EXPANSILE AND CONTRACTILE GRIPPING DEVICE

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WITNESS

By V. Kellemes

ATTORNEYS.
EXPANSILE AND CONTRACTILE GRIPPING DEVICE

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This invention relates to an expansile and contractile gripping device somewhat similar to that set forth in the patent to E. E. Kellems No. 1,670,543, issued May 22, 1928, except that it refers more particularly to the manner of forming the end loops by which the grip with article gripped therein may be attached to a draft device or suspended from various movable or fixed supports such as insulators, steel messengers and the like.

The particular gripping device referred to comprises a multiplicity of wire strands interlaced or interwoven about a common axis and extending continuously from the draft end to the cable receiving end and return to the draft end to form a series of return bends at the cable receiving end arranged in substantially uniformly spaced relation circumferentially so as to enable that end of the gripping device to be more easily and quickly placed over and upon and removed from the article to be gripped without liability of injury to the hands of the operator.

The ends of the strands at the draft end of the tubular body are divided into groups having preferably an equal number of strands in each group and the main object of the present invention is to return the strands of one group along and upon the strands of another group to form a loop and to fasten the free ends of the strands of both groups to the remaining strands of the extensions at the inner end of the loop so that the strands of the loop may be integral parts of the strands which form the tubular body.

In other words I have sought to provide the draft end of the tubular body with an integral loop which is sufficiently flexible to enable it to be placed over and upon insulators or other movable attaching devices.

A further object is to wind the strands of one group upon the strands of the other group throughout the length of the loops for binding the strands of each group together and thereby greatly strengthening the loops.

Another object is to provide simple and efficient means for binding the free ends of the strands of both groups to the remaining strands of the extensions at the inner end of the loop for further strengthening the loop.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawings:

Figure 1 is a side elevation of a gripping device embodying the various features of this invention.

Figure 2 is a side elevation of the groups of strands wound one upon the other ready for receiving the fastening means for binding the free ends of the groups.

Figure 3 is a longitudinal sectional view showing more particularly the manner of binding the free ends of the strands of each group to the remaining strands of the extensions.

Figure 4 is a perspective view of the draft end of a similar grip except that the two groups of strands shown in Figure 1 are subdivided into branches, those of one branch being returned upon those of another branch to form a loop and bound together in the manner shown in Figures 1 and 3.

Fig. 5 is a longitudinal sectional view of the plug member in place.

As illustrated in Figure 1 this gripping device comprises a multiplicity of strands of wire or other suitable material interlaced or interwoven about a common axis to form a tubular body.

These wire strands are extended continuously from the draft end to the cable receiving end of the tubular body and returned to the draft end so that the portions of the strands at the cable receiving end of said body form return bends to enable that end to be more easily manipulated endwise for expanding the tubular body radially without injury to the hands of the operator and also to permit it to be more easily placed over and upon the article to be gripped than has heretofore been practiced.

It is now clear that the ends of the continuous strands are all located at the draft end of the tubular body. These ends are extended some distance beyond the draft end of the tubular body and are divided.
into groups or branches —a— and —a’,—, shown by dotted lines in Figure 2, preferably an equal number of strands in each group.

The extensions of each group are returned along and upon the strands of another group and during this returning operation the strands of the ends of each group are wound around and upon the other group to firmly bind the strands of each group together and thereby to form a loop —3—.

The free ends of the strands of both groups are then brought into close overlapping relation to the remaining strands of the extensions at the inner end of the loop and the adjacent portions of all of the strands are then bound together with a wire binding coil —4— or other secure fastening means.

That is, the binding wire —4— is tightly wound around the adjacent portions of the strands and then the combined binding wire and adjacent portions of the strands are soldered together to firmly secure the ends of the groups of strands to the extensions, see Figure 3.

In the construction shown in Figure 4 the end extensions of the strands at the draft end of the tubular body —Δ— are divided or arranged in four groups instead of two groups as shown in Figure 1, said groups being arranged in pairs of two groups and those of each pair are returned one upon the other in the manner shown in Figures 1 and 2 to form separate loops —3”—.

That is, the ends of the groups of each pair are spirally wound around and upon the other to bind the strands of each group, the free ends of the group of each pair being then firmly bound to the remaining strands of the corresponding division by means of the wire coils —4— and soldered in the manner described for the binding shown in Figures 1 and 3.

Suitable means is provided for holding the draft end of the tubular body against undue contraction and for automatically expanding the same if contracted for automatically expanding the same if contracted and for this purpose a plug, preferably of soft rubber or other suitable resilient material, is inserted within the forwardly converging ends of the strands adjacent the inner end of the draft eye —3— to exert outward pressure or expansive force upon the adjacent portions of the strands.

This plug is preferably tapered toward the draft eye to conform to the normal taper of the adjacent portion of the tubular body and thereby assist in maintaining the normal tubularity of said body as may be required to enable it to be easily and quickly placed over and upon the article to be held or drawn endwise by the gripping device.

This plug —5— is held in place by means of a wire loop —6— having its closed end engaging the larger end face of the plug and its opposite arms passed through lengthwise openings in the plug and secured with the ends of the adjacent strands of the tubular body within the binding coil —4— as shown more clearly in Figures 1 and 5.

It is evident from the foregoing description that the extended ends of the strands beyond either end of the interwoven strands of the tubular body may be similarly formed into two or more groups in a manner described without departing from the spirit of this invention and that the number of the loops so formed may be varied at will by simply varying the number of groups of strands and arranging those groups in pairs so that the strands of one group may be wound around and upon the strands of another group and the free ends of both groups fastened to the adjacent portions of the extensions by any suitable fastening means.

The construction shown and described is particularly simple and efficient both in construction and operation but obviously various changes may be made in the detail construction without departing from the spirit of the invention. For example, the tubular body of the woven wire grip may be of any suitable construction capable of radial and axial expansion and contraction while any suitable means may be employed for holding the convergent ends of the strands against undue contraction and therefore I do not wish to limit the invention to the construction shown and described.

I claim:

1. An expansile and contractile gripping device comprising a multiplicity of wire strands interwoven with each other about a common axis to form a tubular body, said strands being extended beyond one end of the tubular body and the extensions arranged in groups, each group being returned along and upon another group and fastened thereto to form a loop.

2. An expansile and contractile gripping device, as in claim 1, in which the strands of each group are wound spirally around the strand of another group to bind those of each group together.

3. An expansile and contractile gripping device comprising a multiplicity of wire strands interwoven with each other about a common axis to form a tubular body, said strands being extended beyond one end of the tubular body and the extensions arranged in groups, each having an approximately equal number of strands, the strands of each group being returned along and upon the strands of another group to form a loop, and means for securing the ends of the groups to the portions of the strands at the inner end of the loop.

4. An expansile and contractile gripping device comprising a multiplicity of wire strands spirally interwoven with each
other about a common axis to form a tubular body and extended beyond one end of said body, the extensions being divided into separate groups and each group returned along another group and wound spirally thereon to bind the strands of each group together to form a loop, and means for binding the ends of the groups to the portions of the strands at the inner end of the loop.

5. An expansible and contractile gripping device comprising a multiplicity of wire strands spirally interwoven with each other about a common axis to form a tubular body and extended beyond one end of said body, the extensions being divided into separate groups and each group subdivided into separate branches, each branch being returned along another branch and spirally wound thereon to form a loop, and means for binding the ends of each branch to the strands at the inner end of the loop.

6. An expansible and contractile gripping device comprising a multiplicity of wire strands interwoven with each other about a common axis and having their draft ends convergent, and means within said convergent ends for holding them against undue contraction.

7. An expansible and contractile gripping device as in claim 6 in which the means is tapered toward the draft end.

8. An expansible and contractile gripping device comprising a multiplicity of wire strands interwoven with each other about a common axis and having their draft ends convergent, and a resilient member within the draft end of the device for holding the strands against undue contraction.

9. An expansible and contractile gripping device comprising a multiplicity of wire strands interwoven with each other about a common axis and having their draft ends convergent, and a resilient plug within the convergent ends for yieldingly holding the latter against undue contraction and for automatically expanding the same after contraction.

10. An expansible and contractile gripping device comprising a multiplicity of wire strands interwoven with each other about a common axis to form a tubular body, said strands being extended beyond one end of the tubular body and the extensions arranged in groups, each group being returned along and upon another group and fastened thereto to form a loop, and a resilient plug within said tubular body adjacent the inner end of the loop.

In witness whereof I have hereunto set my hand this 18th day of April, 1930.

VIVIEN KELLEMS.