(No Model.)

G. H. PHELPS.

Suspender End.

No. 242,790. **Patented June 14, 1881.**

Fig. 1.

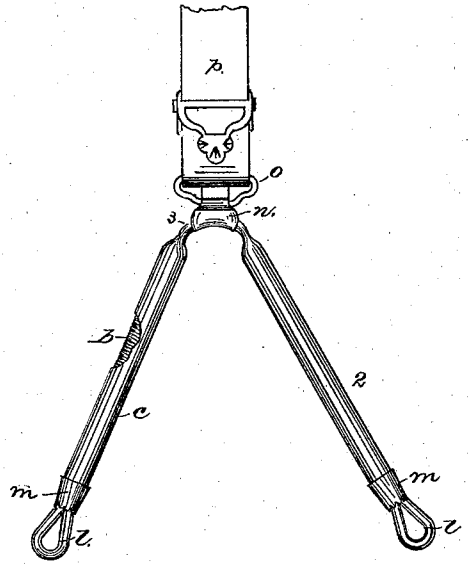


Fig. 2.

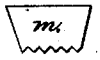


Fig. 3

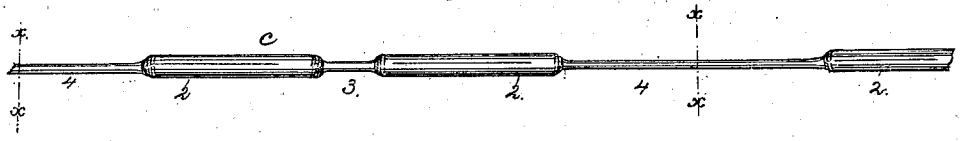


Fig. 4.



Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

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SUSPENDER-END.

SPECIFICATION forming part of Letters Patent No. 242,790, dated June 14, 1881.

Application filed April 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEO. H. PHELPS, of West Newton, county of Middlesex, State of Massachusetts, have invented a new and useful Improvement in Suspender-Ends, of which the following description, in connection with the accompanying drawings, is a specification.

This invention in suspenders relates to improvements in the formation of the end pieces, whereby the same are rendered elastic and have given to them great strength and durability.

My invention consists of an end piece composed of a fibrous core having spiral springs placed thereon at intervals, the springs and the core between them being inclosed within a tubular textile covering, portions of the core directly inclosed by the tubular covering being bent or folded into loop form to serve for button-holes.

Figure 1 represents in perspective a suspender having an end piece embodying my invention, a portion of the tubular textile cover being broken out to show the spiral spring. Fig. 2 is a detail showing one of the metal clasps which serve to hold the textile covered part of the core in loop form for a button-hole. Fig. 3 is a detail representing the continuous blank, from which the end pieces are formed, before the same is cut up into pieces, on the line *x x*, of proper length for separate end pieces. Fig. 4 is a detail showing two spiral springs arranged upon the core; and Fig. 5 is a detail of the core, all the springs having been removed.

In the practice of my invention, I take a fibrous core, A, and tie in it knots a a' a^2 a^3, at suitable distances apart. The knots a a' and a^2 a^3 are distant from each other greater than the length of the spiral springs *b*, within which, at their ends, the said knots will fall when the springs *b b* are placed on the core A, as in Fig. 4. The springs *b* thus applied will so hold the core between the knots a a' and a^2 a^3 as to furnish a sufficient amount of slack therein between knots a a' and a^2 a^3 to permit the spiral spring to be elongated for the proper distance before the core is fully straightened out, which checks the further elongation of the springs.

It is obvious that I might connect the ends of the spiral springs *b* by short pieces of cord, substantially equal to the length of the core, between the knots a' a^2, omitting from the core those parts of it between the knots a a' and a^2 a^3; but in such construction there would be no definite limit to which the springs *b* could stretch, so I prefer to use a core in one piece, rather than in several pieces; and, further, a continuous core to limit the extension of the springs insures the formation of a better external covering or jacket.

The core, having been prepared as in Fig. 4, is placed in or at the axis of a suitable braiding-machine, or a picture or other cord covering machine containing warps and a shuttle or equivalent for a weft-thread, where it is covered by a textile tubular covering, *c*. (Represented in Figs. 1 and 3.)

Referring to Fig. 1, it will be noticed that the large parts 2, of substantially equal length, are those where the spring is located. The small covered part 3 is that between the knots a' a^2, and the small parts 4 represent a longer portion of the core with only the textile cover *c* upon it.

Having made a piece of material, such as represented in Fig. 3, of indefinite length, the same is cut or separated through the parts 4 on dotted lines *x x*, and the small parts or ends so produced are bent or doubled to form loops *l*, (see Fig. 1,) which are secured in position by metal clips or pieces *m*, the said loops so held serving as button-holes to engage with buttons.

The small covered flexible part 3 of the core, between the springs *b*, is made to engage the hook *n* of the usual eye or loop, *o*, connected with the strap or webbing *p* of the suspender.

The end piece, Fig. 1, will, when strained, stretch until the core-piece A is fully straightened.

I do not broadly claim a fibrous core within a spiral spring, as they have been combined in the manufacture of garters.

Instead of the metal pieces *m*, I might secure the parts in loop form by stitches.

I claim—

1. As an improved article of manufacture, a suspender-end composed of a core, A, surrounded by two independent spiral springs having their adjacent ends separated, as de-

scribed and shown, the said springs and core between and beyond them being covered with a tubular covering, the ends of the covered core being folded into loop form and suitably secured in place to form loops for button-holes, substantially as described.

2. The continuous blank composed of the core A, independent springs placed thereon at intervals and connected with and so as to be distended by the core, and a tubular seamless covering for the springs and core between the springs, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE H. PHELPS.

Witnesses:
G. W. GREGORY,
BERNICE J. NOYES.