Feb. 6, 1951

P. C. FORBES

2,540,779

RESILIENT SPRING WIRE SUPPORT

Filed July 16, 1948

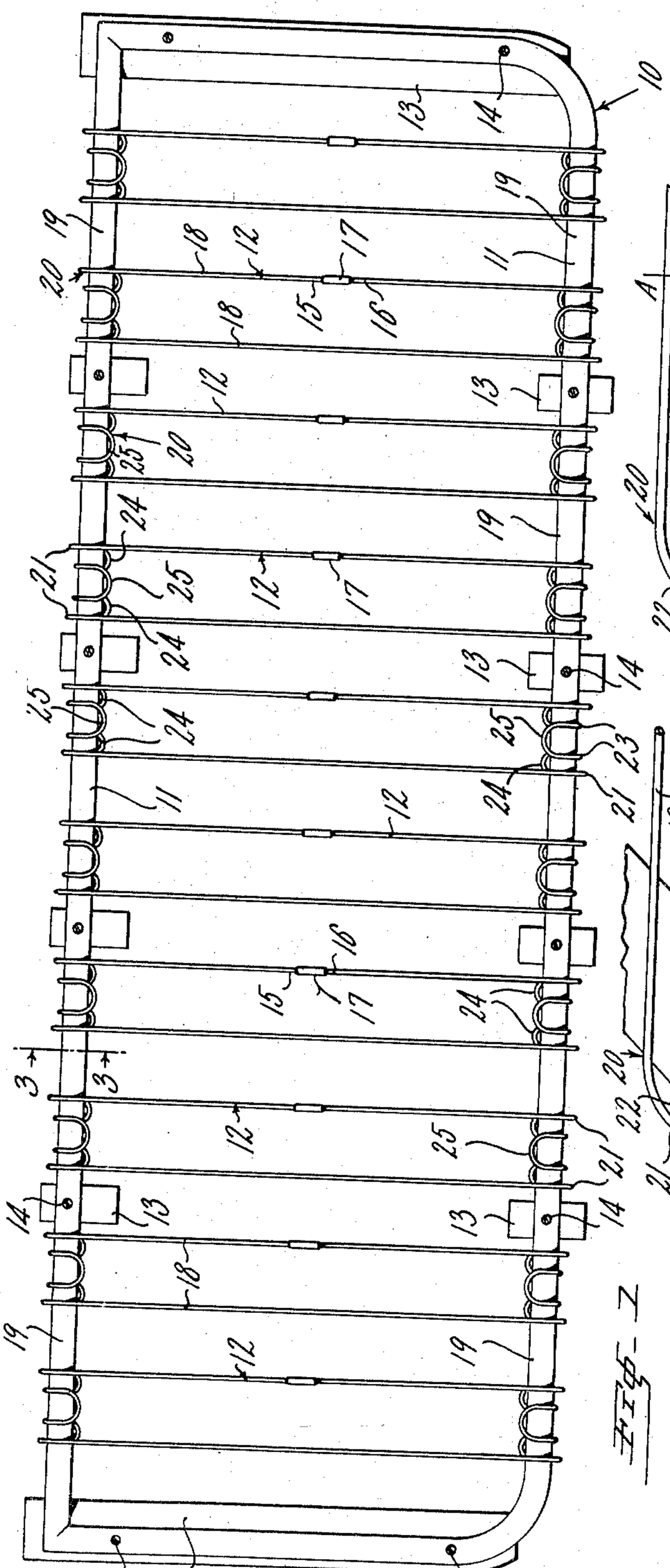

FIG. 1

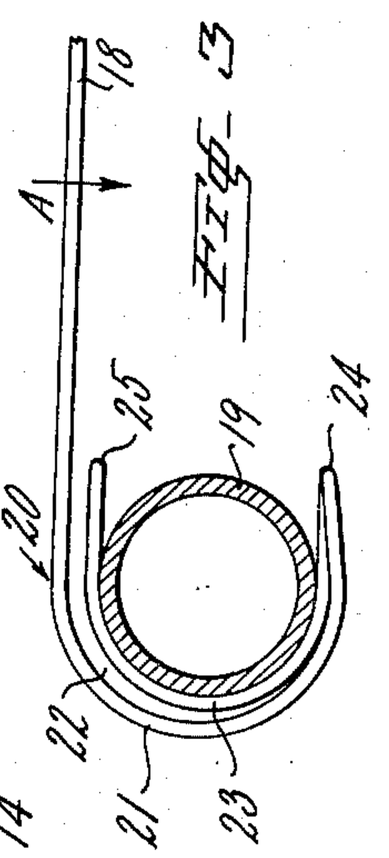

FIG. 3

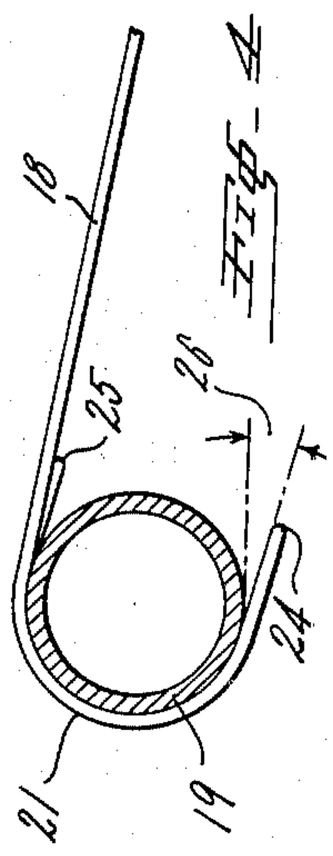

FIG. 4

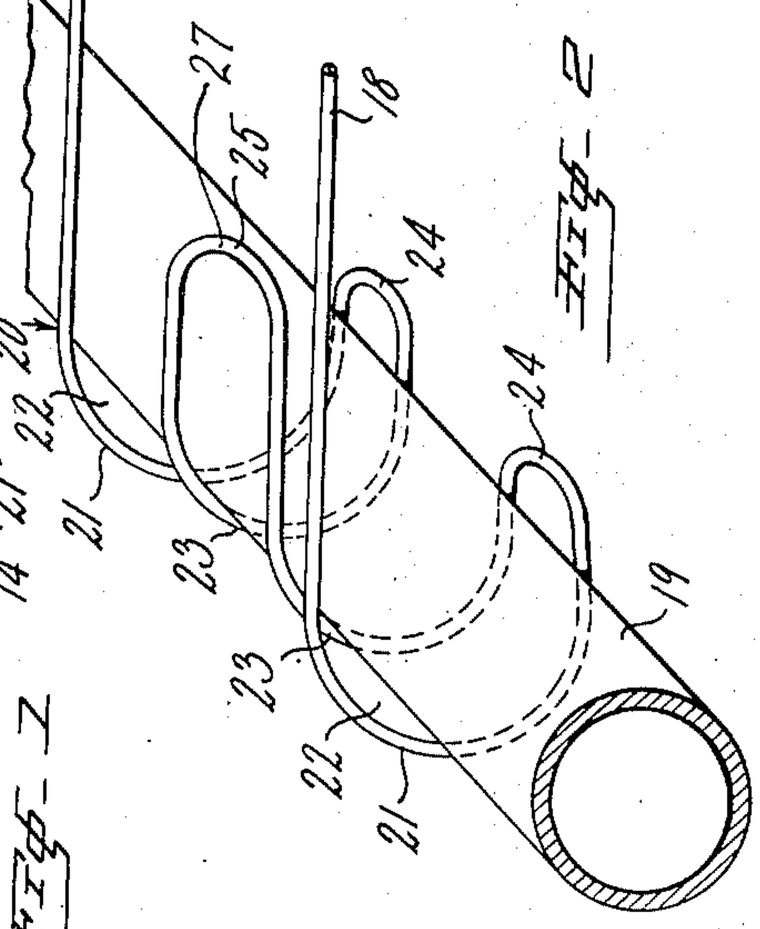

FIG. 2

INVENTOR.
PERLEY C. FORBES
BY
William R. Eyer
ATTORNEY

Patented Feb. 6, 1951

2,540,779

UNITED STATES PATENT OFFICE

2,540,779

RESILIENT SPRING WIRE SUPPORT

Perley C. Forbes, Mishawaka, Ind., assignor to United States Rubber Company, New York, N. Y., a corporation of New Jersey

Application July 16, 1948, Serial No. 39,161

5 Claims. (Cl. 155—179)

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This invention relates to an improved spring, and particularly to a spring construction adapted to be suspended between frame members to form a resilient base for seats, and other such resilient supporting structures such as davenports, beds, automobile seats and the like.

Heretofore various types of springs, such as coil springs, spiral springs, and rubber springs have been used in the construction of resilient bases for the above mentioned uses. In such prior constructions special means were used to anchor the spring members to the frame structure. In some of the constructions the use of coil springs and elliptical springs alone or combined with spiral springs increased the thickness of the seat structure to a point where it either could not be conveniently accommodated in the required space to permit the use of the desired thickness of padding above the spring base, or utilized space that might be used for other purposes. The latter conditions are sometimes met in automobile seats where it is required that the top surface of the seat be positioned relatively close to the floor, and the space below the seat is useful for storage.

One of the objects of this invention is to provide a resilient base for a seat which is shallow and comfortable, and is also relatively inexpensive due to its simplicity of construction, small number of parts and the convenient and efficient manner in which the spring members may be assembled.

This invention and the foregoing and other objects and advantages of the invention are further disclosed in the following description and the accompanying drawings, in which:

Fig. 1 is a top plan view of a resilient seat base, embodying this invention and mounted on supports extending from a platform;

Fig. 2 is an isometric view of one end of a spring unit attached to a frame member on one side of the resilient base;

Fig. 3 is a cross-sectional view of the frame member taken on line 3—3 of Fig. 1, and showing one end of the unloaded spring unit supported on the frame member; and

Fig. 4 is a view similar to Fig. 3, but showing the position of the spring unit when it is loaded.

Referring to Fig. 1 of the drawings, the resilient base 10 embodying this invention comprises a frame 11, having continuous spring units 12 extending across the frame, and adapted to resiliently support a load, such as the body of a person, which normally would be supported directly by some form of a padding or cushion (not

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shown) resting upon the units 12 and covering the entire top surface of the resilient seat base. As shown herein, the resilient seat base may be supported on upright supports 13 extending from the floor below, and the base may be suitably secured to the supports 13 by screws 14, or other like securing means extending through the frame 11 into the supports.

Each of the spring units 12 is made of a continuous length of spring wire having its ends 15 and 16 united by a weld 17. The spring units 12 comprise suspended portions, or members 18, which are secured to the frame members 19 at the opposite sides of the frame 11 by the looped ends 20 of the spring units 12.

The details of the looped ends 20 of the spring units 12 are shown in Figs. 2 to 4 of the drawings. The suspension members 18 extend into a pair of spring loops 21, which are curved around the frame member 19, but are separated therefrom by the spaces 22 as shown in Fig. 3. The spring loops 21 are united to a pair of intermediate loops 23, which are also curved around the supporting frame member 19 and are supported by the frame member 19 in contact therewith, as shown particularly in Fig. 3. The inner pair of loops 23 and the outer pair of loops 21 are connected by a pair of loops 24, which lies in a plane generally perpendicular to the planes of the loops 21 and 23. The pair of inner loops 23 is connected by a loop 25 on the opposite side of the frame member 19 from the pair of loops 24. The loop 25 also lies generally in planes perpendicular to the plane of loops 21 and 23.

The spring units 12 are made from spring wire, which may be bent while cold. Each unit is made from a continuous length of wire, and the ends thereof may be united either before or after the length of wire is shaped into the spring unit. The length of wire may be shaped into the spring units 12 on the supporting frame 11, but the lengths of wire are preferably shaped on another form, and then assembled on the supporting frame by springing the loops 21 and 23 to a larger radius and slipping them over the frame members 19. This can be done, if the connecting loops 24 do not extend too far beyond a tangent to the frame member 19 which is also perpendicular to the suspension members 18. For the purpose of more clearly illustrating the looped ends 20, the loops 24 are shown as extending beyond such tangent, but in order to assemble the units 12 on the frame with greater facility, it is desirable that the loops 24 extend beyond the

center of the frame member, but not to the tangent.

When the spring units 12 are assembled on the frame 11, the intermediate loops 23 of the looped ends 20 of the spring units fit snugly about the frame members 19, and support the outside spring loops 21 out of contact with the frame member 19, as indicated by the space 22 in Figs. 2 and 3.

When the load carrying suspension members 18 are loaded in the direction of the arrow A, the movement of the load is resiliently resisted by the spring loops 21, which tend to maintain their shape due to the spring action of the wire. As the load is increased, the spring loops 21 contract until they make contact with the frame member 19, as shown in Fig. 4. As the contraction proceeds, the suspension members 18 are deflected downwardly by the load, and when the loops 21 make contact with the surface of the frame members 19, a snubbing action is set up between the spring loops 21 and the frame members 19. The snubbing action cushions the end of the movement of the load, as the looped ends 20 of the spring units 12 turn about the frame members 19. The angle through which the looped ends 20 are adapted to turn about the frame member 19 from its unloaded to its loaded position is illustrated by the angle 26 in Fig. 4. Such angle may be of a variable number of degrees, but by way of example, and without limitation in respect thereto, it has been found that an angle of about 15° gives satisfactory performance.

For the purpose of giving greater stability to the spring units 12, they are shown herein as being provided with a pair of extension members 18, and with a pair of intermediate loops 23, united by connecting loops 25. However, the connecting loops 25 may be severed near their centers 27, so as to disconnect the suspension members 18 of a spring unit, and the separated suspension members and spring loops 21 will continue to function as before, particularly if the loops 21 and 23 are placed close together. Accordingly it is not necessary that the suspension members 18 be equally loaded when they are united in a single unit 12 as illustrated.

While the preferred embodiment of this invention is shown and described herein, it will be understood that the details thereof may be changed without departing from the spirit of this invention and the scope of the appended claims.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A continuous wire spring having loops adapted to embrace a support, one of said loops being bent on a radius smaller than the other loop, a loop connecting said loops of different radius and lying in a plane generally perpendicular to the plane of the other loops, said loop of smaller radius being adapted to be supported on the support, and said loop of smaller radius and connecting loop being adapted to support said loop of larger radius out of contact with the support when no load is applied.

2. A continuous wire spring having a pair of inside and a pair of outside loops adapted to embrace a support, said inside loops being bent on a radius smaller than the outside loops, a pair of loops connecting one loop of each pair of outside loops to one loop of each loop of said inside pair of loops, a loop connecting said loops of said inside pair of loops, said connecting loops lying in planes generally perpendicular to the planes of said loops which are adapted to embrace said support, and said inside pair of loops and said pair of loops connecting said inside pair of loops to said outside pair of loops being adapted to support said outside pair of loops out of contact with the support when no load is applied to said spring.

3. A continuous wire spring unit having spring members at each end thereof adapted to be supported on a support and connected by suspension members extending between said ends of said spring unit, each of said ends of said spring unit comprising a pair of outside loops adapted to embrace the support, a pair of inside loops adapted to embrace said support, a pair of loops connecting one loop of each pair of inside and outside loops, a loop connecting said loops of said inside pair of loops, said connecting loops lying generally in planes perpendicular to the planes of said embracing loops, said inside pair of loops being bent on a smaller radius than said outside pair of loops, and said inside pair of loops and said loops connecting said inside and outside pair of loops being adapted to support said outside pair of loops out of contact with the support when no load is applied to the suspended portion of said spring support.

4. A resilient supporting structure comprising a frame, suspension members extending across said frame, wire spring members connected to said suspension members, wire means continuous with said spring members for attaching said spring members to a frame member, said spring members comprising a U-shaped turn hooked over and spaced from said frame member, said wire attaching means comprising U-shaped turns hooked over and engaging said frame member and united to said first turns on the side of said frame opposite to said suspension members.

5. A resilient supporting structure comprising a frame, suspension members extending across said frame, wire spring members comprising U-shaped turns connected to said suspension members and hooked over and spaced from a frame member, U-shaped turns of wire continuous with said wire spring members hooked over said frame member in engagement therewith and located between said spring members.

PERLEY C. FORBES.

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