June 9, 1959 R. F. JOY ET AL 2,889,603

COMPRESSION SLEEVE AND METHOD OF COMPRESSING FOR WIRE ROPE SLINGS

Filed April 5, 1954

Fig. 1.

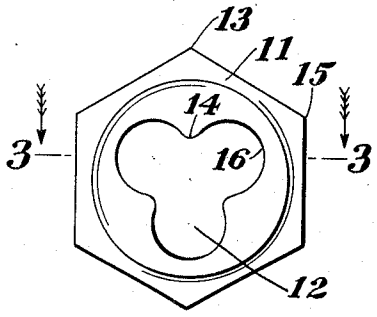


Fig. 2.

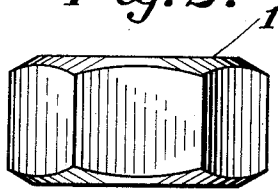


Fig. 3.

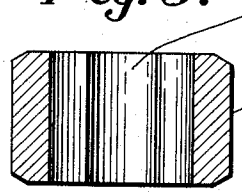


Fig. 4.

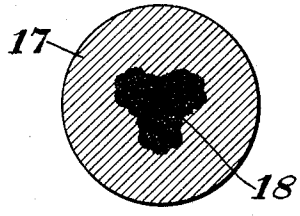


Fig. 5.

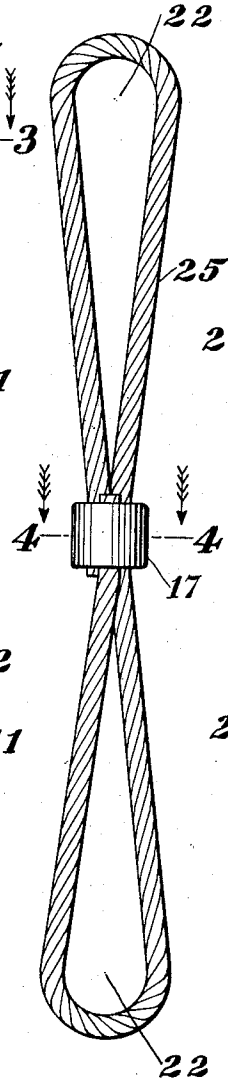


Fig. 6.

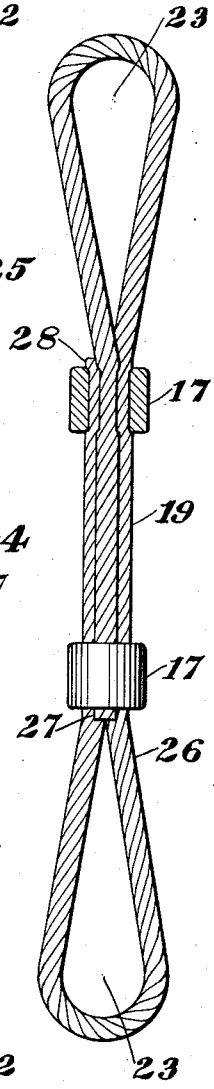
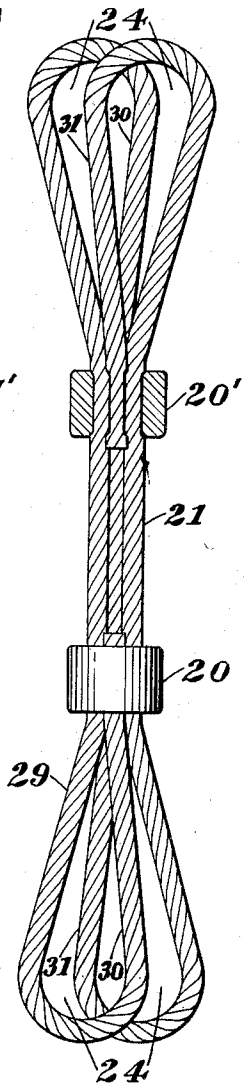


Fig. 7.



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COMPRESSION SLEEVE AND METHOD OF COMPRESSING FOR WIRE ROPE SLINGS

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4 Claims. (Cl. 24—123)

This invention relates to a compression sleeve for wire rope slings and the like which is simple to apply and which develops the full strength of the rope, and to slings made with such sleeves.

One object of the invention is to provide a sleeve adapted to be compressed around a plurality of wire rope parts.

Another object is to provide a sleeve having a preformed opening therethrough such that the wire rope parts inserted therein have a definite initial position before compression of the sleeve.

Another object is to provide a sleeve having a preformed opening therethrough and a preformed wall of varying thickness.

Still another object is to provide a sleeve in which the unopened strands therein are not changed in relative position during compression or otherwise weakened when the sleeve is compressed thereon by means of a die.

Another object is to provide a wire rope sling or the like that is of simple construction.

Another object is to provide a type of wire rope sling having eyes at each end, in which the number of strands in the body of the sling and in the eyes can be varied depending upon the service to which the sling is to be put.

Referring now to the drawings:

Figure 1 is a plan view of one type of sleeve,

Fig. 2 is a side elevation, and

Fig. 3 is a cross section on line 3—3 of Fig. 1, these 3 figures showing the sleeve before being compressed.

Fig. 4 shows a cross section of the sleeve after having been compressed in a die.

Fig. 5 shows a sling or grommet made with a single sleeve.

Fig. 6 shows a sling made with a pair of sleeves.

Fig. 7 shows another type of sling made with two sleeves, each sleeve accommodating four rope parts.

The sleeve is characterized by having a preformed, multi-lobed opening therethrough, and a wall of varying thickness. As shown in Figs. 1, 2 and 3, the sleeve **11** is of hexagonal shape with a preformed trefoil-shaped opening **12** therethrough. This opening is so positioned that the apices **13** formed by two adjoining sides of the hexagon are radially opposite the intersection of adjoining lobes of the trefoil while the alternate apieces **15** are radially opposite the extreme outer parts **16** of the trefoil lobes. When a sleeve having a four lobed opening is used, the perimeter of the sleeve will preferably be octagonal; with the opening so placed that the lobe intersections are radially opposite alternate apices of the octagon.

In Fig. 5, a single sleeve **17** is used with a single length of wire rope to form a sling with a single part loop **22** on either side of the sleeve. In forming this sling, a sleeve **17**, having a three lobed opening therethrough is used. The rope **25** is threaded through one of the lobes, and the ends of the rope are looped back and inserted from opposite sides of the sleeve through the remaining lobes respectively. After the wire rope parts are in place

the sleeve is compressed in a die until it is in an approximately cylindrical form as shown in Fig. 4 at **17**, the enclosed rope parts being compressed into compact form as shown at **18**, the metal forced in from the pressure applied by the die, which first contacts the sleeve at the apices **13** and **15**, until the polygonal outline approaches a circular shape. As will be seen the individual parts have now more or less lost their identity and are compacted into a single unit **18** having no regular outline but having contact with the sleeve throughout.

In Fig. 6 a pair of sleeves **17** are used to form a sling having a single part loop **23** at either end and a three part body **19** between the sleeves. In making this sling, sleeves **17** and **17'** are threaded onto rope **26** and spaced apart by a distance equal to the required body length of the sling. One end **27** of the rope **26** is looped back and inserted successively through sleeves **17'** and **17** and the other end **28** of the rope **26** is similarly looped back and inserted successively through sleeves **17** and **17'**. The sleeves are then compressed upon the ropes as previously described.

The sling shown in Fig. 7 comprises two sleeves **20** and **20'** each having a four lobed opening therethrough, and a single length of wire rope **27**, and includes a double loop **24** at each end and a three part body **21** between the sleeves. This sling is made by threading two sleeves **20** and **20'** on the rope **29**. One end of the rope **30** is looped back and threaded through sleeve **20**. The other end of the rope is looped back and threaded successively through sleeves **20'** and **20** to form the standing part **21**. The part **31** is then looped back and threaded successively through sleeves **20** and **20'** to form the standing part **21**. Finally the part **31** is looped back and inserted thru sleeve **20'**. The sleeves are then compressed upon the rope.

The sleeve is readily applied to the rope by threading the required parts through the sleeve where they are held in their proper position by the lobes of the sleeve opening and then compressing the sleeve in a die.

While we have shown but three embodiments of the use of the sleeve many other combinations are possible whereby the number of parts in the sling body or the loops may be made to suit the use for which the sling is intended and whereby more than one continuous piece of rope may be employed. Also, the parts forming the body of the sling may be braided or twisted around each other as desired. Thus it is not intended that my invention shall be limited to the specific forms shown in the drawings but other modifications may be resorted to without departing from the spirit of the invention as defined by the appended claims.

We claim:

1. A compression sleeve for wire rope and the like, said sleeve being polygonal in cross section and having an even number of sides, a single multilobed shaped opening extending therethrough having half as many lobes as the sleeve has sides and located at approximately the geometrical center of the sleeve, the lobes being oriented so that a radial line bisecting each lobe passes through each alternate apex formed by the sides of said polygonal member and a radial line passing through the intersections of adjacent lobes passes through each apex intermediate the alternate apices of said polygonal member, whereby when said sleeve with wire rope inserted in the lobes is inserted in a die and compressive force applied thereto, a pressure will be exerted upon said apices and cause the metal of the sleeve to flow into close contact with the wire rope parts inserted in said multilobed opening.

2. A compression sleeve for wire rope and the like, said sleeve defining in cross section a polygon with an even number of sides and having a single multilobed

shaped opening extending therethrough located at approximately the geometrical center of the sleeve the lobes being oriented so that each lobe will be bisected by a radial line originating at an apex of said polygon and each intersection between two adjoining lobes will lie on a radial line originating at an apex of said polygon whereby pressure from a compression die upon said apices causes a flow of metal around wire rope parts inserted in said multilobed opening.

3. The method of forming wire rope products which includes passing a wire rope through each lobe of a multilobed shaped central bore of a compression sleeve of polygonal cross section having an even number of apices said central bore being oriented so that the lobes are bisected by diagonals joining opposed apices of the said sleeve and each intersection between adjoining lobes lies along a diagonal joining other opposed apices, and applying compressive force to the compression sleeve by a die which initially contacts the sleeve at the aforesaid apices thereby forcing the metal of the sleeve into close engagement with each wire rope contained in the said lobes of the central bore.

4. The method of splicing wire ropes which comprises inserting said wire ropes to be spliced into lobes of a multilobed shaped opening extending through a compression sleeve having a polygonal cross section, the lobes of said multilobed shaped openings being oriented so that said lobes and also the intersections between said lobes are located radially of the apices of said polygon, and compressing said compression sleve in a die which initially contacts the aforesaid apices to preliminarily force metal of the compression sleeve to flow tightly around the wire ropes inserted into said multilobed shaped opening.

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