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METHOD OF MAKING SPRING INSERTIONS

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2 Sheets—Sheet 1

Fig. 1

Fig. 2

Fig. 3
Fig. 4

Fig. 5

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2 Sheets-Sheet 2

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METHOD OF MAKING SPRING INSERTIONS

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5 Claims.

(Cl. 140—3)

The direction of the helices of the adjoining springs a1 and a2 is counter-clockwise. The wire portions connecting the springs lie alternately at the top ends d1 and d2 and respectively at the bottom end d1 of the spring. These connecting wire portions are accurate according to Figs. 1 and 2. They may however, be of any desired shape and may also be straight. In any case, the connecting wire portions are formed with the adjoining spring recesses, in which buckles e, or other linking elements (such as metal bands, wires, straps, cords, or the like) can be anchored, to bridge over the cavities formed within four adjoining springs.

Fig. 2 differs from the construction of Fig. 1 in that the helices of the adjoining springs are intertwined in the known manner.

The axes of the upholstery springs of one and the same spring row according to Fig. 1, lie in a straight line. However, according to Fig. 3 they may lie in a zig-zag line, that is, the successive springs formed of a wire length are located in different spring rows of the spring wire insertion. For example, springs i and g, shown in full line in Fig. 3, are located in the second spring row of the spring insertion, whereas the springs j, h and i, are located in the first row of the spring insertion. The vacant places in the rows are filled up by the springs of another succession of springs shown in dotted lines.

In making the spring wire insertion according to the improved method, the wire 2 which is of such a length that it is sufficient for the production of a greater number of springs (see Fig. 4) is wound onto a spool 1, the outer diameter of which is preferably smaller than the diameter of the spring to be produced. The end 21 of the wire 2 is fixed to a frame holding the spring wire insertion and the spool 1 is kept in such a position that its geometric axis is parallel to the geometric axis a1—a2 of the spring a1 to be formed (see Fig. 5). Then the spool, while rolled around its geometric axis is displaced vertically to its axis to a distance at which it reaches the place which will be occupied by the spring a1 in the spring wire insertion. Thereupon, the spool held at its lower disc 4 is moved in the direction c1—c2 as indicated by the arrow 2.

For facilitating the withdrawal of the wire, the spool may meanwhile perform a precessional movement, that is, a rocking movement around its axis of precession, whereby the wire helices are removed from the spool along the border of the bottom disc 4. Such a number of turns is thus withdrawn from the spool, which is to constitute the spring a1, for example, four turns according to Fig. 5. Owing to the fact that the wire is generally wound around spool 1 in several layers, the diameter of the helices of the individual layers are different, so that they in any case...
deviate from the diameter of the helices of the springs to be produced. The final diameter of the spring \( a_1 \) can be obtained in such manner that the greatest diameter of the spring wire on the spool is so adjusted as to be smaller than the desired diameter of the spring \( a_1 \), and during the withdrawal of the helices from the spool, the diameter of the wire spring can be increased by deformation to the desired size.

After having completed spring \( a_1 \) in this manner, the spool 1 reaching the level of the upper end of the spring \( a_1 \), is displaced in a direction which is normal to its axis to such a distance that its axis should coincide with the direction \( o_2 - o_3 \) of the axis of the next spring \( a_2 \) (see Fig. 5). Meanwhile the spool, without being inverted, is rolled around its axis to such an extent that a wire portion corresponding to the length of the connecting portion \( d \) between springs \( a_1 \) and \( a_2 \) is unwound from the spool. Thereupon, the spool held at its lower disc 4, is moved in the direction of axis \( o_3 - o_2 \) as indicated by the arrow \( y \), whereby the wire is firmly held at the portion \( d \).

Thereby, the wire helices on the spool are detached therefrom along the border of the top disc 3, as illustrated in Fig. 4 in dotted lines. After the spring \( a_2 \) has been completed in the same manner as has already been described in connection with the spring \( a_1 \), the spool reaches the level of the lower end of the spring \( a_2 \). After the spring \( a_2 \) had been produced in a downward direction, the spool, in order to produce the next spring \( a_3 \) in an upward direction, is displaced again in a direction normal to its axis to such distance that its axis should coincide with the axis \( o_3 - o_2 \) of the next spring. Thereby, the spool without being inverted is rolled anew around its axis for such a duration of time that a length of wire necessary for forming a wire portion \( d \) connecting the lower end of the spring \( a_3 \) with the lower end of the next spring \( a_2 \) to be made in an upward direction, should be withdrawn. Thereupon, after fastening the wire portion \( d_3 \), the method is continued in a manner as has already been described in connection with the making of spring \( a_2 \). During the production of the springs, the spool is alternatively moved up and down, whereby the geometric axis and respectively the axis of the precession cone of the spool always remains parallel to itself, that is, it does not undergo any inversion.

When viewing the adjacent springs, for example, in the direction of arrow \( x \) (see Fig. 5), then starting from the front plane \( z - z \) of inspection, the direction of winding of the middle spring \( a_2 \) marked with an arrow, is opposite to that of both adjoining springs \( a_1 \) and \( a_3 \).

This application is a division of application Serial No. 250,505, filed January 12, 1939.

I claim:

1. A method for the manufacture of spring insertions for stuffed seats, mattresses, cushions or the like, in which more than two upholstery springs are arranged substantially axially parallel to one another, comprising withdrawing wire axially in one direction from a spool having turns of wire wound thereon, sufficient to form a first spring, withdrawing a sufficient length of wire laterally of the spool to form a connecting piece between said first spring and a second spring to be formed, and forming the second spring by withdrawing sufficient turns of wire axially of the spool in a direction opposite to said first-mentioned direction.

2. A method for the manufacture of spring insertions for stuffed seats, mattresses, cushions or the like in which more than two upholstery springs are arranged substantially axially parallel to one another, comprising withdrawing wire from a spool having turns of wire wound thereon, including the steps of withdrawing axially of the spool in one direction sufficient turns of wire to form a first spring, withdrawing a sufficient length of wire laterally of the spool to form an inwardly recessed connecting piece of bent wire between said first spring and a second spring to be formed, and forming the second spring by withdrawing sufficient turns of wire axially of the spool in a direction opposite to said first-mentioned direction.

3. A method for the manufacture of spring insertions for stuffed seats, mattresses, cushions or the like in which more than two upholstery springs are arranged substantially axially parallel to one another, comprising withdrawing wire from a spool having turns of wire wound thereon, including the steps of withdrawing axially of the spool in one direction sufficient turns of wire to form a first spring, withdrawing a sufficient length of wire laterally of the spool to form an inwardly recessed connecting piece of bent wire between said first spring and a second spring to be formed, and forming the second spring by withdrawing sufficient turns of wire axially of the spool in a direction opposite to said first-mentioned direction.

4. A method for the manufacture of spring insertions for stuffed seats, mattresses, cushions or the like in which more than two upholstery springs are arranged substantially axially parallel to one another, comprising withdrawing wire axially in one direction from a spool having turns of wire wound thereon, sufficient to form a first spring, withdrawing a sufficient length of wire laterally of the spool to form a connecting piece between said first spring and a second spring to be formed, and forming the second spring by withdrawing sufficient turns of wire axially of the spool in a direction opposite to said first-mentioned direction and passing each turn of the second spring through the adjacent turn of the first spring.

5. A method for the manufacture of spring insertions for stuffed seats, mattresses, cushions or the like in which more than two upholstery springs are arranged substantially axially parallel to one another, comprising withdrawing wire axially in one direction from a spool having turns of wire wound thereon, including the steps of withdrawing axially of the spool in one direction sufficient turns of wire to form a first spring, withdrawing a sufficient length of wire laterally of the spool to form an inwardly recessed connecting piece of bent wire between said first spring and a second spring to be formed, and forming the second spring by withdrawing sufficient turns of wire axially of the spool in a direction opposite to said first-mentioned direction and threading each turn of the second spring through the adjacent turn of the first spring to intertwine the coils of adjacent springs.

GEORGE TÖRÖK.