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GLIDER LINKAGE

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Fig. 1.

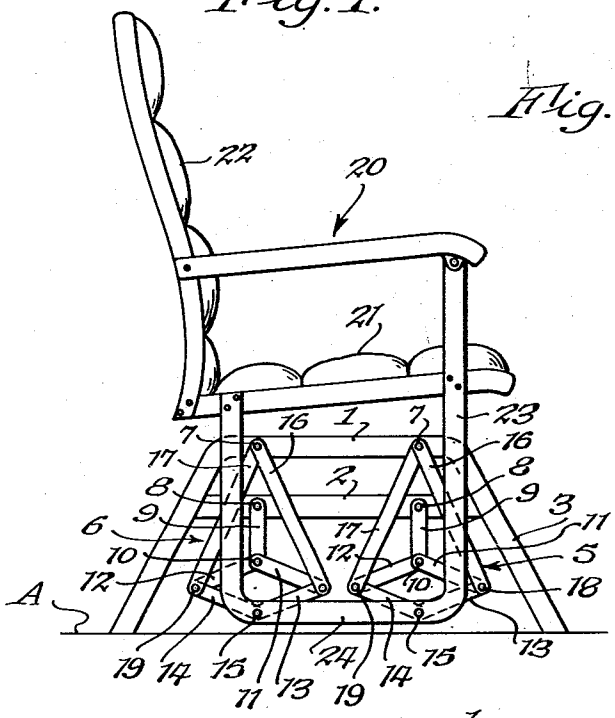


Fig. 2.

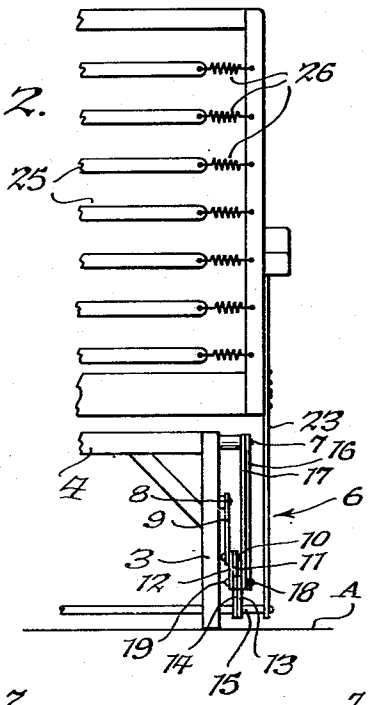


Fig. 3.

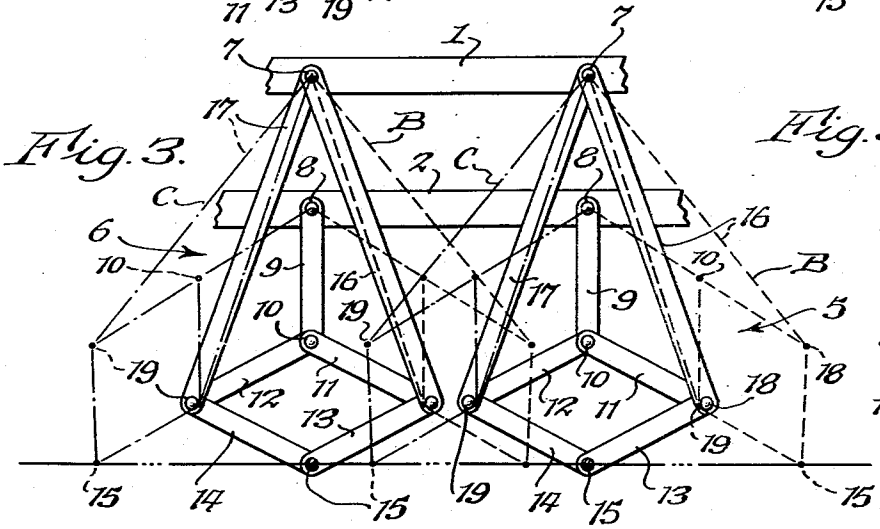
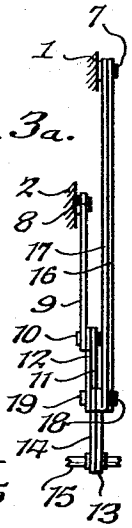


Fig. 3a.



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Fig. 4.

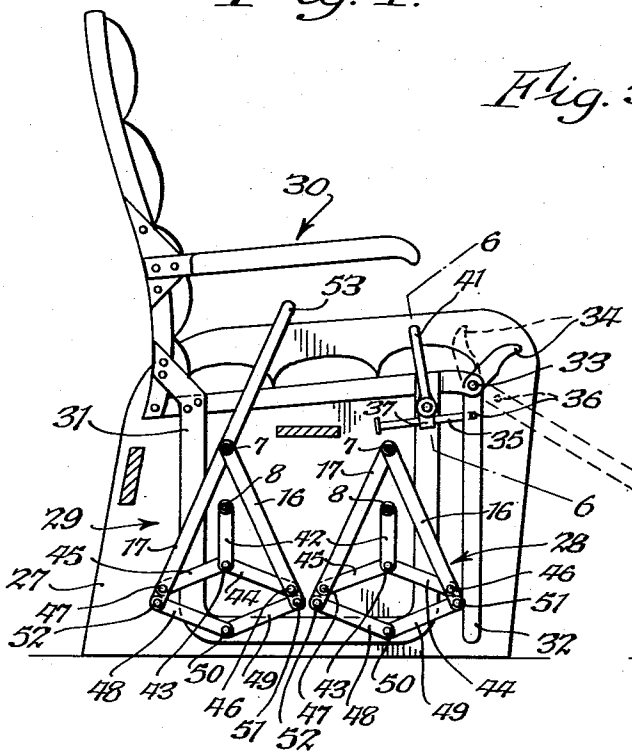


Fig. 5.

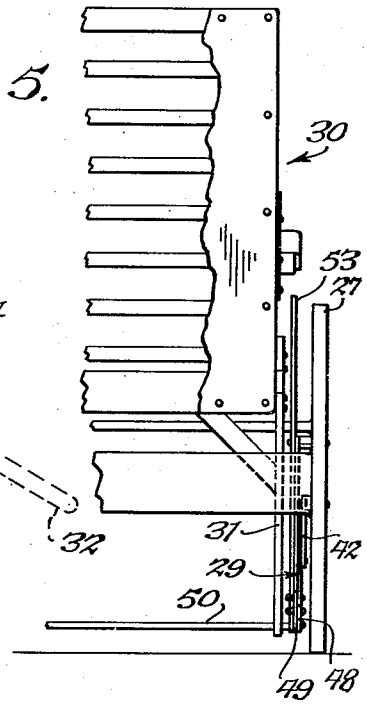
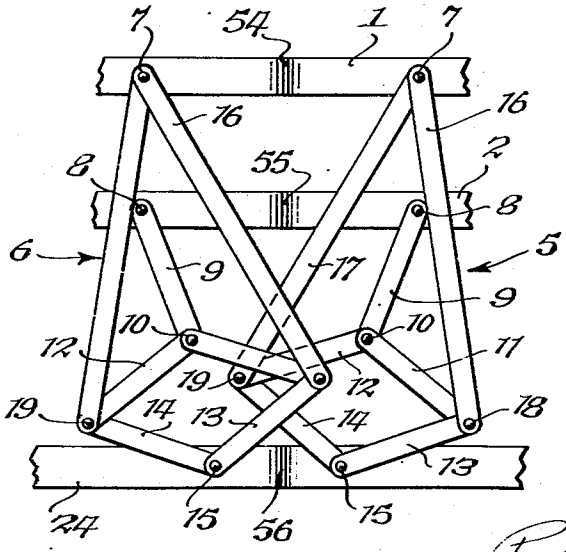


Fig. 7.



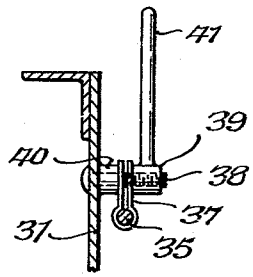


Fig. 6.

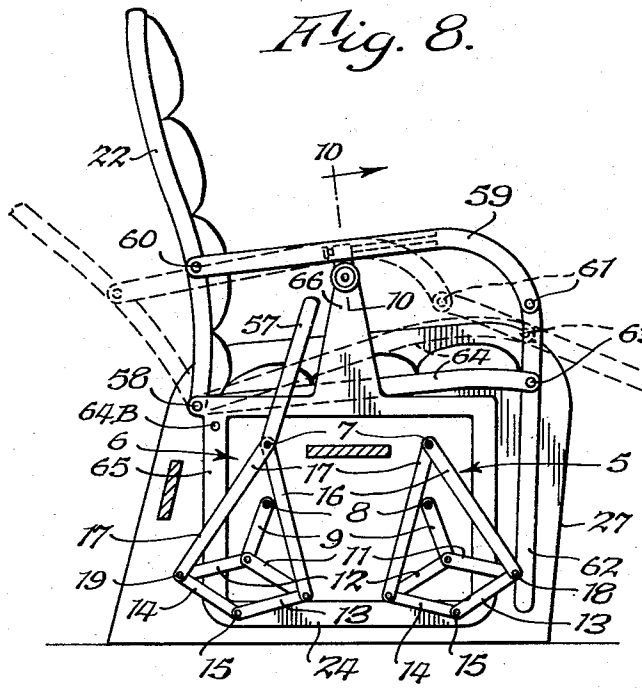
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Fig. 8.



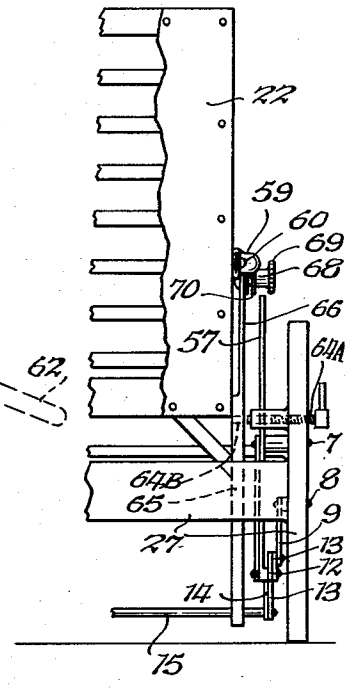


Fig. 9.

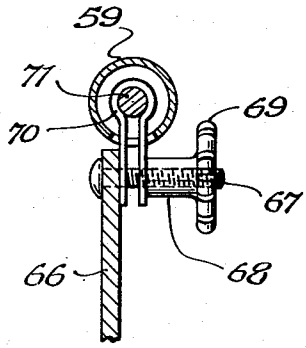


Fig. 10.

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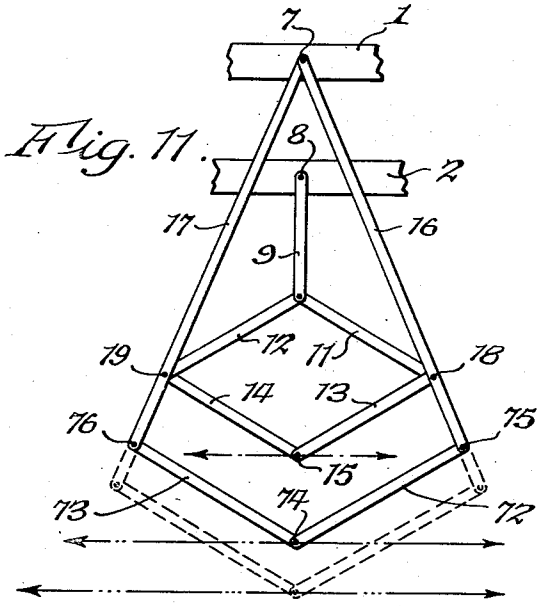


Fig. 11.

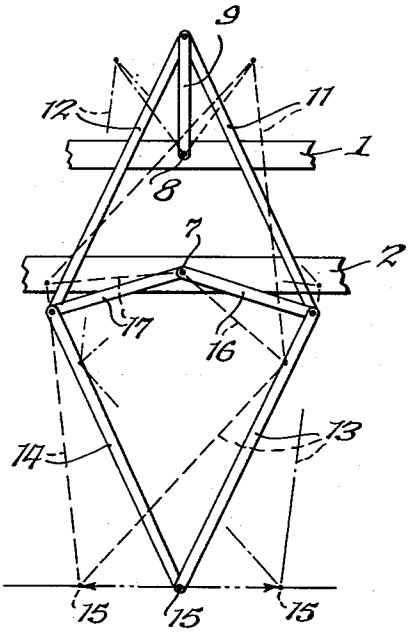


Fig. 12.

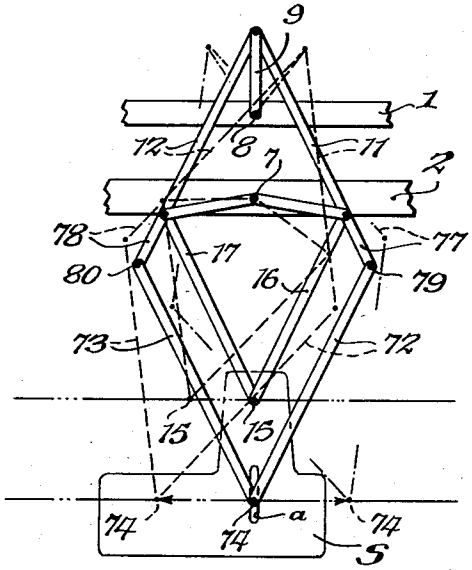


Fig. 13.

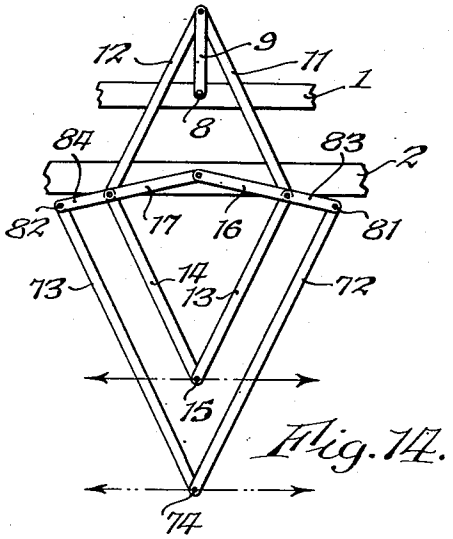


Fig. 14.

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UNITED STATES PATENT OFFICE

2,683,481

GLIDER LINKAGE

Anton Lorenz, Buffalo, N. Y.

Application December 2, 1946, Serial No. 713,515

4 Claims. (Cl. 155—61)

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This invention relates to oscillating mountings or personal supports, where a person is supported and guided in approximately straight line, reciprocatory movement. It is particularly useful for supporting chairs, settees, swings, glider seats, beds, hammocks, articles of furniture and other supports for the body or person. In referring herein later to articles of personal support, I intend to refer to any support for the body or person, by which the support is given an approximately straight line, to and fro movement.

There is a substantial demand, particularly in hot and humid climates, for rocking chairs, swings, seats, and other articles on which a person may rest, that have a to and fro movement because such movement of a person, if it can be obtained without too much physical exertion, creates a relative air movement past the person or user that evaporates moistures from the skin and thus exerts a cooling effect on that person. That is the purpose of fans, but an equivalent air movement accomplished in a manner that leaves the hands free for other purposes or requires less physical exertion is much desired. In addition, a limited to and fro, rhythmical or periodic movement has a soothing effect on the nervous system, as evidenced by the effect of rocking of a small child. Even adults as well as large children enjoy to and fro regular periodic movements, as evidenced, for example, by the continued popularity and attractiveness of swings, gliders, hammocks and rocking chairs. Supports of this type heretofore employed have had substantial vertical, as well as horizontal movement, and hence much of the physical exertion required to keep the support in oscillation has been expended needlessly in elevating the support. Various but unsuccessful attempts have heretofore been made to obtain a practically straight line, to and fro or reciprocatory movement of the support, in order that the physical effort required for maintaining the motion will be a minimum.

An object of the invention is to improve the construction and action of swings, gliders, and other personal body supports, and produce a regularly periodic motion that is more pleasing and attractive to the user than has heretofore been possible, and which will be exceptionally simple, strong, durable, compact and inexpensive.

Another object of the invention is to provide an improved support for a person, with which the person may have a free, reciprocatory, substantially straight line, regularly periodic movement of substantial amplitude; with which a

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minimum of physical effort is necessary to initiate and maintain such movement; which will occupy a minimum of space both vertically and horizontally; which will avoid the use of long links; which may be made largely from relatively simple elements, such as stamped and punched links; which will avoid the disadvantages of the circular or arcuate motions of simple, pivoted links and levers; with which the support will maintain substantially the same distance from the floor throughout its movement; which will have a soothing and reassuring effect on the nervous system of the user; and which may be easily adapted to supports of many different types.

A further object of the invention is to provide an improved and simple mounting for giving a support a substantially straight line, reciprocatory motion.

Other objects and advantages of the invention will be apparent from the following description of several embodiments of the invention, and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawing:

Fig. 1 is a side elevation of a chair supported on a base for substantially straight line forward and rearward motion;

Fig. 2 is a front elevation of the mechanism at one end of the chair;

Fig. 3 is a diagram illustrating the principle of the movement;

Fig. 3*a* is an end elevation, on a large scale, of a unit of the mounting;

Fig. 4 is a side elevation, partly in section, of a chair mounted in accordance with the invention, and illustrating how the mounting units may be employed to initiate and maintain its movements, and also how the chair may have a foot or leg rest adjusted into different positions of support;

Fig. 5 is a front elevation of the mechanism at one end of the mounting used in Fig. 4;

Fig. 6 is a sectional elevation of a portion of the same, the section being taken approximately along the line 6—6 of Fig. 4;

Fig. 7 is an elevation of part of the mounting illustrating how two units may be arranged in tandem in close proximity, yet clear each other during movements;

Fig. 8 is a view somewhat similar to Fig. 4, but illustrating the application of the improved mounting to reclining chairs;

Fig. 9 is a front elevation of one end of the mounting mechanism of Fig. 8;

Fig. 10 is a sectional elevation of the same, the section being taken approximately along the line 10—10 of Fig. 8;

Fig. 11 is another diagram illustrating another modification of a unit by which a support carried thereby will be held upright in a stable position during its to and fro movement;

Fig. 12 is a diagram illustrating a modification of a unit of the mounting;

Fig. 13 is another diagram somewhat similar to Fig. 11 but illustrating its adaptation for holding a seat or support in upright position during its to and fro movement; and

Fig. 14 is a diagram somewhat similar to Fig. 13 but illustrating another modification of the principle of the invention.

To explain the principle of the invention, reference is first made to Figs. 1 to 3 and 3a wherein the elements 1 and 2 represent parts of a common, relatively stationary base 3 that rests upon the ground A. This base may be in the nature of a metal frame or of any other suitable construction, and has members or parts 1 and 2 at each end thereof which are connected together by any number of suitable braces 4, Fig. 2. On the members 1 and 2 at each end of the base there are two suspension units 5 and 6, arranged in tandem on the members 1 and 2, that is, one forwardly and one rearwardly with respect to each other. Since these units are all similar, one will be described, and the same reference characters will be applied to the others.

For the unit 5 the members 1 and 2, which are rigidly connected and which are part of the relatively stationary base, carry two relatively stationary pivots 7 and 8, vertically spaced and aligned. On the pivot 8 is pivoted one end of a single link 9, the other end of the link 9 being hingedly connected by pin 10 to one corner of a rhombus formed of four equal, hingedly connected links. This rhombus includes links 11 and 12 which are hinged on the pin 10, and links 13 and 14 which are hinged together by a pin 15. The links 11, 12, 13 and 14 are all of equal length between their hinged connections, and the link 9 extends in a direction away from the pivot 7. The length of link 9 between pivot 8 and pin 10 is substantially equal to the distance between the pivots 7 and 8.

Hinged upon the pivot 7 for individual, pivotal movement thereon are two links 16 and 17, the link 16 being hinged to the pin 18 which hingedly connects the links 11 and 13 of the rhombus. Similarly the link 17 is hingedly connected to a pin 19 which hingedly connects the links 12 and 14 of the rhombus. From this it will be observed that the rhombus having its sides hinged to each other is pivotally suspended at one corner on pivot 8 by the link 9, and by its two adjacent corners that are diametrically opposite, it is also swingingly suspended by the links 16 and 17 on the pivot 7. Thus we have a rhombus swingingly suspended from two separate pivots. When the rhombus is suspended in this manner, if it is swung on its double suspension in one direction, such as to the right in Fig. 3, the links or parts thereof take the relative positions represented by the dash lines B in Fig 3, and when the rhombus is swung to the left in Fig. 3, the links or parts thereof take the relative positions represented by the dot and dash lines C in Fig. 3.

When the rhombus is swung to the right in Fig. 3, it will be noted that the link 9 elongates the rhombus in a diagonal direction vertically by an amount having a proportional relation to the extent of the swing, and the pin 15 which is at the free corner of the rhombus will consequently move in a straight line or horizontal direction into another position at the same level, indicated by the numeral 15 and the dash lead line. When the suspension unit is swung to the left in Fig. 3, the dot and dash lines C indicate that the pin 15 will still remain at the same level or straight line, but at the other side of the central position. Thus as the suspension unit is swung on pivots 7 and 8, the pin 15 will always move in a straight line irrespective of the amplitude of the swing. In other words, the swinging suspension of the rhombus translates an oscillating motion of the suspension unit into a straight line movement of the pin 15.

Referring now to Figs. 1 and 2, it will be observed how these suspension units may be utilized to mount a support or article on which a person may rest, such as a glider seat or chair designated generally at 20. This chair has a seat part 21 and a back part 22, and the frame of the chair seat or settee has a depending, rigid loop frame 23 at each end. The cross bar 24 of each frame 23 pivotally mounts the adjacent pins 15 of the two suspension units at that end of the chair or settee. There will be a similar mounting at each end, and thus the chair or settee will be supported at four points which are the pins 15 at the lower ends of the suspension units in close proximity to the ground. Therefore the center of gravity of the chair and its load will be relatively low, thus aiding stability of this device. Since the pins 15 all move horizontally as the suspension units oscillate, the chair will move horizontally forwardly and rearwardly in a straight line path, and always will be in the same upright position without any tilting thereof. In other words the chair or settee will glide forwardly and rearwardly in a straight, reciprocatory movement because of the particular suspension units which oscillate during this straight line movement of the support.

It will be noted that although the suspension units oscillate or swing something like a pendulum, there is no vertical component of movement of the seat or settee and thus little or none of the effort required to move the chair backwardly and forwardly, i. e. horizontally, will be utilized in raising the settee and the human body vertically to any extent, regardless of the amplitude of the movement. In the ordinary swing, much of the force required to keep the swing in motion is expended in lifting the person in the swing vertically by an amount proportional to the amplitude of the swing, and the greater the amplitude of the swing, the greater the push must be to cause it.

Because of the pivotal mounting of the suspension units 5 and 6, the chair or seat will always be urged back into the central position when it is released or is free to move, and thus one may glide forwardly and rearwardly, smoothly and with a minimum of effort. The seat and back of the chair may be made of any suitable construction, and in Fig. 2 the upholstering or cushions have been removed to show the flexible straps 25 connected at their ends to the sides of the back frame by coil springs 26. These straps 25 and springs 26 are arranged in spaced relation vertically along the back, to provide a yielding support for the cushions that are shown in Fig. 1. The back formed of straps 25 and the ends of the back frame, of course, may be straight, or have a suit-

able curvature such as shown in Fig. 1 in order to more closely approximate the natural curvature of the spine of the average person likely to use the chair or support.

In Figs. 4, 5 and 6, a modification of the construction shown in Figs. 1 to 3 is illustrated. In this embodiment of the invention the base or frame 27 supports the suspension units 28 and 29, two units at each end of the frame 27, and those forming a pair at each end are also arranged in tandem in a direction forwardly and rearwardly. The chair designated 30 has a depending rigid loop frame 31 which is similar to the frame 23 of Figs. 1 to 3, and pivots 7 and 8 for each suspension unit are provided in vertically spaced relation on the frame 27. The chair or settee may be of any suitable construction, but it is here shown as having a foot or leg-rest 32 hinged at 33 to the seat of the chair, so that it may be swung upwardly from a normal, depending position shown in full lines in Fig. 4, to an operative position shown by the dash lines in that figure. This leg-rest 32 may be swung into any of various positions, one being shown by the dash line, by a person while sitting in the chair, by merely operating a handle 34 at one end of the hinge of the leg-rest. A rod 35 may be hinged at 36 to the rest 32 and pass through a clamp 37 (see Fig. 6), the arms of the clamp being mounted on a stud 38 which is rigidly carried by and projects from the frame loop 31 carried by the chair. A nut 39 is threaded on the outer end of the stud 38 and serves to compress the arms of the clamp 37 against a boss or collar 40 on the stud. When the nut 39 operated by a handle 41 is turned in a direction to tighten it on the stud 38, it will force together the arms of clamp 37 and frictionally grip rod 35 sufficiently to hold it from endwise movement, and this will hold the leg-rest 32 in any desired, adjusted position. To change the adjustment, one merely rocks the handle 41 rearwardly to release the clamp 37 and thereby release the rod 35, whereupon the rest 32 may be swung into the desired position and then held in that position by merely rocking the handle 41 forwardly.

The suspension units are generally similar to those shown in Fig. 3 with the exception that in this example, the equivalent of the rhombus is formed in a somewhat different manner. The distance between the pivots 7 and 8 is the same as the length of the single link 42 which is pivoted on the pivot 8. The link 42 extends in a direction away from pivot 7 and is hinged by pin 43 to rhombus links 44 and 45. The link 44 is hinged at its free end by pin 46 to the link 16, and the link 45 at its free end is hinged by pin 47 to the other link 17 of the suspension unit 28. The links 16 and 17 of unit 28 are extended beyond the pins 46 and 47, and other rhombus links 48 and 49 are hinged together on a pin 50. The other end of the link 49 is hinged by a pin 51 on the link 16 below the pin 46, and the free end of the link 48 is hinged by pin 52 on the extended end of the link 17 of the same suspension unit. It will be noted that if the rhombus having two side formed by the links 44 and 45 was completed by two links of equal lengths and also hinged on the pins 46 and 47, there would be the same straight line action of the pin between those added links the same as described for the pin 15 in Figs. 1 to 3.

The links 48 and 49 are of equal length between hinge pins, and would be parallel to the adjacent or corresponding rhombus links which are omitted, and the pins 50 will also have the same straight line, horizontal or reciprocatory movement when the suspension units 28 and 29 are swung on pivots 7 and 8. The pins 50 of the tandem suspension units at each end of the chair or settee are connected to the lower cross member of the depending chair frame 31, and thus the chair or settee will have a straight line forward and rearward movement as the supension units 28 and 29 oscillate.

In order to make it possible for one to use the hands instead of the feet to maintain this reciprocatory movement of the seat, one of the links at each end, such as the link 17 of the suspension unit 29, is extended upwardly beyond the adjacent pivot 7 into a position at the end of the chair or support where they can be easily reached by the hands. Thus a person sitting on the support may grasp either or both extensions 53 and by pulling and pushing thereon, the suspension units will be caused to oscillate. That will cause forward and rearward gliding of the support or chair.

In Figs. 1 to 3, as well as in Figs. 4 to 6, the two suspension units at each end of the chair or support were arranged in tandem, but spaced apart forwardly and rearwardly sufficiently to clear one another during such movement. In Fig. 7 is illustrated a manner in which those suspension units, such as shown in Fig. 3, may be brought closer together where compactness of space under the chair is desired. For this purpose the frame members 1 and 2, corresponding to those of the same numbers in Figs. 1 to 3, are laterally offset at 54 and 55, so that each forward suspension unit 5 will be spaced or offset, endwise of the chair, from the other unit 6 at the same end, and thus the two tandem suspension units at each end may pass or overlap one another, as shown in Fig. 7, without interference. The cross bar 24 of the depending frame on the chair or support should also be offset as at 56, so that the pins 15 of the two suspension units will also be offset endwise of the chair or support.

In the embodiment of the invention shown in Figs. 8 and 9, the construction is generally similar to that shown in Figs. 4 to 6, and corresponding parts will be given corresponding reference numerals. The suspension units 28 and 29 of Figs. 4 and 5 are, however, replaced by the type of suspension units shown in Figs. 1 and 3, except that the link 17 of each unit 6 is extended upwardly to form an operating handle 57 (see Fig. 3) by which the suspension units may be caused to oscillate in the manner explained in connection with Figs. 4 and 5. Otherwise the mounting of the chair or support on the frame 27 is the same as explained in connection with Figs. 1 to 6. The chair, however, instead of having the pivoted leg-rest 32, is of the reclining type in which the back rest 22 is hinged to the base of the chair by pivots 58. The arm rests 59 at the sides of the chair or support are hinged to the back rest by pins 60, and also by pins 61 to the upper end of a foot or leg rest 62 which, in turn, is pivoted intermediate its ends by pins 63 to the forward ends of seat 64 that is also hinged on pivots 58. With this arrangement, when the back rest 22 of the chair or support is tilted rearwardly, the leg-rest 62 will be rocked into an elevated position such as is shown by the dash lines in Fig. 8. The portion of the rest 62 above the pins 63, may be obtained merely by upward extensions at the ends of the rest 62, leaving the interior of the rest clear above the pins 63 so as not to interfere with the legs of the person sitting or reclining in the chair or seat.

When one desires to prevent forward and rear-

ward movement of the chair or support, a detachable coupling may be made between the support and the base. In Figs. 8 and 9, for example, a lock element or rod 64A may be threaded through the base frame 27 so as to move into and out of an aperture 64B in the depending loop 65 of the chair or support frame, and thus hold the latter against movement until rod 64A is withdrawn from aperture 64B.

The base or frame of the chair 65 at one side is provided with an upstanding arm 66 (see Fig. 10) which rigidly mounts a threaded stud 67 carrying a nut 68 with an operating flange 69. A U-shaped clamp 70 has its ends apertured, with the stud 67 passing therethrough, so that when the nut 68 is tightened, it will compress the arms of the clamp 70 about a rod 71 that is disposed between the arms of the clamp and hinged to the adjacent arm rest 59. By loosening the nut 68, the arm rest may be moved through different extents into any of various reclining positions, one of which is shown by dash lines in Fig. 8 and held in a selected position merely by tightening the nut 68.

Referring next to Fig. 11, another type of suspension unit is illustrated. This suspension unit is generally similar to that shown in Figs. 1 and 3, and the parts have similar reference characters, except that the links 16 and 17 which are pivoted on the pivot 7 are extended beyond the pins 18 and 19 by which they are connected to the rhombus. Additional links 72 and 73 are hinged together at their ends by a pin 74, the other end of link 72 being hinged by a pin 75 to the extending end of the link 16. The other end of the link 73 is hinged by a pin 76 to the depending or extending end of the link 17. The links 72 and 73 are of equal length and they are connected to the links 16 and 17 at equal distances from the pins 18 and 19, so that the link 72 will be parallel to the corresponding link 13 of the rhombus, and the link 73 will be parallel to the link 14 of the same rhombus. As this unit swings or oscillates, the pin 74 will also partake of the same straight line reciprocatory movement as the pin 15 of the rhombus. Therefore pins 15 and 74 will always move in equidistant paths throughout the entire arc of oscillation of the suspension unit. This property may be taken advantage of in supporting the chair or support, and it will be observed that if the pins 15 and 74 are coupled to the chair or support frame, they will keep the support upright throughout the forward and rearward movement of such support or chair. This makes it necessary to have only one suspension unit of this kind at each end of the chair or support. One of the pins 15 or 74 may engage in a slot in the seat to provide enough play to accommodate the slight variations in the direct distance between pins 15 and 74 as the linkage swings back and forth.

The dash lines in Fig. 11 indicate how the links 16 and 17 may be further extended and hinged to additional links shown by the dash lines, and thus provide a third pin for attachment to the support that will also have a straight line forward and rearward movement. Thus one may have two, three or more points spaced vertically for attachment to the chair or support and all of which points of attachment will have straight line reciprocatory movement as indicated by the double ended arrows in Fig. 11.

In Fig. 12 another modification of the suspension unit is illustrated in which the pivot 7 is below the pivot 8, and the single link 9 extends upwardly from the pivot 8. In other words, the single link 9 still extends in a direction away from the other pivot 7, and the length of the link 9 still remains of the same length as the distance between pivots 7 and 8. The lengths of all of the links, unless otherwise specified, will always be considered as the distance between the hinged or pivoted points thereof. In this embodiment the rhombus is formed of the links 11 to 14 inclusive, which rhombus is suspended at its forward and rearward corners by the links 16 and 17 from the pivot 7, the same as in Figs. 1, 3 and 11, except that part of the rhombus now extends above the links 16 and 17. The rhombus is hinged at its upper corner by the link 9 to the pivot 8, and the opposite corner of the rhombus carrying the pin 15 is at the bottom as usual, and will move in a straight line, forward and rearward movement as the unit swings about the pivots 7 and 8, which is indicated by the double ended arrows in line with pin 15 in Fig. 12. When the unit is swung rearwardly, the position of the parts is shown by the dash lines and when swung forwardly or to the right in Fig. 12, the parts will have the positions shown diagrammatically by the dot and dash lines.

In Fig. 13 still another modification of the suspension unit is illustrated which is somewhat similar to that shown in Fig. 12 except that the links 11 and 12 of the rhombus are extended as at 77 and 78, and additional links 72 and 73 corresponding to those with those numerals in Fig. 11, are hinged to the extended ends 77 and 78 by pins 79 and 80. The additional links 72 and 73 are hingedly connected together by the pin 74. With this arrangement the pin 74, as well as the pin 15, will have a straight line reciprocatory movement, and thus the chair frame may be coupled to the pins 15 and 74 which keeps the chair from rotating on either pin 15 or 74 and holds it upright in a stable manner as it moves forwardly and rearwardly during the swinging of the suspension unit. A seat S is supported by the pins 15 and 74, with a pin and slot connection between one of the pins and the seat to provide enough play to accommodate the slight variations in the direct distance between the pins as the mechanism moves forwardly and rearwardly. In Fig. 13 the pin 74 may run in a vertical slot *a* in the seat S. Possible rearward and forward positions of the parts of the suspension unit are shown by the dot and dash lines and the dash lines respectively in Fig. 13 as in Fig. 12. In this embodiment (Fig. 13), the links 72 and 73 preferably have the same lengths as links 11 and 12 plus extensions 77 and 78, and thus there is one rhombus of hingedly connected links 72, 73, 11 and 77, and 12 and 78, and another rhombus of different size formed of links 11, 12, 16 and 17. As this double rhombus oscillates, each will elongate in a direction generally parallel to the radius of oscillation, by an amount having a selected ratio to the amplitude of oscillation from a normal, intermediate position, which ratio will be similar for both rhombuses. Thus pins 15 and 74 will have paths that are everywhere equidistant and which will approach a straight line as the length of link 9 approaches in value the distance between the relatively stationary pivots 7 and 8. By extending links 11 and 12 further and adding further links 72 and 73, one can provide any number of such rhombuses in any unit.

In Fig. 14 still another modification of the suspension unit is illustrated in which the basic suspension unit is the same as in Fig. 12 except that the additional links 72 and 73, instead of being

hingedly connected to the extensions 77 and 78 of the links 11 and 12 of the rhombus, as in Fig. 13, are instead hingedly connected by pins 81 and 82 to extensions 83 and 84 of the suspension links 16 and 17 that are pivoted on pivot 7. The pin 74 which hingedly connects the links 72 and 73 to each other will also move in a straight line movement as shown by the double ended arrow. Thus the pins 15 and 74 also in this arrangement will have parallel forward and rearward movement at all times, and will effectively hold the chair or support in a stable, upright position throughout its forward and rearward gliding movements.

It will be observed that as each suspension unit swings about pivot 7, the rhombus thereof, or its equivalent in Figs. 4 and 5, will be elongated by the single link pivoted on pivot 8, by an amount proportionally related to the amplitude of the swing to give the corner of the rhombus opposite from the corner connected to the single link on pivot 8, a straight line or reciprocatory movement.

Where the chair or support is broad, as in a settee, it is especially desirable to extend pins 15 of Figs. 1 to 3, 8 and 9 and 50 of Figs. 4 and 5 between end frame loops 31 or 65 and couple those pins to the loops 31 or 65 against endwise movement therein, so as to increase the rigidity of the support in its resistance to distortion.

It will be observed that the seat or support on which the person rests will move always at the same distance from the floor, and therefore the feet of such person may always rest on the floor during this straight line motion if that is desired, and it is easier to propel one's self with the feet on the floor if the seat remains at the same distance from the floor. The bearings or hinge connections may be plain bearings, or anti-friction bearings such as ball-bearings in order that the effort required to propel the support may be kept to a minimum. A mounting of this type is also useful for beds or infants' cribs, because one is soothed by a periodic motion, and a horizontal periodic motion is preferable because vertical movements tend to create fear of falling. A forward and rearward gliding without substantial vertical component of movement would cause no fear in one, and the periodic movement would then cause maximum inducement to sleep of the user. While a support mounted in this manner may be operated backwardly and forwardly by a small motor and a crank connection, it has been illustrated as adapted only for manual movement or propulsion in order to simplify the disclosure.

It will be understood that various changes in the details and arrangments of parts, which have been herein described and illustrated in order to explain the nature of the invention may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

I claim:

1. A device for mounting a personal support for horizontal oscillation comprising said support, a relatively stationary base having, at each end thereof, a pair of vertically spaced pivots, a rhombus formed of pivotally interconnected links, a primary pair of links pivotally connected to diagonally opposite corners of said rhombus at pivotal interconnections between the rhombus links at such corners, and also pivotally connected to one of said pivots at equal distances from the said corners, a single link hinged to one of the other corners of the rhombus and to the other of said pivots, the length of said single link between its pivotal connections being equal to the distance between said pivots, and a supporting coupling between the adjacent end of said article and the other of said other corners for mounting said support.

2. A device for mounting a personal support for horizontal oscillation comprising a relatively stationary base having, at each end thereof a pair of vertically spaced pivots, a rhombus formed of pivotally interconnected links, a primary pair of links pivotally connected to diagonally opposite corners of said rhombus at pivotal interconnections between the rhombus links at such corners, and also pivotally connected to one of said pivots at equal distances from the said corners, a single link hinged to one of the other corners of the rhombus and to the other of said pivots, the length of said single link between its pivotal connections being equal to the distance between said pivots, said single link extending from said other of said pivots in a direction away from said one pivot, and a supporting coupling carried at the other of said other corners and connected to said support and forming its sole support.

3. A mounting for a personal support comprising said support, a relatively stationary base having, at each of horizontally spaced portions thereof, a pair of vertically spaced pivots, a single link hinged on one of said pivots, extending in a direction away from the other of said pivots, a rhombus of pivotally interconnected links having a pivotal connection with said single link at one corner of the rhombus at a distance from said one pivot equal to the distance between said pivots, a pair of links hinged on said other pivot and at equal distances therefrom to the diagonally opposite corners of the rhombus adjoining said one corner, and an articulated connection between said support and the remaining corner of the rhombus and forming the sole mounting for said support.

4. A device for mounting a support for oscillation comprising said support, a rhombus of hingedly connected links, additional links of equal length hinged to each other and to two adjacent links of said rhombus at equal distances from the hinged connection between said two links, to create multiple rhombuses having some link parts common to all, a base, a generally upright link hinged at one end to the hinge between said two adjacent links, and at its other end to said base, auxiliary links hinged to a common pivot of said base that is vertically disposed relatively to said link which is hinged to said base, the distance between said base pivots being equal to the length of said upright link between its pivots, with one rhombus within the other, said auxiliary links being hinged to said two adjacent links at equal distances from their pivotal connection to said upright link, said auxiliary links being of equal length between their pivots, said support being connected to the lower ends of said rhombuses.

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