May 12, 1925. 1,537,698

H. D. ROBINSON

LAYING OF AND SEIZING FOR SUSPENSION BRIDGE CABLES

Filed Oct. 15, 1924

Fig. 1

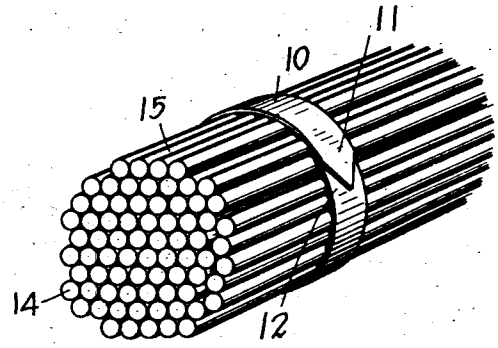



Fig. 2

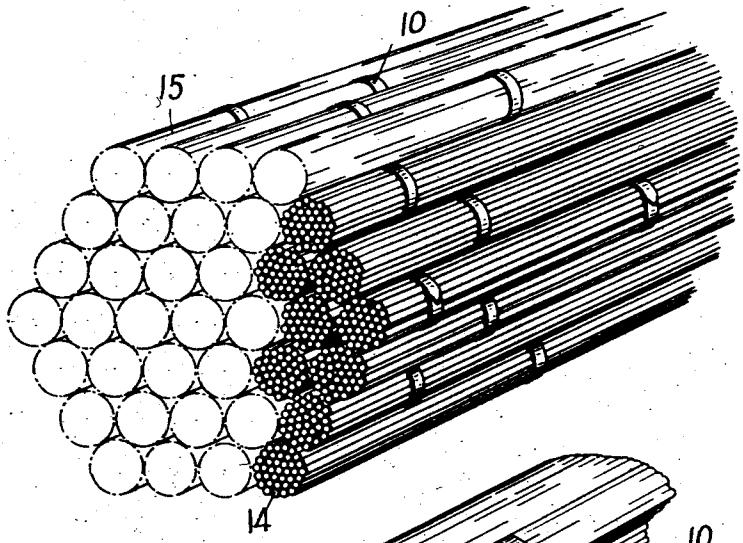
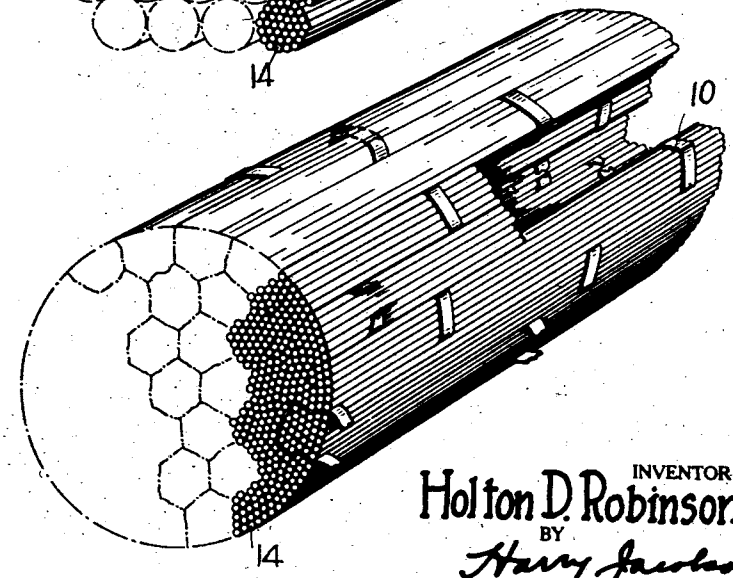



Fig. 3

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# UNITED STATES PATENT OFFICE.

HOLTON D. ROBINSON, OF NEW YORK, N. Y.

## LAYING OF AND SEIZING FOR SUSPENSION-BRIDGE CABLES.

Application filed October 15, 1924. Serial No. 743,682.

*To all whom it may concern:*

Be it known that I, HOLTON D. ROBINSON, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Laying of and Seizing for Suspension-Bridge Cables, of which the following is a specification.

This invention relates to wire cables for suspension bridges and to the laying thereof and contemplates improvements in the method of construction and in the means for forming a compact cable of substantially any practical size.

It is well known that suspension bridge cables are laid in strands, each strand comprising a number of parallel wires of the full length of the cable. It is also well known that means must be provided for temporarily maintaining the wires of each of the strands in place, in parallel relation, and for preventing entanglement or crossing of said wires during the various steps in laying and wrapping the cable. The strand or bundle of wires is usually cylindrical in form and is usually held together or seized temporarily, to maintain the wires in position against displacement, by means of a series of wire rings looped around the strand at spaced intervals. The wire of which said rings or loops is made and which has customarily been used heretofore for this purpose is of circular cross section and occupies considerable space comparatively, thereby tending to keep the strands apart. No serious difficulty arises from this tendency, until most of the strands have been laid at which time it becomes necessary to cut and remove said wire loops or rings, known as "seizings", in order that the individual cable wires may be freed from the strands in which they are laid without hindrance from said seizings and said wires forced or squeezed together to result in a compact cable comprising a great number of parallel wires.

In the formation of cables of large diameter it has heretofore been customary, after about two-thirds to three-quarters of the strands have been laid, to wedge the intervening strands apart to obtain access to the interior strands, and to cut and remove the seizings for the said interior strands, so that the binding together of seven of the innermost strands to form a central compact core for the cable becomes possible. This procedure has heretofore been necessary by reason of the fact that the seizings maintain the strands in cylindrical form, thereby preventing the individual wires of the strands from leaving the strand itself to fill up the recesses or interstices between strands when the entire cable is pressed into final form and wrapped. Great difficulty and delay in construction with resulting additional cost have been experienced in cutting and removing the seizings of the interior strands, which seizings if allowed to remain in place, would seriously interfere with the compacting of the cable wires into proper form. In the present invention a new form of seizing is used, whereby it becomes immaterial whether or not the seizing is cut or withdrawn from the strand. The use of my improved seizing furthermore eliminates the necessity for the prior formation of an inner cable core before completing the laying of all the strands, as will be seen hereinafter.

In the drawings,

Fig. 1 is a perspective view of a portion of a strand showing one of my improved seizings secured thereabout.

Fig. 2 is a similar view of the cable as it appears when first laid by my improved method, and

Fig. 3 is a similar view of the suspension bridge cable as it appears after it has been compacted into final form, showing the appearance of the interior and some of the exterior seizings therein.

In the practical embodiment of my invention each strand is seized by means of a thin, though comparatively wide ring or band 10, preferably of flat wire or of sheet metal, the ends 11 and 12 of said band being secured together in any suitable manner. The method of securing the ends is not important, but one of many possible forms is illustrated herein. As shown, the edge of the pointed end 11 is soldered to the outer face of the end 12, though it will be understood that numerous other structures may also be used for accomplishing this end. The band 10 is sufficiently wide to effectively hold the wires 14 in a strand 15 firmly together, it being understood, of course, that a series of seizings or bands 10 are used throughout the length of the strand. The strands are all laid in the usual manner as indicated in Fig. 2, excepting that the seizings remain un-

broken until all the strands have been laid, no inner core being formed as has been heretofore necessary.

When the cable is to be compacted, as for instance, previously to attaching the suspender cable clamps or bands and during the wrapping thereof, the pressure applied to the cable during the squeezing or compacting operation exerts sufficient stress upon the bands 10 to burst said bands without the necessity for the introduction of a tool into the cable for the purpose of cutting said bands. To facilitate the squeezing operation, it is sometimes desirable to sever and cut off those of the bands 10 which are easily accessible on the outside of the cable, as the cable squeezing and wrapping process goes on, a portion 16 of said band being sometimes entirely removed when said bands are severed, as indicated by the dotted lines on one said band in Fig. 3.

It will be seen that by reason of the fact that the seizings 10 are of thin material, the burst seizings may be allowed to remain in the interior of the cable without any disadvantages or trouble arising therefrom, since substantially no appreciable space is occupied thereby, and the wires may be forced together as closely as may be desired, whereby said interior seizings may assume a shape which can be compared to an open irregular hexagon with somewhat wavy sides.

It will be understood that various changes such as in the proportions and spacing of the seizing, in the manner of securing the ends together and the like may be made without departing from the spirit and scope of this invention, and that I do not wish to limit myself to the specific seizing shown herein which is merely illustrative of my invention.

I claim:

1. The method of laying a cable for a suspension bridge comprising the provision of a series of strands of wire in parallel relation, banding the strands with seizings occupying little space radially of the cable and designed to be readily burst under pressure, laying the strands, and applying pressure to the outermost strands for compacting the cable, while allowing said seizings to remain in the cable.

2. The method of laying suspenston bridge cables comprising the provision of a series of strands of wire in parallel relation, seizing each of said strands at intervals in the length thereof, laying the strands, and compacting the strands to form the cable, while allowing the seizings to remain in the cable.

3. The method of laying suspension bridge cables comprising the provision of a series of strands, seizing said strands with bands of thin material, laying the strands, compacting the strands, applying pressure to the outermost strands and depending on said pressure to burst said bands.

4. A seizing for the strands of a suspension bridge cable comprising a thin band adapted to be readily burst under pressure and adapted to remain in said cable.

5. Means for temporarily confining the strands of a suspension bridge cable until said strands are squeezed together comprising a series of thin metallic bands of low tensile strength arranged on said strands at intervals, and means for securing the ends of each of said bands together.

6. A seizing for the strands of a suspension bridge cable comprising a cylindrical band of comparatively great width and little thickness radially of the strand and adapted to allow said strands to be squeezed together into close contact.

7. A seizing for the strands of a suspension bridge cable comprising a cylindrical metallic band of comparatively great width and little thickness radially of said strands and of low tensile strength and adapted to be readily burst under pressure on said strands for allowing said strands to be formed into a cable and means for securing the ends of said band together.

8. In a suspension bridge cable, a series of strands, and means adapted to be burst under pressure put on said strands for temporarily maintaining the wires of said strands in place.

9. In a suspension bridge cable, a series of strands, and means for temporarily holding the wires of said strands in place, adapted to remain in said cable while allowing the wires of said strands to leave said strands and to come close together under pressure.

10. In a suspension bridge cable, a series of strands, and thin, substantially cylindrical temporary seizings arranged at spaced intervals in the length of each of said strands.

HOLTON D. ROBINSON.