



# UNITED STATES PATENT OFFICE.

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## SPRING FOR CORSET-STIFFENERS OR SIMILAR ARTICLES.

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*To all whom it may concern:*

Be it known that I, HEINRICH TORLEY, a citizen of the German Empire, residing at Ober-Kaufungen, near Cassel, in the Province of Hesse-Nassau and Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Springs for Corset-Stiffeners or Similar Articles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in compound spirally-wound flat-wire springs in which two spirally-wound flat-wire springs of known construction and composed each of any suitable number of coils are connected together by placing them side by side with those edges facing each other where the loops formed by the coils are free and then winding or screwing through those loops a special binding-coil of exactly the same pitch as the loops, or, what will give the same result, pulling through those loops a binding-wire, like pulling the shoe-laces through the holes in the upper part of lace-boots, and finally rolling or pressing the coils of the binding-wire flat down upon or into the face of the wire springs. I thus obtain a compound spirally-wound flat-wire spring which presents an almost-straight edge at both sides and which is strengthened in the middle part, and therefore is especially applicable for making stays or busks for corsets and bodices and for other purposes where great flexibility and a certain resistance against bending through in the middle are required.

On the accompanying drawings I show the new compound spirally-wound flat-wire spring by means of which I attain the objects in view.

Figure 1 shows part of the same, on an enlarged scale, with wire coils wound all in the same direction, the connecting-wire being partly screwed in place and not yet pressed flat. Fig. 2 is a cross-section of Fig. 1 along line I I. Fig. 3 is a view of the same with the connecting-wire completely in place and pressed flat. Fig. 4 is a cross-section of Fig. 3 along line II II. Fig. 5 is a view of the new spring with wire coils wound in opposite di-

rections, the connecting-wire screwed in place partly only. Fig. 6 is a cross-section of Fig. 5 along line III III.

Two, three, or more steel wires *a* and *b* are wound spirally around a mandrel of such thickness as will be prescribed by the width of the spring to be made. The spirals are then pushed off the mandrel and pressed nearly flat by the known process. Two such nearly-flat pressed multiple-wire coils A and B are then placed side by side, with those edges facing each other where the loops C and D, respectively, are free. Both multiple coils are then bound together by pulling through the loops a binding-wire, like pulling shoe-laces through the eyes of lace-boots, or instead of such a plain binding-wire a binding-wire coil E may be used, the pitch of the coils of which corresponds exactly to the distance of the loops C and D from each other in each multiple wire coil A and B. This binding-wire is then screwed or wound into the loops C and D, passing alternately and regularly through the loops of the coil A and then through the adjacent loops of the coil B. This done, the whole fabric is pressed or rolled flat, as indicated in Figs. 3 and 4. By this both multiple coils A and B are rigidly bound together, so that the whole forms a strong but very flexible steel spring. The central binding by the wire E forms, so to say, a sort of backbone of the compound spirally-wound flat-wire spring.

It is not necessary that the coils A and B be wound both in the same direction. They may be wound in opposite directions upon the same mandrel or upon separate mandrels, but of same thickness, so that the pitch of the loops will be the same. A spring of this design is shown by Figs. 5 and 6. It will be seen that the coils *a'* are wound in one direction, left to right, and the coils *b'* in the opposite direction. The pitch of the free loops C' D' is, however, the same, and therefore the binding-coil E' can be wound into these loops exactly in the same way as described in the preceding case, and the whole is then rolled or pressed flat and the fabric produced resembles the one described first in every respect, except that the coils in both halves are bent in opposite directions.

If desired, thin steel wires may be introduced into the loops C D or C' D' and also into the little space left between the loops C and D or C' and D'—that is to say, between the binding-coil E or E', or only between the latter alone, or between the two first coils only, as indicated in dotted lines in the drawings. This would protect the main coils C D and C' D' from being pushed toward each other if the binding by the coil E or E' should happen not to be firm enough. This is, however, not essential.

The essential feature of my present invention and the gist of the same is the binding of the two multiple coils together in the middle, whereby I obtain the strengthening central backbone and almost straight and closed

edges at the two sides, which is not found in similar fabrics of known construction.

What I therefore claim as my invention is— 20

As an article of manufacture a spring for corset-stiffeners and similar articles consisting of two multiple wire coils each composed of several concentric wires these two multiple coils being bound together by an intervening wire which passes through the loops of the two coils alternately, the whole being flattened as set forth. 25

In testimony whereof I have affixed my signature in presence of two witnesses.

HEINRICH TORLEY.

Witnesses:

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J. A. RITTERSHAUS.