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CHAIR

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Fig. 1.

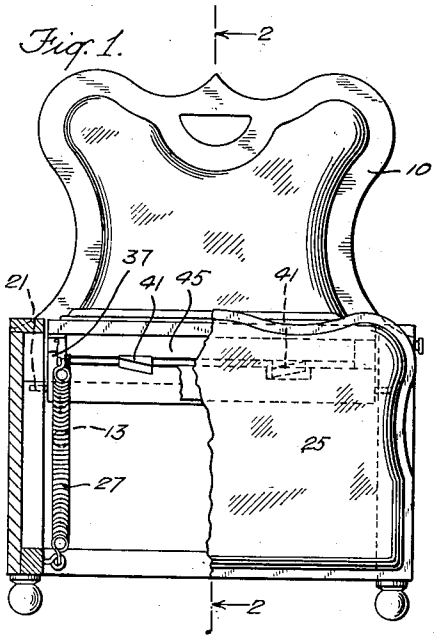


Fig. 2.

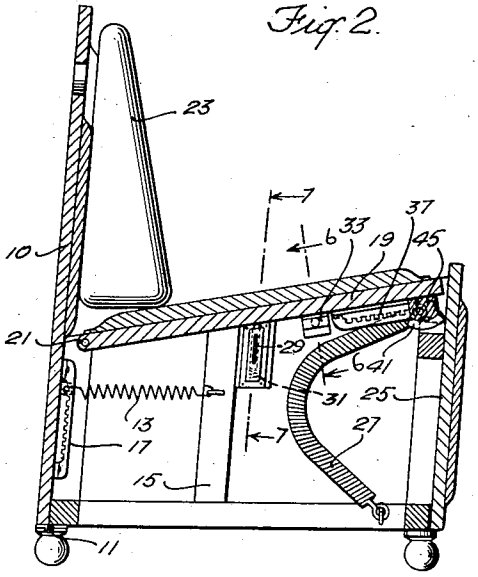


Fig. 3.

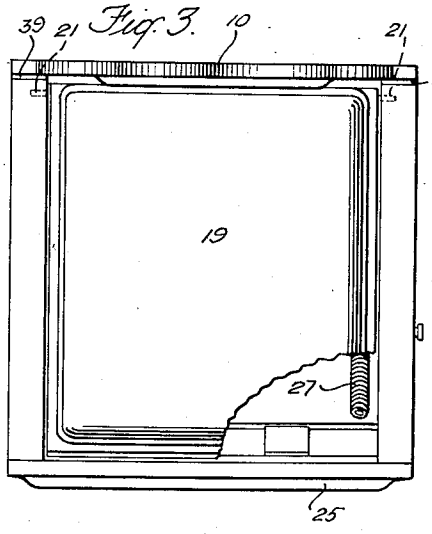


Fig. 4.

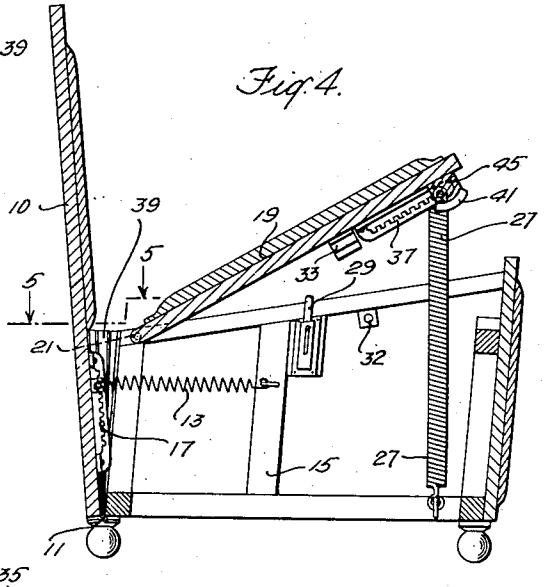
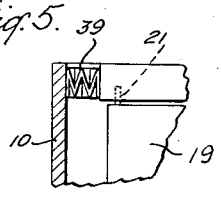


Fig. 5.



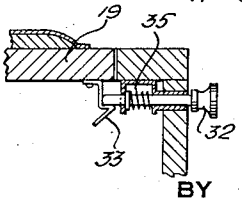


Fig. 6.

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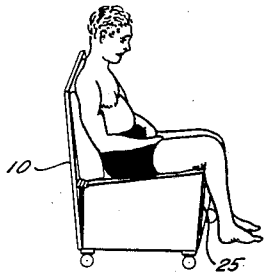
Fig. 8.



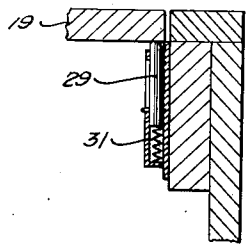


Fig. 7.

Fig. 9.

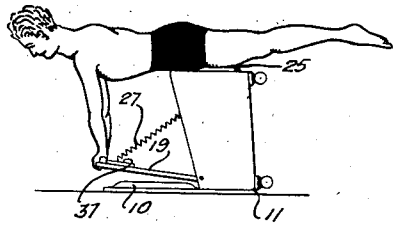


Fig. 10.

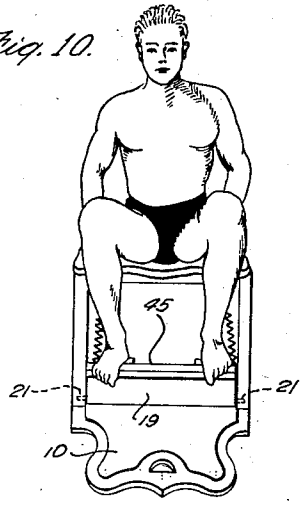


Fig. 17.

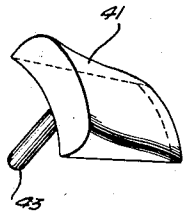


Fig. 11.

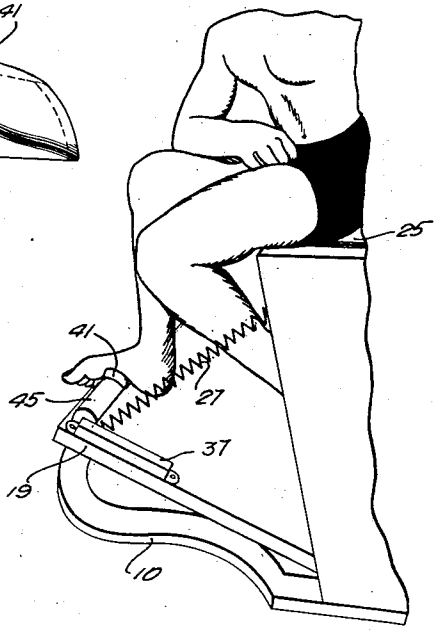


Fig. 12.

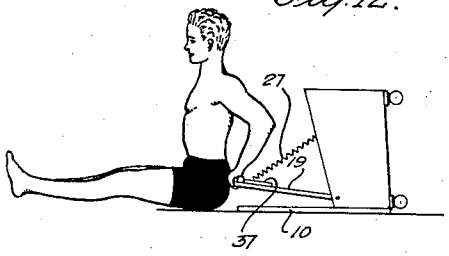


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Fig. 13.

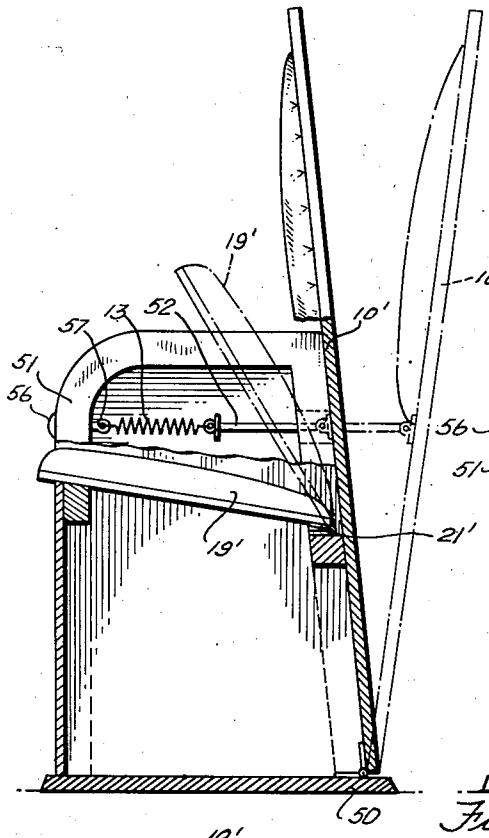


Fig. 14

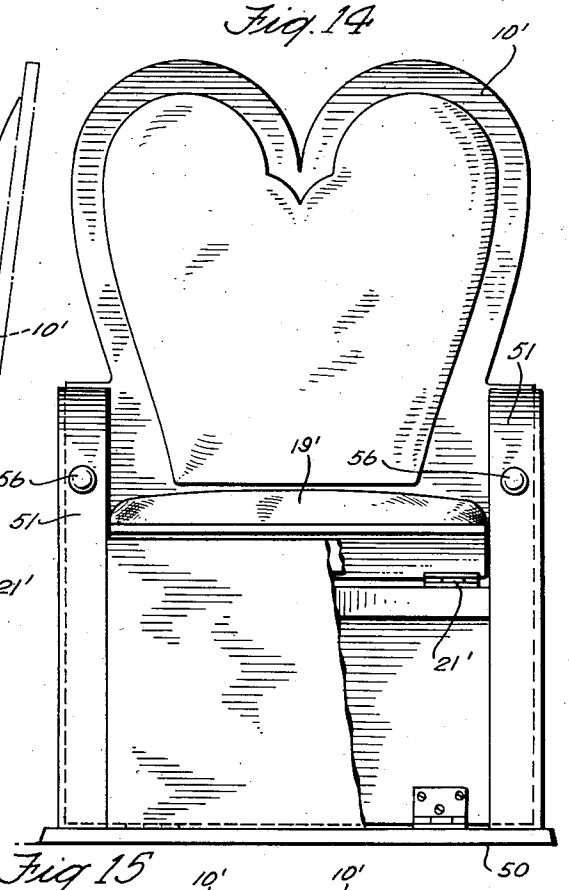


Fig 15

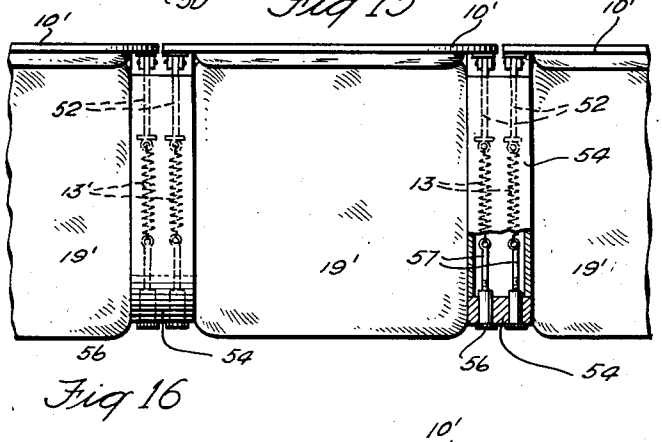
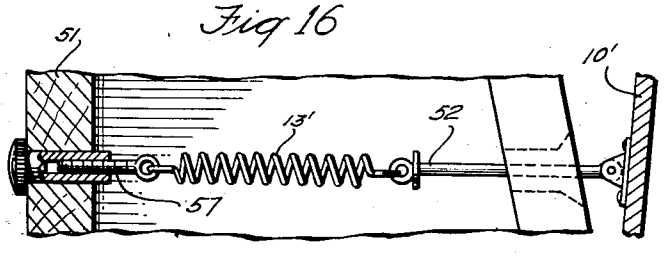


Fig 16



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UNITED STATES PATENT OFFICE

1,969,901

CHAIR

Joseph H. Pilates, New York, N. Y.

Application August 29, 1931, Serial No. 560,075

9 Claims. (Cl. 272—58)

My present invention relates to improvements in chairs. More particularly, it is an object of my invention to devise a chair which will better support the body, promote better posture and insure more thorough rest and relaxation to the sitter. A further object is to provide a chair which is convertible into an exercising device, as well as to provide an improved exercising device. A still further object is to provide a device of this type which will be useful in correcting fallen arches of the feet.

Further objects and advantages of the invention will be apparent as the description proceeds and the features of novelty will be pointed out in the appended claims.

My invention will be best understood by reference to the following detailed description taken with the annexed drawings, in which

Figure 1 is a view in front elevation and in vertical section of a preferred embodiment;

Figure 2 is a section along the line 2—2 of Fig. 1;

Figure 3 is a top plan view of the chair with a portion broken away;

Figure 4 is a view in vertical section similar to Figure 2 but with the seat in raised exercising position and with the back in retracted position, in order to maintain which an applied force would be necessary to act in the opposite direction of the tension of the spring shown attached to the back;

Figure 5 is a section taken along the line 5—5 of Figure 4.

Figure 6 is a view in section taken along the line 6—6 of Figure 2 and showing a latch device for holding the seat in non-exercising position;

Figure 7 is a section along the line 7—7 of Figure 2 showing a device for raising the seat when the same is unlatched;

Figures 8, 9, 10, 11 and 12 show the operation of my improved exercising device;

Figure 13 is a side elevation view, partly in section, of a modified chair in which the exercising device is omitted;

Figure 14 is a front view of same with parts broken away;

Figure 15 is a plan view of a series of such chairs;

Figure 16 is a view on a larger scale of a spring for the back of the chair and a tensioning device for the spring; and

Figure 17 is a perspective view of one of the arch supporting devices removed from the chair.

Referring now to the drawings in detail, 10 denotes the back of my improved chair, such back being hinged at a point near the bottom of the chair as at 11, the back being held in operative position by means of a pair of springs at either side, one of which, 13, is seen in Figures 2 and 4. Means are preferably employed for varying the tension of the springs 13 as by anchoring one end of the springs to a post 15 within the chair and the other end in a toothed rack 17 attached to the back of the chair by means of which one end of the springs may be brought toward or away from the hinge 11.

My improved chair includes a seat 19 which is hinged at 21 adjacent the back of the chair, such construction permitting the seat to be moved through an angle of several degrees as shown for example in Figure 4. It will be noted that when my device is used as an ordinary chair, the seat is tilted preferably downwardly toward the rear of the chair by an angle of 10° more or less and also the back 10 is inclined forwardly to the vertical by several degrees, as for example by an angle of 5° more or less, whereby the seat and back of the chair cooperate to give a maximum degree of support to the body, it being understood that when a person sits in the chair and leans back in it, his weight will cause the back to move about the hinge 11 in accordance with the amount of weight which is leaned against it. Preferably a cushion 23 of more or less wedge shape is employed by being rested against the back with the base of the wedge resting upon the seat, the provision of this cushion and also a better support given the back.

The chair also comprises a front 25 which plays an important part in the use of my device as an exerciser, such front, together with the seat 19, being upholstered as shown. Reference to Figures 8 to 12 will indicate that when my device is used as an exerciser the chair is placed with its back upon the floor while the person reclines upon the front 25. It is essential that the seat 19 move upwardly about the hinge 21 (in the position shown in Figure 4), and also that it retain this position away from the front 25 as otherwise one grasping the end of the seat would be pinched upon the seat coming down in contact with the front. In my present device this contingency is provided against by employing a coil spring 27 for the exercising function such that the individual coils of the spring rest upon one another when the spring is not under tension, whereby the springs in themselves hold the seat in its upward position. In other words, the spring will in its raised position resist any force tending to compress the spring which is applied in the direction of its

length. However, the spring may be coiled within the chair simply by applying a force at right angles to the spring. In such position, however, it does not exert an appreciable force so that it is necessary to provide some means for causing the seat to assume its upper position of rest, and to this end I have provided a plunger 29, (Figures 4 and 7), which plunger is caused to ride in a recess provided for it and to be pushed upwardly by means of a spring 31, the construction being such that the plunger 29 rides in its recess and cannot be accidently removed. In order to hold the seat down against the pressure exerted by the plunger 29, the latch device shown in Figure 6 may be employed consisting of a plunger 32, a latch 33 attached to the chair seat 19 and a spring 35. Thus when the plunger 32 is pulled out against the spring 35 it releases the latch proper 33 and allows the plunger 29 to initiate the upward movement of the seat 19 to the position shown in Figure 4.

For the purpose of varying the resistance to movement of the seat 19 caused by the spring 27, I preferably mount the end of said spring adjacent the seat 19 in a rack 37.

The side edges of the hinged back 10 are preferably connected to the sides of the chair by flexible bellows 39 which thereby prevent one's fingers or clothing from being caught between the seat and the sides of the chair.

When my improved device is to be used as an exerciser it is placed on the floor in the position shown in Figures 9 to 12 with the back 10 upon the floor and used in a variety of ways to develop different muscles in the body, a few exercises being indicated in Figures 9 to 12. An important advantage of my device is that, as previously stated, it may be used to correct fallen arches. To accomplish this most effectively a pair of metal blades 41 are provided which preferably are removably attached to the outer edge of the seat 19, the use of such arch supporting members being shown best in Figure 11. An arch block which is suitable for use is shown in detail in Figure 17, such block being of a shape to fit the arch of the foot, the block being held in place by means of a stud 43 which is entered into a hole in a beam 45 engaging the lower surface of the seat 19.

In Figures 13, 14, 15 and 16 I have illustrated my improved chair without the exercising device. It will be noted that the back 10′ is hinged to the base 50 of the chair and when the chair is not being sat in, the back occupies a position in which it is tilted forward somewhat of the vertical. When, however, the chair is sat in and weight leaned against the back, it is permitted to move outward, as shown in the dotted lines of Figure 13, against the tension of the springs 13′ connecting the back 10′ and the front portions of the chair 51 through rods 52. Preferably also the seat 19′ is also hinged as at 21′ whereby the seat may be tilted upwardly whenever the occasion demands, as when use of my improved chair is had for auditorium purposes, or when it is desired to use the space beneath the seat 19′ for storage purposes. In Figure 15 I have shown the arrangement of seats according to my invention when used in an auditorium in which the arm rests 54 are used to house the springs controlling the backs of the seats. In Figure 16 I have shown means for adjusting the tension of the springs, such means comprising an interiorly threaded bushing 56 in which is engaged a threaded rod 57 attached to spring 13′.

It will be seen from the foregoing that by virtue of the coaction of the downwardly inclined seat and spring-pressed, hinged back which makes a somewhat acute angle thereto, pressure is applied to the spine at the point where it is most apt to slump, whereby greater comfort and hygiene are obtained.

While I have illustrated and described in detail certain preferred forms of my invention, it is to be understood that changes may be made therein and the invention embodied in other structures. I do not, therefore, desire to limit myself to the specific construction illustrated, but intend to cover my invention broadly in whatever form its principle may be utilized.

I claim:

1. In combination, a chair frame having a seat hinged thereto, an exercising device enclosed by said frame and seat, said exercising device comprising a spring, one end of which is attached to the chair frame and the other end to the seat, so as to oppose a movement of the seat about the hinge away from said frame, said spring when relaxed forming a yielding support for the seat to maintain it normally above the level of the front portion of the chair.

2. In a chair having a fixed frame, a seat inclined downwardly toward the back, the back being hinged to the chair frame a substantial distance below the level of the rear edge of the seat and having spring means connected to the back and to the frame for urging said back against said fixed frame.

3. In a chair having a frame and side portions, a seat inclined downwardly toward the back, the back being hinged to the chair adjacent the floor and at a substantial distance below the level of the rear edge of the seat and contractile spring means disposed beneath the seat and having the opposite ends connected to the back and to the frame for urging said back against said side portions.

4. In a chair having side portions, a seat inclined downwardly toward the back, the back being hinged to the chair a substantial distance below the level of the rear edge of the seat and having spring means urging said back against said side portions, and a loose back cushion of generally wedge-shape fitting said chair with the bottom of the wedge adapted to be placed upon the seat.

5. In a chair having side portions, a seat inclined downwardly toward the back, the back being hinged to the chair a substantial distance below the level of the rear edge of the seat and having spring means urging said back against said side portions, and means for obstructing access to the space between the back and the chair when the back is in a position outward from the chair.

6. In combination, a chair having a frame and a back, a seat mounted on the frame for tilting movement into proximity to, and toward parallelism with, said back, and a spring attached to said seat and adapted to oppose said tilting movement toward said back, said back forming a flat supporting surface and the surface opposite said back being adapted to constitute a body support whereby said chair is adapted to be placed on its back and used for exercising by tilting said seat against said spring.

7. In combination, a chair having a frame and a back, a seat occupying a normally depressed position and mounted on the frame for tilting movement into proximity to, and toward paral-

lelism with said back, and a spring attached to said seat and adapted to oppose said tilting movement toward said back, said chair being adapted to be placed on its back and used for exercising, said spring being ineffective to return the seat to its fully depressed position.

8. A chair adapted to be turned on its back and when so turned to be used for exercising, comprising a frame, a back, a seat swingingly mounted on the frame, a portion at the front of the chair disposed to extend substantially horizontal when the chair is placed on its back and to serve as a body support, and an exercising device normally enclosed by said seat and frame, said device comprising a spring connected at opposite ends to the chair frame and to the seat to oppose swinging movement of the seat in one direction.

9. A chair adapted to be turned on its back and when so turned to be used for exercising, comprising a frame, a back, a seat swingingly mounted on the frame, a portion at the front of the chair disposed to extend substantially horizontal when the chair is placed on its back and to serve as a body support, and an exercising device normally enclosed by said seat and frame, said device comprising a spring connected at opposite ends to the chair frame and to the seat to oppose swinging movement of the seat in one direction, and an arch fitting device attached to the seat.

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