Nov. 14, 1961 S. R. PAINE ET AL 3,008,176

HINGES

Filed April 22, 1959

FIG-1

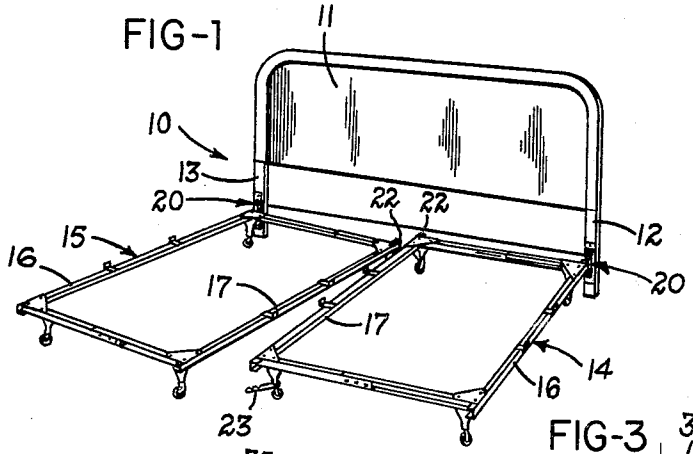


FIG-2

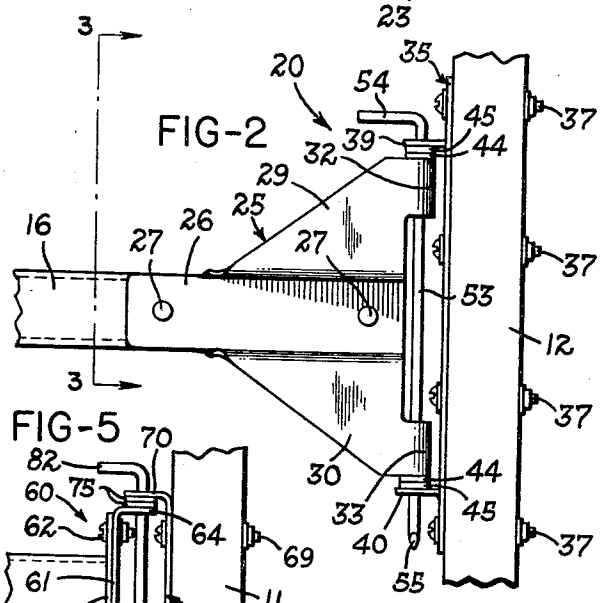


FIG-3

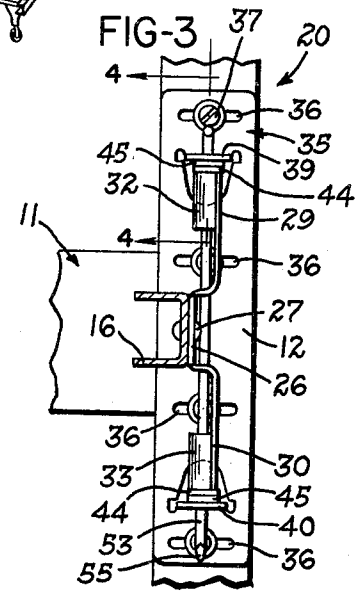


FIG-5

FIG-6

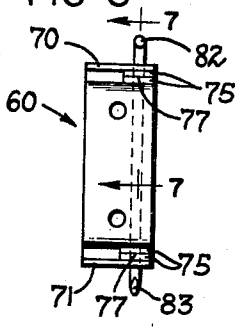


FIG-4

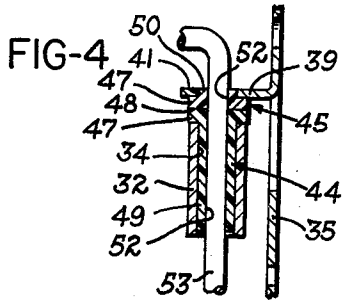
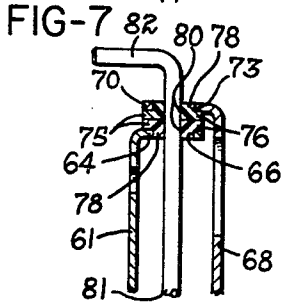


FIG-7



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HINGES

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Filed Apr. 22, 1959, Ser. No. 808,174
5 Claims. (Cl. 16—136)

This invention relates to hinges and more particularly to improved swing hinges for pivotally mounting bed frames to bed headboards.

The swinging type of Hollywood bed, where one or more caster mounted bed frames are pivotally mounted on hinges to a headboard, employs what are commonly called swing hinges in the trade. This provides for a variety of frame and headboard combinations and simplifies the burden of making side-by-side twin bed frames on a single headboard. The swing hinges of this invention eliminate all metal-to-metal contact by the employment of nylon bushing inserts through which a hinge pin may be assembled. This eliminates noise, and reduces friction so that no lubrication is required at any time. Also, the hinges are easy to assemble and disassemble, and provide strength and long wearing qualities.

It is therefore an object of this invention to provide a swing hinge characterized by the elimination of all metal-to-metal contact of moving components, long life, and simplicity of assembly and disassembly.

A further object of this invention is to provide a swing hinge as outlined above wherein a plurality of nylon bushings are utilized for extension through spaced apart hinge tabs with pairs of bushings having bearing surfaces in abutment with each other.

A still further object of this invention is to provide a swing hinge as outlined above having nylon bushings for the separation of the hinge pin from the hinge plates and for the separation of the hinge plates from contact with each other.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings, and the appended claims.

In the drawings:

FIG. 1 is a perspective view of a pair of folding bed frames attached to a headboard by the swing hinges of this invention;

FIG. 2 is an elevational view of one of the hinges as attaching the side rail of a foldable bed frame to a headboard;

FIG. 3 is an end view of the hinge of FIG. 2 looking generally along line 3—3 of FIG. 2;

FIG. 4 is a partial section through the hinge of FIG. 2 showing one of the tab and bushing assemblies taken generally along line 4—4 of FIG. 3;

FIG. 5 is an elevational view of a modified form of the hinge for the attachment of a headboard bracket on a side rail to be a headboard;

FIG. 6 is an end view of the hinge of FIG. 5; and

FIG. 7 is a partial section through the hinge of FIG. 5 showing one of the tab and bushing assemblies taken generally along line 7—7 of FIG. 6.

Referring to the drawings, which illustrate preferred embodiments of the invention, a bed to which the hinge of this invention is applied is indicated generally at **10** as including a headboard **11** with right and left headboard legs **12** and **13**. A pair of substantially identical foldable bed frames **14** and **15** each include extended outer side rails **16** and inner side rails **17**. The bed frames **14** and **15** are mounted for pivotal movement on the headboard **11** by hinges indicated generally at **20** secured at the outer side rails **16** and at the legs **12** and **13**. The inner side rails **17** are preferably provided with rubber bumpers **22** for engagement against the headboard **11**. The rubber bumpers decrease the noise generally found when the metal inner side rails **17** come into contact with the headboard **11**, and also eliminate the hazard of marring the headboard or a wall behind the headboard. A latch **23** is included to extend between the frames **14** and **15** for securing the frames in a closed position.

Referring to the details of the hinge **20** as shown in FIGS. 2–4, a first hinge plate **25** is formed of a sheet metal stamping and includes a rearwardly extending tongue **26** adapted for fixture to the outside surface of the outer side rail **16** by rivets **27**. Integral supporting flanges **29** and **30** extend outwardly from either side of the tongue **26** and are each terminated in a pair of outwardly extending spaced apart hinge tabs **32** and **33**. The tabs **32** and **33** are rolled over to form axially aligned bushing openings **34**.

A second hinge plate **35** is also formed of a sheet metal stamping and includes slotted openings **36** for fixture to the front surface of one of the legs **12, 13** by means of mounting bolts **37**. Portions of the plate **35** are partially punched out and bent forward to form a second pair of outwardly extending spaced apart hinge tabs **39** and **40**. The tabs **39** and **40** are arranged for interfitting relation with adjacent tabs **32** and **33** on the first hinge plate **25** and include bushing openings **41** for axial alignment with the openings **34** in the tabs **32** and **33**.

Means for preventing metal-to-metal contact of the hinge plates **25** and **35** include a molded nylon hinge pin bushing **44** for each of the tabs **32, 33** and a similar bushing **45** for each of the tabs **39, 40**. As more clearly shown in FIG. 4, the bushings **44** and **45** each having an enlarged cylindrical shoulder **47** provided with an outer bearing surface **48** on the end thereof. The bushings **44** and **45** also include integral cylindrical shanks **49** and **50**. The shanks **49** of the bushings **44** are extended into the openings **34** in the tabs **32** and **33** and adhesively secured in place with the shoulders **47** in abutment with the tabs. Similarly, the shanks **50** of the bushings **45** are extended into the openings **41** in the tabs **39** and **40** and are adhesively secured with the shoulders **47** in abutment with the tabs **39** and **40** and with the outer bearing surfaces **48** of each of the adjacent bushings in abutting relation. It is therefore seen that the arrangement of the bushings provides for the separation of the adjacent tabs.

Each of the bushings **44** and **45** includes an axial hinge pin opening **52** extending through the bushing for the acceptance of a removable hinge pin **53**. The hinge pin **53** is provided with an upper hand grip in the form of a bent over portion **54**, and the lower extremity of the pin **53** is pointed at **55** to facilitate assembly through the openings **52** in the bushings **44** and **45**. When assembled, as shown in FIG. 4, the hinge pin **53** secures the first and second plates **25** and **35** on the bushings **44** and **45** in separated pivotal relation to each other. Also, since the plate **35** is symmetrical, it may be used on either of the legs **12** or **13**. The plate **25** may be used on either of the side rails **16** or **17** by turning it top for bottom, as necessary.

An accessory hinge for attachment to a headboard bracket **59** on a side rail is shown generally at **60** in FIGS. 5–7. The hinge **60** includes a first hinge plate **61** adapted for fixture to the bracket **59** by bolts **62**. The plate **61** includes a pair of outwardly extending spaced apart hinge tabs **64** and **65** within which are formed axially aligned bushing openings **66**.

The hinge **60** also includes a second hinge plate **68** adapted for fixture to one of the legs **12** or **13** of the headboard **11** by bolts **69**. The plate **68** includes a pair

of outwardly extending spaced apart hinge tabs **70** and **71** arranged for interfitting relation with the tabs **64** and **65** of the plate **61**. The tabs **70** and **71** form bushing openings **73** for axial alignment with the openings **66** in the plate **61**. The openings **66** and **73** are offset in relation to the bolts **62** and **69**, as shown in FIG. 6.

Means for preventing metal-to-metal contact of the hinge plates **61** and **68** include molded nylon hinge bushings **75** for each of the tabs **64**, **65** and **70**, **71**. The bushings **75** are similar in form to the bushings **45** of the hinge of FIGS. 2–4 and include an enlarged cylindrical shoulder **76** provided with an outer bearing surface **77** on the end thereof. An integral cylindrical shank **78** of the bushing **75** is extended into the openings in the tabs and adhesively secured with the shoulder **76** in abutment with the tabs. The bearing surfaces **77** of adjacent bushings **75** are in abutting relation providing for the separation of adjacent tabs **64**, **65** and **70**, **71**.

Each of the bushings **75** includes an axial hinge pin opening **80** extended through the bushing for the acceptance of a removable hinge pin **81**. The pin **81** is similar to the pin **53** and includes a bent over hand grip portion **82**. The lower extremity of the pin **81** is pointed at **83** to facilitate assembly through the openings **80** in the bushings **75**. When the hinge **60** is assembled, as shown in FIG. 7, the hinge pin **81** secures the first and second plates **61** and **68** on the bushings **75** in separated pivotal relation to each other.

It is therefore seen that the hinges of this invention provide a simple and sturdy construction which prevents metal-to-metal contact of relatively moving parts and which is easy to assemble and is universally adapted for use with headboards and metal bed frames.

While the forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise forms of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A hinge adapted for the pivotal mounting of a bed frame rail to a headboard comprising a first hinge plate adapted for fixture to said rail and having outwardly extending spaced apart tabs forming axially aligned bushing openings, a second hinge plate adapted for fixture to said headboard and having outwardly extending spaced apart tabs arranged for interfitting relation with adjacent tabs on said first plate and forming bushing openings for axial alignment with said openings in said first tabs when in said interfitting relation, a nylon hinge pin bushing for each of said tabs, each of said bushings having an enlarged shoulder provided with an outer bearing surface on the end thereof and an integral shank extending into an opening with said shoulder in abutment with a tab and with the bearing surfaces of adjacent bushings in abutment with each other providing for the separation of adjacent tabs, and a removable hinge pin extended through said bushings securing said first and second hinge plates in separable pivotal relation.

2. A hinge adapted for the pivotal mounting of a bed frame rail to a headboard comprising a first hinge plate adapted for fixture to said rail and having outwardly extending spaced apart rolled over tabs forming axially aligned tubular bushing openings, a second hinge plate adapted for fixture to said headboard and having outwardly extending spaced apart tabs arranged for interfitting relation with adjacent tabs on said first plate and forming bushing openings for axial alignment with said openings in said first tabs when in said interfitting relation, a nylon hinge pin bushing for each of said tabs, each of said bushings having an enlarged cylindrical shoulder provided with an outer bearing surface on the end thereof and an integral cylindrical shank extending into an opening with said shoulder in abutment with a tab and with the bearing surfaces of adjacent bushings in abutment with each other providing for the separation of adjacent tabs, and a removable hinge pin extended through said bushings securing said first and second hinge plates in separable pivotal relation.

3. A hinge adapted for the pivotal mounting of a bed frame rail to a headboard comprising a first hinge plate adapted for fixture to said rail and having outwardly extending spaced apart tabs forming axially aligned bushing openings, a second hinge plate adapted for fixture to said headboard and having outwardly extending spaced apart tabs arranged for interfitting relation with adjacent tabs on said first plate and forming bushing openings for axial alignment with said openings in said first tabs when in said interfitting relation, a molded nylon hinge pin bushing for each of said tabs, each of said bushings having an enlarged shoulder provided with an outer bearing surface on the end thereof and an integral shank extending into and adhesively secured to an opening with said shoulder in abutment with a tab and with the bearing surfaces of adjacent bushings in abutment with each other providing for the separation of adjacent tabs, and a removable hinge pin extended through said bushings securing said first and second hinge plates in separable pivotal relation.

4. A hinge adapted for the pivotal mounting of a bed frame rail to a headboard comprising a first hinge plate having a tongue adapted for fixture to said rail, a pair of integral supporting flanges extending upwardly from said tongue and forming outwardly extending spaced apart rolled over tabs forming axially aligned tubular bushing openings, a second hinge plate adapted for fixture to said headboard and having outwardly extending spaced apart tabs arranged for interfitting relation with adjacent tabs on said first plate and forming bushing openings for axial alignment with said first tabs when in said interfitting relation, a molded nylon hinge pin bushing for each of said tabs, each of said bushings having an enlarged cylindrical shoulder provided with an outer bearing surface on the end thereof and an integral cylindrical shank extending into an opening with said shoulder in abutment with a tab and with the bearing surfaces of adjacent bushings in abutment with each other providing for the separation of adjacent tabs, and a removable hinge pin extended through said bushings securing said first and second hinge plates in separable pivotal relation.

5. A hinge adapted for the pivotal mounting of a bed frame rail to a headboard comprising a first hinge plate having a tongue adapted for fixture to said rail, a pair of integral supporting flanges extending outwardly from said tongue and forming outwardly extending spaced apart rolled over tabs forming axially aligned tubular bushing openings, a second hinge plate adapted for fixture to said headboard and having spaced apart portions which are punched out and bent forward to form tabs arranged for interfitting relation with adjacent tabs on said first plate and forming bushing openings for axial alignment with said tubular openings in said first tabs when in said interfitting relation, a molded nylon hinge pin bushing for each of said tabs, each of said bushings having an enlarged cylindrical shoulder provided with an outer bearing surface on the end thereof and an integral cylindrical shank extending into an opening with said shoulder in abutment with a tab and with the bearing surfaces of adjacent bushings in abutment with each other providing for the separation of adjacent tabs, and a removable hinge pin extended through said bushings securing said first hinge plates in separable pivotal relation.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,008,176 November 14, 1961

Stuart R. Paine et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 57, for "to be a headboard" read -- to a headboard --; column 4, line 67, for "said first hinge" read -- said first and second hinge --.

Signed and sealed this 10th day of April 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents