Aug. 14, 1962 E. FRANK 3,048,855

CONVERTIBLE COUCH

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Fig. 1

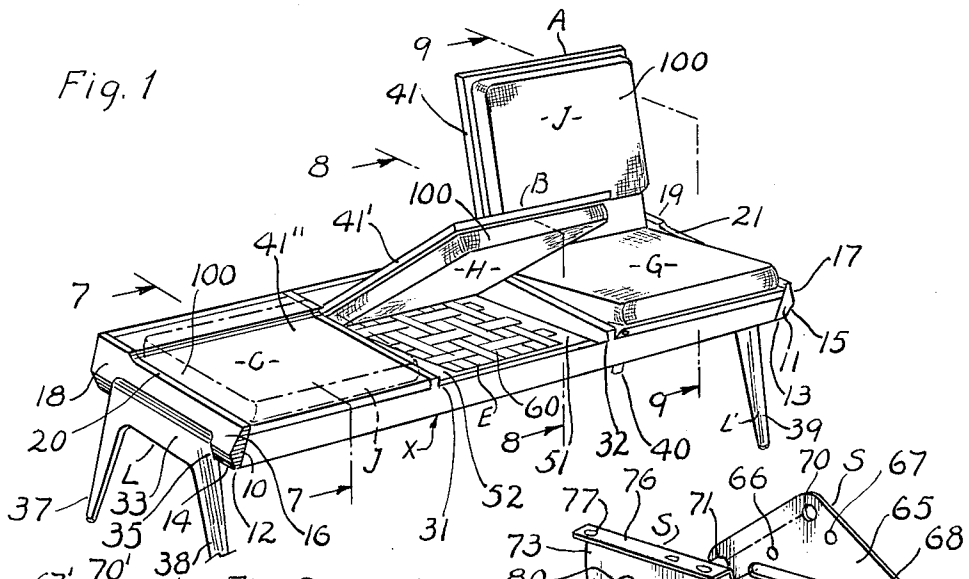


Fig. 2a

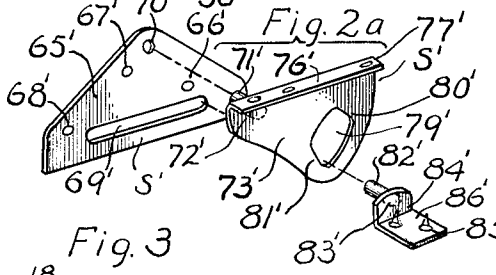


Fig. 2

Fig. 3

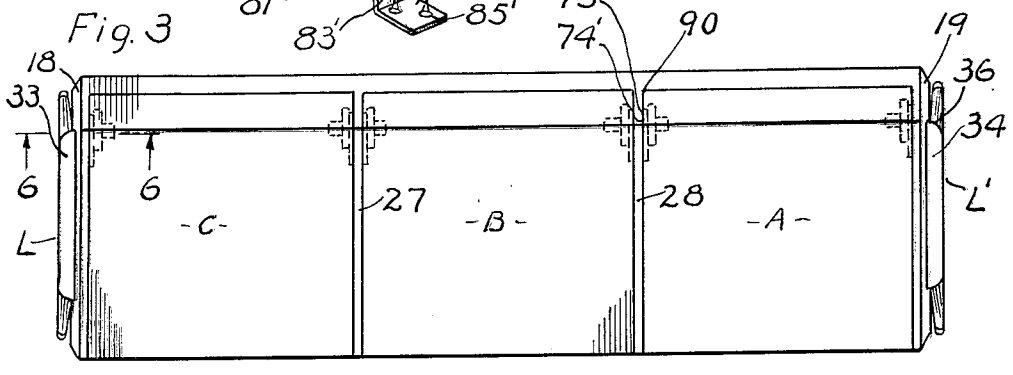
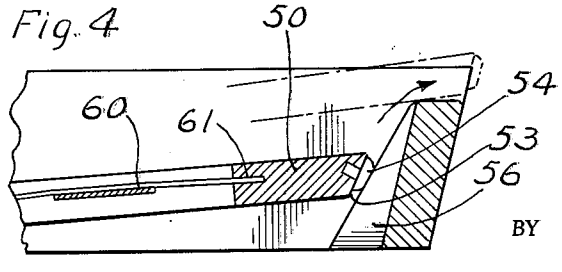


Fig. 4



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Fig. 5

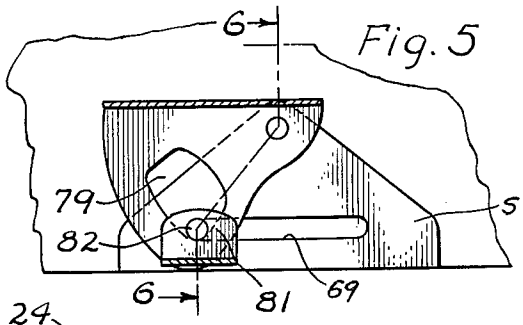
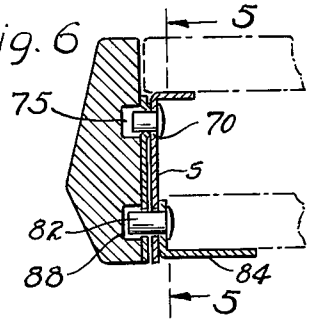


Fig. 6



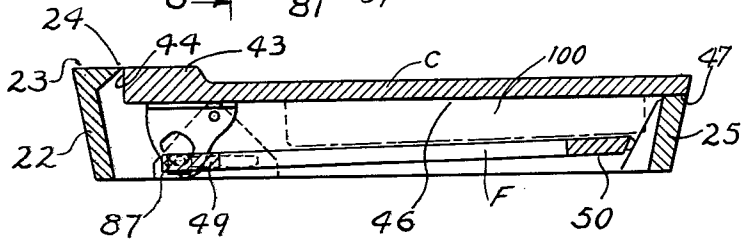


Fig. 7

Fig. 8

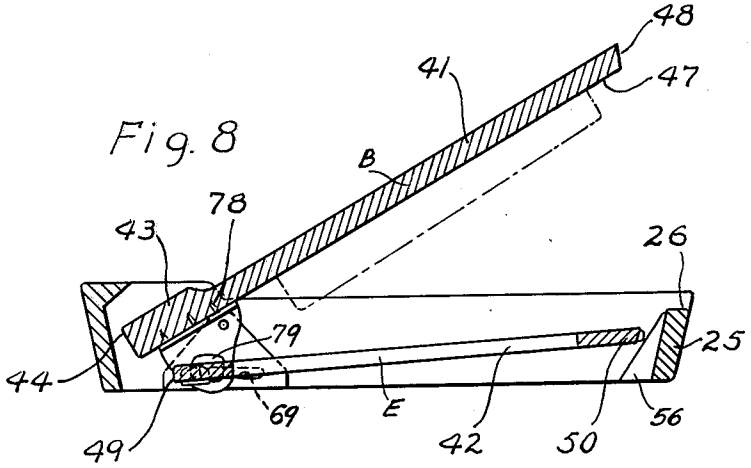
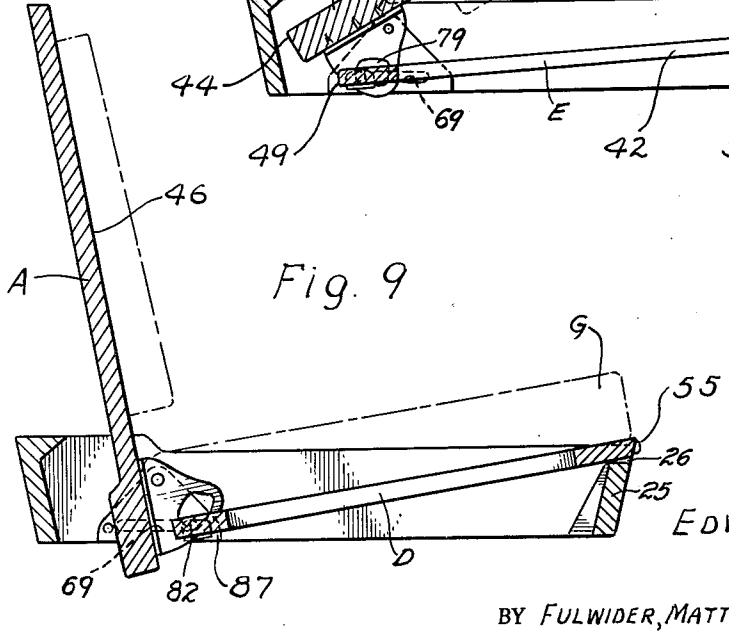


Fig. 9



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CONVERTIBLE COUCH

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3 Claims. (Cl. 5—7)

This invention relates generally to furniture and more particularly to a plural section couch that is convertible to an upholstered bench.

It is a primary object of the invention to provide an artistically designed plural-section couch that is quickly converted into an attractive bench by simple manual positioning of the backrest of each section. The conversion of couches to different furniture elements is usually accomplished by single unitary movement and with considerable physical effort. In prior structures of this type it has always been difficult to preserve the over-all artistic appearance because of the necessity of using heavy adjustment fixtures and the difficulty in housing same.

It is a major object of the present invention to provide a novel and improved convertible couch that eliminates the disadvantages of heretofore proposed articles of this nature.

A more particular object is to provide a convertible couch wherein the couch frame is hingedly connected to the lower end of the backrest and the rear of the cushion support so that manual movement of the backrest automatically moves the cushion support to a cushion concealing position.

Another object of the invention is to provide a convertible couch with simple, light-weight conversion mechanism of such small dimension that the over-all artistic design of the couch is not affected.

Still another object of the invention is to provide a convertible couch that is converted to a handsome bench with a minimum of physical effort.

A further object of the invention lies in the provision of a plural-section convertible couch in which each section is individually convertible to bench-defining position.

A still further object of the invention is to provide a connecting hinge mechanism that permits concurrent automatic movement of the backrest and cushion supports between their different positions.

Another object of the invention is to provide a light-weight dual hinge mechanism for each couch section, the hinges simultaneously connecting the frame, backrest and cushion support so that manual movement to converted positions is accomplished with minimum effort.

Still another object of the invention is to provide a hinge connection of couch frame, backrest and cushion support whereby manual movement of the backrest to a bench-defining position causes the cushion support to be withdrawn, and movement thereof to a backrest defining position causes the cushion support to be tilted to a comfortable seating position.

Yet another object of the invention is to provide a leg-supported shallow frame having movable backrest and cushion supports hingedly connected thereto in such manner that manual collapse of the backrest on the frame withdraws the cushion supports from a tilted seat position on the frame to a cushion concealing position below the backrest.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as the specification proceeds, the invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawing in which:

FIGURE 1 is a perspective view of a preferred form of convertible couch embodying the present invention with the backrest sections thereof disposed in various positions of adjustment;

FIGURE 2 is an exploded perspective view of one of the unique hinges utilized in said couch;

FIGURE 2*a* is an exploded perspective view of an oppositely disposed hinge;

FIGURE 3 is a plan view of the couch with the backrest in coffee table-defining position;

FIGURE 4 is a fragmentary enlarged vertical sectional view showing the front portion of said couch;

FIGURE 5 is an enlarged fragmentary vertical sectional view taken on the line 5—5 of FIGURE 6;

FIGURE 6 is an enlarged fragmentary vertical sectional view taken on the line 6—6 of FIGURE 5;

FIGURE 7 is a vertical sectional view taken on the line 7—7 of FIGURE 1;

FIGURE 8 is a vertical sectional view taken on the line 8—8 of FIGURE 1; and

FIGURE 9 is a vertical sectional view taken on the line 9—9 of FIGURE 1.

Referring to the drawings, and particularly FIGURE 1 thereof, a preferred form of convertible couch embodying the present invention is shown with the plural seat and backrest defining elements disposed in various positions of adjustment. The convertible couch broadly includes a rigid frame X preferably of wooden construction; a plurality, such as three backrests A, B and C; a cushion support D, E and F for each of the backrests A, B and C, respectively; and a seat cushion G for each of the backrests A, B and C. The seat cushions G are identical. In the interest of clarity only one such cushion is shown in the drawings. The lower end of each backrest is hingedly secured to the rear portion of the frame and to the rear end of its respective cushion support by means of a hinge structure S. With this arrangement, the backrests A, B and C may be moved between a couch-defining position represented by backrest A in FIGURE 1, and a bench-defining position represented by backrest C in this FIGURE.

More particularly, the frame X includes leg supporting ends **10** and **11** which are identical in design. The ends **10** and **11** have flat longitudinal lower edges **12** and **13**, respectively, and upwardly flared lower side portions **14** and **15**, respectively. The artistic design of the ends **10** and **11** includes downwardly flared upper side portions **16** and **17**, respectively. The ends **10** and **11** have thickened areas **18** and **19** adjacent their rear edges, and flat upper edges **20** and **21**, respectively, sloping downwardly and forwardly to present an artistic appearance.

The frame ends **10** and **11** are connected at the rear, in any conventional wood working manner, to a frame back **22** which flares outwardly and upwardly as shown in FIGURES 7, 8 and 9. The frame back **22** conforms in width to the ends **10** and **11** and at the top thereof has a continuous flat forwardly projecting portion **23** tapered sharply to a knife edge **24**. The frame X has an outwardly flared front member **25** connected in standard manner to the forward inner edges of the ends **10** and **11**. The front frame piece **25** is narrower than the ends **10** and **11**, as shown in FIGURE 8, and has a flat continuous upper edge **26**. The frame X is completed by dual transverse cross-pieces **27** and **28** spaced in a uniform manner between the ends **10** and **11**. Cross-pieces **27** and **28** conform in general to the outer configuration of the frame ends **10** and **11** with the exception that they are shortened at the rear where they are attached to the back frame **22**. The cross-pieces **27** and **28** are notched at **31** aand **32** to connect with the rest upon the front piece **25**. However, they are in alignment with the upper edge surfaces **20** and **21** of the ends **10** and **11**, respectively.

The frame X is supported by a pair of identical leg

members L and L'. The members L and L' include frame supporting cross pieces 33 and 34 which are grooved transversely on their inner sides at 35 and 36, respectively, to receive and be connected with the frame ends 10 and 11. The grooves 35 and 36 conform to and support lower edges 12 and 13, and the sides 14 and 15, respectively, of the ends 10 and 11. The connection may be made by gluing, pegging or any conventional woodworking operation. The cross pieces 33 and 34 have dual legs 37 and 38, and 39 and 40, respectively, flared outwardly therefrom.

An inspection of FIGURES 1, 2 and 3 will indicate that the backrest sections A, B and C are identical in every respect and for this reason the description will be limited to the single section A. It is also apparent that the convertible couch can be produced with any desired number of sections without departing from the spirit and scope of the present invention.

Backrest A has a solid panel 41 that preferably is a solid wood member having a longitudinally disposed raised strip 43 adjacent its lower or rear end. The outer edge 44 of the raised strip 43 substantially coincides and merges with the adjacent knife edge 24 of the frame back 22. The raised strip 43 conforms the panel 41 to the configuration of the ends 10 and 11, and the cross pieces 27 and 28, respectively. The backrest panel 41 has a surface 46 that is flat throughout its entire area. The front lower edge 47 of the backrest panel 41 is adapted to rest on the upper edge 26 of the front frame member 25 and is therefore angled slightly at 48 to coincide therewith in outer conformity.

The cushion support D is an open frame formed of back and front portions 49 and 50, and connecting side members 51 and 52. As stated before, any conventional woodworking method may be used in joining the described parts. The front edge of the portion 50 is angled slightly at 53 and a pair of plastic buttons 54 and 55 are secured thereto. The plastic buttons 54 and 55 are adapted to engage and slide on adjacent tapered plural guides 56 secured on the inside of front frame member 25. The plastic buttons 54 and 55 insure easy movement of the front edge 53 of the cushion support up and down the guides 56 to positions of use shown in FIGURES 4, 7, 8 and 9. The cushion support D has a series of cross-lapping strips 60 secured in the usual manner at 61 in the inner edges of oppositely disposed framing members 49 and 50, and 51 and 52, respectively. These strips 60 may be formed of any suitable material such as synthetic plastic or fabric.

The convertible couch hinge structure includes dual sets of hinges S and S' for each backrest A, B and C. The hinges S and S' are substantially ientical with the exception that their disposal on either side of the backrest requires slight structural changes. Hinge S includes a flat attachment plate 65 apertured at 66 for reception of plural frame securing screws 67. An elongated horizontally disposed slot 69 is stamped or otherwise formed in the base of the plate 65. The plate 65 is also formed with a bore 70 to receive a hinge pin 71 welded at 72 to an inner hinge plate 73. The hinge pin 71 extends through the bore 70 formed in the upper front portion of the plate 65 and projects outwardly into a recess 75 in the frame end 11, as shown in FIGURE 6. The inner hinge plate 73 has an inwardly bent flange 76 drilled in a plural manner at 77 to recive screws 78 which provide means for securing the hinge plate 73 to an outer rear edge portion of the backrest panel 41. The hinge plate 73 is formed with a camming aperture 79 in its lower portion. The edges 80 and 81 of camming aperture 79 control the movement of a follower pin 82 welded at 83 to a flanged bracket 84 which is apertured at 85 to receive attachment screws 86 that secure the bracket to the rear outer end 87 of cushion support D. The follower pin 82 projects through the camming aperture 79, the slot 69 in the attachment plate 65 and finally is received in a groove 88 in the frame end 11, as shown in FIGURE 6. The camming aperture 79 is enlarged to permit passage of a screwdriver in the insertion of the screws 67.

The parts and method of attaching the hinge S' are substantially identical as heretofore described with the following exceptions: The outer attachment plate 65' has plural screw apertures 66', 67' and 68' disposed in a different staggered arrangement to avoid contact with screws in adjacently disposed hinges on the cross-pieces 27 and 28. The hinge arrangement is best shown in FIGURE 3. The flange 76' of the inner hinge plate 73' is bent in the opposite direction to form a securing means on an outer edge 90 on the backrest 41.

The operation of the spaced hinges S and S' controls the movement of the cushion supports D, E and F. Actuation of the hinges is initiated by manual movement of the backrests A, B and C. If the backrest A is disposed initially in the position shown in FIGURE 9, the front edge 53 and plastic buttons 54 and 55 of the cushion support D are disposed in a seated fixed position on the upper edge 26 of the front frame 25. The follower pin 82 is held in locked postion in the front end of the slot 69 in the attachment plate 65 by means of the rear edge 80 of the camming aperture 79. Closing movement of the backrest A by folding it downwardly and forwardly to a bench-defining position results in a hinge movement as shown in FIGURES 8 and 7. Thus, referring to FIGURE 8, each of the follower pins will be cammed rearwardly by its contact with the sides of the camming aperture 79 since its outer end is slidably disposed within its respective horizontal slot 69. Hence, the rear end of the cushion support D will be concurrently urged rearwardly as its backrest A is folded forwardly. During such rearward movement the front end of the cushion support E will slide downwardly and rearwardly over the guides 56. When the backrest A has been folded completely flat, as shown in FIGURE 7, the cushion support E will have been lowered sufficiently as to provide clearance for the back cushion 100 of the backrest C within the confines of the frame X, and such back cushion will be concealed from view. In the closed or bench-defining position of FIGURE 7, the rear edge 44 of the backrest C almost coincides with the knife edge 24 of the rear frame 22.

Back cushions 100 are either fixedly or detachably secured to the front surfaces of the backrests A, B and C. The seat cushions G are disposed on the cushion supports D, E and F, respectively, between the cross-pieces 27 and 28 when the backrests are in rearward elevated positions, as shown in FIGURES 1 and 9. When the couch is converted to a bench, the seat cushions are removed and the backrests A, B and C with attached back cushions 100 are folded into the position shown in FIGURE 7. In this position these back cushions are completely hidden from view. Clearance for so concealing these back cushions is provided by the movement of the cushion supports D, E and F from their upwardly and forwardly tilted position of FIGURE 9 to their more nearly horizontal position of FIGURE 7. The backrests now form a substantially uninterrupted horizontal surface and the loose seat cushions G may be placed on the backs of the backrests. If desired, one or more of the seat cushions may be left off of the backrests whereby a table surface will result. Should all three seat cushions be left off the backrests an aesthetically pleasing coffee table will thereby be provided.

From the foregoing description it will be apparent that the operation of the convertible couch is simple. Each section is an individual unit and a minimum of physical effort is required to move the backrest between an upwardly extending position and their horizontally extending position. The hinges are so light in weight and so arranged that they are substantially hidden at all times. The plural sectional arrangement and the dual lightweight hinges provide conversion means that requires a minimum of physical effort.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

I claim:

1. A convertible couch that may be converted into a bench, comprising: a frame; a plurality of backrests that normally extend upwardly but which may be folded forwardly to a horizontally extending position when said couch is converted to a bench; a back cushion on the front of each of said backrests; a cushion support for each of said backrests that normally serves to receive the weight of a user, the front end of each of said cushion supports normally resting upon a generally horizontal flat surface of said frame; rearwardly and downwardly inclined guide surfaces formed on said frame rearwardly of said flat surfaces; and hinge means interposed between said frame and said backrests and cushion supports that automatically urges said cushion supports rearwardly as said backrests are folded forwardly whereby the front ends of said cushion supports will slide downwardly and rearwardly over said guides as said backrests are folded forwardly to thereby provide clearance for said back cushions within the confines of said frame, said hinge means including an attachment plate fixed to said frame and formed with a horizontally extending slot and a bore, a hinge plate fixed to the lower portion of each of said backrests and having a hinge pin that extends into the bore of said attachment plate, said hinge plate also being formed with a camming aperture, and a bracket fixed to the rear portion of each of said cushion supports and formed with a follower pin that is received by the camming aperture of said hinge plate.

2. A convertible couch that may be converted into a bench, comprising: a frame; a plurality of backrests that normally extend upwardly but which may be folded forwardly to a horizontally extending position when said couch is converted to a bench; a back cushion on the front of each of said backrests; a cushion support for each of said backrests that normally serves to receive the weight of a user, the front end of said cushion support normally resting on a horizontal surface of said frame so as to maintain the front end of said cushion support higher than the rear end thereof; and means that automatically lower the front end of said cushion supports relative to said frame as said backrests are folded forwardly whereby clearance

is provided for said back cushions within the confines of said frame, said means including an attachment plate fixed to said frame and formed with a horizontally extending slot and a bore, a hinge plate fixed to the lower portion of each of said backrests and having a hinge pin that extends into the bore of said attachment plate, said hinge plate also being formed with a camming aperture, and a bracket fixed to the rear portion of each of said cushion supports and formed with a follower pin that is received by the camming aperture of said hinge plate.

3. A convertible couch that may be converted into a bench, comprising: a frame; a plurality of backrests that normally extend upwardly but which may be folded forwardly to a horizontally extending position when said couch is converted to a bench; a back cushion on the front of each of said backrests; a cushion support for each of said backrests that normally serves to receive the weight of a user, the front end of said cushion support normally resting on a horizontal surface of said frame so as to maintain the front end of said cushion support higher than the rear end thereof; a seat cushion normally loosely disposed upon each of said cushion supports, said seat cushions being removed from said cushion supports when said backrests are to be folded forwardly; and means that automatically lower the front end of said cushion supports relative to said frame as said backrests are folded forwardly, said means including an attachment plate fixed to said frame and formed with a horizontally extending slot and a bore, a hinge plate fixed to the lower portion of each of said backrests and having a hinge pin that extends into the bore of said attachment plate, said hinge plate also being formed with a camming aperture, and a bracket fixed to the rear portion of each of said cushion supports and formed with a follower pin that is received by the camming aperture of said hinge plate.

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