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COIL SPRING CONSTRUCTION
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2,631,840

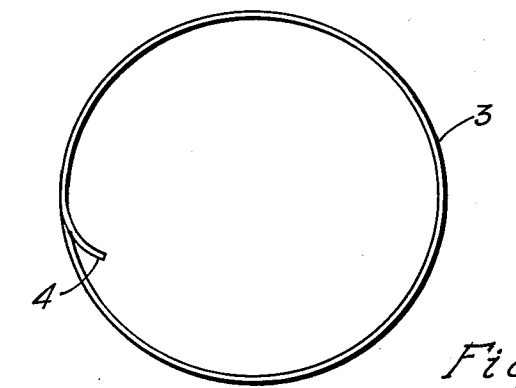


Fig. 4.

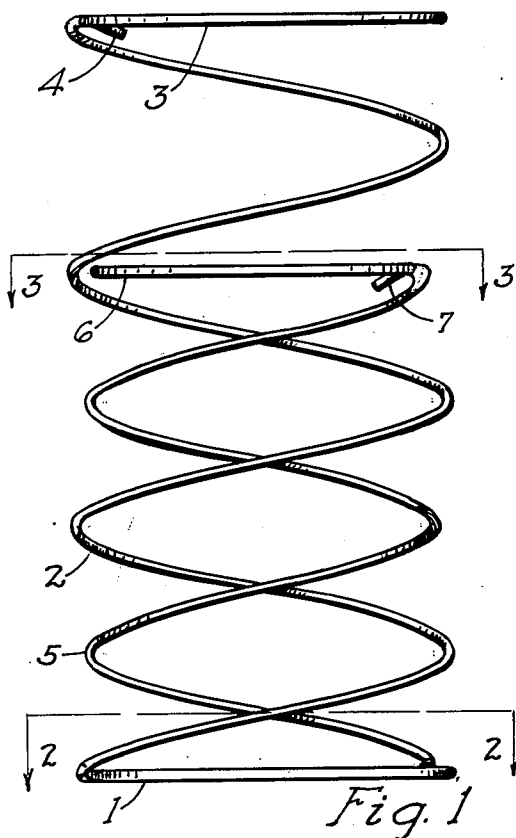


Fig. 1

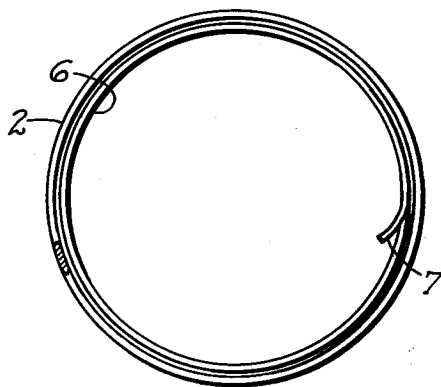


Fig. 3.

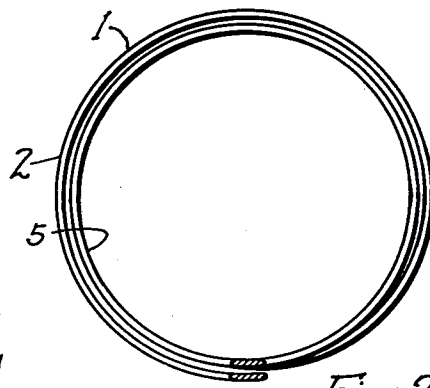


Fig. 2.

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COIL SPRING CONSTRUCTION

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2 Claims. (Cl. 267—1)

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The invention relates to a coil spring construction. It more particularly relates to a coil spring for cushions, mattresses and the like adapted to compress much more readily during the first stages of loading than during the final stages of loading.

A principal object of the invention is to provide a coil spring which is particularly adapted for use in an article of furniture serving in two capacities, such as a davenport-bed.

Another object of the invention is to provide a coil spring construction of simple manufacture which is endowed with heavy load carrying ability during a portion of the compression cycle.

A further object of the invention is to provide an integral double coil spring having the inner coil of a shorter length than the outer coil.

Still another object of the invention is to provide a double coil spring which readily compresses under a light load yet readily supports a heavy load.

Other objects and advantages will become apparent during the course of the following description which taken in conjunction with the annexed drawing illustrates a way of putting the invention into effect, such disclosed means illustrating but one of various ways of carrying out the principle of the invention.

In the drawing:

Fig. 1 is a side elevation of the new coil spring.

Fig. 2 is a sectional view taken along lines 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a sectional view taken along lines 3—3 of Fig. 1 looking in the direction of the arrows.

Fig. 4 is a plan view of the spring looking down on the top.

Referring to Fig. 1 the outer coil of the spring starts with a flat base 1 which continues upwardly in a spiral section 2 to form the body of the spring. The upper end of the outer coil ends in a circular loop portion 3 with the extreme end of the spring pointing both inwardly and downwardly at 4. The base 1 is actually formed with a double circular loop (see Fig. 2) having the inner loop extending upwardly in a spiral 5 to form the inner coil spring. The inner spiral 5 ends in a circular closed loop portion 6. The loop portion 6 ends with a portion 7 pointing inwardly and downwardly. As shown the inner spring is considerably shorter than the outer spring and the inner coil is of enough smaller diameter than the outer coil to allow it to compress without interference with the outer coil. The loops 3 and 6 are in planes parallel with the base 1.

In the sectional view of Fig. 2 the relation be-

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tween the outer spiral portion 2 and the inner spiral portion 5 is seen in greater detail. Spiral 2 is seen running downwardly into the outer base loop portion and inner spiral 5 extends downwardly into the inner base loop portion.

In the sectional view of Fig. 3 the manner in which the inner spring terminates is shown in detail. Outer spiral section 2 continues upward at this section while inner coil 5 terminates in a flat loop 6 having an inwardly and downwardly extending end 7.

Fig. 4 illustrates the appearance of the spring coil as viewed from above. The flat circular loop 3 of coil 2 terminates in an inwardly and downwardly pointing section 4 and at this elevation the spring comprises only the outer coil.

In the operation of a coil spring of the described construction it will be apparent that during initial loading of the spring only the outer coil is compressed whereas under a heavy or concentrated load both the inner and outer spring support the load. This construction allows the provision of a spring which is suitable for use in cushions, mattresses, and the like having the combined properties of a soft cushion easily compressible under light loads as well as the property of being capable of supporting heavy or concentrated loads. This feature is particularly desirable for certain articles of furniture serving a dual purpose such as daybeds and the like. The mattresses or cushions in these combination pieces should have the property of being comfortable and hence compressible under a light load when used for sleeping purposes wherein the load is distributed over a relatively large area and also of being comfortable and readily capable of supporting a heavy load concentrated upon one spot as when they are sat upon or used in the manner of a chair. The instant construction fulfills these requirements by virtue of the coaction of the various parts of the single spring so designed that some compression readily occurs under a light load yet even a heavy or concentrated load will fail to crush or completely compress the spring.

In assembling the spring of the invention it will be generally preferable to wind the spring from a single strand of suitable material such as conventional spring wire. It will be apparent that if desired the coil diameter, and length of the inner coil may be varied relative to the outer coil to give a spring having the desired characteristics under various loading conditions. It will be further apparent that the coils need not

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bear the relation shown in the drawing in that the inner and outer coils may run parallel instead of intersecting or any variation therebetween depending on the pitch and the number of coils desired in each section of the spring. If, for any reason, desirable the inner spring may be assembled separately and welded to the outer spring to form an integral assembly. It will be apparent that the construction described affords advantages over the use of two separate springs one of which is housed within the other due to the fact that no provision need be made for holding the one spring in alignment with the other as by use of special clips, a burlap container, or the like. In the instant case by turning the upper ends of the spring inwardly and downwardly the two springs are enabled to compress readily without interfering with each other. While a circular coil or loop is illustrated and described it is within the purview of the invention for the coils to take on oval or modified ellipsoidal shape.

I claim:

1. In a double coil spring formed from one continuous length of wire, the combination which includes two spiral nested coils with one of said coils extending in a clockwise direction and the other coil extending in a counterclockwise direction to allow up and down movement of each coil without interference from the other with the inner coil of shorter length than the outer coil, a flat base double loop portion consisting of an outer loop and an inner loop integral with the spiral coils, and a top closed loop for each of the

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spiral coils with the ends of the wire bent inwardly and downwardly.

2. In a double coil spring structure the combination which includes two nested spiral coils with one of said coils extending in a clockwise direction and the other coil extending in a counterclockwise direction with the inner coil of shorter overall length than the outer coil, an integral base portion for the spiral coils comprising a continuous double loop with one loop inside the other, and top closed loops terminating the spiral coils at the upper end with the ends of the loops bent inwardly and downwardly, said loop portions being in planes parallel to the plane of the base.

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