Oct. 3, 1961 J. KAISER, JR 3,002,198

SOFA BED

Filed Feb. 9, 1959 2 Sheets-Sheet 1

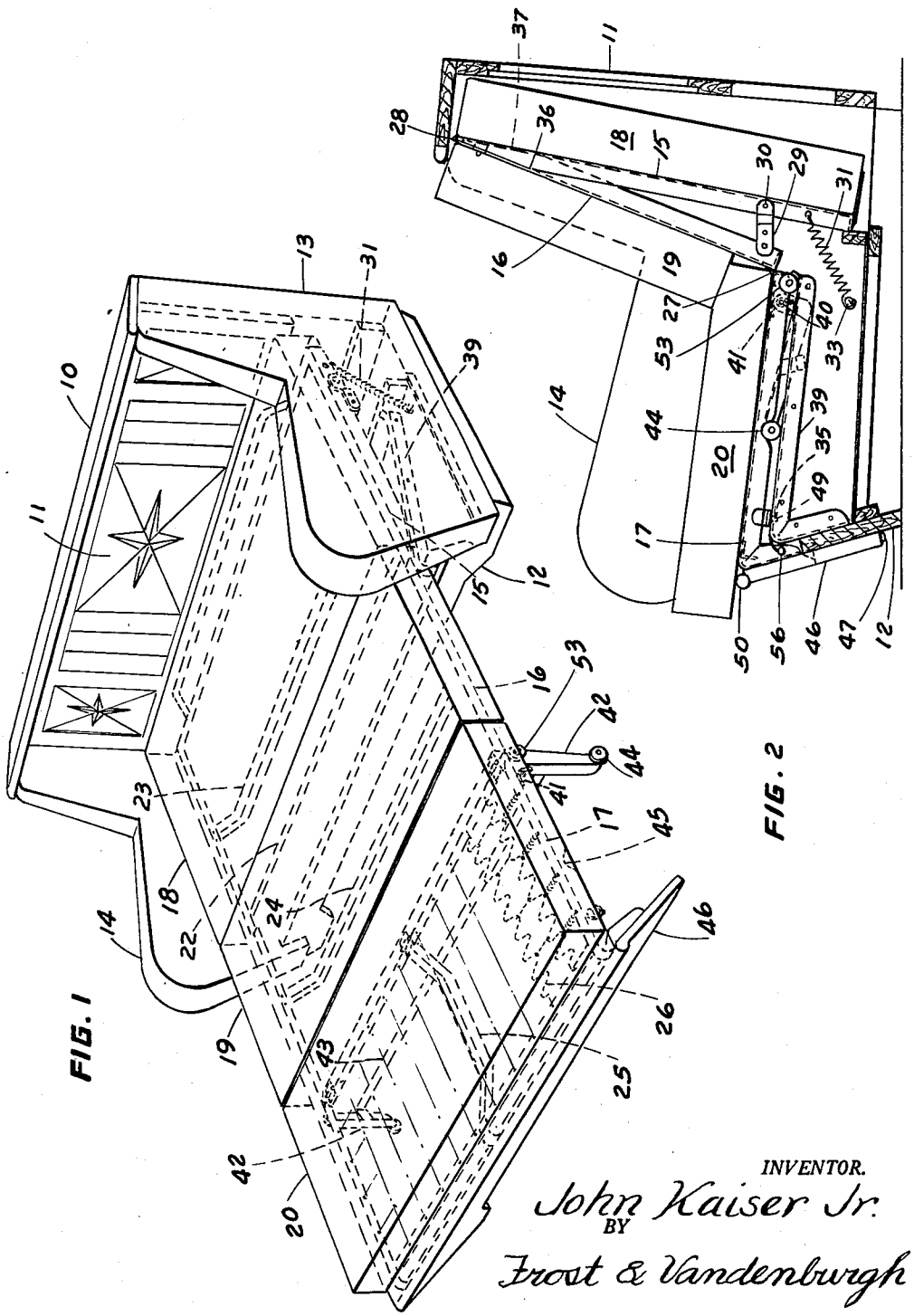


FIG. 1

FIG. 2

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SOFA BED

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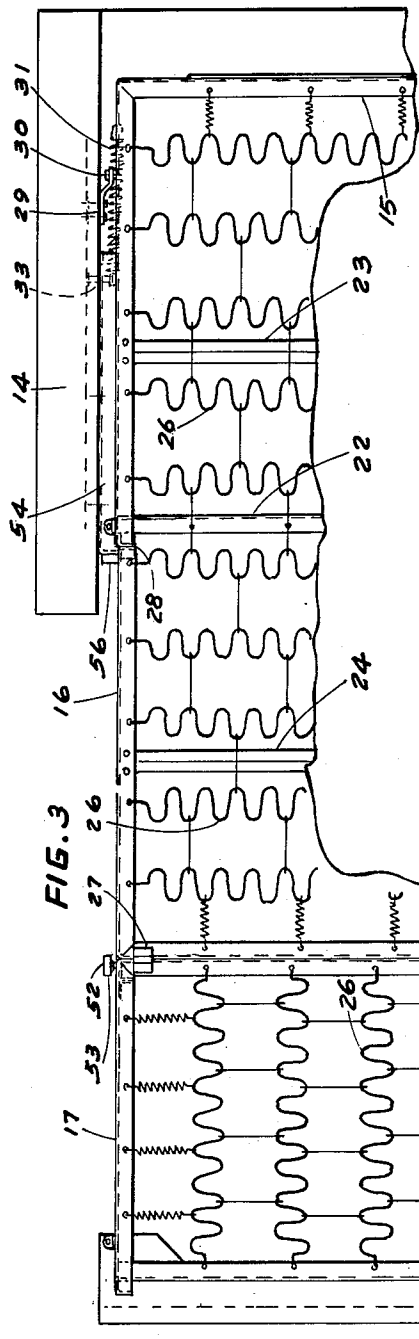


FIG. 3

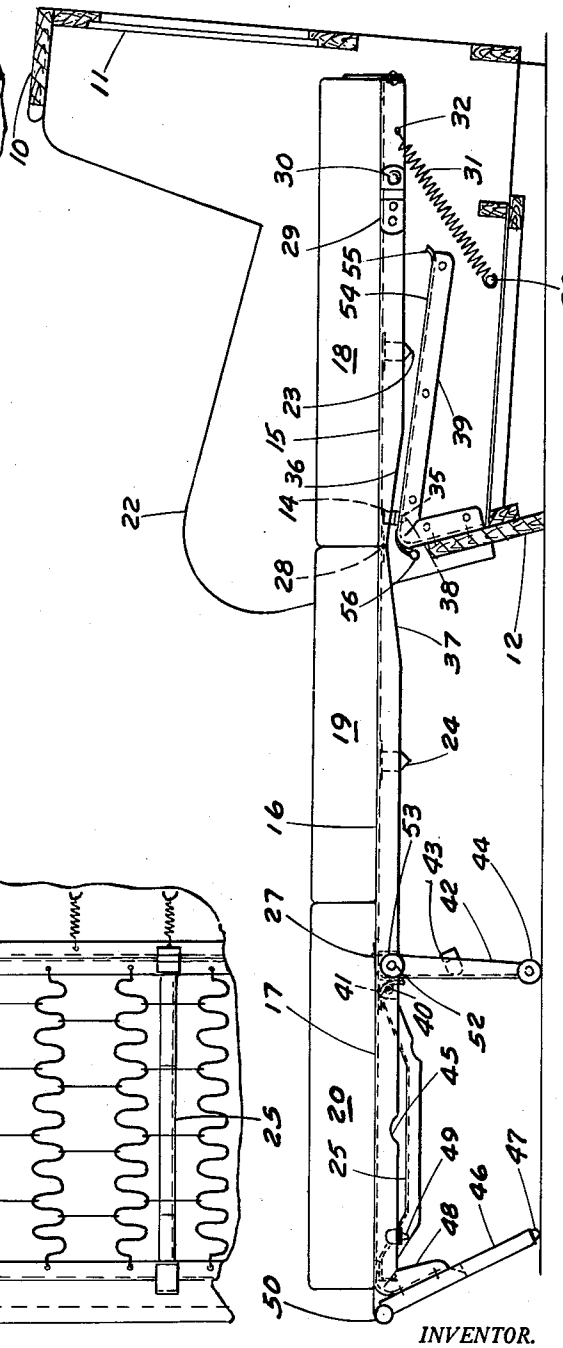


FIG. 4

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SOFA BED

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2 Claims. (Cl. 5—41)

The present invention relates to a sofa bed.

For some time the sofa beds, a sofa which may be unfolded to form a bed, have been becoming more and more popular. In theory these items should have the appearance of an ordinary sofa when they are folded yet should be a comfortable bed. However, the existing articles on the market have disadvantages which result in their failing to accomplish this aim in at least several respects. The principal object of the present invention is to overcome some of these disadvantages that exist with respect to the sofa beds presently being marketed.

As has just been mentioned one of the aims in creating an article of this type is to provide a sofa bed that when folded has all the appearances of a conventional sofa. Because of the necessity for storing the springs and/or mattress within the sofa bed itself, many of the conventional beds are bulky and unwieldy. The base and/or the portion behind the seat back cushions are substantially enlarged to provide the necessary storage space. As a result, as compared to a conventional sofa, there is a much greater depth between the front of the seat cushions and the back of the sofa bed than is the case with a conventional sofa. To provide some of the necessary storage space, often the width of the seat, i.e., the dimension from the front edge of the seat to the seat back cushions is substantially greater than that of a conventional sofa. In some instances this is offset by providing additional seat cushions to shorten this dimension of the sofa but that practice also has its disadvantages as will be subsequently mentioned. Because of these factors such a sofa bed differs substantially in appearance from the appearance of a conventional non-folding sofa. The sofa bed I have devised not only holds down the width of the seat of the sofa but maintains the distance between the front of the seat back and the back of the sofa comparable to that found in a conventional sofa.

In many of the ordinary sofa beds additional cushions are provided for use when the bed has been folded into the shape of a sofa, to obtain something relatively similar to the shape of a conventional sofa. These cushions may be used as seat backs, as seats or both. No matter how they are used they must be removed and a place found to put them when the sofa is unfolded into a bed. This is not only a nuisance but the necessity for providing additional cushions increases the initial cost of the sofa bed. With my invention the sofa is formed of at least part of the same cushions that are employed to form a mattress when the sofa is unfolded with any remainder being automatically stored when the bed is formed into a sofa. This holds down the manufacturing cost, reduces storage requirements, eliminates the necessity for removing portions of the sofa before it is unfolded into a bed and eliminates the necessity for finding some place to put such extra cushions when the sofa is unfolded into a bed.

Other objects and advantages include: the simplicity of operation in converting the sofa to a bed or vice versa, when moving in either direction it is but a simple single movement; a maximum utilization of storage space when the bed has been folded into a sofa; a positive lock of the operating parts when the bed has been folded into a sofa so as to prevent any unwanted movement of the sofa in the direction of conversion to a bed yet a lock which does not require any special manipulations to disengage when it is desired to convert the sofa into a bed; and the concealment of the linkage used to achieve the foldability, thus improving the appearance of the article.

Further objects and advantages will be apparent from the following descriptions taken in conjunction with the drawings in which:

FIGURE 1 is a perspective view of an embodiment of the invention with the embodiment being illustrated in position for use as a bed;

FIGURE 2 is an end elevation of the embodiment of FIGURE 1 in folded position for use as a sofa with the end of the sofa removed to illustrate the folding and unfolding mechanism;

FIGURE 3 is a partial plan view corresponding to FIGURE 1 with the mattress removed; and

FIGURE 4 is an end elevation corresponding to FIGURE 3 but showing the mattress on the bed and with the end of the bed removed.

Referring to FIGURES 1 through 4 the sofa is made up of a frame, generally **10**, which includes a back **11**, a front **12** and two ends, **13** and **14**. Within this frame are three cushion holding members, generally **15**, **16** and **17**, which carry the three cushions **18**, **19** and **20**, respectively. Members **15** through **17** are generally rectangular in shape and are formed of angle iron which define the outer borders thereof. The ends of members **15** and **16** at these adjacent sides are spatially positioned by longitudinal bar **22** except for the two adjacent sides of members **15** and **16**. Members **15** and **16** have longitudinal braces **23** and **24**, respectively, while member **17** has a cross-brace **25**. Within the angle iron boundaries of each of members **15–17** is a suitable spring means **26**. Spring means **26** may be of any suitable design and the details thereof are unimportant insofar as my invention is concerned. Members **16** and **17** are connected by hinges **27** while members **16** and **15** are connected by hinges **28**.

Member **15** is secured to frame **10** by means of brackets **29** and pins **30**. Brackets **29** are secured to ends **13** and **14** of the frame. Pin **30** passes through both bracket **29** and member **15**. The pin has heads on both sides to hold it in place. A pair of springs **31** have one end thereof hooked through an opening **32** in member **15** with the other end of the springs being secured to bolts or pins **33** secured to frame **10**.

The end of member **15** adjacent member **16** is tapered, as seen at **36**. Similarly the adjacent end of member **16** is tapered as seen at **37**. The purpose of these tapers is to permit the members to fold closely together, as seen in FIGURE 2. Member **15** has a downwardly extending pin **38** which projects through a generally vertical opening **35** in angle iron **39**. Angle iron **39** is secured to and forms a part of the ends **13** and **14** of frame **10**. As will hereinafter be discussed angle irons **39** form a track.

Pivotally attached to member **17** by rivets **40** are a pair of legs **42** which are connected by cross brace **43**. Helical twist springs **41** about rivets **40** urge legs **42** into the vertical position illustrated in FIGURES 1 and 4. However, against the urging of the spring the legs **42** may be swung up into the angle irons forming the ends of member **17**, as illustrated in FIGURE 2. Legs **42** have casters **44** at the bottom end thereof and to permit the aforesaid retraction of the legs the ends of member **17** have cut-outs **45** into which the casters will fit.

At the outboard side of member **17** is a leg means formed of plate **46** at the bottom end of which are captive ball casters **47**. Plate **46** is attached to a downward projection **48** forming a part of member **17** and is positioned at an angle to match the angle of front **12** of frame **10**. Thus when the bed is retracted into a sofa, as seen in FIGURE 2, the plate **46** fits flush against front **12** of frame **10**. This construction gives an attractive appearance to the front of the sofa and at the same time

permits adequate room for the feet of a person sitting on the sofa. The top of plate **46** may be provided with a rubber bumper **50**.

Adjacent the outboard end of member **17** is a downwardly projecting pin **49** which is received in the opening **35** in angle iron **39** to lock the sofa in the closed position, as illustrated in FIGURE 2. Thus the pins **38** in conjunction with the opening in angle iron **39** form a latch means to hold the structure in the shape of a bed as illustrated in FIGURE 4 while pins **49** in conjunction with the same opening **35** form a latch means to hold the folding structure in the form of a sofa, as illustrated in FIGURE 2.

Adjacent the inboard side of member **17** and rotatably affixed to the ends thereof by means of pins **52** are a pair of rollers **53**. These rollers cooperate with the upper surface of angle irons **39** which form a track **54**. At the rearward end of track **54** is a stop **55**. It will be seen that the rearward end of track **54** is at the somewhat lower elevation than is the forward end (the end adjacent the front **12** of the frame). Thus the track **54** not only facilitates the opening and closing of the sofa bed in conjunction with roller **53** but this angular position achieves a definite slope to the seat cushion **20**, as illustrated in FIGURE 2 to provide a comfortable sofa. Immediately to the front of track **54** are a pair of pins **56** which serve to trip the legs **42** when the bed is being folded into a sofa.

Assuming that one wishes to convert from a sofa as illustrated in FIGURE 2 to a bed in FIGURE 4 all that is necessary is to grasp the outboard end of member **17** as for example by taking hold of plate **46**, lifting up slightly to remove pin **49** from the opening in angle iron **39** and in the same movement pulling the plate towards oneself. Member **17** rolls easily out on roller **53**. As that roller commences to leave the end of track **54**, legs **42** will pivot downwardly whereupon member **17** will be supported on the legs **46** and **42**. During the extension movement member **15** pivots about pin **30** with spring **31** being extended. Spring **31** thus cushions the downward pivotal movement of member **15**. As the individual continues moving the members away from frame **10** members **16** and **15** will pivot out flat and pin **38** will enter the opening in angle iron **39** locking the members in that position.

The converting of the bed of FIGURE 4 into a sofa as shown in FIGURE 2 is just as simple an operation. All that the person need do is push on member **17** in the direction of frame **10**. The pressure thus applied will cause members **15** and **16** to pivot toward each other about hinge **28** thus withdrawing pin **38** from the opening in angle iron **39**. The pivotal movement is assisted by spring **31**. As the inboard side of member **17** approaches the outboard side of frame **10** legs **42** contact pins **56** and are tripped outwardly to fold within member **17**. At about the same time rollers **53** will commence riding on track **54** to carry member **17** back into the position illustrated in FIGURE 2. At about the time of the completion of the movement the individual can lift up on member **17** to bring pin **49** up over track **54** so that it can drop into the opening in the top of that track and lock the sofa in the FIGURE 2 position.

The foregoing detailed description of a specific embodiment is only for clearness of understanding and for the purpose of complying with 35 U.S.C. 112 and I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A folding sofa bed or the like characterized by being adapted to be positioned with its back close to a wall or the like, said bed comprising: a frame having a front, a back and two spaced ends; a pair of parallel tracks, each of said tracks being attached to the inner side of an end respectively, the forwardly end of said tracks being adjacent said front, the rearwardly end of said tracks being spaced from said back and being at a lower elevation than said forwardly end, said forwardly end having a generally vertical opening therein; a first cushion supporting member of a length to be received between said ends, said member having leg means on the outboard side thereof and a roller on each end thereof adjacent the inboard side thereof, each of said rollers being positioned to ride in one of said tracks respectively; releasable latch means on said member adjacent the outboard side including a downwardly projecting pin receivable in said opening, a second cushion supporting member of a length to be received between said ends of the frame, the outboard side of said second member being contiguous to inboard side of said first member; hinge means connecting said contiguous sides of said members; a third cushion supporting member of a length to be received between said ends of said frame, the outboard side of said third member being contiguous with the inboard side of said second member, said third member being pivotally connected to said frame at points along the ends of said third member and spaced a substantial distance from the outboard side thereof; supporting means associated with said frame and said third member to support said third member generally horizontal when said outboard side is pivoted to a position adjacent said front, including a downwardly projecting pin receivable in said opening; cushion means on said members; whereby said members may be moved from a first position at which the cushion means on said third member is adjacent said back in a generally vertical position, the cushion means on said second member forms the back of a seat and the cushion means on said first member forms the seat of the sofa, to a second position at which the cushion means of all of said members are generally horizontal to form a bed.

2. A folding sofa bed or the like characterized by being adapted to be positioned on a floor with its back close to a wall or the like, said bed comprising: a front, a back and two spaced ends; a pair of tracks on said ends; three rectangular cushion supporting members of a length to be received between said ends, a first and second of said members being positioned contiguous to the third at opposite sides of said third member; hinge means connecting said contiguous sides of said members; the first of said members being pivotally attached to said ends with the portion of the first member rearwardly of the pivotal attachment being somewhat less than the distances between said pivotal connection and the floor and the back; supporting means adjacent the front of said frame to prevent the contiguous side of said first member from pivoting downwardly any farther than the position at which said member is substantially horizontal; a first leg means connected to one of the remaining two members adjacent the contiguous sides thereof to support said sides at a position level with the contiguous side of said first member when it is resting on said supporting means, said leg means being pivotable with respect to said one member between a first position at which it is generally parallel to said one member with the extending ends of the legs outwardly from the pivotal connection to a second position at which said leg means is generally normal to said one member, said leg means being resiliently urged to said second position, said leg means including rollers at the extending ends thereof to serve as castors when said leg means is in the first position, and are received on said tracks when said leg means is in the second position; a second leg means attached to the second of said members and positioned adjacent the side thereof opposite said contiguous side, said second leg means being of a length to position said opposite side at a level corresponding to the height of said first

leg means; whereby when said first member is pivoted from the horizontal to a generally vertical second position it will be facing the back of said frame, said third member will similarly pivot to a generally vertical second position adjacent to and facing outwardly from said first member and said second member will move to a second position between said ends; means attached to said frame and said second member to support said second member in said second position with said opposite side of said second member at a height greater than that at which said contiguous side of said second member is supported; a cushion means on each of said members forming a mattress when said members are in the horizontal position, the cushion means in said second and third members forming a seat and back, respectively, of a sofa when said members are moved to said second position, the cushion means in said first member being folded adjacent said

back when said members are moved to said second position; and releasable latch means to hold said members in said second position.

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