

March 26, 1935.

E. L. WEINMAN
REVERSIBLE COUCH BED
Filed Feb. 15, 1934

1,995,787

Fig. 2

Fig. 1

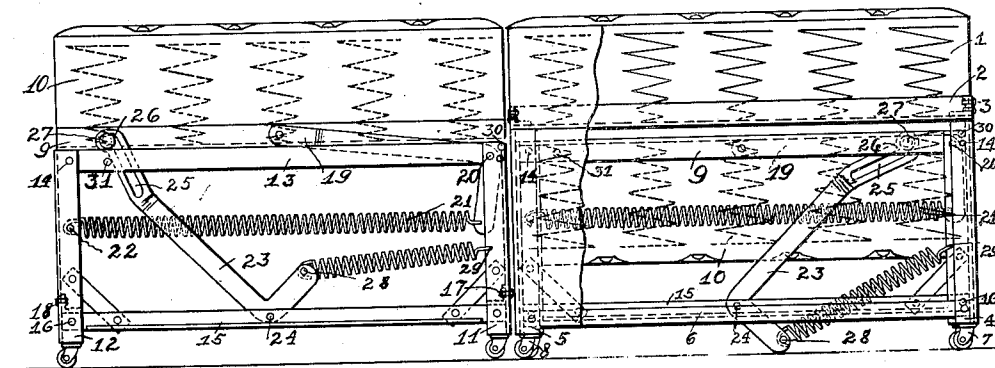


Fig. 3

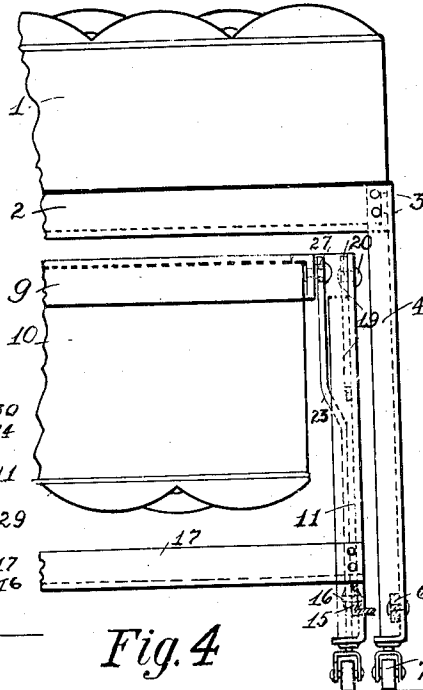
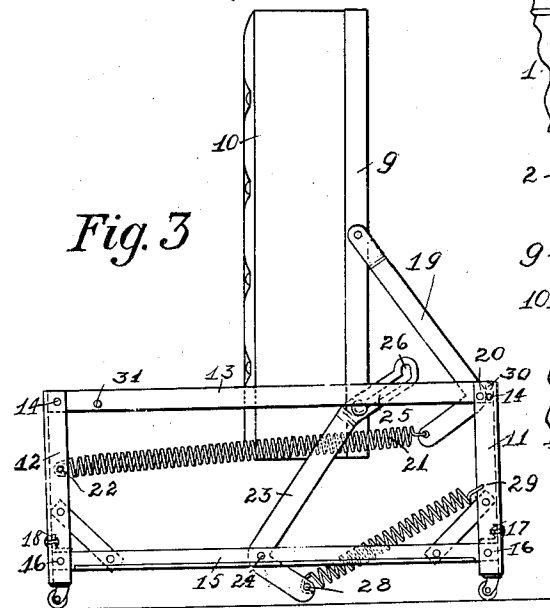


Fig. 4

Inventor,
Edwin L. Weinman

UNITED STATES PATENT OFFICE

1,995,787

REVERSIBLE COUCH BED

Edwin L. Weinman, Chicago, Ill.

Application February 15, 1934, Serial No. 711,298

12 Claims. (Cl. 5—26)

This invention relates to improvements in reversible couch beds, particularly the type which comprises slidably movable sections and has for its primary object, to provide easily operating reversing means for inverting the seat or mattress of one section to be housed within the other section and to elevate such seat or mattress to a higher horizontal level by rotation, when moved outwardly.

10 This object is attained by a simple and inexpensive mechanism shown in the accompanying drawing, in which:

15 Fig. 1 is a vertical transverse end elevation of the complete device with part of the covering cut away showing the inner section with the seat or mattress horizontally inverted, while housed within the outer section;

20 Fig. 2 is a vertical transverse end elevation of the inner section, with the outer section removed and with the seat or mattress in elevated horizontal position in alignment with the seat level of the outer section.

25 Fig. 3 is another vertical, transverse end elevation of the inner section, with the seat or mattress raised uprightly during the transitory movement thereof and

30 Fig. 4 is a fragmentary vertical rear elevation of the longitudinal sides of both sections when housed within one another, with the helical pulling springs omitted. Similar numerals refer to similar parts throughout the several views and the singular may refer to the plural.

35 Referring to the parts and details of construction shown in the several figures, the outer couch bed presented in Figures 1 and 4 comprises a coil spring mattress 1, supported by a bedspring frame 2, preferably made of angle iron bars, connected rigidly by rivets 3, to legs 4 and 5, which are riveted near the bottom to strips 6, these legs 40 being provided with casters 7 and 8 to facilitate moving the outer couch structure.

45 The inner couch bed presented in Figures 1, 2, 3 and 4 consists of a supporting structure and bedspring frame 9, with a coil spring mattress 10, attached, which is shown in Figures 1 and 4, in its lower inverted position, in Fig. 2 in reversed elevated position and in Fig. 3 in transitory vertical position.

50 The supporting structure is also made preferably of angle iron and flat metal strips, legs 11 and 12 being riveted to flat metal strips 13 by rivets 14 and to the transverse angle iron bar 15 by rivets 16, the legs being also connected by 55 longitudinal angle iron bars 17 and 18, thereby

forming with the opposite transverse ends the inner supporting structure.

The mechanism by which the device is operated, is shown in the respective positions of the parts in the different views and consists of a pair of bellcrank levers or linkages at each end of the inner structure to the upper corners of which levers or links 19, are pivoted at point 20, the upper ends of these levers or links being fulcrumed to the approximate center of bedspring frame 9, and the lower ends attached to helical springs 21, which are fastened to the opposite transverse ends of the inner structure at points 22.

15 The bellcrank levers or links 23 are pivoted at points 24, to the approximate center of the transverse angle iron bars 15, of the inner structure and the opposite ends of these levers or links are provided with slots 25, and a notch 26, engaging the rollers 27, of the bedspring frame 9, while the lower ends of levers or links 23, are attached to helical springs 28, fastened at points 29, to the supporting structure.

25 When the inner structure is separated from the outer couch, the bedspring frame 9, is rotated from inverted horizontal position within the inner structure with the mattress 10, below the bedspring frame as shown in Figures 1 and 4, to horizontal position above the inner structure with the mattress on top of the bed spring frame, elevated to the normal height of a couch and in alignment with the level of the outer couch, as shown in Fig. 2.

30 During the rotating operation of the bedspring frame 9, and mattress 10, the lifting thereof is aided by levers 19, while the bedspring frame and mattress are assisted in moving in the direction of their rotation by levers 23.

40 At the beginning of the rotary movement, the rollers 27, of the bed spring frame slide out of notch 26 of levers 23, to the lower end of slot 25 therein, thereby requiring less effort to reverse the bedspring frame and mattress, because they have to be lifted to a lesser height, the lower end of lever 19 moves less far away from leg 11, thereby helical springs 28, pulling on the lower end, contract less and therefore exert more power; also by reducing the distance of the rollers 27, to pivotal point 24 of lever 23, the upper height of the leverage thereof is shortened in proportion to the length of the leverage of the other leg of lever 23, thereby helical springs 28 exert more power pulling thereon.

50 After the reversing operation is completed and the mattress is in elevated horizontal position 55

it is supported with the bedspring frame at one corner on each end, by a sufficiently inwardly projecting stud 30, and the helical springs 28, by pulling on the lower leg of levers 23, force the rollers 27, of the bedspring frame 9, into the notch 26, of the lever 23, which rests against stop 31, thereby the bedspring frame and mattress are supported at both corners in elevated horizontal position.

It will be understood, that if the bedspring frame and mattress are made as light in weight as possible, the slot 25, and notch 26, of levers 23, and the rollers 27, may be dispensed with and the upper ends of these levers may be directly pivoted to the bedspring frame, therefore applicant does not wish to be limited to either one form or the other of these engaging means.

Having thus described the construction and function of the improved device, which is the object of my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a couch bed the combination of a structure including legs, a pair of transverse crossbars connecting the legs of said structure at each end, bellcrank levers pivoted to the approximate center of the lower crossbars and near the upper corners of one side of said structure, respectively, a reversible spring frame and mattress pivoted at the approximate center of its transverse ends to the upper ends of one of the bellcrank levers and also engaging the upper ends of the other bellcrank levers near the corners of the spring frame, pulling springs connecting the lower ends of all of the bellcrank levers with the inner structure aiding in balancing the weight of the spring frame and mattress while reversing the same to horizontally elevated position and also when inverted to lower horizontal position.

2. An inner couch bed provided with a bedspring and mattress adapted to be housed with the latter inside an outer couch bed and also to be used separately therefrom, upper and lower crossbars on the transverse ends of the inner couch bed, levers pivoted to the approximate center of the lower crossbars and engaging the bedspring frame near the corners thereof, and supporting the same in every position, pulling springs attached to the lower part of said levers and to said inner couch bed aiding in swinging said levers toward the center of said structure, a pair of bellcrank levers pivoted near the upper corners of the transverse ends of the inner couch bed and fulcrumed at the approximate center of the bedspring and mattress, the lower ends of said bellcrank levers being also connected by pulling springs to said inner couch bed, said pulling springs aiding to lift the upper end of said bellcrank lever and the center of said bedspring frame upwardly, both sets of levers and pulling springs co-acting in supporting and balancing said bedspring and mattress, whereby the same may be reversed from lower inverted position within the outer couch bed to elevated horizontal position in alignment therewith when moved outwardly.

3. In combination an inner couch bed, provided with a seat, adapted to be housed with its seat inverted under the seat of an outer couch bed when not in use and also outwardly movable to form a separate couch and bed by reversing the inverted seat thereof, and thereby elevating the same to the level of the seat of an outer couch bed, the reversing operation being performed by means of a pair of levers, one such lever being pivoted to the inner couch bed struc-

ture and to the approximate center of the seat thereof and the other lever being pivoted to the approximate center of the transverse ends of the inner structure and provided with a slot engaging the seat of the inner couch bed near one corner thereof, whereby the latter may be sliding to the lower end of the slot during the reversing operation and moving to the upper end thereof, when said seat is rotated to elevated horizontal position.

4. In combination an inner couch bed structure, transverse crossbars connecting the front and rear sides of the inner structure, a bedspring frame and a mattress supported by the latter, a pair of arms pivoted to the crossbars near the center thereof, slots in the end of said arms, rollers near the corners of said bedspring frame and mattress engaging said slots and a pair of levers pivoted near the corners of said inner couch bed structure and pivotally connected to the approximate center of the bedspring frame and mattress and springs pulling on said arms and on said levers thereby aiding in balancing and in reversing said bedspring frame and mattress from and to horizontal position.

5. In a couch bed, including a supporting section and a reversible section supported thereon, a pair of bellcrank levers pivoted at the opposite upper corners of the supporting section and fulcrumed at their upper ends to the approximate center of the reversible section and another pair of levers pivoted to the lower part of the supporting section at the approximate center thereof and provided with slots at their upper ends, engaging the reversible section near the corners of the same whereby the latter may slide from the top of said slot to the bottom thereof and vice versa and pulling springs connected to the lower ends of said bellcrank levers, aiding in reversing said reversible section from one horizontal position to another.

6. In a couch bed the combination of a supporting structure and a rotating bedspring frame and mattress connected thereto, a pair of arms provided with slots at their upper ends and angular extensions at their lower ends, pivoted to the supporting structure, helical springs attached to the angular extensions, and to said supporting structure, means on the bedspring frame engaging said slots whereby part of said bedspring frame may slide to the lower end of said slot, thereby reducing the distance between said bedspring frame and the lower pivot of said arms, thus increasing the leverage of the angular extension connected to said helical springs, whereby a relatively greater force is exerted upon said arms by said helical springs during the reversing operation.

7. In a reversible couch bed the combination of a supporting structure and a reversing bedframe provided with studs at each end thereof, upwardly extending arms pivoted to the lower middle part of the ends of said supporting structure and elongated perforations at the upper ends of said arms, engaging said studs, whereby the latter may slide to the lower end of said perforations, thereby reducing the height to which said bedframe would be lifted while rotating the same, when said arms are swinging from either side to intermediate position.

8. In the combination of a reversible couch bed, comprising a supporting section and a reversible section, a pair of levers pivoted near the corners of the supporting section and at the approximate center of the reversible section and another pair

of levers attached to the lower middle part of the ends of said supporting section and turnably engaging the ends of said reversible section intermediate the center and the corners thereof and pulling springs attached to the supporting section and to said levers, aiding in lifting the levers pivoted to the center of said reversible section and in swinging the levers engaging said reversible section intermediate the center and the corners thereof toward the middle of said supporting section during the reversing operation.

9. In combination a supporting section and a reversible frame section with a bedbottom, connected thereto, a mattress at one side thereof, upwardly extending arms on the lower center part of said supporting section engaging and partially supporting said frame section, bellcrank levers pivoted to said supporting section and to said frame section and pulling springs connected to said bellcrank levers and to said supporting section, aiding in co-action with said upwardly extending arms to lift and reverse said mattress from below said bedbottom to uppermost position above said bedbottom while said arms swing in either direction from one side to the other.

10. In a couch bed, in combination, a supporting structure, a reversible bed section and means for supporting and rotating the same on the supporting structure, comprising at each end a link turnably held on a lower part of the supporting structure approximately midway the front and rear thereof and pivotally engaging the reversible section near one corner thereof, a second link pivoted to the end of the supporting structure and to the reversible section substantially midway between the front and rear thereof and spring means held to said supporting structure assisting in lifting said reversible section upwardly, the first mentioned link swinging from side to side of the supporting section, and additional spring means aiding the lower corners of said reversible bed

section in swinging with said first mentioned link toward the intermediate position in either direction.

11. In a couch bed and the like, the combination of a supporting structure and a rotatable bed section mounted thereon, a reversing mechanism in pivotal engagement therewith, said reversing mechanism comprising horizontally folded linkages pivoted to said rotatable bed section and to the transverse ends of said supporting structure, and diagonally folded linkages turnably held to the lower center part thereof and also to the rotatable bed section, and spring means on said diagonally folded linkages aiding in swinging the lower part of said rotatable bed section towards the middle part of the transverse ends of said supporting structure when rotated in either direction, while said rotatable bed section is reversed to alternate horizontal positions.

12. In a couch bed and the like, adapted to be used with a separate and removable seat, a supporting structure and a rotating bed section bell crank levers pivoted near their elbows to said supporting structure and with their upper ends to the approximate center of the rotating section, the latter being provided with a mattress, adapted to be reversed therewith, when said separate seat is removed, linkages turnably held to the lower middle part of said supporting structure and to said rotating bed section and counterbalancing springs connected to said bell crank levers and to said structure, aiding the same in actuating said linkages to swing the lower corners of said rotating bed section and mattress in either direction upwardly, to approximately balanced intermediate position during the reversing operation and thereby enabling said bed section to turn with said mattress from inverted position to uppermost bed position and vice versa, independently of said separate removable seat.

EDWIN L. WEINMAN.