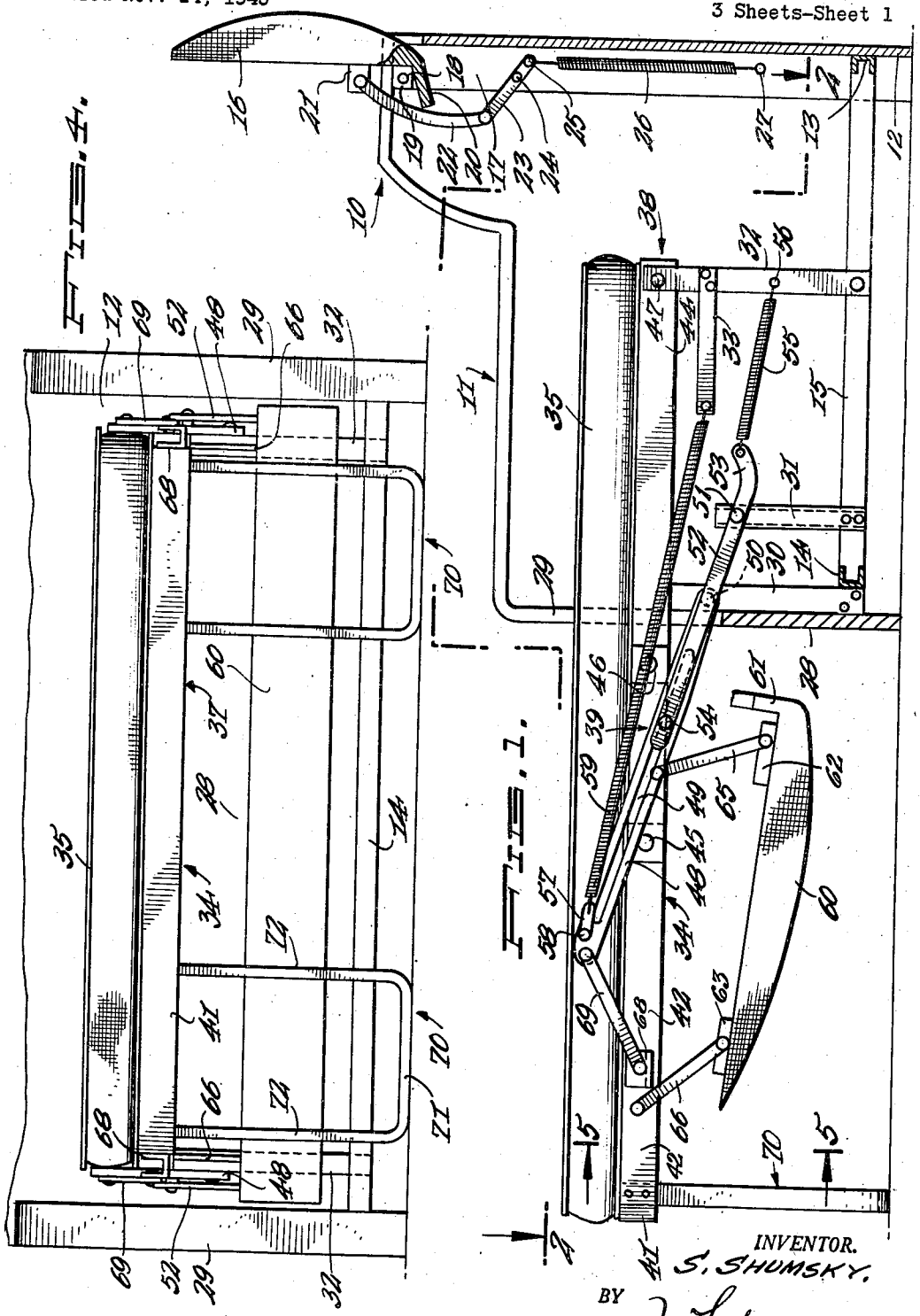
Oct. 18, 1949. S. SHUMSKY 2,485,219

COMBINATION SOFA AND BED

Filed Nov. 14, 1945 3 Sheets-Sheet 1



INVENTOR.
S. SHUMSKY.
BY
J. Ledermann
ATTORNEY.

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Filed Nov. 14, 1945 3 Sheets-Sheet 2

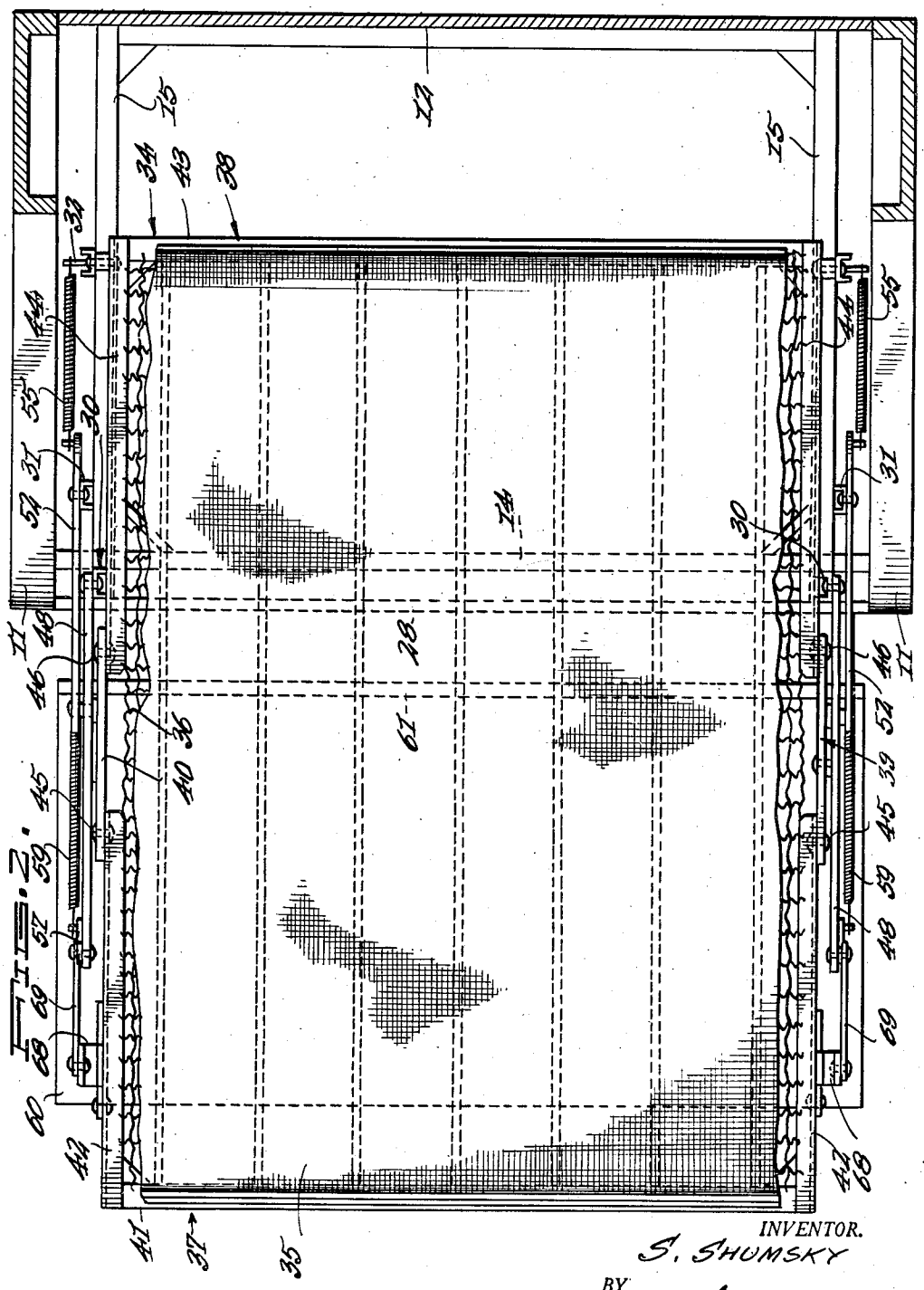


FIG. 2.

INVENTOR.
S. SHUMSKY
BY
J. Lederman
ATTORNEY.

Oct. 18, 1949. S. SHUMSKY 2,485,219

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3 Sheets-Sheet 3

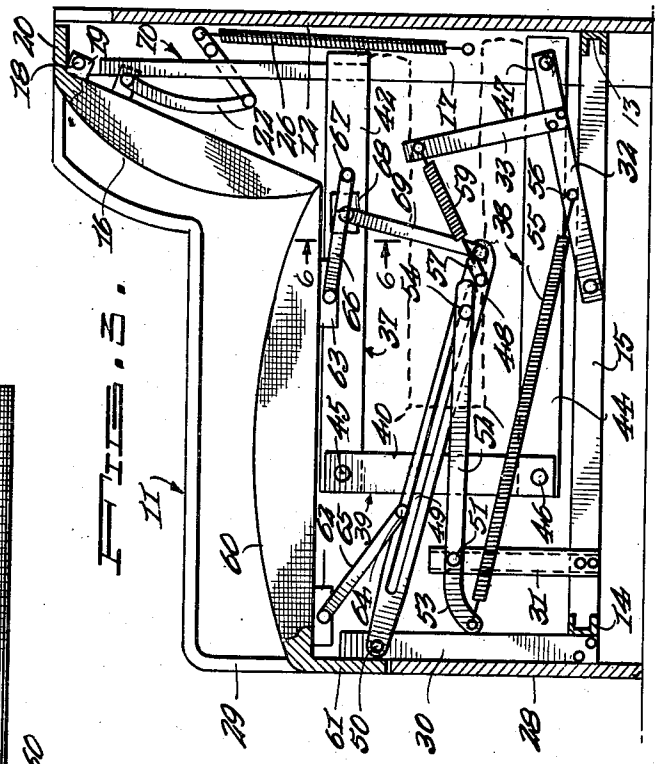


FIG. 4.

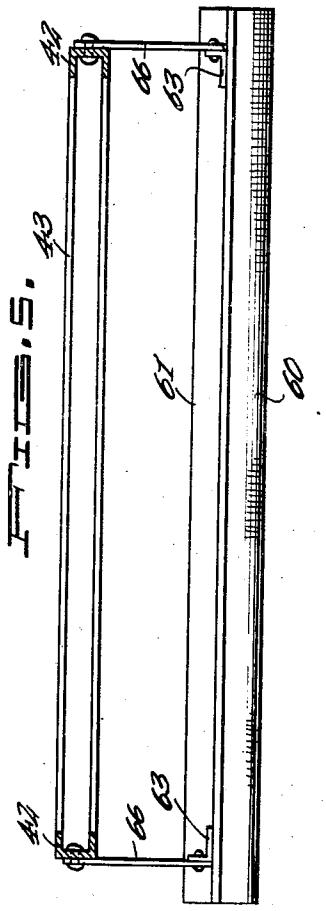


FIG. 5.

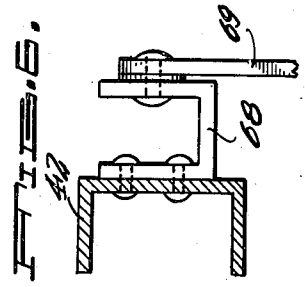


FIG. 6.

INVENTOR.
S. SHUMSKY,
BY J. Ledermann
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,485,219

COMBINATION SOFA AND BED

Solomon Shumsky, Brooklyn, N. Y.

Application November 14, 1945, Serial No. 628,398

1 Claim. (Cl. 5—34)

1

This invention relates to combination articles of furniture, and more particularly to an article of furniture which embodies in one unit both a couch, sofa or the like and a bed, the article being readily convertible from the sofa to the bed and vice versa.

The main object of the invention is the provision of a combination article of furniture as stated above, which is readily and with a minimum of effort convertible from a comfortable sofa into a comfortable bed, and vice versa. The instant invention, in fact, requires so little physical effort to make the above conversion that it may be easily accomplished in practically an instant of time even by frail women or small children.

Another object of the invention is the provision of simple and positive-acting interconnecting linkages and the like whereby the broad objects of the invention are accomplished, and also to provide a substantial and durable structure and mechanism which is at the same time economical and inexpensive in cost of manufacture.

The above as well as additional objects will become apparent in the following description, wherein characters of reference refer to like-numbered parts on the accompanying drawings. It is to be noted that the drawings are intended primarily for the purpose of illustration, and that it is neither desired nor intended to limit the scope of the invention to any or all of the specific details of construction shown excepting insofar as they might be deemed essential to the invention.

Referring briefly to the drawings,

Fig. 1 is a side elevational view, with parts broken away and partly in section, of the combination article of furniture in condition for use as a bed.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1, showing the major portion of the article of furniture in plan view.

Fig. 3 is a side elevational view, with parts broken away and partly in section, of the combination article of furniture in condition for use as a sofa.

Fig. 4 is a fragmentary front elevational view of either Fig. 1 or Fig. 2.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 3, with parts omitted for the sake of clarity.

Referring in detail to the drawings, the numeral 10 indicates the frame of the article of

2

furniture, which resembles that of a sofa and comprises the end members 11, the rear and taller member 12, tied rigidly together by four angle- or channel-iron ties; the back tie is shown at 13, the front tie at 14, and the two side or end ties at 15.

The back rest or cushion 16 extends substantially the full width of the sofa. Corner panels or posts 17 provided at the rear ends of the side frames 11, have pivot pins 18 passing through their upper ends and through ears 19 in the ends of the cushion 16, thereby pivotally securing the cushion 16 to the side frame members 11 and permitting it to be swung from its normal sofa position shown in Fig. 3 to its out-of-the-way position shown in Fig. 1 when the article of furniture is used as a bed. The upper edge of the cushion 16, Fig. 3, is provided with a ledge-like extension 20 rearward whereby the sofa is given a finished appearance and the open space below the ledge, and the mechanism which might otherwise be seen therein, are concealed.

Adjacent each ear 19, a second ear 21 is secured to the side edge of the cushion 16, and an arcuate link 22 has one end pivoted thereto, the other end of the link 22 being pivoted to one end of a lever 23 which in turn is pivoted intermediate its length to the panel 17, at 24. The free end 25 of the lever 23 has the upper end of a tension spring 26 anchored therein, the other end of the spring being attached to the panel 17 at 27 near the lower end of the latter. It is apparent that the weight of the cushion 16 maintains it in the folded down or sofa position shown in Fig. 3 and at the same time maintains the spring 26 under tension; so that, when the cushion 16 is lifted the force of the spring assists in the lifting operation and thereby reduces the degree of effort required, and the spring also releasably locks or maintains the lifted cushion in the position shown in Fig. 1.

A front panel member 28, forming part of the frame 10, extends across the front of the frame between the front uprights 29 of the side or end frame members 11. Rearward thereof, and supported on the forward ends of the ties 15, are upright angle irons or the like 30. Somewhat rearward of the uprights 30 are a pair of upright channels 31 also rigidly supported on the ties 15. A pair of parallel members 32, adapted to serve as rear legs for the bed when the article of furniture is in extended position, are pivoted at their lower extremities to the ties 15 rearward of the uprights 31. Rigid arms 33 are secured at sub-

stantially right angles to the members 32 nearer the upper ends of the latter.

When in extended condition to serve as a bed, the mattress 35 is supported either directly, if it is of an inner spring type, on the then horizontal frame 34, or on a spring, which may be formed by the wires or the like 36 drawn or stretched between the members of the frame 34, the wires 36 being preferably of the stranded type to provide for bending thereof. The particular type of mattress used, or the manner of supporting it on the frame 34 or spring 36, is of course of no consequence to the invention, nor is the particular type of spring which may be used. The frame 34 comprises three sections, the forward U-shaped section 37, the rear U-shaped section 38, and the intermediate section 39 which comprises merely a pair of like parallel bars 40. The forward section 37 includes the yoke 41 having the arms 42 rigid therewith, the arms 42 being pivoted to the ends 45 of the bars 40 of the section 39. The section 38 is substantially like the section 37 and comprises the yoke 43 and its arms 44, the latter being pivoted at their extremities 46 to the other ends of the bars 40. All of these frame members are preferably formed of angle irons.

The upper extremities of the legs 32 are pivoted at 47 to the rearward ends of the yoke arms 44. Pivoted at one end 50 near the top of each upright 30 is an elongated link 48 having a longitudinal slot 49 therethrough. Pivoted near one end at 51 to the upper end of the upright 31, on each side, is a lever 52 having its extension 53 beyond the pivot 51 curved substantially as shown. A pin 54 in the other end of the lever 52 registers slidably in the slot 49 of the link 48. A tension spring 55 has one end secured to the curved extremity 53 of the lever 52 and the other end secured to the leg 32 at 56. A lug 57 is pivoted at one end 58 at the free end of the lever 48; a tension spring 59 has one end secured to the free end of the lug 57 and the other end to the extremity of the arm 33.

The sofa seat 60 has a turned down forward edge or apron 61; when the article of furniture is used as a sofa, Fig. 3, the seat 60 rests upon the arms 42 of the yoke 37 of the frame 34, at the rear, and at the front the apron 61 rests upon the upper edge of the panel 28. Depending ears 62 and 63 are provided on both sides of the seat 60. Links 65 pivoted at one end in the ears 62 are pivoted at their other ends in the upper (Fig. 3) edges of the links 48, nearer the pivoted end 50 thereof, as shown at 64. Links 66 are pivoted at one end to the ears 63 and at the other end at 67 to the yoke arms 42. Brackets 68 are secured to the yoke arms 42 and pivoted at one end thereto are links 69 having their other ends pivoted in the free extremities of the levers 48.

Assuming that the article of furniture is in the condition shown in Fig. 3, used as a sofa, and it is desired to convert it to use as bed, the cushion 16 is first raised, in the manner previously described, into the position shown in Fig. 1. It is to be noted that the U-shaped front legs 70, which comprise the yokes 71 and arms 72 rigidly secured to the yoke 41 of the frame 34, are positioned between the cushion 16 and the frame back 12 when the article is used as a sofa, and the yokes 71 thus serve as handles or grips for lifting the frame section 37 in a swinging movement (counterclockwise, Fig. 3.) Thus, with the cushion 16 raised out of the way, the yokes, or one of them, are grasped and pulled upward and outward. It is to be noted that, in the condition shown in Fig. 3, the springs 55 are under tension, so that, as will become apparent, they thereby assist in the extension or conversion of the sofa into a bed. As the yokes 70 are thus raised and swing the yoke 37 in a counterclockwise direction about the pivots 45, the links 69 lift the free ends of the levers 48 and cause these levers to swing about their pivots 50. This movement of members 48 permits slidable movement of the pins 54 toward the left in the slots 49 and, at the same time, permits contraction of the springs 55 which simultaneously assist in the raising operation by their lever-like action against the free ends of the links 48. After the free ends of the links 48 have moved through an arc equal in degrees to approximately twice the angle made between the spring 59 and the horizontal, continued swinging in the same direction of the links 48 will cause simultaneous dragging of the springs 59 with them and swinging of the legs 32 about their pivots on the frame members 15. The latter operation will cause the legs 32 to lift the yoke 38 of the frame 34. In this manner it is apparent that the frame 34 will, in the extreme position shown in Fig. 1, straighten out and be supported on its outer or front end by the yokes 70 which now serve as legs. At approximately the midpoint of the arc through which the yokes 70 are thus swung from the original extreme to the final extreme position, the seat 60 will weight the moving frame on the left-hand side so that descent from that point to the final position will be assisted by gravity. Moreover, however, during the said final half of the movement, the springs 59 will become increasingly tensed, thus providing a cushioning effect to the descent and preventing banging of the yokes 70 on the floor. In the final position the seat 60 will hang by the links 65 and 66 from the yoke arms 42, as shown, under the bed and out of the way; and the forward ends of the arms 44 of the frame 34 will rest on and be supported by the uprights 30.

Also, in the final position shown in Fig. 1, the levers 52 will substantially align themselves with the links 48, the links 69 being of such length as to prevent the springs 59, now under tension, from returning the links 48 in a counterclockwise direction beyond the said aligned position. The springs 55 will also be somewhat under tension.

To restore the article to the condition of a couch or sofa, the yoke is pushed upward whence, assisted by the forces of the springs 59 under tension which thereupon begins to increase the momentum of the counterclockwise swinging of the frame section 38, the various parts are readily and without much effort restored to the original sofa condition, with the sofa seat 60 settling into proper position. The sofa cushion 16 is then folded back down to the position shown in Fig. 3. Again, it is to be noted that as the mechanism approaches this original condition, the springs 55 are tensed, as shown in Fig. 3, thus making it easy again to convert to a bed when desired.

It is to be noted that the construction described permits of conversion of a sofa of standard dimensions into a wide or double bed. The mattress 35 is of course flexible and readily assumes either the flattened out condition or the folded up condition shown in Fig. 3. An additional front cross member 14, previously mentioned, serves to brace the forward part of the frame 10 laterally. In the case of this as well as any or all other members which have been referred to as angle irons or channels, it is of course to be understood

that they may be of any desired or suitable cross-sectional conformation.

Obviously, modifications in form and structure may be made without departing from the spirit and scope of the invention.

I claim:

A combination sofa and bed comprising a front and a back member and end members, said end members having horizontal mutually parallel braces extending across the lower ends thereof, said front member being shorter in height than said back member, a back cushion pivotally secured adjacent said back member, a folding frame comprising a front substantially U-shaped section and a rear substantially U-shaped section and an intermediate section, said sections being in pivotal engagement with each other, a seat cushion, said sections in folded condition being arranged in end view of said folding frame in the shape of a U with said rear section positioned substantially parallel with said braces and adjacent thereto, said intermediate section extending upward from said rear section substantially vertically, and said front section being positioned above and substantially parallel with said rear section, said front section having rigid yokes extending upward from the front end thereof, and means connecting said sections, said braces, said seat cushion, and said front member for, upon swinging said front member forward through an arc of 180 degrees, straightening out said folding frame into a horizontal plane with said rigid yokes serving as front legs for said straightened out frame, said means comprising rigid uprights at the front end of said end members, additional and shorter rigid uprights spaced rearward from said first uprights and on said end members, an elongated link having a longitudinal slot therein pivoted at one end to the upper end of each of said uprights, a lever pivoted adjacent one end to each of said second-named uprights near the top

of the latter and intermediate the length of the lever, one end of each of said levers being curved, the other ends of said levers having pins therein registering in said slots of said elongated links, links connecting the other ends of said elongated links with said front section, rigid members pivoted at one end to said braces intermediate the length of the braces and pivoted at the other end thereof to the rear of said rear section, said rigid members having rigid arms extending at right angles thereto, tension springs connecting said other ends of said elongated links with said rigid arms, additional tension springs connecting said curved ends of said levers with said rigid members intermediate the length of the latter, links pivoted at one end to the forward portion of said seat cushion and at the other end to said elongated links, links pivoted at one end to the rearward portion of said seat cushion and at the other end to said front section, and additional links pivoted at one end to said forward section and at the other end to said free extremities of said elongated links.

SOLOMON SHUMSKY.

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