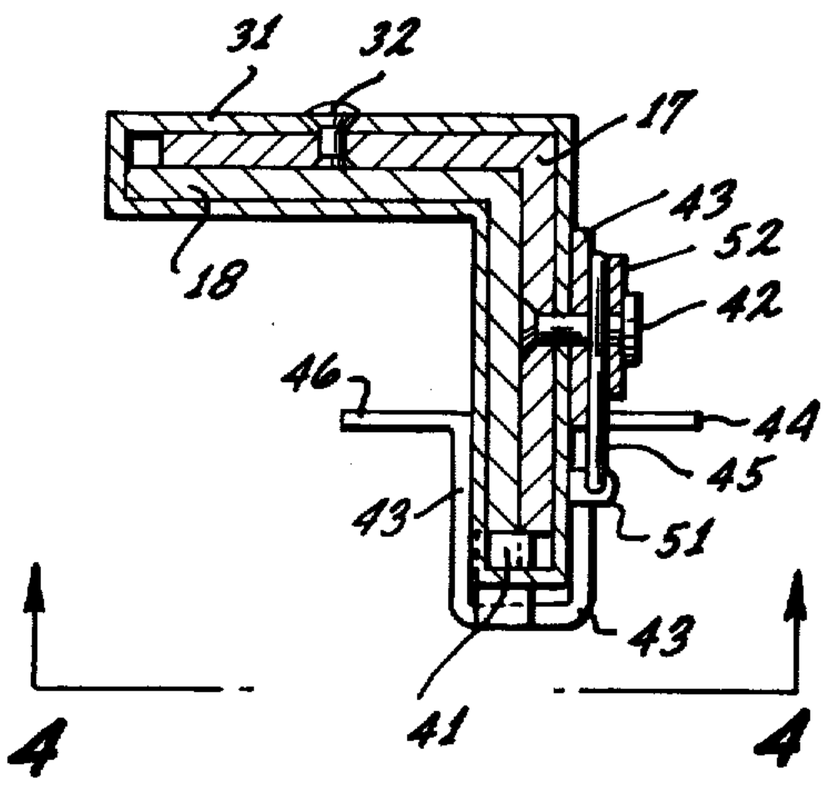


FIG. 3

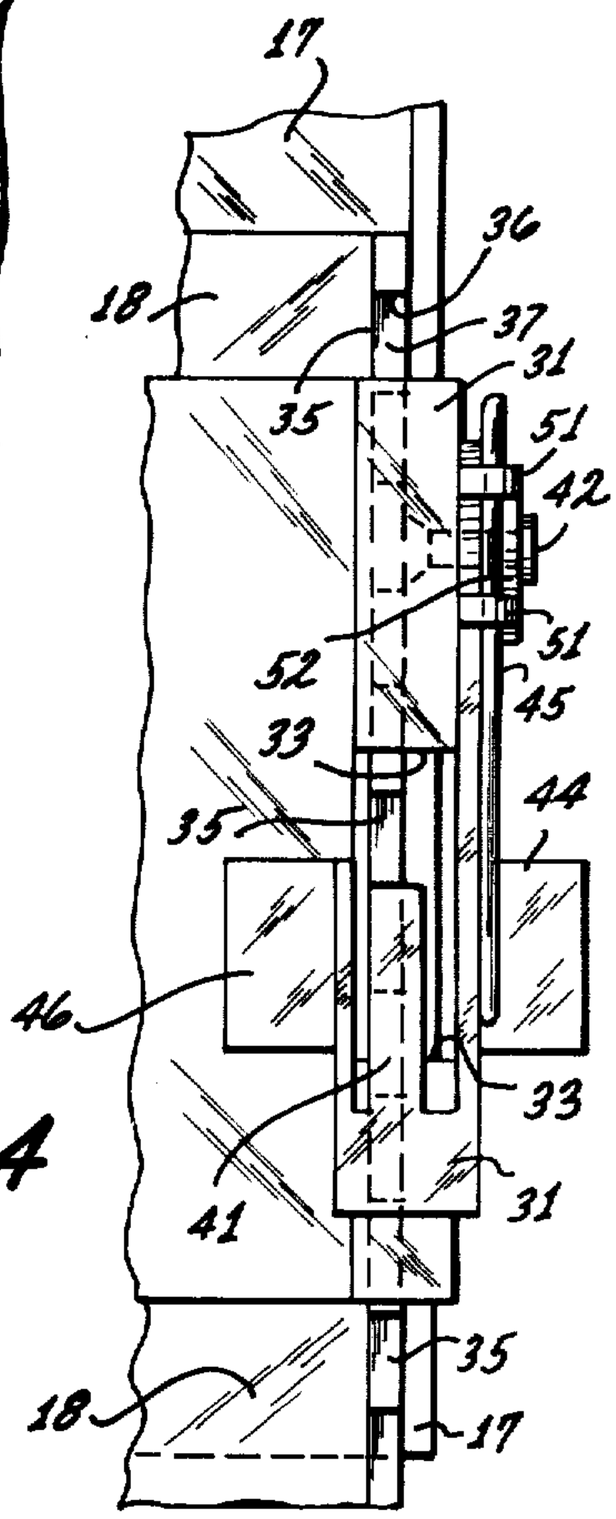
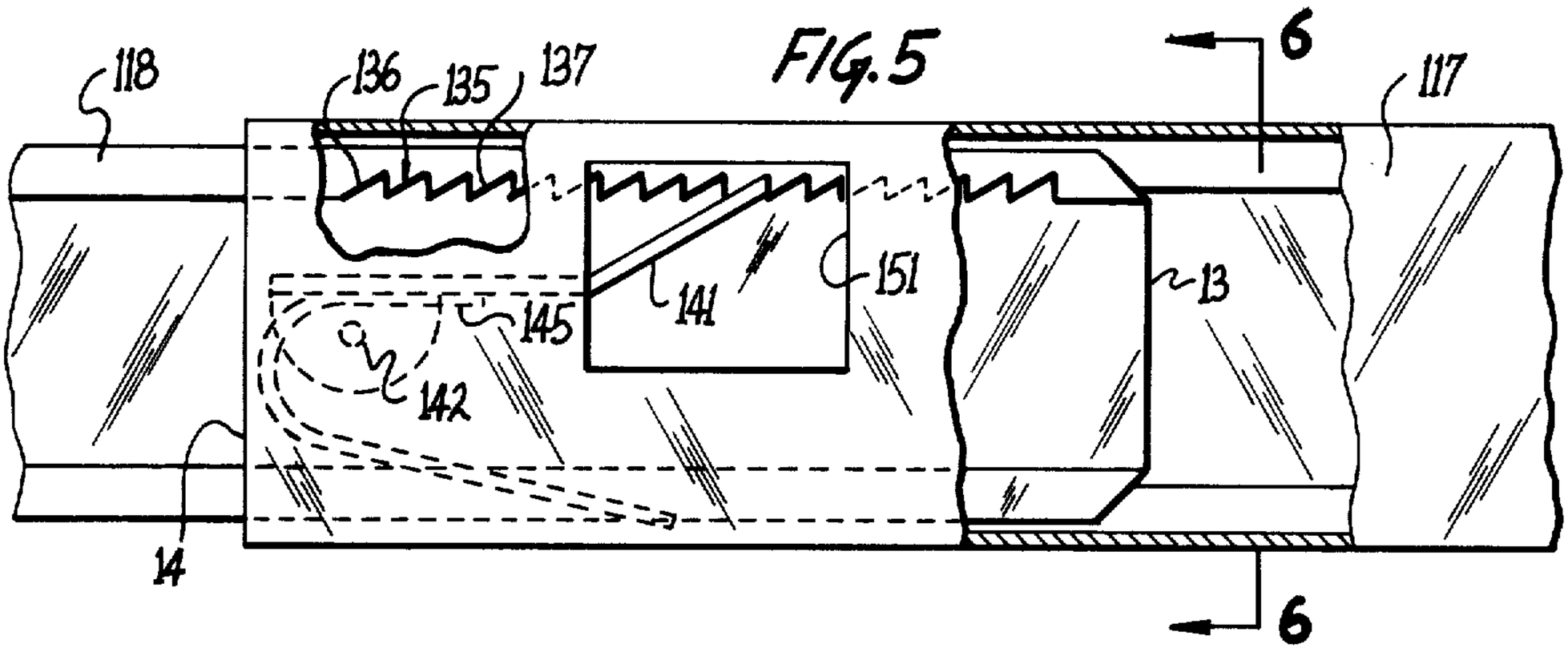


FIG. 4

FIG. 5



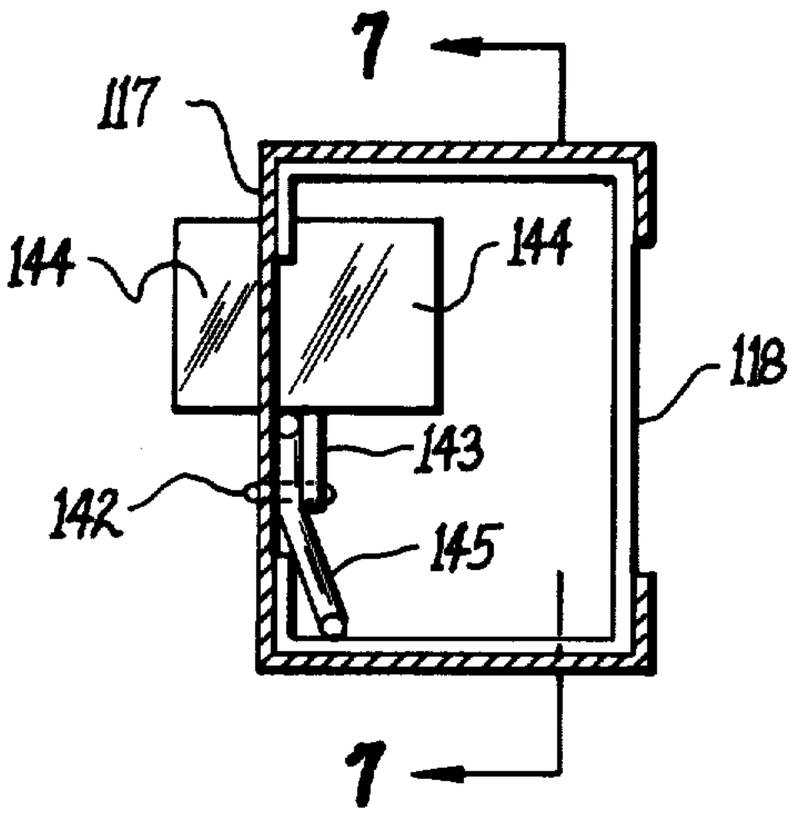


FIG. 6

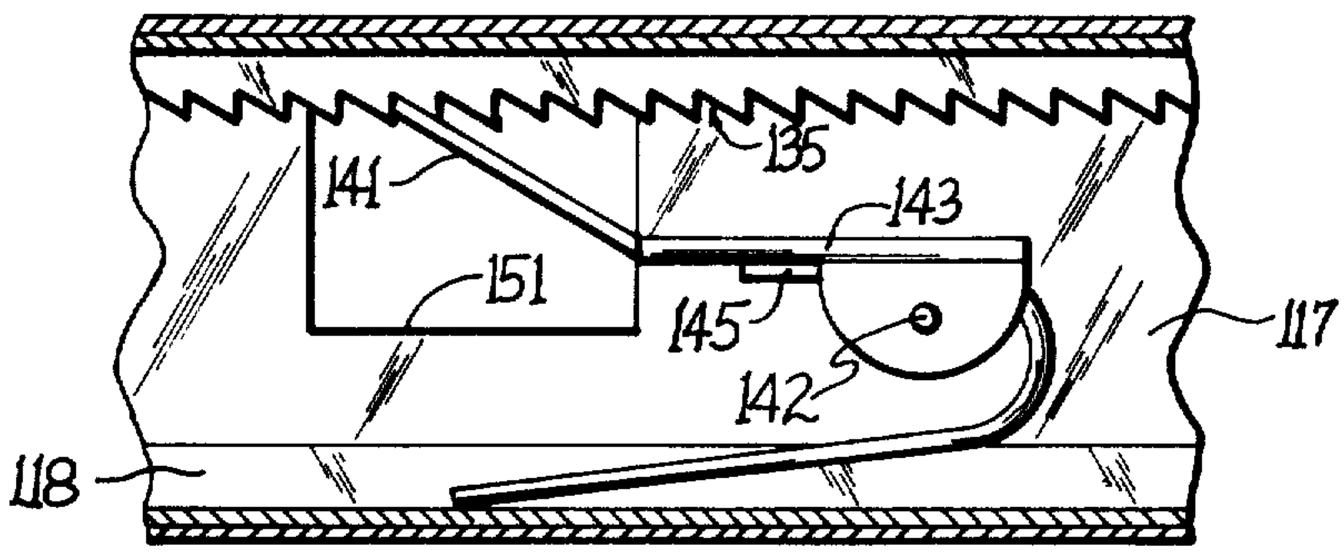


FIG. 7

ADJUSTABLE BED-FRAME

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

FIELD OF THE INVENTION

This invention relates to an adjustable bed frame and, more particularly, to a pair of improved adjustable cross or transverse members for the bed frame.

BACKGROUND OF THE INVENTION

In U.S. Pat. No. 3,744,068, for example, a well-known type of adjustable bed frame is disclosed. A problem has long existed in the art because frame members of this type have not provided positive interlocking engagement between sliding elements which make up the cross or transverse frame members without the need of a large number of fasteners. In addition, the assembling and disassembling of the elements is time consuming and complicated because if, by chance, the width has been assembled too narrow or too wide for the particular box spring and mattress, the box spring and mattress should be completely removed before any readjustment could be made.

OBJECTS OF THE INVENTION

An object of this invention is to provide a simple, economical means for fastening together elements of a transverse member of a bed frame while still allowing for adjustments.

Another object of this invention is to provide an improvement in the adjustment fastening means which allows easy movement, in the narrowing direction, of a bed frame and resistance in the widening direction.

These and other objects and features of advantage will be better understood after studying the following detailed description of the preferred embodiment of my invention, together with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a plan view of a typical bed frame on which my novel means is incorporated.

FIG. **2** is a partial elevation taken on line **2—2** of FIG. **1**, in the direction of the arrows, showing one embodiment of my invention.

FIG. **3** is a section taken on line **3—3** of FIG. **2**, in the direction of the arrows.

FIG. **4** is a partial bottom view taken on line **4—4** of FIG. **3**, in the direction of the arrows.

FIG. **5** is a partial elevation similar to FIG. **2**, showing another embodiment of my invention.

FIG. **6** is a section taken on line **6—6** of FIG. **5** in the direction of the arrows.

FIG. **7** is a section taken on line **7—7** in the direction of the arrows.

DETAILED DESCRIPTION OF THE DRAWING

Referring to FIG. **1**, in particular, a standard bed frame is shown in plan view and comprises a pair of spaced parallel side frame members **11** and **12** which are attached to a headboard **13**. The side frame members are spanned by a pair of cross or transverse frame members **14** and **15**. Normally, the side frame members **11** and **12** are each made of one section of angle iron with one leg disposed vertically so that a recessed support is provided for a box spring and mattress (not shown). The

cross members **14** and **15** are, in this embodiment, each respectively made of two angle iron elements **17** and **18** wherein elements **18** are pin-mounted to member **11** by suitable pins **19** and elements **17** are pin-mounted to member **12**, also by suitable pins **19**.

As shown in the drawing, elements **17** and **18** overlap and are held together by some fastening means. However, I have shown elements **17** and **18** held together by my novel means **21** which is schematically shown in FIG. **1**, and shown in detail in FIGS. **2**, **3**, and **4**.

Referring to FIGS. **2**, **3**, and **4**, I will describe an embodiment of my novel fastening means. The angle shape of elements **17** and **18** are more clearly shown in FIG. **3**, wherein element **17** is disposed outside of element **18**. Near the end of element **17** is mounted a sleeve **31** which has an L-shaped cross-sectional shape, as shown in FIG. **3**, to match the shape of the angle members **17** and **18**. Sleeve **31** is conveniently mounted to element **17** by, for example, a rivet **32**. Elements **17** and **18** both extend through the sleeve **31**. Sleeve **31** is provided with a cutout **33**, as shown in FIG. **2** at its lower side or portion, thereby, exposing the lower ends of the vertical legs on both elements **17** and **18**. As shown more clearly in FIG. **2**, element **18** is provided with a series of teeth **35**, each formed by a vertical face **36** and a sloping face **37**, for reasons that will become apparent hereinafter. Engaging the teeth **35** is a pawl **41** pivotably mounted to sleeve **31** by a pin **42**, and an arm **43** to which the pawl **41** is attached. A tab **44** is also attached to arm **43**, as shown, to provide a place for a person to operate the pawl **41**. A wire spring **45**, which is attached to sleeve **31** by eyelets **51**, urges the pawl **41** against the teeth **35**, since the other end of the spring **45** is disposed under the tab **44**. A washer **52** holds the spring **45** in place. Another tab **46** could be placed opposite tab **44** to provide another place to operate the pawl **41**.

My novel means operates in the following manner: The bedframe is sold and stored in a suitable container with elements **17** and **18** separated, and each respectively folded against the side members to which each element is attached. One then rotates each element until they are disposed substantially perpendicular to the respective side member. Each element **18** is inserted into a respective sleeve **31** and, since the shape of the teeth **35** are as they are shown, element **18** freely moves through the sleeve, causing a ratchet action between the pawl **41** and the teeth **35**. Since the pawl is being urged against the teeth **35**, reverse motion of element **18** is not possible unless one grasps tab **44** or tab **46** and pivots the arm **43** downward, as viewed in FIG. **2**. The teeth **35** are now free of the pawl and element **18** could be withdrawn from sleeve **31**.

One can now see one big advantage in using my novel means. This is, after each element **18** is initially inserted into a respective sleeve **31**, one does not need to measure the width of the box spring (not shown) and then bring the space in between the vertical legs of respective side members **11** and **12** to that distance. All one needs to do is place the box spring on top of the bed frame and push the side members **11** and **12** together until the vertical legs thereon close in on the box spring. The spacing is automatically locked and one can readily see any movement of the bed frame after assembly would not cause the spacings to open.

Referring to FIGS. **5**, **6**, and **7**, I will describe another embodiment of my novel fastening means. In some ways, this embodiment would be preferred over the

embodiment shown in FIGS. **2**, **3**, and **4**. In this embodiment, the crossmembers **14** and **15** are each respectively made of two channel iron elements **117** and **118** disposed back-to-back as shown with element **118** within element **117**, forming a tubular form. Both elements **118** are pin-mounted to member **11** by the pins **19** and both elements **117** and pin-mounted to member **12** also by the pins **19**.

In this embodiment, although elements **117** and **118** overlap, they do not require an elaborate means **21** as described in the above described embodiment. As shown in FIG. **5**, element **118** is provided with a series of teeth **135** each formed by a sloping face **136** and a vertical face **137**. Engaging the teeth **135** is a pawl **141** pivotably mounted to the element **117** by a pin **142** and arm **143** to which the pawl **141** is attached. A tab **144** extends from pawl **141**, as shown in FIG. **6**, to provide a place for a person to operate the pawl **141**. The tab **144** extends through an opening **151** formed in channel **117**. The operation of this embodiment is substantially the same as the first described embodiment.

Having described two embodiments of my invention, one skilled in the art, after reading the above description, could devise other embodiments without departing from the scope and spirit of my invention. Therefore my invention is not to be considered as limited to the disclosed embodiment, but includes all embodiments falling within the scope of the appended claims.

I claim:

1. In an adjustable bed frame adapted to support a box spring and mattress,

a pair of spaced parallel [horizontal] *horizontally* disposed side frame members;

at least one horizontally disposed transverse frame member comprising two elongated elements;

one of said elements mounted by one of its ends to one of said side frame member and the other of said elements mounted by one of its ends to the other of said side frame members;

said other element having a series of teeth disposed substantially along its length;

a spring-loaded pawl mounted on said one element [near its free end];

said one element and said other element being disposed in slidable relationship to each other so that said pawl engages said teeth one at a time, *said teeth facing in a direction such that said pawl is free to ride over said teeth when said side frame members are moved inwardly toward one another, engagement between said pawl and one of said teeth preventing said side frame members from moving outwardly relative to one another.*

2. In the frame of claim **1**:

said teeth are shaped so that said members are locked in one direction and are free to move in the other direction.

3. In the frame of claim **1**:

said elements each has a right angle shaped cross-section;

said sleeve has a right angle shaped opening;

said sleeve is mounted to said one element so that both legs of said one element are adjacent to the interior of said sleeve;

said other element has said series of teeth formed on the lower edge of the respective leg forming the angle shape;

an arm is pivotably mounted on the side of said sleeve so that said arm pivots about an horizontal axis and extends substantially horizontal along said sleeve.

4. In the frame of claim **3**:

said sleeve has an opening formed in its lower portion to expose said teeth;

said pawl extends into said opening to engage said teeth.

5. In the frame of claim **4**, said teeth are shaped so that said elements move freely in one direction and are locked from moving in the other direction.

6. In the frame of claim **1**:

said elements each has a channel shaped cross-section wherein one element is of a size to slip into the other element of said same transverse frame member;

said channel elements of said same transverse frame member are disposed back-to-back to form a tubular enclosure;

said inner channel elements has a series of teeth formed thereon; and

a pawl pin-connected on said outer channel element and disposed to engage said teeth.

7. In the frame of claim **6**:

said outer channel member has an opening formed near said pawl;

a tab formed on said pawl and disposed to extend through said opening.

8. In the frame of claim **7**, said teeth are shaped so that said elements move freely in one direction and are locked from moving in the other direction.

9. In the frame of claim 1, said pawl being provided near the free end of said one element.

10. In the frame of claim 1, wherein said teeth are provided along a short segment of the length of said other element.

11. In the frame of claim 1, wherein said other element includes a wall defining an opening, and said teeth are provided along the edge of said wall and project into said opening.

12. In the frame of claim 1, wherein each of said elements has a generally C-shaped cross-sectional shape, and said wall is a flange on said other element and forming part of said C.

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