Oct. 2, 1951 H. ANDERSEN 2,569,912

ROPE SLING

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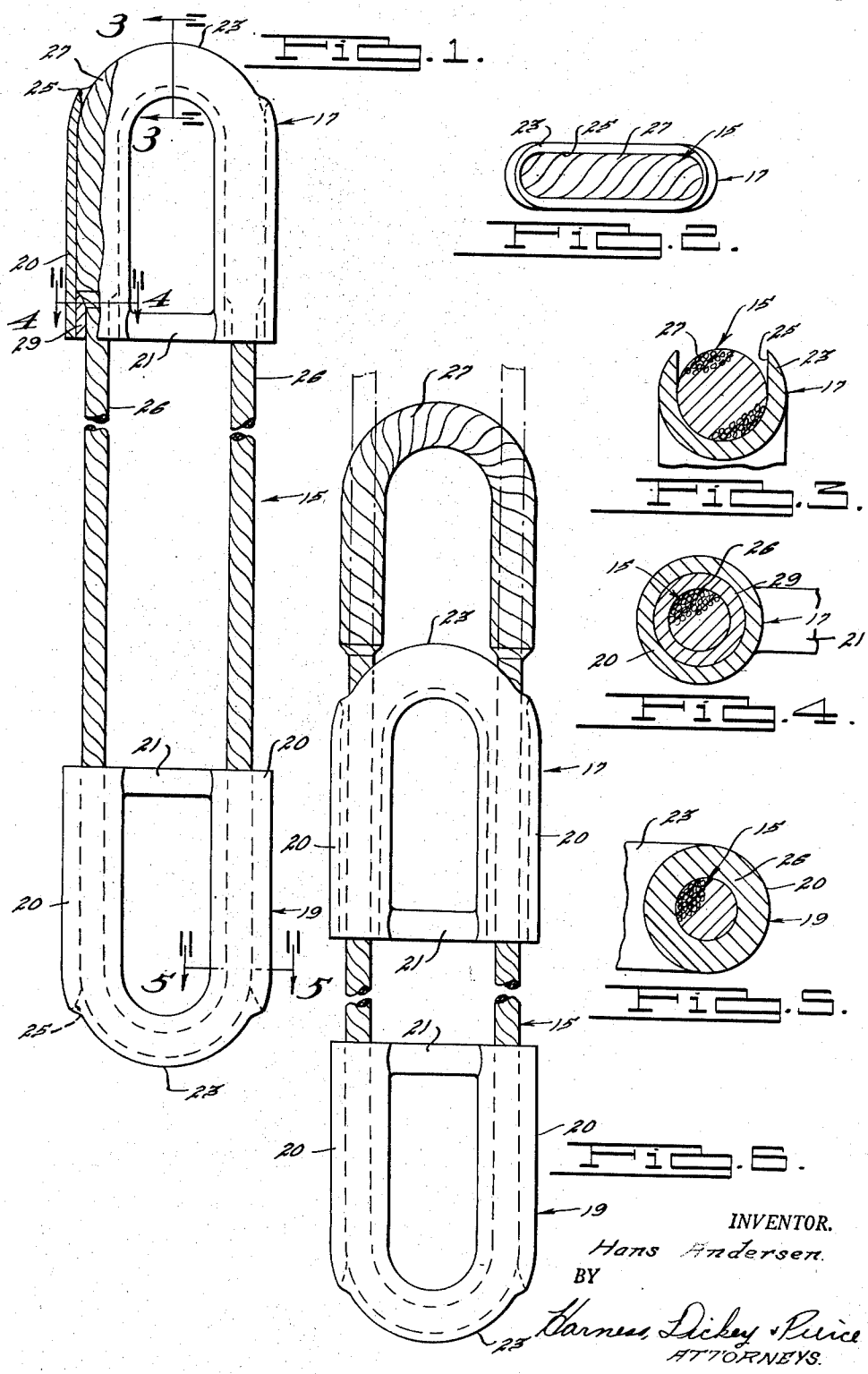


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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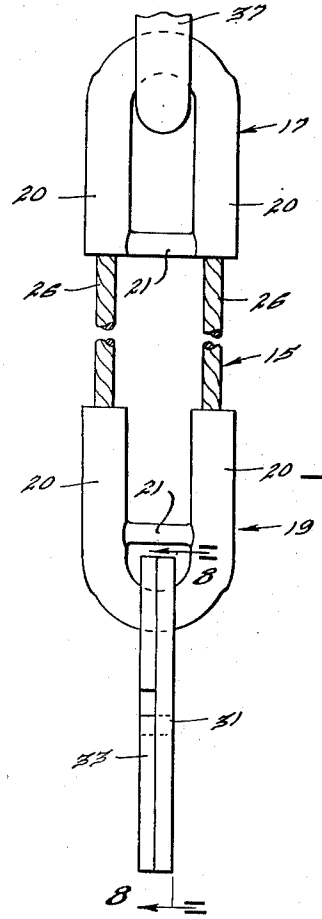


Fig. 7.

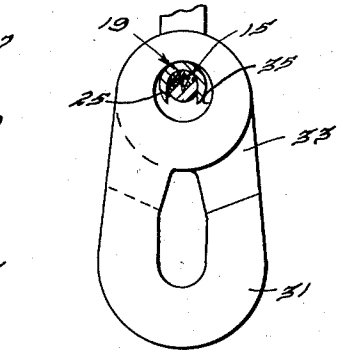


Fig. 8.

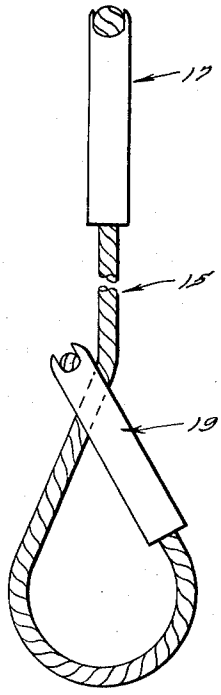


Fig. 9.

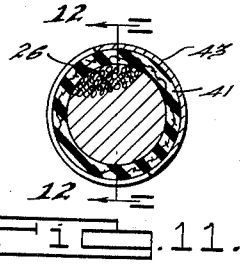


Fig. 11.

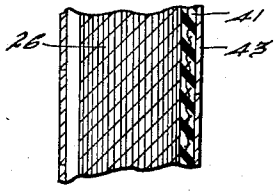


Fig. 12.

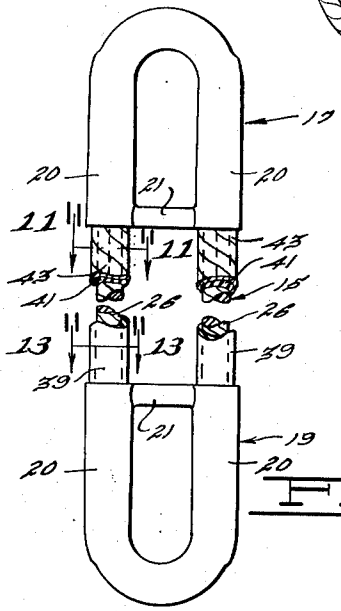


Fig. 10.

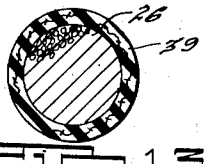


Fig. 13.

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ROPE SLING

Hans Andersen, Detroit, Mich.

Application October 27, 1947, Serial No. 782,419

4 Claims. (Cl. 294—74)

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This invention relates to improvements in rope slings and to an improved method of forming the same.

It is an object of this invention to provide a rope sling of the endless-rope type which has a breakage point substantially equal to that of two separate lengths of rope, and which is provided with opposed tubular loop members forming chokers, so that the sling will tighten about a load in a simple and effective manner without requiring any force other than the weight of the load to cause the proper tightening.

It is a further object of this invention to provide a rope sling of the endless type, which is formed by splicing together the free ends of a length of rope, and is provided with a tubular loop member which confines and embraces the spliced portion of the rope so that only the smooth and uninterrupted portions of the rope will engage the load being lifted.

It is a further object of this invention to provide a rope sling of the aforementioned type in which a pair of tubular loop members or chokers are provided which embrace portions of the rope and are adapted to be passed through each other to form a choke-type sling, and which provide a stronger and more versatile rope sling.

It is a still further object of this invention to provide a tubular member for use in a rope sling of the aforementioned type which has a portion of the outer wall section cut away, intermediate the extremities of the loop, so as to provide a clearance opening and rope seat, whereby a pair of the tubular loop members and a rope form the endless-type sling, aforementioned.

It is a still further object of this invention to provide nonabrasive and relatively resilient means for embracing the portions of the rope not confined by the aforementioned tubular members, so as to protect the rope from gouging or the like, and so as to protect a load lifted by the sling from damage from the rope itself.

It is a still further object of this invention to provide a rope sling of the aforementioned type, which includes hook means for permitting the sling to be used as an extension sling or the like.

A still further object of this invention is to provide a rope sling of the aforementioned type which is especially rugged in construction, simple to make, inexpensive to manufacture, and which is more versatile in use than any heretofore known in the art.

It is a still further object of this invention to provide an improved method for forming a

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rope sling of the aforementioned type, which permits the sling to be made in a more economical and efficient manner.

These and other objects of this invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

Figure 1 is a fragmentary front elevational view of one embodiment of the rope sling of this invention;

Fig. 2 is a top plan view of the structure illustrated in Fig. 1;

Fig. 3 is an enlarged sectional view of the structure illustrated in Fig. 1 taken along the line 3—3 thereof;

Fig. 4 is an enlarged sectional view of the structure illustrated in Fig. 1 taken along the line 4—4 thereof;

Fig. 5 is an enlarged sectional view of the structure illustrated in Fig. 1 taken along the line 5—5 thereof;

Fig. 6 is a fragmentary front elevational view of the rope sling illustrated in Fig. 1 showing the sling in a partially constructed position;

Fig. 7 is a fragmentary front elevational view of a further embodiment of a rope sling of this invention;

Fig. 8 is a view partly in elevation and partly in section taken along the line 8—8 of Fig. 7;

Fig. 9 is a fragmentary side elevational view of the rope sling illustrated in Fig. 7 arranged to form a choke-type sling and connected to a conventional crane hook;

Fig. 10 is a fragmentary front elevational view of a still further embodiment of a rope sling of this invention;

Fig. 11 is an enlarged sectional view of the structure illustrated in Fig. 10 taken along the line 11—11 thereof;

Fig. 12 is an enlarged sectional view of the structure illustrated in Fig. 11 taken along the line 12—12 thereof; and

Fig. 13 is an enlarged sectional view of the structure illustrated in Fig. 10 taken along the line 13—13 thereof.

Referring now to the drawings, and more particularly to Figs. 1 to 6, it will be seen that the rope sling illustrated therein includes a rope 15 made of any suitable material such as wire and a pair of opposed and spaced tubular loop members or chokers 17 and 19. The chokers 17 and 19 are preferably bent in the shape of a U, and the free ends of the legs 20 thereof are preferably, although not necessarily, interconnected by a suitable cross bar 21. The outer wall portion

of the bight 23 of the tubular member 17 is cut away at 25, as best illustrated in Fig. 3, so as to provide a clearance opening at the closed ends of the legs 20 and also to provide a rope seat, as will be hereinafter brought out.

The bight of the tubular member 19 may be either cut away in the same manner as in the tubular member 17 or may be closed so that the member 19 will be open only at the free ends of the legs 20 thereof. However, for reasons which will hereinafter appear, the tubular member 19 is illustrated as being formed in the same manner as the tubular choker 17. The inside diameter of the tubular choker 19 is substantially equal to the outside diameter of the rope 15, to allow a true bearing of the rope under its strain and to allow equaling of the two rope sections, as will hereinafter appear; while the inside diameter of the choker 17 is larger than the outside diameter of the rope 15.

The rope sling is formed by taking the length of rope 15 and threading it through the tubular member 19. As the upper wall of the bight of the choker 19 is cut away, the rope may be easily threaded through the opposed choker legs 20. However, if the choker 19 were closed, except for the free ends thereof, the inside diameter of the choker would have to be larger than the rope 15 in order to permit the latter to be easily threaded through the former. When a closed tubular member is used, the space between the rope and the inside diameter of the choker would be filled with solder, or other suitable fill material.

As can be seen in Fig. 6, when the rope is threaded through the choker 19, a pair of spaced parallel rope sections 26 are provided, which extend outwardly from each of the choker legs 20. The free ends of the rope sections 26 are then passed through, and beyond, the legs 20 of the choker 17, so that the free ends of the rope sections extend beyond the bight portion of the choker 17. The free ends of the rope sections 26 are then spliced together at 27 with an improved interlocking splice which under tests has proven itself to be of equal strength to the rope, and which is flexible enough to be shaped into a loop, and the choker 17 is moved along the rope sections 26 until the spliced rope portion 27 is disposed within the confines of the tubular choker 17. As the upper wall of the choker is open, and as the inside diameter of the tubular choker 17 is larger than the rope, the splice 27 can be easily and completely confined thereby. The portions of the choker legs 20, adjacent the free ends thereof also embrace a limited portion of the unspliced rope sections 26 and, therefore, a certain amount of play between these rope portions and the wall of the choker will exist. In order to eliminate the space between these portions of the rope and the choker so that the rope will bear against the entire length of the choker wall, and also so as to properly anchor the rope in the choker, the free ends of the choker legs 20 are filled with any suitable fill material such as solder 29, as can be best seen in Fig. 4.

It will thus be seen that a rope sling of the endless-rope type, which will have the strength of substantially that of two separate ropes, is provided in which the spliced portion of the rope is completely confined within a tubular choker. Therefore, only the smooth and uninterrupted portion of the rope can engage a load to be lifted so that uniform engagement of the load is obtained and so that the rope can freely slide with respect to the load, thereby insuring that the load will be properly centered in the sling and will not be damaged by the spliced portion of the rope.

It will thus be appreciated that this sling may be used as a choke-type sling, such as generally illustrated in Fig. 9, for drawing tightly around a load in lifting the same. As the rope 15 is smooth along its unconfined portions, the load itself will tighten the sling with respect thereto and will not require any hammering or forcing of either choker in order to tighten the sling around the load.

In the embodiment illustrated in Figs. 7, 8 and 9, the rope sling of the aforementioned type is provided with a pair of overlapping and opposed hooks 31 and 33. The hooks 31 and 33 are provided adjacent the opposite ends from their hook portions with an aperture 35 through which the rope 15 and the choker 19 is passed, so that the hooks form a part of the sling. The hooks may be disposed along a portion of either of the rope sections 26 or tubular choker 19 so as to be adapted for various uses by cutting away the cross bar 21 of choker 19; but in the drawings, the hooks are shown as being supported by the bight portion of the tubular choker 19 and confined thereon by the cross bar 21. With this arrangement, the upper choker 17, as illustrated in Fig. 7, can be directly connected to a crane hook 37, and the hooks 31 and 33 will depend from the lower choker 19 so that the sling is adapted for use as an extension-type sling rather than as a choke-type sling. The hooks are slidable on the bight portion of the tubular choker 19 so that they may properly center themselves along the bight in accordance with the load which they are lifting.

In the embodiment illustrated in Figs. 10 to 13, the rope sections 26 of the sling, between the tubular chokers 17 and 19, are embraced by suitable nonabrasive and somewhat resilient material, shown as being in the form of rubber and canvas steam hose or tubing having an inside diameter corresponding to the outside diameter of the rope. In the assembly of this sling, a piece of tubing 39 is inserted over each of the rope sections after the rope has been threaded through the tubular choker 19 and before it has been passed through the tubular choker 17. Each of the tubing members 39 is moved along its rope section until it abuts the free end of its choker leg 20. These pieces of tubing are of a short enough length to permit the choker 17 to be moved along the rope sections far enough to permit the splicing to take place beyond the choker 17 as described above. After the free ends of the rope sections 26 have been spliced and the choker 17 moved away from the choker 19 so as to embrace the spliced portion 27 of the rope, a gap between the free ends of the legs of the choker 17 and the upper end of the tubing members 39 exists. Each of these gaps is filled by longitudinally splitting a short piece of tubing 41 and stretching it around each unembraced portion of the rope. As best seen in Fig. 11, the split tubing members 41 are wrapped with a suitable tape 43 so as to be held in place. The portions of the rope 15, which are not confined by the chokers 17 and 19, are thus embraced by the tubing members 39 and 41, and the split tubing members 41 can be moved from adjacent one choker to a position adjacent the other choker if the members 39 become worn. The tubing prevents any damage to articles or loads which might occur where wire rope is used which might dig into, or damage, the load being carried. The

tubing, therefore, acts as a protector, both for the load being carried as well as a protector for the rope itself.

It will thus be seen that a rope sling is provided which has many uses and which may be arranged to carry various types of loads. Likewise, it will be seen that the sling of this invention is extremely strong and has the spliced rope portions completely confined in a choker. It will therefore be appreciated that this sling is more versatile and more rugged in construction, as well as being inexpensive to manufacture and much more efficient and simple to use than any sling heretofore known in the art.

I claim:

1. A rope sling including a length of rope reversely looped intermediate its ends so as to provide spaced parallel extending rope sections, a generally U-shaped tubular member being partially open intermediate the ends thereof so that the free ends of said cable can initially extend through and beyond said tubular member, said rope free ends being spliced to provide an endless rope with the spliced portion being of a larger diameter than the remainder of the rope, and the majority of the spliced portion of said rope being tightly embraced and confined in said tubular member.

2. A rope sling including a pair of tubular loop members at least one of which is partially open intermediate the extremities thereof, a length of rope threaded through one of said tubular members so as to have an intermediate portion thereof confined by said one tubular member and so that the free ends of said rope are disposed in spaced relation to said last tubular member, said free ends of said rope being inserted through the other tubular member and extending through the open portion thereof and beyond said tubular member, the free ends of said rope being spliced together beyond said other tubular member so that said spliced portion is of a larger diameter than the remainder of the rope and said other tubular member then being arranged so as to tightly confine the majority of the spliced portion of said rope therein.

3. A rope sling including an endless rope formed by reversely looping a length of rope and splicing the free ends of the latter together so that the spliced portion is of a larger diameter than the remainder of the rope, a tubular loop member having an intermediate portion of the outer wall

section thereof cut away to provide a clearance opening and a rope seat, said tubular loop member tightly embracing the majority of the spliced portion of said rope and embracing a portion of the unspliced section of said rope, and fill means disposed in the portion of said tubular loop member embracing said unspliced rope portion so as to tightly confine the unspliced portion of said rope disposed in said tubular loop member.

4. A rope sling including a pair of tubular loop members at least one of which has an intermediate portion of its outer wall section cut away to provide a clearance opening and rope seat, a length of rope, one of said tubular members having an inside diameter substantially equal to the outside diameter of said rope and said rope being threaded through said one tubular member so that an intermediate portion of said rope is confined by said tubular member and the free ends of said rope extend outwardly and parallel from said tubular member, the free ends of said rope being inserted through the other of said tubular members and through the open portions thereof to a point beyond said other tubular member, the free ends of said rope being spliced together so that the spliced portion is of a larger diameter than the remainder of the rope, said other tubular member having an inside diameter of a size sufficient to receive and tightly confine the spliced portion of said rope therein and embrace a portion of the unspliced part of said rope, and fill means disposed in the portion of said last tubular member which embraces the unspliced portion of said rope so as to substantially tightly confine the unspliced portion of said rope in said tubular member.

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