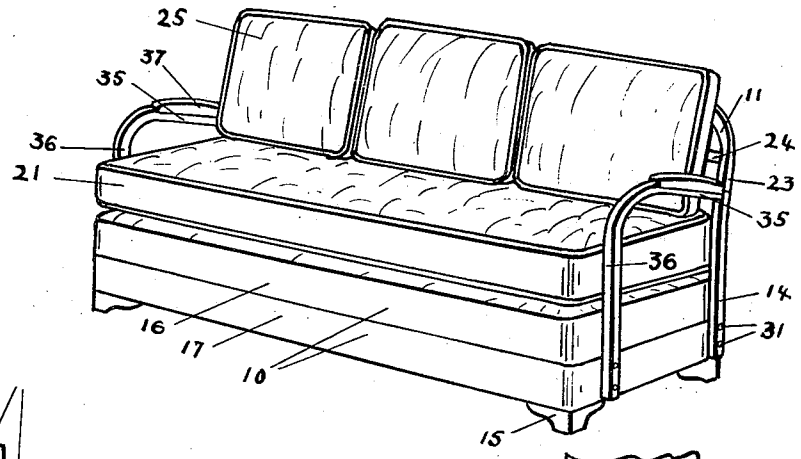
April 1, 1941. T. FOSTER 2,236,753

CONVERTIBLE STUDIO COUCH

Filed May 7, 1938 2 Sheets-Sheet 1

Fig. 1



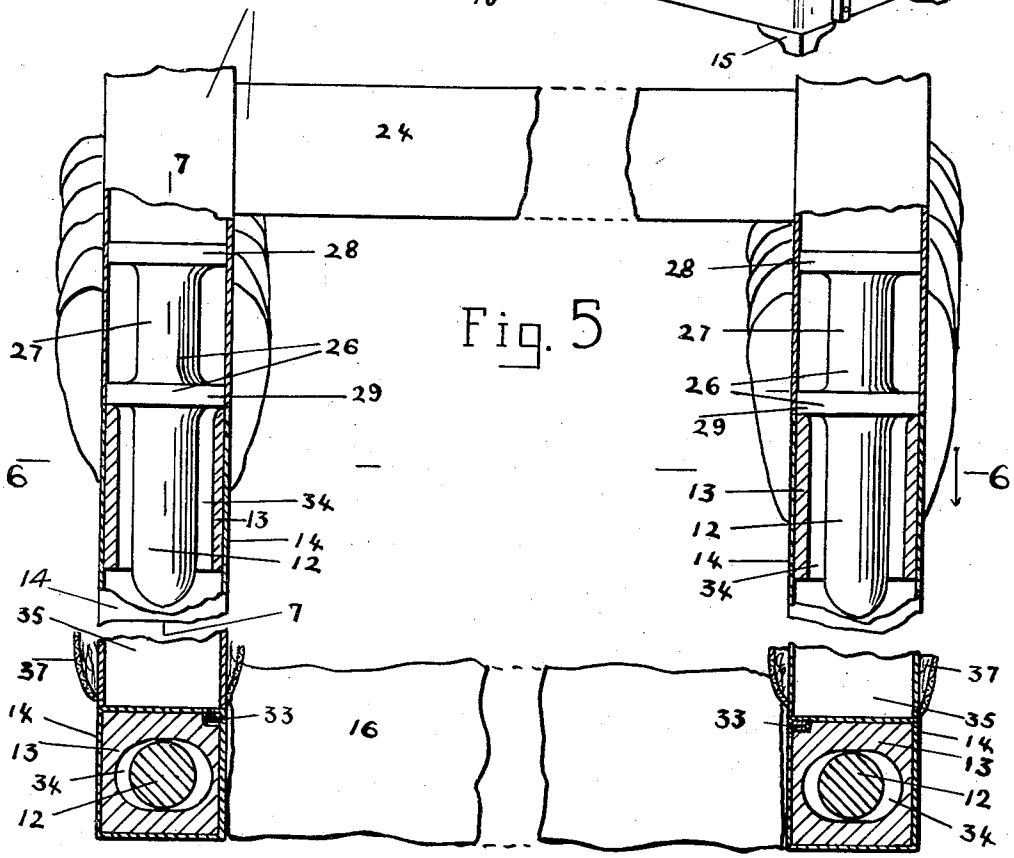


Fig. 5

Fig. 6

INVENTOR

Townsend Foster

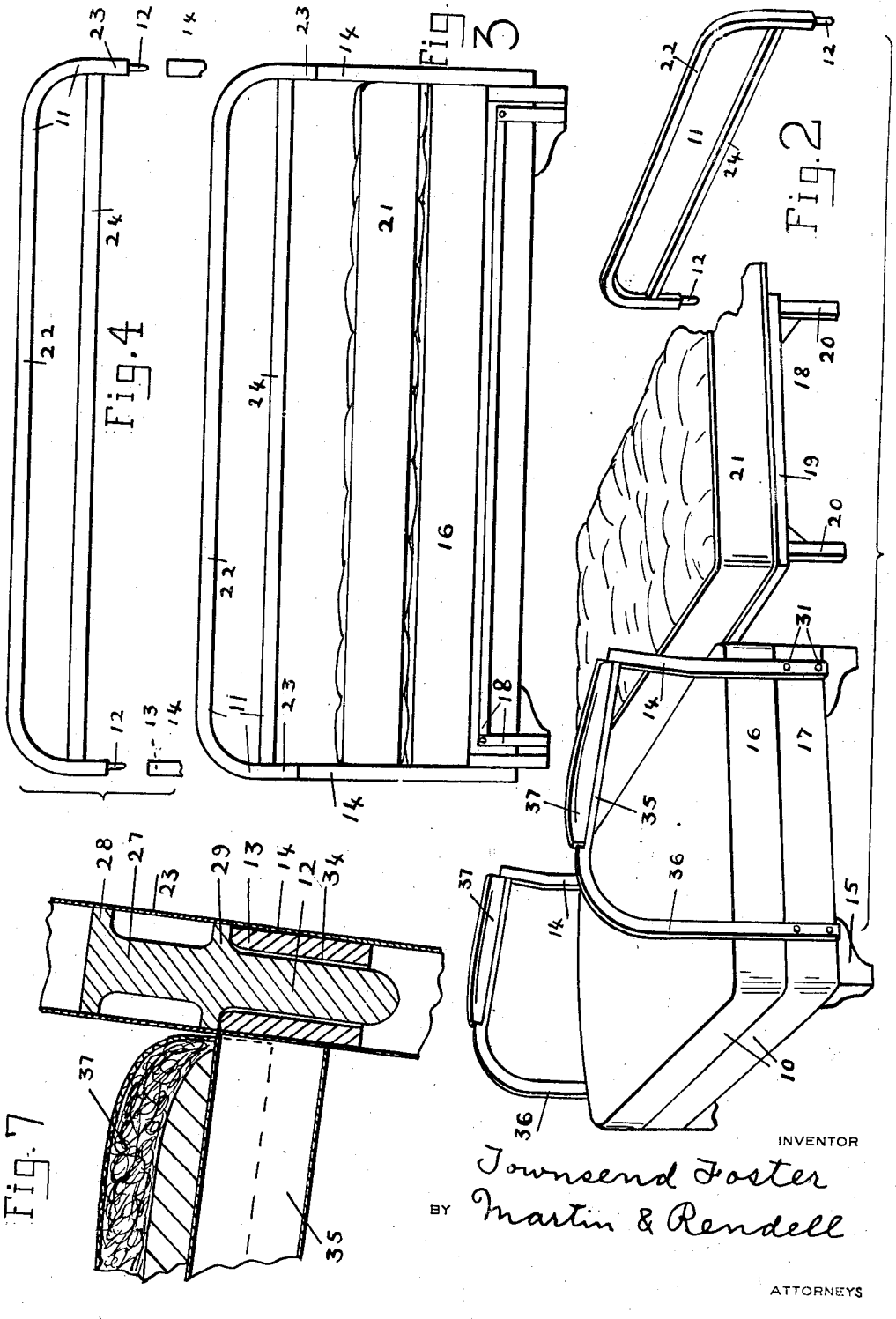
BY Martin & Rendell

ATTORNEYS

April 1, 1941. T. FOSTER 2,236,753

CONVERTIBLE STUDIO COUCH

Filed May 7, 1938 2 Sheets-Sheet 2



Patented Apr. 1, 1941

2,236,753

UNITED STATES PATENT OFFICE

2,236,753

CONVERTIBLE STUDIO COUCH

Townsend Foster, New Hartford, N. Y., assignor to Foster Brothers Manufacturing Company, Utica, N. Y., a corporation of New York

Application May 7, 1938, Serial No. 206,540

3 Claims. (Cl. 5—59)

This invention relates to a convertible studio couch. By this expression there is meant in this invention an article of furniture having two bed sections the main bed section of which has housed therebeneath the secondary bed section when the article is used as a studio couch, the article furthermore having a detachable back removable from the main bed section when the article is to be used as a double bed or as twin beds.

The purpose of the invention is to provide a convertible couch bed of the character described which is of new and improved construction and of new, simple and easy operation but which construction is very economical in construction and composed of a minimum of parts and which especially is free from any appearance of machinery or other parts used only to allow the back to be detachable and yet which is free of unsightly parts or projections when the removable back is detached from the main bed section.

A further purpose is to provide an article of the class described wherein a new and improved arrangement of pin and socket joints are used upon the lower corners of the removable back and the rear corners of the main bed section to allow the said back to be readily attached to the main bed section or as readily detached therefrom by one person without the use of extra fastening parts, locking members or even tools for connecting the parts or detaching the same; a further purpose is to provide a new and improved form of pin and socket joints in a co-operating pair at the ends of the back and at the rear corners of the main bed section so that the back can be readily detached or attached without the liability of the parts going together with difficulty or coming apart when required only upon the use of unusual force.

It will be understood that a removable back attached by vertically disposed pin and socket joints at the ends of the back and the rear corners of the main bed section would be liable to jam and go together or come apart with great difficulty if the said pins and sockets were of ordinary construction and co-operation unless practically the whole device was made with greater precision than is commercially practicable upon a device of the general construction herein outlined and to be sold at a very reasonable price that obtains for such articles.

Further purposes and advantages of this invention will appear from the specification and claims herein.

Fig. 1 is a perspective view of a convertible studio couch embodying this invention when the article is to be used as a couch.

Fig. 2 is a perspective view of said studio couch when it has been converted into a twin bed and the removable back has been detached from the main bed couch section and is shown as standing beyond the secondary or smaller bed section.

Fig. 3 is a rear elevation of said studio couch with the detachable back in place upon the main bed section.

Fig. 4 is a rear elevation of the parts shown in Fig. 3 but with the back detached and slightly raised above the main bed section, the view omitting all of the main bed section except the upper ends of the rear corner posts of said main bed section.

Fig. 5 is a rear elevation on an enlarged scale of the opposite end portions of the back end of the upper ends of the tubular corner posts of the main bed section when the back is in place upon the main bed section. The upper portions of the said tubular posts are shown in longitudinal section and the lower portion of the rear wall of the corresponding tubular end members of the back are cut away in order to show the pins in side elevation within the socket joints.

Fig. 6 is a horizontal sectional view on line 6—6 of Fig. 5.

Fig. 7 is a vertical sectional view on line 7—7 of Fig. 5.

Referring to the drawings in a more particular description it will be seen that a convertible studio couch embodying this invention consists of a main bed-couch section or as it will be hereinafter usually called for briefness a main bed section 10 and a back 11 adapted to be detachably mounted upon said main bed section by means of pins 12 depending from the lower end portions of the back into removable engagement with open-topped socket members 13, one of which is provided at the upper rear corner of the main bed section conveniently by said socket members 13 being inserted in the upper end of tubular posts 14 one of which is provided in substantially upstanding position adjacent each of the rear corners of the main bed section.

The main bed section 10 is conveniently formed with more or less ornamental feet 15 at its four corners carrying thereabove a suitable framework of the proper height as hereinafter described with said framework open at its back. Said framework carries at its top the bed member proper of this main bed section. The bed member ordinarily and preferably is composed of a set of coiled springs mounted side by side on end carrying at its top suitable upholstering with the whole bed covered at its top and sides with a suitable covering 16 of fabric or the like. In practice this covering is continued downwardly as a covering 17 about the front and two ends of the framework carrying the bed proper. The details of the frame of this bed section need not be described as the form of the frame is immaterial to this invention. As already mentioned, this frame is open at the back and this is for the purpose of ordinarily housing within said frame and below the bed

member proper of this main bed section the secondary or smaller bed section 18. As best appears in Fig. 2 this secondary bed section is composed of a rectangular framework ordinarily composed of front and rear rails connected by angle iron ends 19 with said rectangular frame supported at its four corners by short legs 20. Ordinarily the top of this secondary frame is provided with a resilient mattress-supporting surface such as of woven wire and helical springs of well known construction. The whole secondary bed section is shorter and narrower than the main bed section so that it can be housed within the framework of the main bed section either by pushing the secondary bed section beneath the main bed section from the rear or as is more commonly done by shifting the main bed section rearwardly over the secondary bed section. For convenience in so relatively moving the parts the legs of the secondary bed section are usually not provided with casters while the feet of the main bed section are provided with casters or the equivalent frictionless gliders. The height of the secondary bed section 18 is such that the above mentioned telescopic motion may readily take place relative to the open rear side of the framework of the main bed section. In other words, when the two bed sections are being telescoped the lower secondary one passes below the lower face of the spring structure of the main bed section.

A mattress or large cushion 21 preferably of the spring-filled type is placed over the main bed section 10 when this article of furniture is to be used as a couch as shown in Fig. 1. Also when this article of furniture is functioning as a couch there will be used with it several small cushions 25 commonly placed at a slightly slanting angle and resting against the back 11. When the studio couch is to be used as a double bed or twin bed these small cushions are removed and after the bed sections 18 of the couch have been separated into desired position either for a double bed or a twin bed, the large mattress or cushion 21 will be removed from the main bed section and placed upon the secondary bed section thus raising the secondary bed section to ordinary bed level and providing a comfortable-sleeping bed section. The proportion of the parts is preferably such that the upper surface of the mattress or cushion 21 when on the secondary section is substantially on a level with the covered top of the main bed section so that the two sections may be conveniently used as a double bed. On the other hand the said mattress or cushion 21 when placed upon the main bed section forms a couch of convenient height when a person is sitting thereon.

The removable back 11 is conveniently formed of a top rail 22 and opposite end portions 23 connected thereto with said end portions having their lower parts preferably in substantially upright position. As illustrated herein the removable back has its top rail 22 and its ends 23 most conveniently formed of metallic tubular material but this feature it will be seen is not essential to the invention as long as the back has means for supporting at the lower extremities of its ends the downwardly extending pins 12 whereby the said back is removably and conveniently attached to the open topped socket members 13 provided upon the opposite rear corners of the main bed section. Preferably also the back 11 will have at least one additional lengthwise member 24 conveniently being another tubular member spaced below the top rail 22 and having its opposite ends attached to the back ends 23. This additional cross rail 24 serves as a structural brace for the top rail 22 and its connected depending ends 23 but is usually desirable to make the back more comfortable in use and as a further support for the small cushions 25.

The pins 12 which severally depend from the lower extremity of the ends 23 of the back may be mounted in any desired way in said end members, but when the said end members are formed of metal tubular material a convenient way of mounting the pins in said tubular ends 12 is to form the said pin as a depending portion upon the spool-like member 26. This spool-like member is really and preferably an integral upward extension of the pin 12 and consists of a central portion 27 preferably in alignment with the pin 12 while at the upper and lower ends of said central portion there are outwardly extending flanges 28 and 29. These flanges extend out to meet and be suitably secured to the inner surface of the tube forming each back end 12. I have shown this tube as being square and accordingly as seen in the detail views thereof the upper and lower flanges will be square to fit snugly within the bore of said tubing. I have called the flanges square as they are such substantially although slight notches are placed in either one or two opposite corners thereof to enable the said flanges to fit the inside of the tubing which has at one corner the inwardly projecting material of the usual lock joint 33 of said tubing. Preferably the pin 12 and its extension 26 and the two flanges 28 and 29 will be formed as a malleable iron casting in order to give the said pin member the desired strength and toughness. Obviously if metal tubing of other than square shape is being used to form the removable back the flanges will be shaped so as to fit the bore thereof. The pin members are permanently fastened in the lower portion of an end as by welding the lower flange to the adjacent part of the tube forming the end 12. The preferred and most convenient form of cross-sectional shape of pin 12 is to make the same circular in cross area and with practically parallel sides but with the lower end of the pin rounded off for convenience in starting the pins into the holes of their corresponding sockets.

The socket members 13 are most conveniently provided adjacent the rear corners of the main bed section and at the proper height thereon by providing substantially upright posts 14 conveniently adjacent each rear corner of the main bed section. These posts will also preferably be of the same size and structure as the main parts of the removable back. As I have shown the parts of the back as formed of square tubing, I therefore utilize square tubing of the same size for these posts 14. Preferably these tubular posts 14 extend down along the ends of the main bed section near the rear corner thereof and are of sufficient length to extend downwardly to overlap the framework of said main bed section and the lower end of each post is permanently secured to said framework by two bolts or screws 31 which extend through two opposite side walls of said tubing and then through the fabric covering 17 of said framework and then into the metal or wood members of the said framework. From the thus fastened lower end a rear corner post extends up past the adjacent covering of the spring member of the main bed section and then continues upwardly past and closely adjacent to the end of the mattress or cushion 21 when that cushion is upon the main

bed section. Ordinarily the said corner post extends slightly above the upper level of the said cushion 21. As shown in the drawings herein the upper end, say a quarter or a third of said tubular post, is bent towards the rear slightly in order to support the back at the desired slightly backwardly slanting angle.

Within the upper end of each tubular rear post 14 there is permanently mounted a socket member 13. Each socket member is of an outside size and shape to fit the inside of the post 14. Assuming the post 14 to be of square tubing the outside shape or contour of the socket members 13 will be square except for a recess formed at one corner to allow for the extra material of the lock joint 33 at one corner of the tubing. The socket member 13 will be of sufficient length so that its hole or aperture 34 will give support to the pin 12 for sufficient length to make a joint free from swinging or swaying motion.

As already mentioned a plain pin and socket joint between the back ends 23 and the post 14 would not provide with certainty a sufficiently easily manipulated joint for the purpose of this studio couch unless the parts of the studio couch were made and assembled with very much greater precision and accuracy than is commercially practicable with a relatively low-priced article of furniture such as a studio couch of this description has to be. It will be seen that the pin and socket joints in an article of this sort are located away from each other the length of the couch, namely ordinarily about six feet and three inches. This very length of the two removable joints away from each other means that when the woman who is to shift her studio couch into double bed position goes to remove the removable back from the couch the back should easily lift up when she grasps the top rail of the bed anywhere near either end with both hands. If either pin and socket joint should be even slightly tight that joint would not slip. An effort to overcome that tightness by putting one or both hands closer to that end would result most likely in cramping the other end because there was not sufficient lifting power provided at that end. It will be understood that a structure of this sort simply must be operable by one person. In the same way the removable back should be so easily placeable in position by both pin and socket joints going together that all the person should have to do would be to start the pins into the opposite sockets and the slight weight of the back will let the back slide down to normal holding position. There should not during this motion be the slightest tightness at either joint or the parts will cramp and lock in a position above the desired normal down position. Further possibilities of irregularity either in the construction of the parts or more likely in the assembling thereof is that any one framework of the main bed section may not have the outer face of its ends vertical. It will be recalled that the corner posts 14 have their lower ends secured to the ends of the framework of the main bed section. If the planned vertical face of an end of the main bed frame should be out of the vertical plane even a small fraction of an inch, by the time the top of the corner post is reached, this divergence will be multiplied many times so that the tops of the corner posts or at least one of them might be not absolutely in alignment with even a perfectly-made back 12. Furthermore, there may be a slight difference in the length of the outside dimension of the main bed section which would obviously vary the distance between the sockets in the rear corner posts carried thereby. Another element of variation is the thickness and possibilities of additional seams or folds in the fabric covering 17 outside of the framework of the main bed section. Again sometimes although not often the distance between the depending pins 12 of the removable back may vary a slight amount from the standard dimension planned therefor. These and several other known possibilities of variation will show that the pin and socket joints to be used in this construction must be of such character and their relative location and co-operation must be such as to allow for the presence of one or more of these variations especially in the distance between the sockets and sometimes even in the distance between the two pins of a studio couch. To overcome these possibilities of trouble I have provided a special pin and socket joint and particularly a special arrangement of the members of the two pin and socket joints so that while the joints are substantially close fitting from front to back, the holes of the sockets by being elongated lengthwise of the studio couch will provide for an appreciable looseness of fit or play of the pins in the socket holes lengthwise of the couch. There is practically no chance of variation from front to back in the co-operation of the pins and socket holes and accordingly I make this fit of the pin and socket joints relatively tight. This gives the back an appearance and feeling of great stability and firmness because the only appreciable test that is made of the tightness of these joints is when a person reclines against the back. With my set of joints tight in this direction, that is from front to back, the couch will stand that test. Almost never will a couch be tested as to the rigidity or firmness of the back lengthwise of the couch. By making the socket holes elongated lengthwise there is provided sufficient lengthwise space in the holes for the pins to readily go down thereinto even though the center of the socket holes may not be in alignment with the centers of the pins.

Preferably I accomplish this lengthwise enlargement by making the socket holes 34 appreciably wider lengthwise of the couch than is the dimension of the pins in that direction. A convenient form of so elongating the socket holes for a round pin such as shown in the drawings herein is to make a hole, the two end portions of which lengthwise of the couch are semi-circular but the axes of these two semi-circular parts are spaced apart an appreciable distance, say about one-quarter of an inch so that the central portion of the hole has its front and rear sides straight and more or less parallel to each other. This construction provides the proper relatively close fit from front to back but allows one or both pins to slide down into the socket holes more or less towards either end thereof lengthwise of the couch and so provides an easy fit even if the pins are not in true alignment with the absolute center of the socket hole.

It will be understood that I do not intend to be limited to the precise form of the elongated hole in the socket lengthwise of the couch for use with a round pin nor do I intend to limit my invention to the use of a round pin, as variations as to these details will be obvious to persons skilled in the art.

Ordinarily the main bed section will be provided with an arm at each end. These may be conveniently formed of tubular material, preferably harmonizing with the tubular posts 14 and the parts of the back 11. Accordingly I provide

at each end of the main frame an arm **35** of square tubing having its rear end fastened as by welding to the front of the tubular post **14** at or near its upper end while the forward end of the arm is carried by an upright support **36** conveniently formed by an integral down-turned extension of the tubing forming the arm. The lower end of this support is rigidly fastened to the end of the frame of the main bed section towards the front thereof. Each arm will usually be provided at the top with an upholstered pad **37** which at the rear end of the arm extends above the level of the top of the adjacent tubular post **14** and serves to largely conceal and practically to prevent the hands of the operator coming into contact with the upper end of the tubular post **14**. However, each socket member has its upper end finished off smooth and is flush or level with the smooth upper end of its post **14**.

It will be seen furthermore that I have placed the socket member of the joint as the lower member of the joint on the said posts **14** so that when the back is removed from the main frame there is no upwardly projecting pin left on the main bed section where it would be unsightly and in the way.

This peculiar loose fit of the pin and socket joints lengthwise of the back allows the back to be readily demounted from the main bed section in a manner that seems to most women to be convenient and natural, viz: First by grasping the top rail of the back near one end and lifting that end up a few inches (which disconnects that end of the back from its socket and due to the elongated socket does not cramp the joint at the other end); and then by reaching out to convenient arm's length towards the other end and lifting up on the top rail, the joint at the said other end is disconnected without cramping. Similarly if desired the two joints can be connected one after the other instead of connecting both at the same time. Some women find it most convenient to kneel upon the main bed section near its center and then reach back and grasp the top rail of the back with the hands separated naturally and then lift the back bodily upwardly.

The whole construction of this convertible studio couch lends itself readily to shipping the whole article in "knock-down" form in one carton. The back is first detached and then the two arms with their attached supporting members namely the rear tubular posts **14** and the forward supports **38** are detached from the main bed support and these three parts are placed flatwise between the cushion **21** and the top of the main bed section. The secondary bed section is of course housed in its regular place beneath the main bed section and the space beneath the smaller bed section will receive the small cushions **25**. The parts are readily assembled by simply attaching the arm supports at their lower ends to the main bed section frame-work by the screws or bolts provided therefor.

What I claim as new and desire to secure by Letters Patent is:

1. In a convertible studio couch, the combination of a main bed-couch section less in extent from front to rear than from end to end and having an upstanding post adjacent each rear corner, an easily detachable back extending from end to end of the main bed-couch section and including at each end a downwardly extending member in alignment respectively with the said rear corner posts, an open-topped, upright socket in the upper end of each of said rear corner posts and a pin extending down from the lower extremity of each of said downwardly extending back members, said pins readily entering said sockets and thereby holding the back in upright position, said pin and socket joints having all their cooperating front and rear surfaces parallel and non-wedging, and easily sliding apart by moving the back upwardly from the main bed section and said pin and socket joints being relatively close-fitting from front to rear but having an appreciable loose fit lengthwise of the studio couch, so that raising the back unevenly does not cramp the joints, and cooperating stop faces at substantially right angles to the cooperating front and rear surfaces.

2. In a convertible studio couch, the combination of a main bed-couch section less in extent from front to rear than from end to end and having an upstanding tubular post adjacent each rear corner, a detachable back extending from end to end of the main bed-couch section and including at each end a downwardly extending tubular member in alignment respectively with the said rear corner posts, an open-topped, upright socket in the upper end of each of said rear corner posts and a pin extending down from the lower extremity of each of said downwardly extending back tubular members, said pins readily entering said sockets and thereby holding the back in upright position, said pin and socket joints having all their cooperating front and rear surfaces parallel and non-wedging and being readily detachable by moving the back upwardly from the main bed section and said pin and socket joints being relatively close-fitting from front to rear but having an appreciable loose fit lengthwise of the studio couch, so that either end of the back can be raised appreciably more than the other end without producing a cramping or jamming action at said joints.

3. In a convertible studio couch, the combination of a main bed-couch section less in extent from front to rear than from end to end and having an upstanding post adjacent each rear corner, a detachable back extending from end to end of the main bed-couch section and including at each end a downwardly extending member in alignment respectively with the said rear corner posts, an open-topped, upright socket in the upper end of each of said rear corner posts and a pin extending down from the lower extremity of each of said downwardly extending back members, said pins readily entering said sockets and thereby holding the back in upright position, each of said pin and socket joints having cooperating transverse stop faces and said joints having all their cooperating front and rear surfaces parallel and non-wedging so that said joints are easily detachable by moving the back upwardly from the main bed section, said pins fitting the socket holes relatively closely from front to back but the socket holes being elongated lengthwise of the couch relative to the dimension of the pins in that direction and relative to the spacing of the two pins, so that either end of the back can be raised appreciably more than the other end without producing a cramping or jamming action at said joints.

TOWNSEND FOSTER.