Feb. 28, 1939. W. E. WUNDERLICH 2,148,890

STUDIO COUCH

Filed March 22, 1937

Fig. 1.

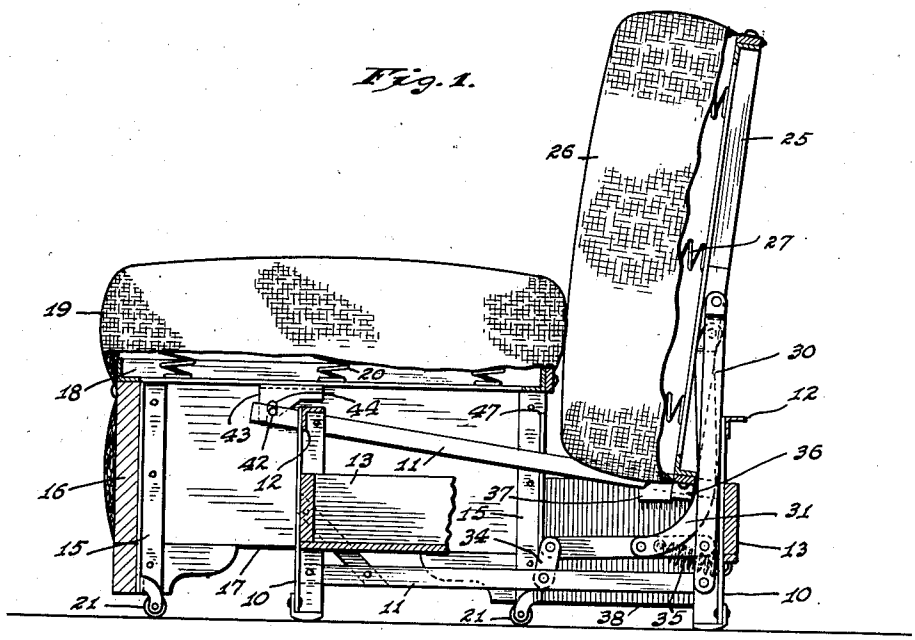
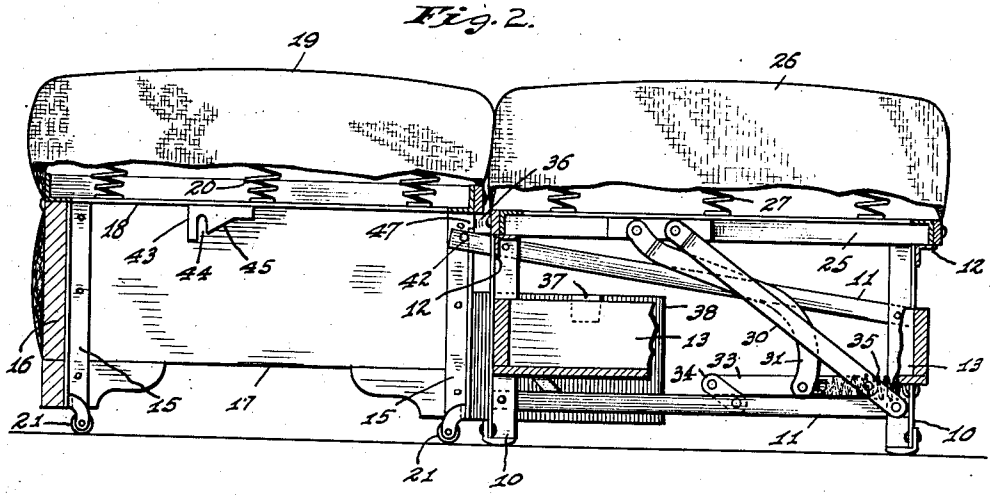


Fig. 2.



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STUDIO COUCH

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3 Claims. (Cl. 5—47)

My invention relates to studio couches and has for its particular object the production of a studio-couch construction which can readily be changed to convert the couch into a bed. A further object of my invention is to provide an arrangement in which all the upholstery may be permanently attached to the frame of the couch, whereby loose pads or cushions may be eliminated. Still another object of my invention is to provide a couch of this type in which the two sections may either be left permanently in association with each other to form a double-width bed or may be completely separated to provide two independent beds.

In carrying out my invention, I form the frame of the couch in two telescoping sections, the outer one of which carries the seat of the couch and the inner one of which carries the back. The back constitutes a rigid frame to the front face of which any desired form of upholstering is permanently attached, and the back is connected to its associated frame-section or base by links which permit it to move from an approximately vertical, back-forming position to a substantially horizontal, bed-forming position when the two sections of the couch are extended. Releasable latch means are provided for holding the two couch sections in nested relationship when the structure is used as a couch, and additional means are provided permitting complete separation of the two sections when they are extended.

The accompanying drawing illustrates my invention, Figs. 1 and 2 being end elevations, with parts broken away, showing the structure in couch-forming and bed-forming conditions respectively.

The inner or lower section of the couch frame comprises legs **10**, cross members **11**, and longitudinal frame members **12** secured together to form a rigid frame which may include a bedding-box **13**. If desired, the bedding-box may be built permanently into the frame to aid in stiffening it.

The upper or outer section of the couch frame comprises legs **15**, a front **16** rigidly secured to the two front legs, and ends **17** rigidly secured to the legs **15** at each end of the couch. A rectangular sub-frame **18** is carried by the front **16** and ends **17**, and to this frame the seat **19** of the couch is attached, the upholstering of the seat preferably including springs **20**. The outer section of the couch is mounted on wheels or rollers **21** so that it can readily be moved forwardly or rearwardly relatively to the inner or lower frame section.

The back of the couch comprises a sub-frame **25** to which suitable upholstering **26**, desirably including springs **27**, is attached. The sub-frame **25** is connected to the inner couch section or base through the medium of two links **30** and **31** at each end of the couch. The upper ends of these links are pivotally connected in spaced relation to the adjacent end of the sub-frame **25**, the axis of pivotal attachment of the link **30** being above that of the link **31**. The link **30**, which may be substantially straight, has its lower end pivoted to the inner couch section, conveniently to the rear leg **10** near the bottom thereof. The lower end of the link **31** is not connected directly to the inner couch section, but instead is pivotally attached to an intermediate point of an auxiliary link **33** one end of which is pivotally connected to the link **30** at an intermediate point thereof and the other end of which is pivotally connected to a swinging arm **34** which extends downwardly from the auxiliary link **33** and has its lower end pivotally connected to the inner frame-section, conveniently to the adjacent cross-member **11**. The effective length of the arm **34** is approximately equal to the distance between the pivotal connections of the link **30** to the auxiliary link **33** and the leg **10**, respectively; so that any position of the auxiliary link is approximately parallel to any other position. When the structure is used as a couch, the point of pivotal connection between the link **31** and the auxiliary link **33** is located an appreciable distance in advance of the plane of the sub-frame **25**, and the link **31** is therefore curved to clear the lower edge of such sub-frame.

When the structure described is used as a couch, the parts occupy the relative positions illustrated in Fig. 1, the sub-frame **25** being approximately vertical and the outer frame section being moved inwardly to bring the seat **19** into contact with the back **26**. When it is desired to use the structure as a bed, the outer frame section carrying the seat **19** is moved forwardly to the position illustrated in Fig. 2. With the seat **19** thus removed from the back **26**, the sub-frame **25** can be tilted rearwardly and moved forwardly into the position illustrated in Fig. 2, in which position the upper surface of the back **26** will be substantially coplanar with the upper surface of the seat **19**. In this position, the sub-frame **25** rests securely on the top of the inner frame-section at both front and rear.

The weight of the back **26** and its associated sub-frame **25** can be at least partially counterbalanced by the provision of tension springs **35** each of which acts between an auxiliary link **33** and the inner frame-section or base to bias such auxiliary link rearwardly, thus tending to cause the link **30** to swing toward the upright position shown in Fig. 1. Conveniently, the legs **10** are formed of angle iron, as indicated, and the link **30** is pivoted to the inner face of one flange of such angle iron so that the other flange can act as a stop or abutment limiting swinging movement of the link **30** to hold the back in the desired upright position.

To hold the back in vertical position with the link **30** in engagement with the leg **10**, the subframe **25** may be provided at each end with a downwardly projecting finger **36** engaging an abutment **37** on a wing **38** which extends rearwardly from the outer or front section of the couch frame. Engagement of the finger **36** with the abutment **37** prevents the back **25** from moving out of its vertical position until after the outer couch-section has been moved forwardly far enough to permit the finger **36** to clear the abutment **37**.

To aid in holding the back **25** firmly in upright position the links **30** and **31** are desirably so arranged that, as the back **25** approaches its extreme upright position, the pivotal axis of the connection between the link **31** and back **25** passes through a line joining the pivots at the top of the link **30** and at the lower end of the link **31**. With this arrangement, a certain toggle-like action is obtained which tends to stress the links slightly, take up all lost motion, and hold the back **25** rather firmly in upright position.

I obtain several distinct advantages by pivoting the lower end of the link **31** on the auxiliary link **33** rather than directly to the base or inner frame-section of the couch. One such advantage arises from the fact that as the back is swung from upright toward horizontal position it is bodily carried forwardly, thus decreasing the maximum distance to which the upper edge of the back **25** will project rearwardly beyond the base as it is lowered and making it unnecessary to move the couch as far from a wall in rear of it as would otherwise be the case. Another advantage obtained by the use of the auxiliary link **33** is that the back **25**, when moved upwardly from its lower position illustrated in Fig. 2, will not tilt as rapidly as it would if the lower end of the link **31** were pivoted directly to the base. As a result of this last feature, it is easier to obtain a firm seating of the back **25** at both the front and rear sides of the base. Still another advantage resulting from the use of the link **33** is an increase in the smoothness of action as the back **25** is moved from one position to the other and a more satisfactory balancing of the back by the spring **35**.

In effect, the links **30** and **31** may be regarded as pivoted to the auxiliary link **33** and the structure as embodying means for moving the auxiliary link forward as the back **25** is lowered, and vice versa.

To prevent the outer or front section of the frame from moving forwardly on its supporting rollers **21** when the structure is being used as a couch, I may provide a releasable latch means for holding the two frame sections in telescoping relation. As shown in the drawing, the upper cross-member **11** at each end of the inner frame-section projects forwardly beyond the front legs **10** and is there provided with a transversely extending pin **42**. The outer or upper frame-section is provided at each end with a latch member **43** positioned to co-operate with the pin **42** when the two frame-sections are telescoped together. As shown, each of the latch members is provided with a downwardly opening, pin-receiving notch **44** and, in rear of such notch, with a rearwardly and upwardly inclined cam-surface **45**. When the two sections of the frame are moved into telescoping relation, the cam surfaces **45** engage the pins **42**, thus causing the outer frame section to be elevated slightly until the notches **44** come over the pins **42**, whereupon the outer frame section drops under the influence of gravity and the pin **42**, being received in the notch **44**, holds the two sections together. When it is desired to move the sections into extended relationship, the front side of the outer section is raised slightly to permit the rear wall of the notch **44** to clear the pin **42**, and the outer frame section is then moved outwardly.

The same pins **42** which co-operate with the notches **44** to retain the two frame sections in telescoped relationship may also be employed to limit separation of the two frame sections. To this end, the pins **42** are made long enough to overlap the flanges on the rear legs **15** of the outer frame section, so that they engage such flanges when the two frame sections are completely extended and prevent their separation. If desired, the upper ends of the flanges on the legs **15** may be cut away, as indicated at **47** so that by moving the front end of the inner frame section upwardly relative to the rear end of the outer section the pins **42** can be made to clear the leg-flanges, whereby the two frame sections can be completely separated to form two independent beds.

I claim as my invention:

1. In a studio couch, a base, a back, a pair of main links pivotally connected to said back in vertically spaced relation at each end of the back, the upper of said main links being pivotally connected to said base at its lower end, an arm pivoted to said base, and an auxiliary link pivotally connected to an intermediate point of said upper main link extending forwardly therefrom, and connected to said arm, the lower end of the other of said main links being pivoted to said auxiliary link.

2. In a studio couch, a base, a back, and a pair of link mechanisms located at opposite ends of the base and operatively connecting the base and back, each of said link mechanisms comprising a member movably supported from said base, a pair of links having their lower ends pivotally connected to said member in spaced relation and their upper ends pivotally connected to said back in spaced relation, said links being so arranged as to guide the back for movement from a generally vertical position to a generally horizontal position with its front face uppermost, and means for moving said member forwardly as said back is moved from vertical to horizontal position, said means comprising an extension rigid with one of said links, said extension projecting downwardly below said member and being pivotally connected to said base.

3. In a studio couch, a base, a back, and a pair of link mechanisms located at opposite ends of the base and operatively connecting the base and back, each of said link mechanisms comprising a member movably supported from said base, a pair of links having their lower ends pivotally connected to said member in spaced relation and their upper ends pivotally connected to said back in spaced relation, said links being so arranged as to guide the back for movement from a generally vertical position to a generally horizontal position with its front face uppermost, and means for moving said member forwardly as said back is moved from vertical to horizontal position.

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