March 9, 1937. E. A. KRIMS 2,072,890

SPRING CUSHION

Filed Aug. 22, 1935

Fig. 1.

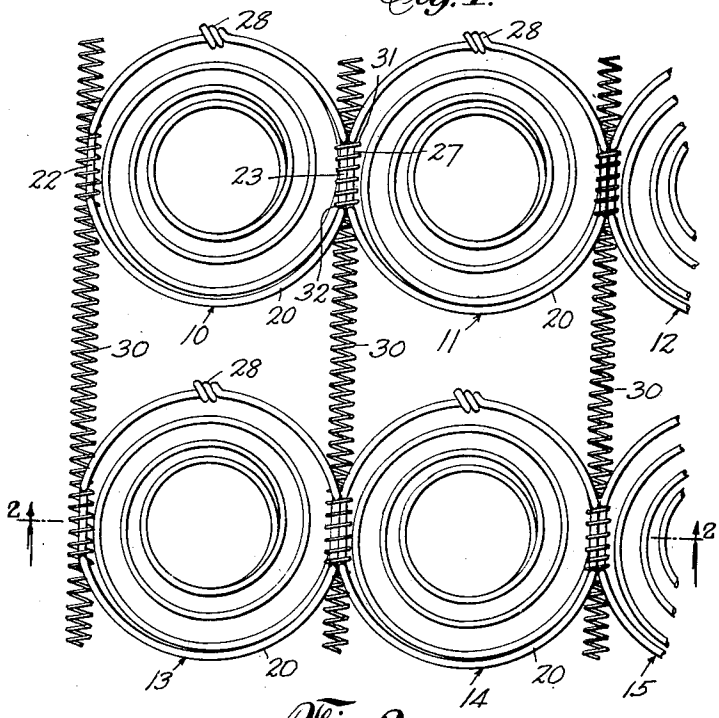


Fig. 2.

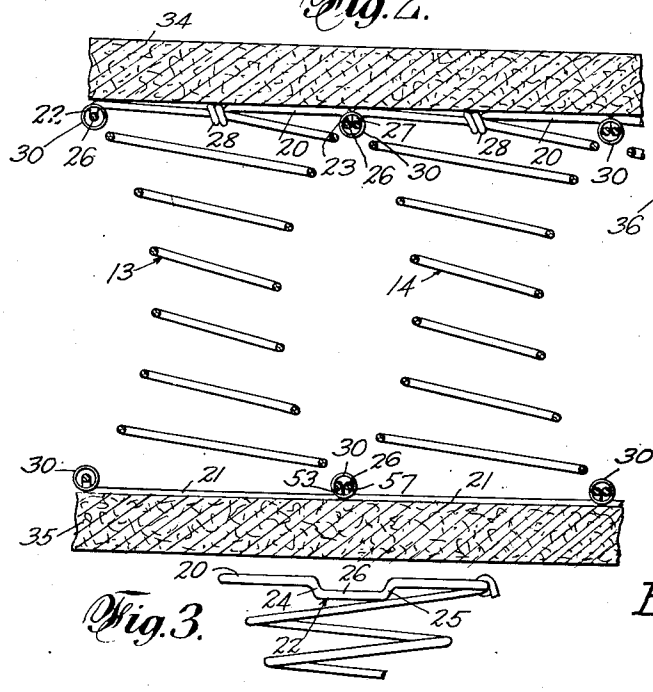


Fig. 3.

Fig. 4.

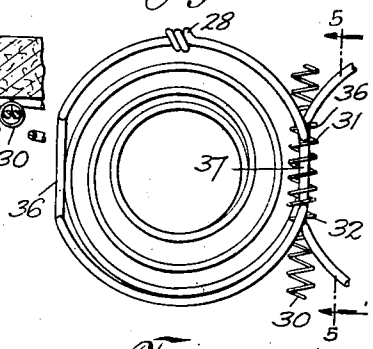
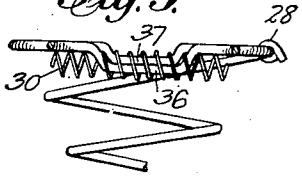


Fig. 5.



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SPRING CUSHION

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Application August 22, 1935, Serial No. 37,314

1 Claim. (Cl. 5—269)

This invention relates to spring cushions and particularly, to the type in which a series of similar "spiral" coil springs are arranged in parallel rows and secured together by means of smaller elongated helical coil springs.

My invention contemplates the provision, in the end coils of the spiral springs, of vertically arranged depressed portions, about which portions the helical springs are threaded to hold the adjacent spiral springs adequately against relative movement, and thereby to prevent the clicking or other objectionable noises resulting if the springs are permitted to move past or to rub against each other.

My invention further contemplates the provision of securing means for the spiral springs, which means is arranged at all times inwardly of the end coils of the spiral springs, and out of contact with the covering layers of filling material usually used in mattresses, cushions and pillows of the type to which this invention is applicable. The securing means, in the form of helical springs, is consequently prevented from wearing through the filling material in the course of time, and toward the outer surface of the cushion.

My invention further contemplates the provision of a spring cushion structure designed to be economically and quickly assembled and securely held together by means of comparatively thin connecting wire springs.

The various objects of my invention will be clear from the description which follows, and from the drawing, in which

Fig. 1 is a top plan view of a part of a cushion to which my invention has been applied, it being understood that the remaining parts of the cushion are similarly constructed and therefore need not be shown nor described.

Fig. 2 is a vertical section of the same, taken on the line 2—2 of Fig. 1.

Fig. 3 is a side elevation of the upper portion of one of the spiral springs, showing a typical vertical depression in an end coil thereof.

Fig. 4 is a top plan view similar to Fig. 1 of a modified form of the spiral spring.

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 4.

In the practical embodiment of my invention which I have illustrated by way of example, a series of spiral coil springs as 10, 11, 12, and others not shown, are arranged in a row, said springs being made preferably of comparatively heavy or thick wire. An additional row consisting of the springs 13, 14, 15 and others are arranged in the next row preferably in spaced relation to the first-mentioned row, and as many additional rows as are desired are made up in the same manner to form the complete spring cushion.

Each of the spiral springs has an uppermost or end coil 20 and a lowermost end coil 21 of the same diameter, the end coils being of greater diameter than the intermediate coils, as is well known in the art, so that the springs may be collapsed.

In accordance with my invention, there are made, before the springs are assembled, in the upper end coils 20 of each of the various springs, a pair of diametrically opposed preferably U-shaped depressions or offsets as 22, 23, each lying in a plane parallel to the axis of the spring. Each depressed portion or offset comprises the upright portions 24, 25 and the integral horizontal and preferably straight connecting portion 26.

The U-shaped depressed part or offset 23 of the spring 10 may be arranged in contact throughout its entire length with the similar depressed part or offset 27 of the adjacent spring 11, said part 27 corresponding to the depressed part 22, or said parts 23 and 27 may be arranged adjacent and without touching each other if desired. Similarly, the inward or upward offset 53 in the lower end coil 21 of the spring 10 is arranged adjacent the similar offset 57 in the end coil of the spring 11. Said offsets are preferably spaced angularly about 90° from the knotted or twisted extremity 28 of the end coil.

To assemble the springs into rows, the operator merely arranges the offsets as 23, 27 and 53, 57 in contact, thus arranging the spiral springs in their proper positions in the row. The helical connecting springs are then rotated to thread them about the adjacent aligned pairs of offsets in the rows. Said helical springs 30 are of sufficient length to extend throughout the width or length of the cushion in one direction.

It will be noted that a limited number of the coils of the connecting spring 30 are arranged on the straight parts 26 of the offsets and are confined between the upright parts 24, 25 of the offsets. For that reason, the adjacent springs such as 10 and 11 cannot materially shift longitudinally relatively to each other, that is, in the direction of the longitudinal axis of the spring 30 since such attempted shifting of the springs is resisted by the abutment of the coils 31 and 32 of the spring 30 against the upright parts as 24 and 25 respectively of the offsets. Similarly, vertical

relative shifting of the springs 10 and 11 to any material extent is also prevented by the connecting spring.

Relative shifting of the spiral springs in any other direction is also prevented since the straight parts 26 of the offsets are confined within the coils of the helical spring 30. The length of the offset parts 26 is preferably such that they will not contact with any coil of the spiral spring when said spring is depressed.

The lengths of the upright portions 24, 25 of the various offsets are such that the helical spring 30 for the upper end coil lies entirely below said coil, and the corresponding spring 30 for the lower end coil lies entirely above said coil, as best seen in Fig. 2. For this reason, when the stuffing or filling material 34, 35 is arranged above the end coils 20 of the sprial springs in the completed cushion, or below the end coils 21, pressure on the cushion due to ordinary use cannot force the helical springs into contact with or through the filling. The hard parts of the spring 30 therefore cannot work their way through the filling to the surface of the cushion to cause discomfort to the user.

It will be understood that comparatively light wire may be used for the helical springs 30. It will further be understood that the helical springs 30 prevent relative rotation or other relative movement of adjacent springs such as 10 and 11, or 13 and 14, since the offsets are substantially straight and in parallel planes, the offsets 23 and 53 lying in one plane and the offsets 27 and 57 in another. It will finally be understood that the operator who assembles the spiral springs need merely arrange the offsets of the end coils thereof in adjacent relation and then thread the helical spring 30 about said offsets whereby the springs become automatically arranged in their proper positions.

As shown in Figs. 4 and 5, the opposed offsets of each end coil may be made of different lengths and depths instead of the same size. In this form of my invention, the offset 36 is the longer and deeper, while the diametrically opposed offset 37 spaced about 180° therefrom in the same end coil is shorter and of less depth to fit into the offset 36 of the adjacent spiral spring and to become arranged thereabove in the case of the upper end coils and therebelow in the case of the lower end coils. The adjacent spiral springs thereby become arranged somewhat closer together and form smaller spaces to be bridged by the filling material 34, 35. The depths of the offsets are such in any case that the connecting springs are at all times arranged vertically inwardly of the end coils.

It will be seen that the diameters of the end coils measured at the offsets is less than the remaining diameters of the end coils and that the total width of the resulting cushion is less than the sum of the greatest diameters of the coil springs.

It will further be seen that I have provided a simple and efficient structure for securing the spiral springs of spring cushions or mattresses together against relative movement in any direction, the securing means being so arranged at the end coils of the spiral springs as to fail to project therebeyond and thereby to prevent such wear upon the filling material used with the cushion, mattress, or pillow constructed in accordance with this invention as would cause the springs to work through the filling material to the outer casing of the cushion.

While I have shown and described a certain specific embodiment of my invention, I do not wish to be understood as limiting myself thereto since I intend to claim my invention as broadly as may be permitted by the state of the prior art and the scope of the appended claim.

I claim:

In a spring cushion, a pair of adjacent upright wire coil springs each having an upper and a lower end coil of the same diameter, the terminal portion of each end coil being secured to the adjacent part of the next succeeding coil, each of said coils having a pair of diametrically offset portions in spaced relation to said terminal portion, each of the offsets being arranged in a plane parallel to the axis of the spring and including a horizontal portion of substantial length, one of the offsets of said pair being longer than the other, and deeper than the other by an amount substantially equal to the thickness of the wire of said springs, the horizontal portion of the shorter offset of one spring interfitting with and resting on the horizontal portion of the longer offset of the adjacent spring to arrange the corresponding end coils of the springs in the same horizontal plane, the interfitting offsets being arranged in the same vertical plane whereby one of said offsets directly transmits vertical pressure in one direction to the other of the offsets, and a connecting spring threaded about said horizontal portions of the offsets and having an internal diameter substantially equal to the combined thicknesses of said horizontal portions.

EDWARD A. KRIMS.