

J. F. KITCHEN.

METHOD OF MAKING GARMENT STAYS.

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1.123,893.

Patented Jan. 5, 1915.

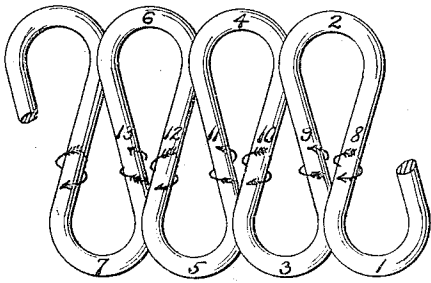


Fig. 1.

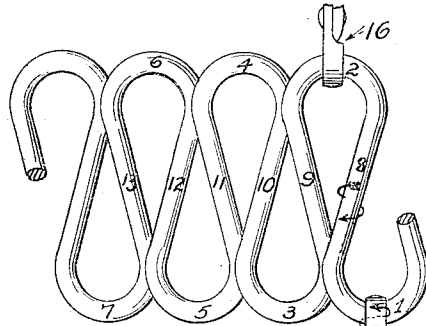


Fig. 2.

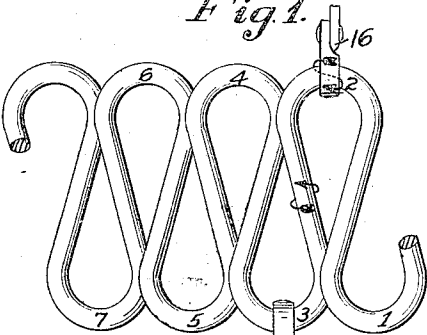


Fig. 3.



Fig. 7.

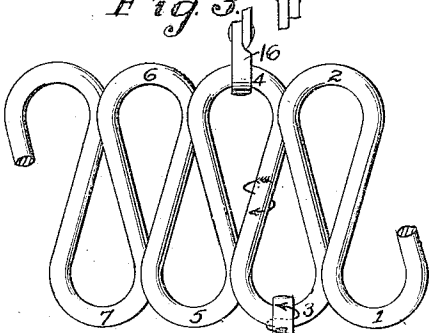


Fig. 4.

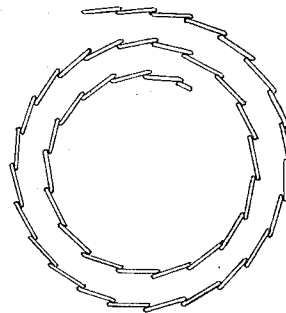


Fig. 5.



Fig. 6.

WITNESSES

Stephen Wach.

Elbert L. Hyde.

INVENTOR

John F. Kitchen

By Fredk H. Hume
Attorney

UNITED STATES PATENT OFFICE.

JOHN F. KITCHEN, OF MEADVILLE, PENNSYLVANIA, ASSIGNOR TO THE SPIRELLA COMPANY, OF MEADVILLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

METHOD OF MAKING GARMENT-STAYS.

1,123,893.

Specification of Letters Patent.

Patented Jan. 5, 1915.

Application filed July 10, 1912, Serial No. 708,708. Renewed October 21, 1914. Serial No. 867,903.

To all whom it may concern:

Be it known that I, JOHN F. KITCHEN, a resident of Meadville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Methods of Making Garment-Stays, of which the following is a specification.

This invention relates to the manufacture of wire garment stays, and particularly to that form of stay which is made up of wire bent back and forth alternately in opposite directions to form two series of oppositely disposed loops or eyes lying along the edges of the stay and united by a series of intermediate transverse portions or crossings lying at nearly right angles to the length of the stay. In such stays, the resistance to flatwise bending is due almost entirely to the torsional stiffness of the transverse portions or crossings. Usually such stays are subjected to much more severe bending stresses in a flatwise direction than in any other direction. It is, therefore, important to so form the stays that the torsional stiffness and resiliency of the transverse or crossing portions of the stay be as great as possible.

The object of the invention is to provide a method of forming stays of the character described whereby they are not only rendered stiffer in one flatwise direction as compared with the other, but also possess an increased resiliency and increased ability to withstand short bends and avoid taking permanent bends or sets, as compared with such stays as heretofore constructed.

It is well known that when wire is subjected to twisting stresses sufficient to impart a permanent torsional set thereto, the torsional resistance of the wire against a short twist in the same direction is greatly increased and the elastic limit or resiliency of the wire is likewise increased. I take advantage of this characteristic of twisted wire, and form the stays in such manner that each crossing or transverse portion of the wire body is twisted after the formation of the stay to a sufficient degree to impart a permanent set thereto,—the twisting operation being so performed that all of the crossings are twisted or set in the same direction relative to the body of the stay. The result is a stay which is considerably stiffer against bending in the flatwise direction which produces a further twist in the

crossings or transverse portions in the same direction in which they have already been twisted than against bending in the opposite flatwise direction, and which, finally, is considerably more elastic and resilient and, therefore, capable of being subjected to shorter bends without permanent distortion than it otherwise would be. As a consequence, a stay made according to this method can be fabricated of smaller or lighter wire than when made according to the old method, without rendering such stay unduly flexible, as well as possessing other advantages which will be appreciated by those skilled in the art.

In the accompanying drawings, Figure 1 is an enlarged plan view of the stay made according to this invention, illustrating diagrammatically the twisting of the crossings; Figs. 2, 3 and 4 are diagrammatic views illustrating the manner of imparting the twist or torsional set to the crossings; Figs. 5 and 6 are diagrammatic views showing the stay in edge view, and respectively illustrating the shape before twisting and after twisting; and Fig. 7 is a plan view illustrating modifications.

The stay is made up of wire bent back and forth alternately in opposite directions to form the two series of oppositely disposed eyes or loops marked on the drawings in succession 1, 2, 3, 4, 5, 6, 7, etc., lying along the two edges of the stay body and connected by the transverse portions or crossings marked in succession 8, 9, 10, 11, 12, 13, etc. In the particular embodiment illustrated, the eyes or loops are so formed as to overlap, so that when the stay is viewed edgewise, as in Figs. 5 or 6, they present a "shingled" appearance. The loops, however, may be left open so that they do not overlap, such as shown in Fig. 7, without departing from the spirit of the invention.

The wire may be bent to the form illustrated by any suitable mechanism, such as that illustrated and described in Patent No. 1,009,823, granted November 28, 1911, to Marcus M. Beeman, or that described and claimed in the patent of Marcus M. Beeman and John F. Kitchen, granted October 29, 1912, No. 1,042,756, or any other suitable mechanism capable of bending the wire back and forth to form the two series of oppositely disposed loops or eyes.

After bending the wire to the form described, the twist or torsional set is imparted to the transverse or crossing portions by twisting or tilting the various loops in succession, each loop being tilted while the opposite loop is being held so that the transverse portion or crossing connecting these two loops is twisted. As illustrated in the drawings, this is accomplished by grasping two oppositely disposed loops, such as members 1 and 2 by suitable mechanism such as twisting jaws 15 and 16, and rotating one or both of said twisting jaws. If only one set of twisting jaws is rotated, the other set of twisting jaws will be held stationary.

Fig. 2 illustrates the two sets engaging the oppositely disposed loops or eyes 1 and 2 with the twisting jaws 16 held stationary and the jaws 15 rotated in the direction of the arrow thereon, whereby the transverse or crossing portion 8 connecting the loops 1 and 2 is twisted in the direction of the arrow indicated thereon.

Fig. 3 shows the twisting jaws 16 still in engagement with the eye or loop 2, but with the jaws 15 in engagement with the eye or loop 3, the latter in this case being held stationary while the jaws 16 are rotated in the direction of the arrow indicated thereon, whereby the transverse portion 9 connecting the loops or eyes 2 and 3 is twisted in the direction of the arrow shown thereon.

Fig. 4 shows the jaws 15 in engagement with the loop or eye 3, while the twisting jaws 16 are in engagement with the loop or eye 4. The jaws 16 in this case are held stationary while the jaws 15 are rotated in the direction of the arrow thereon, whereby the transverse portion 10 connecting the loops or eyes 3 and 4 is twisted in the direction of the arrow thereon.

The operations described are repeated for each loop or eye throughout the length of the stay, whereby all of the transverse or crossing portions are twisted to a sufficient degree to impart a torsional set thereto.

It will be observed that the twists or torsional sets in all of the transverse portions or crossings run in the same direction, so that they reinforce each other, and render the stay stiffer against bending in such flatwise direction as tends to twist these crossings still farther in the direction in which they have already been twisted.

The twisting members may be of any suitable kind or character and embodied in any suitable organized mechanism capable of engaging the several loops in succession and twisting or tilting them in the manner described.

In the formation of a stay with overlapping loops by means of the Beeman and Beeman and Kitchen machines above referred to, the stay comes from the machine bent or curled flatwise as indicated in Fig.

5. By tilting successive loops, as described, a twist is imparted to the crossing members and the stay at the same time is straightened, as shown in Fig. 6, and is made more resilient and has greater resistance to bending in one direction than in the other. Preferably, the forming and twisting operations are so carried out that, in the finished stay, the overlapping portions of the loops are brought into closer relation to each other, as will be readily apparent from comparison of Figs. 5 and 6. With the form of stay shown in Fig. 6, or any form in which the loops or eyes do not overlap, as in Fig. 7, it is immaterial in which direction the twist runs, provided the crossings are all twisted in the same direction relative to the body of the stay. The method described is applicable to the construction of any form of stay in which the wire is bent alternately in opposite directions to form oppositely disposed loops lying successively on opposite sides of the axis of the stay.

What I claim is:

1. The method of forming garment stays, consisting in bending wire at intervals and alternately in opposite directions to form oppositely disposed edge-forming loops or eyes and transverse connecting portions, and thereafter gripping oppositely disposed loops or eyes and tilting the same in a manner to impart a twist or torsional set to the transverse or crossing portions connecting the loops or eyes.

2. The method of forming garment stays, consisting in bending wire at intervals and alternately in opposite directions to form oppositely disposed edge-forming loops or eyes and transverse connecting portions, and then gripping oppositely disposed loops or eyes and holding one thereof and tilting the other to impart a twist or torsional set to the transverse portion or crossing connecting said loops or eyes.

3. The method of forming garment stays, consisting in bending wire at intervals and alternately in opposite directions to form edge-forming loops or eyes and transverse connecting portions or crossings, with the adjacent edges of contiguous loops overlapping, and then gripping oppositely disposed loops or eyes and tilting the same in a manner to impart a twist or torsional set to the transverse or crossing portion uniting said eyes and to bring the overlapping portions of the eyes into closer relation.

4. The method of forming garment stays, consisting in bending wire at intervals and alternately in opposite directions to form edge-forming loops or eyes and transverse connecting portions, and then gripping oppositely disposed eyes and tilting the same to impart a twist or torsional set to the transverse portion or crossing connecting said eyes, then gripping the next pair of

oppositely disposed eyes and similarly tilt-
ing the same to impart a twist or torsional
set to the transverse portion or crossing con-
necting said eyes, the eyes being successively
5 tilted in such direction as to twist all of the
crossings in the same direction relative to
the body of the stay.

In testimony whereof, I have hereunto
set my hand.

JOHN F. KITCHEN.

Witnesses:

WM. S. SMITH,
T. F. CHARLTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."