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PROCESS OF FORMING SPRING FILLERS FOR FURNITURE AND THE LIKE

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Fig. 3

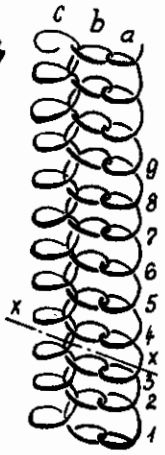


Fig. 2

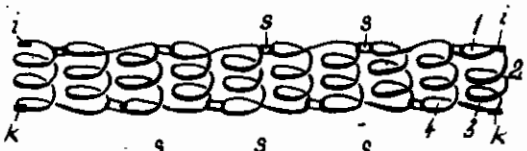
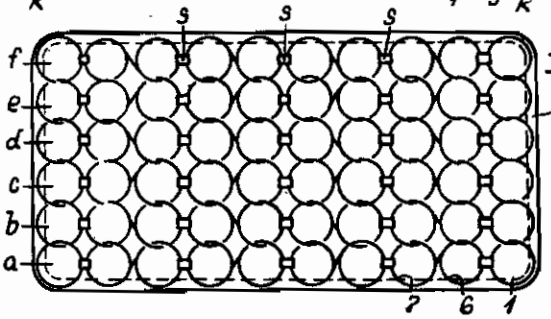


Fig. 1



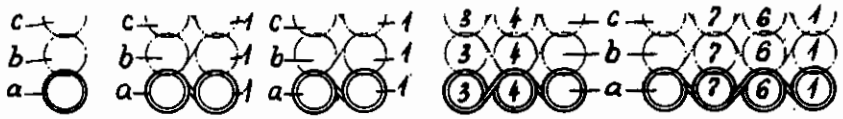
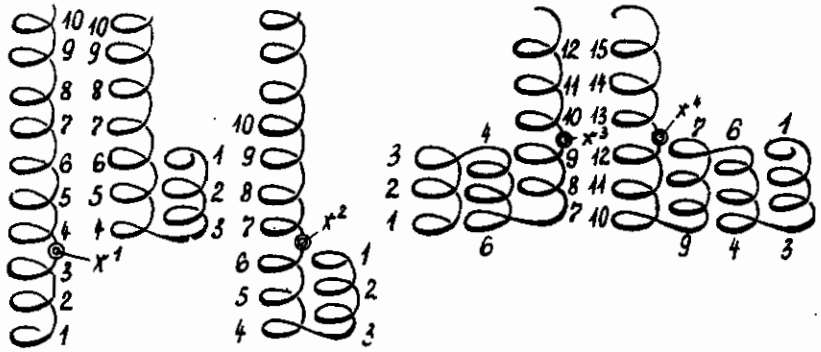


Fig. 4 Fig. 5 Fig. 5a Fig. 6 Fig. 7



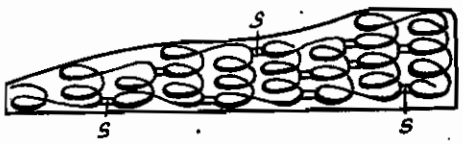


Fig. 8

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ALIEN PROPERTY CUSTODIAN

PROCESS OF FORMING SPRING FILLERS FOR FURNITURE AND THE LIKE

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This invention relates to a method of forming fillers for seat cushions, upholstery, mattresses, sofas or the like, in which rows of coiled springs are made of one continuous wire and the single coils are arranged in parallel position with respect to each other by bending a predetermined number of windings.

More particularly, the present invention relates to a process for producing a number of parallel and juxtapositioned rows of spirally coiled windings corresponding to the width of the filler to be formed arranged in parallel position by bending a long wire spiral at points spaced to correspond to the desired height of the coiled springs, the long spiral being bent alternately in opposite directions to the extent of 180° and the coils being united with one another at their unconnected windings by means of suitable clamping or connecting means.

In this respect, it is advantageous to spacedly arrange the spirally coiled windings used for producing the rows of coiled springs, thus facilitating the insertion of the clamping or bending tool, besides forming an even surface for the seat cushion or other devices.

The adjacent or juxtapositioned rows of spiral coils may be intertwined with their respective windings after the wire winding mandrel is removed and prior to the bending operation. On the other hand, it is also possible to connect with one another the rows of spiral coils, prior to the bending thereof, either with the aid of coils of relatively smaller diameter or with clamp-like fastening means.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 illustrates a top plan view of the spring filler;

Figure 2 illustrates a side elevation thereof;

Figure 3 illustrates a diagrammatic view of some of the rows of coils used for the preparation of the filler;

Figures 4 to 7 show the process in a plurality of steps in plan view and in side elevation in which, to make it clear, the side elevation of only one row of coils is shown; and

Figure 8 illustrates a spring filler shown in the form of an automobile seat cushion.

The seat cushion set forth in Fig. 1 comprises six rows of coils *a, b, c, d, e, f*, each row consisting of a continuous wire, the single springs of the seat cushion being arranged in parallel relationship by bending off from a long wire spiral a predetermined number of springs each formed of a desired number of spiral windings, the bending being first in one direction and then in the opposite direction. As disclosed in Figures 1 and 3, the rows of coiled springs have their adjacent windings intertwined, whereby, as clearly shown in Figures 1 and 3, the rows of springs are formed of alternate right or left coils.

The spring structure illustrated in Figs. 1 and 2 is held under tension in known manner, by means of lateral supporting frames *i, k*.

The seat cushion may be prepared, for example, by advancing the interconnected rows of coils *a, b, c, d, e, f* far forward enough to permit simultaneous grasping of the coiled wire by means of suitable bending and clamping tools on the dash-and-dot line *x—x* shown in Fig. 3, whereupon a predetermined number of windings is bent off by said tools from the original rows of coils *a, b, c, d, e, f* and brought into parallel relationship.

In Figure 4, for example, the bending and clamping tools are applied between spiral windings **3** and **4**. Since the tools are capable, as illustrated in Fig. 3, of simultaneously grasping all other windings, the free windings **1, 2, 3** of all rows of coils *a, b, c, d, e, f* are simultaneously bent off at the bending point *x'* and brought into parallel relationship with respect to the corresponding row of springs (see Fig. 5).

In Figs. 4 to 7, to make it more clear, there are shown only single rows of coils *a* having at one of their ends the required number of bent off windings. It is clear, however, that the same operation is simultaneously performed with all other rows *b, c, d, e, f*.

As shown in Fig. 5*a*, the rows of coils *a, b, c, d, e, f*, with the bent off windings **1, 2** are all pushed so far forward as to permit grasping of the coiled wire at the new bending point x^2. In Fig. 5*a* this bending point lies between windings **6** and **7**. At this point, the windings **4, 5** and **6** of all rows of coils *a, b, c, d, e, f* are again brought into parallel relationship with respect to the original row. In this instance, however, the bending off is made in the opposite direction to that of the previous bending. Figure 6 illustrates

the row of coils *a* after two bending off operations.

After again pushing the coils under the bending tools, renewed bending is carried out at bending point x^3 lying between windings 9 and 10. This bending is made in the same direction as in the first operation in order to form a row of coiled springs as shown in Fig. 7. This row of coils is then again bent off at bending point x^4 lying between windings 12 and 13 in the opposite direction to that of the previous operation, and so forth, until finally there will result compact rows of coils extending over the entire length of the seat cushion, as illustrated in Figs. 1 and 2.

Since the process set forth in Figs. 4 to 7 is carried out simultaneously with all rows of coils, it is possible to produce the finished spring filler in an extremely short time. The springs may be attached to one another at those windings that are not connected to adjacent springs, by means of clamps, spiral coils or the like.

The new process, according to the present invention, enables the preparation of seat cushions having springs of any suitable height, by purely mechanical means, i. e. by adjustment of the clamping and bending tools applied to the coils *a, b, c, d, e, f*.

It is possible, for example, to prepare the automobile seat cushion shown in Fig. 8, by properly adjusting the feed of the row of coils to first bend off a single winding simultaneously from all rows of coils corresponding to the width of the cushion, whereupon one after another, two springs with two windings, four springs with four windings, and finally, two springs having each five windings are bent off in opposite directions by means of bending tools, from the original rows of coils.

Instead of pushing or feeding single rows of coils under the clamping or bending tools, it is naturally possible to have these coils remain stationary and have the adjustable clamping or bending tools move to grasp the portions of coiled wire to be bent.

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