Oct. 24, 1967 G. S. FASANELLA 3,348,244

MODULAR FURNITURE CONSTRUCTION

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Fig. 2.

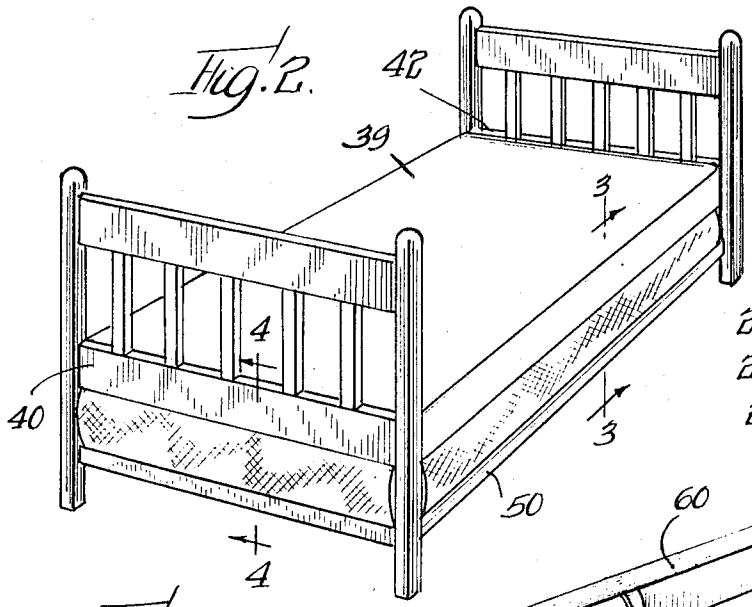


Fig. 3.

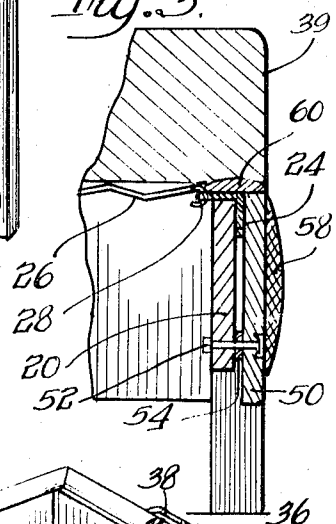


Fig. 1.

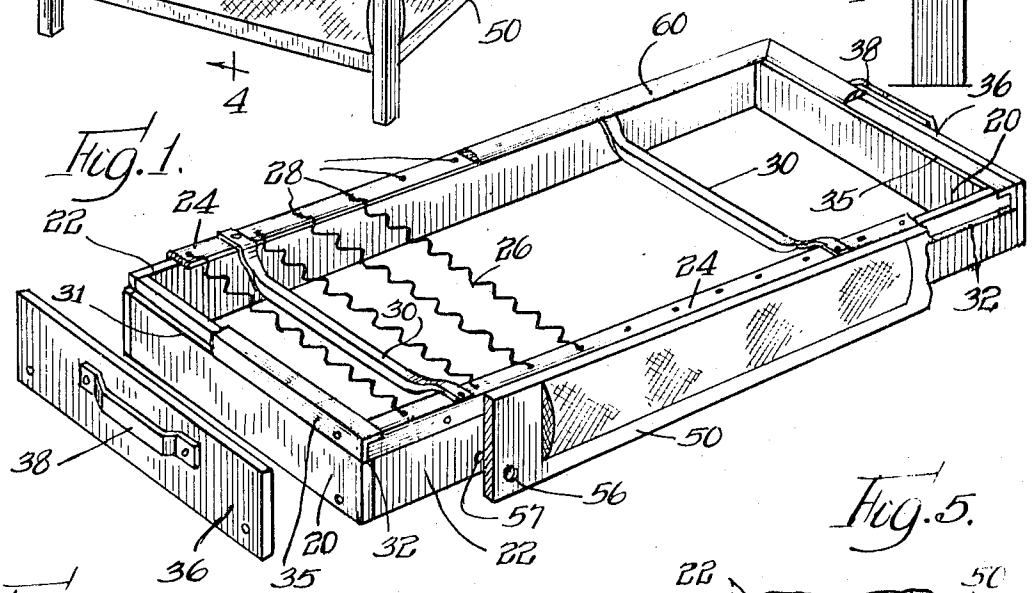


Fig. 4.

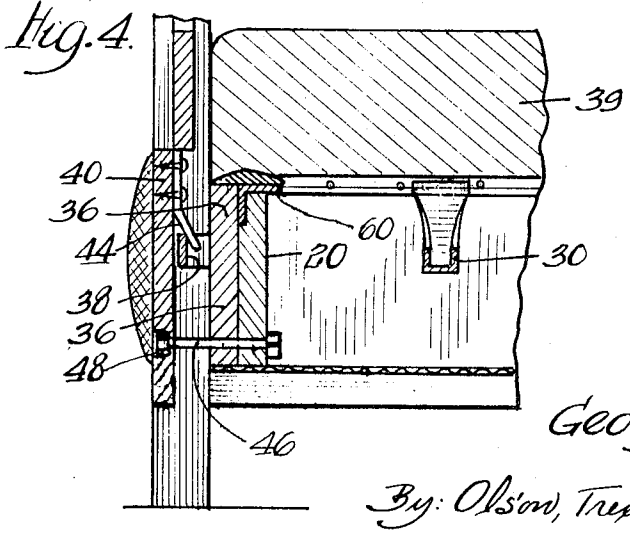
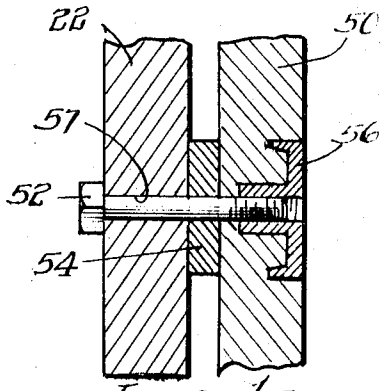


Fig. 5.



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Fig. 6.

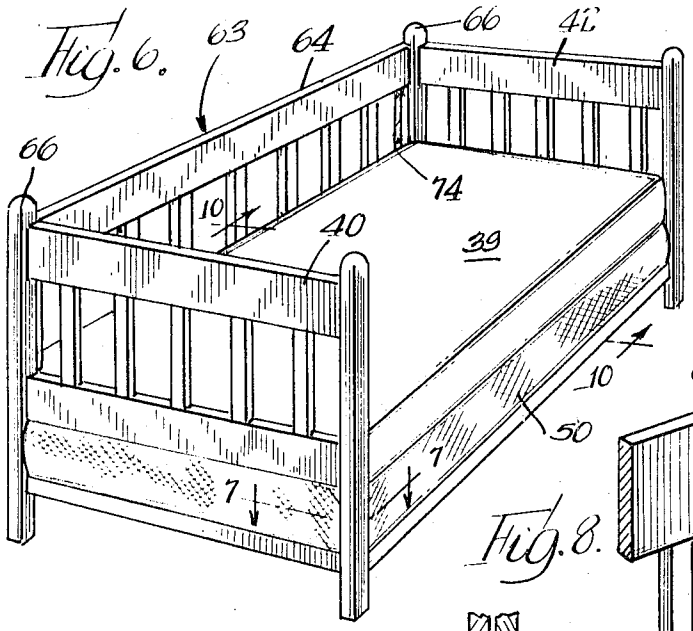
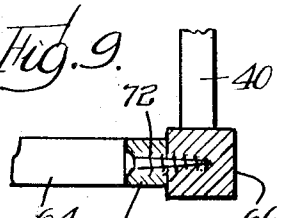


Fig. 9.



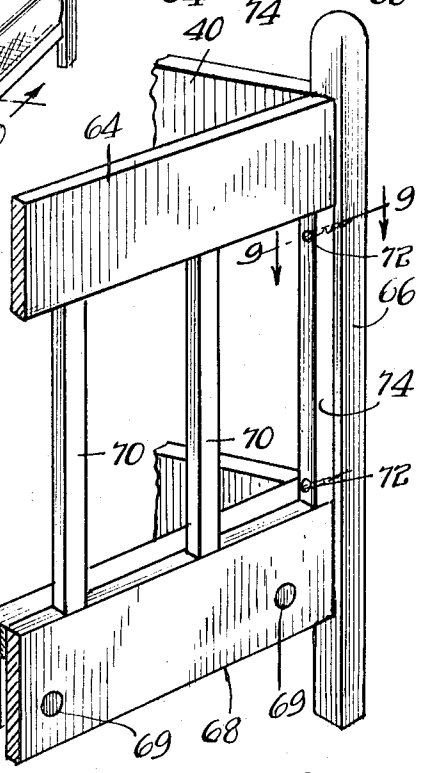
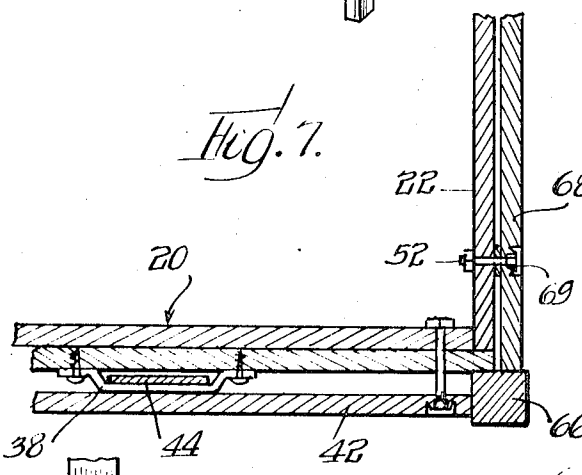


Fig. 8.

Fig. 7.



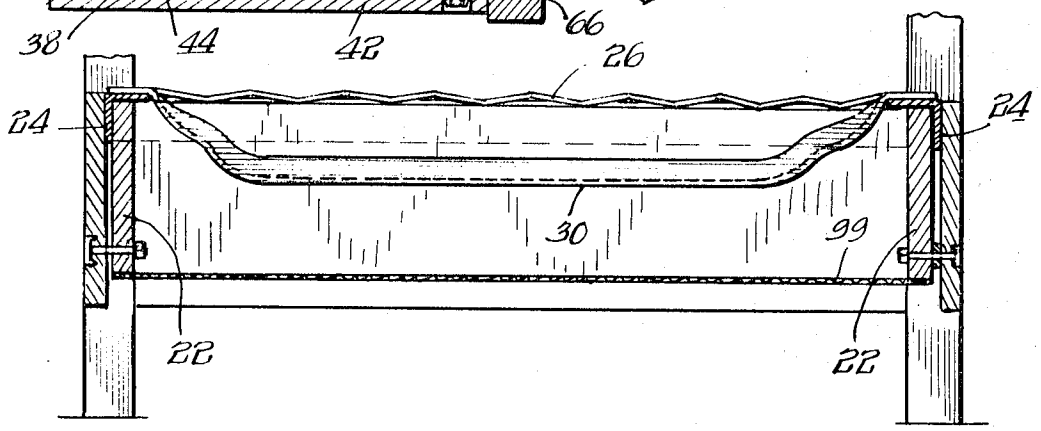


Fig. 10.

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Fig. 11

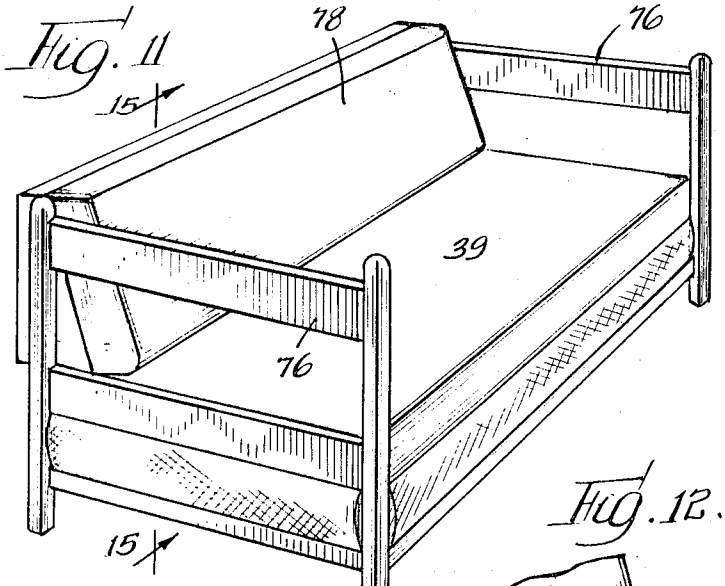


Fig. 12.

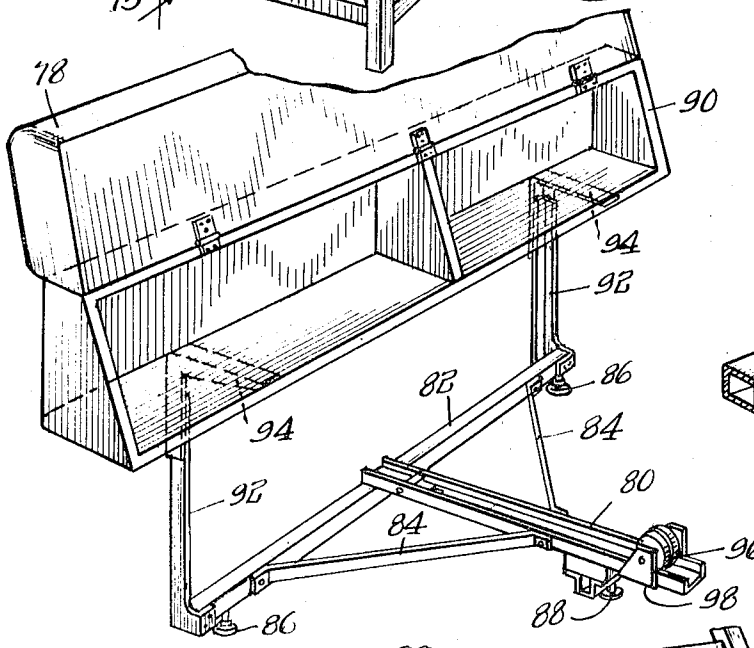
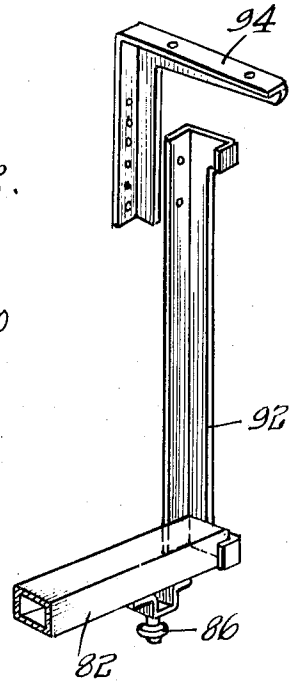


Fig. 14.



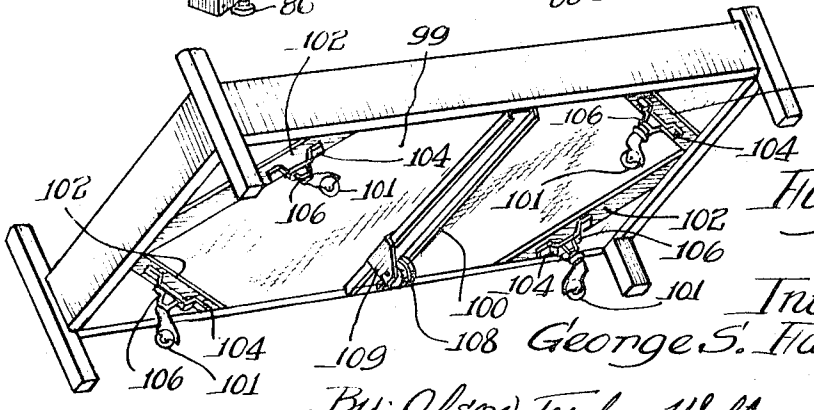


Fig. 13.

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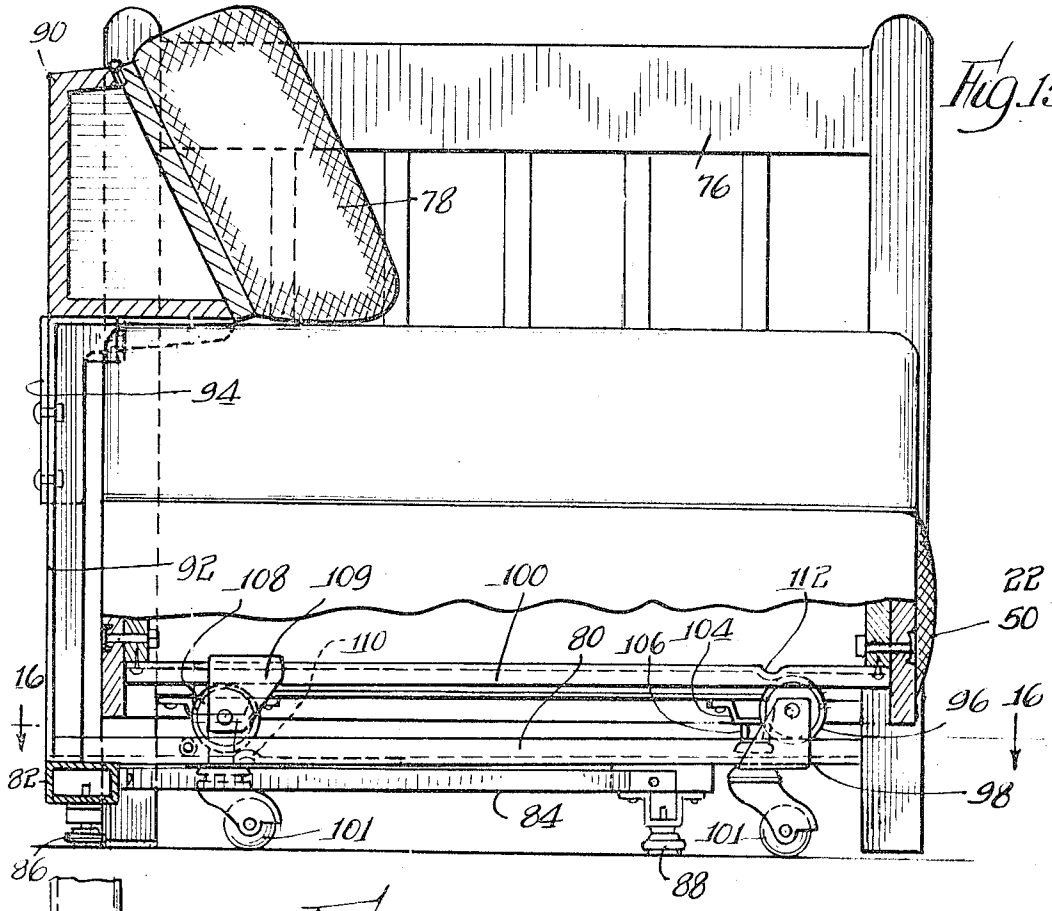


Fig. 15.

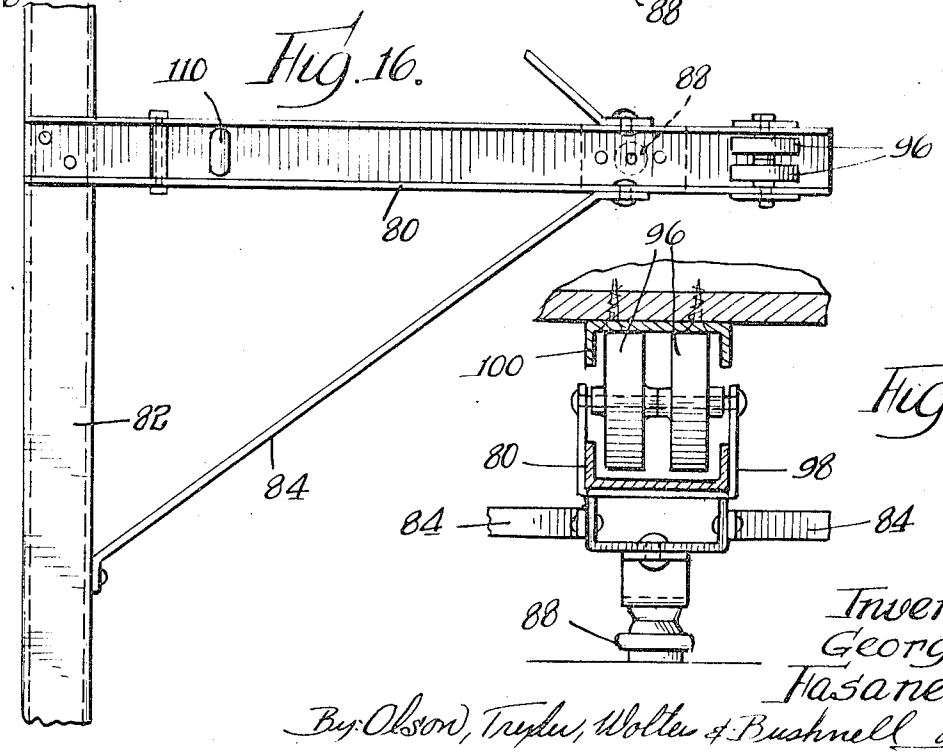


Fig. 16.

Fig. 17.

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3,348,244

MODULAR FURNITURE CONSTRUCTION

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3 Claims. (Cl. 5—17)

ABSTRACT OF THE DISCLOSURE

A furniture module in which a headboard and a footboard are firmly secured in upright position by cooperating cam means and progressively engageable fasteners.

This invention relates to furniture construction and more particularly to a modular bed and convertible couch construction.

The present practice, in constructing furniture such as beds, sofas, couches and the like, is to design each piece of furniture as a separate and distinct unit. The various structural components, other than casters, nails, etc., are not interchangeable between the separate pieces of furniture. Each piece of furniture must be constructed from its own separate source of structural elements. The various elements of the different pieces of furniture each have their own distinct physical characteristics. The manufacturer must, therefore, maintain a relatively large inventory of structural materials which are usable only in the particular piece of furniture for which they are designed.

A principal object of the present invention is to provide a basic furniture module which can be adapted for use in several distinct furniture pieces.

Another object of the present invention is to provide a basic module which can be adapted for use as a bed, sofa, or convertible couch.

Another object of the present invention is to provide supplemental elements which can be easily attached to a basic module to form various articles of furniture.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, wherein:

FIGURE 1 is a sectional perspective view of the basic module;

FIG. 2 is a perspective view of a bed utilizing the module of FIG. 1;

FIG. 3 is a sectional view along the line 3—3 of FIG. 2;

FIG. 4 is a sectional view along the line 4—4 of FIG. 2;

FIG. 5 is a detailed sectional view of one of the side connections;

FIG. 6 is a perspective view of a sofa utilizing the basic module;

FIG. 7 is a sectional view taken along line 7—7 in FIG. 6;

FIG. 8 is a fragmentary perspective view of a corner portion of the sofa;

FIG. 9 is a section taken along line 9—9 in FIG. 8;

FIG. 10 is a sectional view taken along line 10—10 in FIG. 6;

FIG. 11 is a perspective view of a convertible couch which utilizes the basic module;

FIG. 12 is a fragmentary perspective view of the bolster of the convertible couch of FIG. 11;

FIG. 13 is a detail perspective view of the underside of the furniture module used in the convertible couch;

FIG. 14 is a fragmentary perspective view of the bolster support frame;

FIG. 15 is a sectional view of the couch of FIG. 11;

FIG. 16 is a fragmentary view of the bolster support track; and

FIG. 17 is a detailed sectional view of the roller mounting.

Referring now in greater detail to the drawings, there is shown in FIG. 1 the basic furniture module. As is seen in FIG. 1, the basic module comprises a box having two end boards 20 and two side rails 22. There are a pair of side rail angles 24 attached to the upper surface of the side rails 22, which angles 24 have a series of equally spaced holes through the upper flanges thereof. Springs 26 are stretched between the two side rail angles 24 and are connected to the holes 28 in the angles (see FIG. 3). The side rail angles 24 are braced against the spring force by the cross braces 30 which are attached to the side rail angles 24, as shown in FIGS. 1 and 10.

Additional angle irons 35 are secured to the end boards and extend between and overlap the ends of the side rails 22. The end boards are recessed at 31 and the side rails 22 are recessed at 32 to receive the end board angles 35 so that the surfaces of the angles are flush with the surfaces of the end boards.

Attached to each of the end boards 20 are end plates 36. Each of the end plates 36 has a lock strap 38 attached thereto. It should be noted that the side rail angles 24 and end board angles 35 are connected together to form a solid structural frame for the side rails 22 and end board 20.

The basic module of FIG. 1 is a separate and complete unit in itself. The module is constructed so that it may be readily utilized in several pieces of furniture, as will be explained in greater detail later. Since the module can be utilized in a variety of furniture pieces, the inventory requirements of a manufacturer who uses the basic module construction, of my invention, need only have an inventory of basic modules and the various elements to be attached to the module itself. A manufacturer who utilizes the modular method of furniture construction also obtains a great deal of flexibility, in that he can readily assemble a desired one of a plurality of furniture pieces by merely attaching supplemental furniture elements to the basic module. Thus, fluctuations in the demands for the different pieces of furniture may be readily met, while maintaining a minimum inventory.

In FIG. 2, there is shown a perspective view of a bed wherein the basic module of FIG. 1 is utilized and a mattress 39 is positioned on the basic module. There are attached to the basic module end members which may be designated as a headboard 40 and footboard 42 for a bed. The two end members are attached as shown in FIG. 4. There is a locking plate 44 having a downwardly and laterally inclined end or cam portion attached to the headboard and footboard. The locking plate 44 is located in a recess 46 of the headboard or footboard. This recess positions the locking plate 44 relative to the locking strap 38, so that the locking plate 44 will slide into the outwardly extending portion of the locking strap 38. The inclined end portions of the plate 44 provide a cam action which draws the end members 40 and 42 firmly against the ends of the unit or module. Once the locking plate has been positioned in the locking strap, a plurality of bolts 46 are utilized to hold the headboard or footboard of the bed in position against the end plate 36. The bolts 46 are screwed into T-nuts 48 which are recessed into the head and footboards at predetermined locations.

The bed of FIG. 2 also utilizes a pair of side boards 50 which are bolted to the siderails 2 of the bed by bolts 52, as is shown in FIGS. 3 and 5. Spacers 54 are utilized to hold the side boards 50 out from side rails 22 as is done by the side rail angle 24. T-nuts 56 are recessed into the side boards 50 at predetermined locations which are aligned with holes 57 in the side rails 22 adapted to re-

ceive the bolts **52**. The side boards **50** may, if desired, have padding similar to that shown at **58** in FIG. 3, which padding **58** covers the T-nuts **56** and provided the desired decorative effect. The top surface of the side boards **50** and the side rail angle **24** are covered by a cover plate **60** to protect the mattress **39** and bedding from the spring connections in the holes **28**. The lower portions of the side boards **50** extend below the side rail **22**.

From the foregoing description it will be apparent that the bed of FIG. 2 is constructed by attaching a head and footboard to the two ends of the module of FIG. 1, through the use of the locking straps **38** and locking plates **44**. The side boards are attached by the use of bolts **52**. The T-nuts in the side boards **50** are pre-positioned so as to line up with the holes **57** in side rails **22**.

The sofa of FIG. 6 also uses the basic module structure shown in FIG. 1. The same footboard and headboard are used as for the bed of FIG. 2. However, a different footboard and headboard could be used. The front side board **50** is also the same as is used for the bed of FIG. 2. The back unit **63** of the sofa is made up of a back member **64**, back board **68** and support posts **70** (see FIG. 8). The back unit **63** of the sofa is attached to the vertical posts **66** of the headboard **40** and footboard **42** in the manner described below.

The back board **68** replaces the back side board **50** which was utilized in the bed of FIG. 2. The back board **68** differs from the back side board **50** only in the support posts **70** which are attached to it. The back board **68** has T-nuts **69** recessed at the same locations as in the back side boards **50**. The back member **64**, support posts **70** and back board **68**, form an integral unit **63** which is attached to the basic module of FIG. 1. The back unit **63** is attached to the posts **66** by screws **72** through the end support posts **74**, as is shown in FIG. 9. From the foregoing description, it is apparent that the sofa of FIG. 6 may easily be constructed from the same basic elements as used for the bed of FIG. 2, with the addition of a back unit **63**. Since the T-nuts **69** of the back board **68** are in the same location as the T-nuts **56** of the side board **50**, the sofa of FIG. 6 may be constructed by bolting the back unit **63** to the basic module of the bed of FIG. 2.

The convertible couch shown in FIG. 11 uses the basic module of FIG. 1. The couch has two side members **76** which can, if desired, be the same members as utilized for the headboard and footboard of the bed of FIG. 2. The two side members **76** are attached to the basic module of FIG. 1 in the same manner as the headboard and footboard of the bed of FIG. 2. The convertible couch of FIG. 11 is assembled by adding a movable bolster **78** so that the couch may be selectively used for daytime purposes and converted to a bed similar to that of FIG. 2 for nighttime use. (See FIG. 15.) As best seen in FIG. 12, the bolster provides storage space for the bedding when not in use.

The bolster itself, as is shown in FIGS. 12, 14, 16 and 17, utilizes a stationary center track **80** to provide support means so that it may stand independently of the convertible couch of FIG. 11. The stationary track **80** is connected to the base member **82** and two diagonal brace members **84** extend between the center track and the base member. As is shown in FIG. 12, the base member **82** has support feet **86** at each end. The stationary center track **80** has a single support foot **88**. These three support feet provide a solid three-point support for the bolster member **78**. A bolster box **90** is supported from the base member **82** by vertical channels **92** and bolster box support brackets **94** at opposite ends of the base member. The stationary center track **80** has two rollers **96** at the right end of the track, as viewed in FIG. 12. These two rollers **96** are mounted on the track **80** by the roller horn **98**.

As is best seen in FIG. 13, the module of FIG. 1 is utilized as the basic member of the couch. An optional cloth covering **99** has been placed on the bottom of the module. A movable center track **100** is bolted to the bottom of

the module and casters **101** are provided at the corners of the module member. These casters are supported on the module by corner braces **102** to which corner plates **104** are attached and on which the roller brackets **106** are mounted. The casters themselves are supported in the roller brackets in a known manner. The movable track **100** has a pair of rollers **108** supported by the roller horn **109** which is connected to the track **100**.

From the foregoing description of the bolster support means, it is readily apparent, as is best seen in FIG. 15, that the basic module of FIG. 1 is movable, along the stationary track **80**, relative to the bolster box **90**. The stationary track **80** guides the rollers **108** which are on the track **100** of the basic module. The track **100** of the basic module is also guided by the rollers **96** which are attached to the stationary track **80**. When the basic module is moved to the right, as seen in FIG. 15, the two roller members in conjunction with the two track members guide the outward movement of the basic module from the bolster member. With the basic module pulled out to the right, as seen in FIG. 15, the couch of FIG. 11 has been converted to a bed. In this position the bolster member **78** will be separated from the bed. The two side members **76** are utilized as the headboard and footboard of the pulled out modular member. Thus, a bed similar to that shown in FIG. 2 will be formed by the two side members **23** in the basic module of FIG. 1. The basic module of the convertible couch is retained in the position shown in FIG. 15, when it is used as a sofa during the day, by two retaining protuberances **110** and **112** respectively formed in the stationary and movable tracks and positioned for engaging the rollers. When it is desired to move the couch outwardly, sufficient force must be exerted to cause the rollers to ride past the protuberances.

If desired, the bolster may be completely separated from the basic sleeping unit of the convertible couch of FIG. 15. To separate these two members, it is merely necessary to pull the basic module out from the bolster member and to lift the basic module vertically, thereby disengaging the two roller means **96** and **108** from their guide tracks. Since the basic module is supported on its own casters, it can be moved to any desired location separate from the bolster member **78**. When so separated, the user will have a bed similar to that shown in FIG. 1. The bolster member **78** will remain, standing by itself, as shown in FIG. 12.

From the foregoing description of the various components of the basic module and the supplemental elements which are to be attached to the basic module, it is apparent that a bed, a sofa, and a convertible couch can be constructed using the same basic module in all three pieces of furniture. The desired piece of furniture may be easily constructed by attaching the corresponding supplemental elements to the basic module. The connection means for all of the supplemental elements are basically the same and compatible with the connection means provided on the module.

While particular embodiments of the invention have been shown, it should be understood, of course, that the invention is not limited thereto, since many modifications may be made; and it is, therefore, contemplated to cover by the appended claims any such modifications as will fall within the true spirit and scope of the invention.

What is claimed is:

1. A furniture module comprising: a box frame including a pair of end boards, a pair of side rails and connecting means joining said boards and said rails in rectangular relationship; rigid frame elements mounted on top edges of said box frame; spring members connected to opposite rigid frame elements spanning said box frame; braces attached to said frame elements to oppose said spring members; an end plate associated with each of said end boards; a lock strap member mounted on each of said end plates and defining a cam-receiving aperture; upright headboard and footboard members disposed respectively

at said end plates and having locking plate means secured thereto including a cam slidably engaging said cam-receiving aperture; and progressively engageable means interconnecting said end boards, said end plates and said headboard and footboard members.

2. A furniture module according to claim 1 which further includes an upholstery element on each of said headboard and footboard members overlying exposed portions of said progressively engageable means.

3. A furniture arrangement including a module according to claim 1 and further including bolster means having a stationary floor track, a retaining protuberance upstanding from a position adjacent the mounted end of said track, first roller means mounted adjacent the free end of said track, a guide track connected to said box frame and aligned cooperatively over said floor track, a retaining protuberance depending from said guide track adjacent the forward end thereof to coact with said first

roller means, and second roller means mounted on said guide track adjacent the rearward end thereof to coact with said upstanding protuberance, whereby to retain said box frame in a couch-use position.

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