

March 14, 1933.

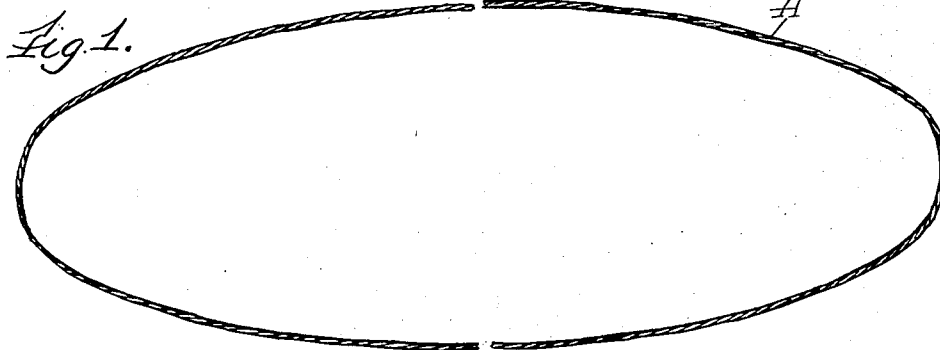
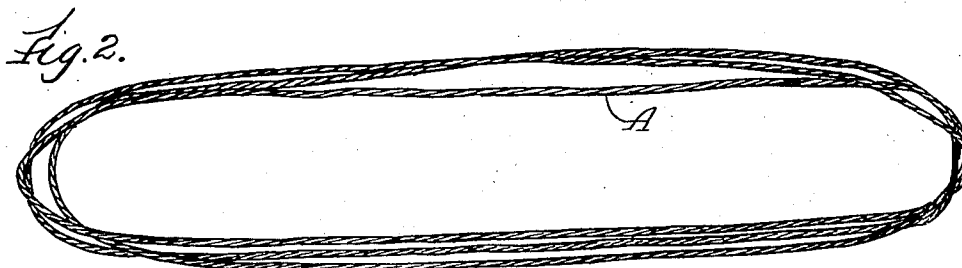
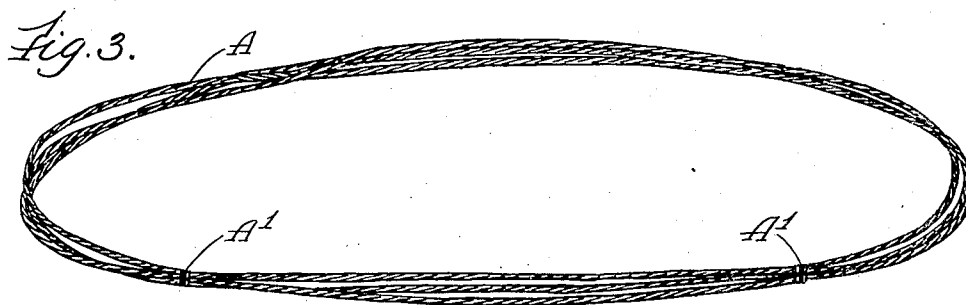
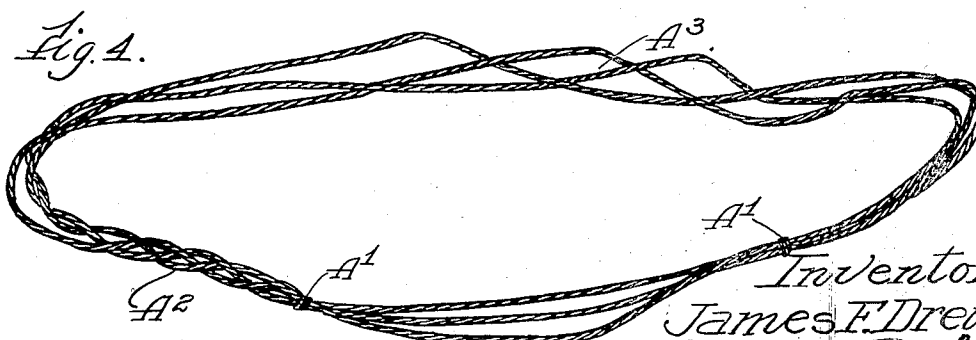
J. F. DREW

1,901,439

SLING AND METHOD OF MAKING THE SAME

Filed March 17, 1931

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 5.

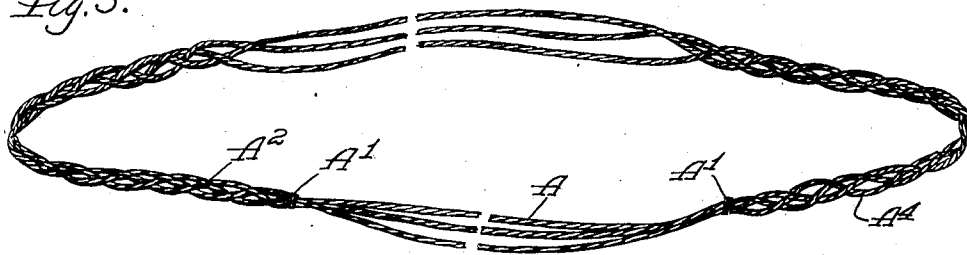


Fig. 6.

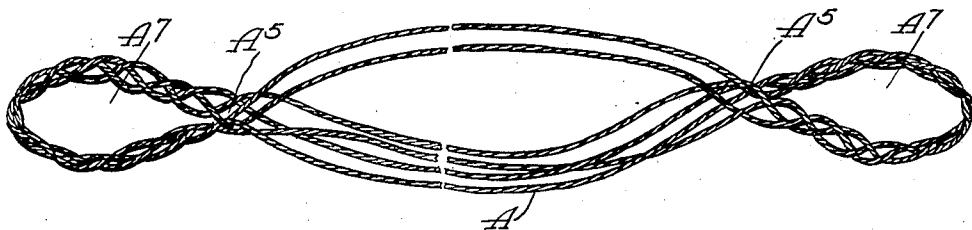


Fig. 7.

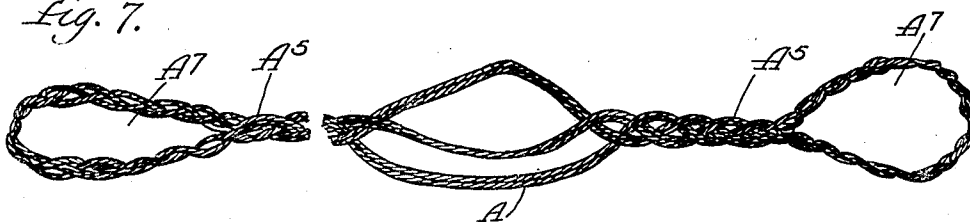
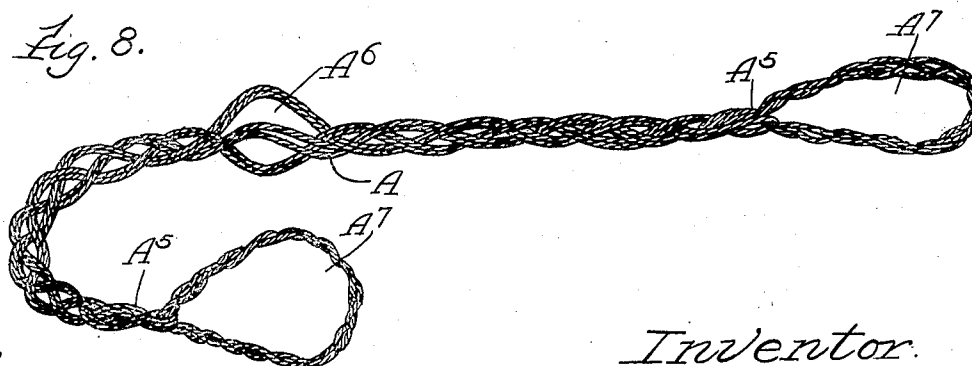


Fig. 8.



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3 Sheets-Sheet 3

Fig. 9.

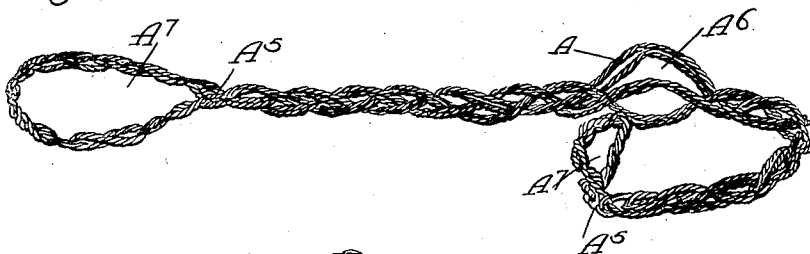


Fig. 10.

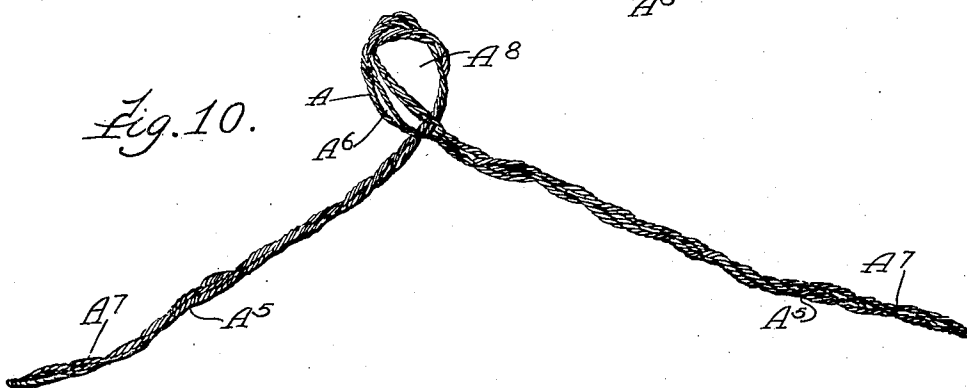


Fig. 11.

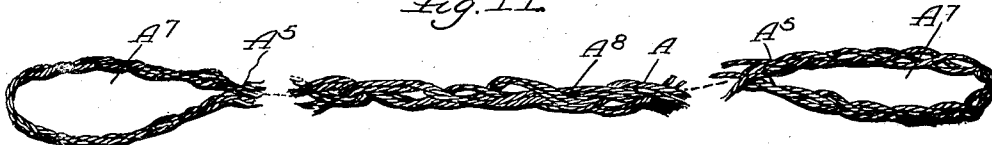


Fig. 12.

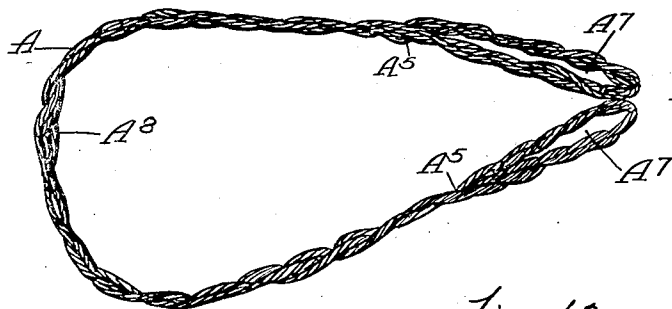
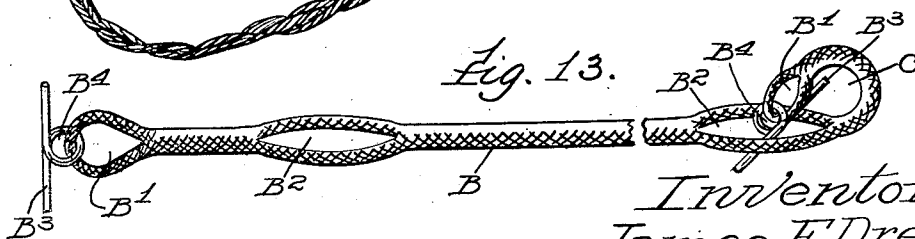


Fig. 13.



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UNITED STATES PATENT OFFICE

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SLING AND METHOD OF MAKING THE SAME

Application filed March 17, 1931. Serial No. 523,316.

This invention relates to a sling and the method of making it. One object is to provide a sling made of cable, rope, or the like, in which eyes are formed without the use of other fittings and attachment members. Another object is to provide means for forming a sling from a single piece of rope or wire. Another object is to form a sling from a single piece of rope or wire in which the latter is braided to form one or more eyes. Another object is to form a relatively flat sling and to form a sling or cable which has a maximum flexibility, a minimum of internal wear and friction, and which by reason of its shape and its construction may adapt itself readily to the contour of the object to be lifted and which will thus readily distribute the sling pressure over a large area and thereby reduce pressure on the object being lifted. Another object is to form a sling which is reversible. Other objects will appear from time to time in the course of the specification and claims.

The drawings are illustrated herein more or less diagrammatically, wherein—

Figure 1 is a fragmentary plan view of a piece of rope, cord or cable;

Figure 2 is a plan view showing the rope rearranged to provide a multiple loop;

Figure 3 shows the triple loop of Figure 2 at a later stage in the operation of forming the sling;

Figure 4 shows the loop after braiding has commenced;

Figure 5 illustrates a later stage in the braiding operation;

Figure 6 shows the commencement of the eye forming operation;

Figure 7 shows the braiding operation almost completed;

Figures 8, 9 and 10 show progressive steps in the completing or tying operation;

Figure 11 is a fragmentary showing of the completed sling;

Figure 12 illustrates the sling in a position of use;

Figure 13 is an elevation showing a particular form of sling which may be used as an automobile tow rope.

Like parts are designated by like symbols throughout.

A indicates a cable, rope, cord or other equivalent member. This cord is initially arranged in a single loop as shown in Figure 1 and is subsequently rearranged into a multiple loop as shown for example in Figures 2 and 3. After the cord has been arranged in a multiple loop it is tied at two points as at A^1 , shown particularly in Figure 3. The tying serves as a guide for the location of the eyes subsequently to be formed. After the ties A^1 are in place the cord is braided first from one tie A^1 as indicated for example at A^2 . During the braiding operation it is found that a twist is put into the remainder of the cord. This is indicated in Figure 4 at A^3 . After the cord has been braided as at A^2 for a while braiding at that end will be stopped and braiding will be commenced at the other end as at A^4 . Experience has shown that this will remove the twist which is indicated at A^3 in Figure 4 and the cord will resume the untwisted form indicated in Figure 5. Thus the braiding is carried on successively first from one end or from one tie A^1 and then from the other end or from the other tie A^1 .

After the braiding has progressed sufficiently to justify the formation of eyes, the ends are crossed as indicated in Figure 6 as at A^5 and braiding is continued, using for the braiding all of the strands, thus where the cord A has been arranged in a triple loop the initial braiding at A^2 and A^4 is accomplished with but three strands. After the eyes have been formed the subsequent braiding uses all of the strands, namely six. In braiding the main body of the sling after the formation of the eyes, the braiding is preferably done first from one end and then from the other. This is usually necessary to remove the twist which braiding from one end puts into the sling. The braiding is carried out until only a small unbraided portion A^6 remains. The problem is then to complete the sling or in other words to tie it to prevent unravelling of the braiding. To accomplish this one end of the sling is forced through the opening left at the un-

braided portion A⁶. The initial step of this operation is indicated in Figure 8 in which one of the eyes has been bent around opposite the opening A⁶. In Figure 9 the eye is about to be inserted through the opening A⁶. In Figure 10 it has been so inserted and the loop A⁸ is formed. To complete the operation the sling is pulled straight, the loop thus disappears and the sling assumes the form shown in Figure 11 in which the eyes A⁷ A⁷ are formed, one at each end of the sling, and in which the main body of the sling is completely braided from end to end. It will be understood that Figure 11 is a fragmentary view with parts broken out.

The sling may be used for any purpose for which it is suitable. Such slings are frequently used for hoisting and when so used are positioned about a load, the eyes being engaged upon a hook of the hoisting mechanism. This position is shown in Figure 12.

Any number of eyes may be formed. For some purposes it is sufficient to form only two eyes as indicated in the sling in the first twelve figures. For other purposes it is desirable to have more. One form of a device in which four eyes are used is that shown in Figure 13. As shown in that figure the device is formed of a main body B which has at each end an eye B¹ and which has intermediate its ends other eyes B². Fastened in each of the eyes B¹ is a rigid rod B³ which is inserted through the eye B¹ and bent to form the loop B⁴. Such a member is used in fastening. For example if the device of Figure 13 is used as a tow rope one end of the member will for example be put about the axle of an automobile so that the axle lies within the loop C. The rod B³ is then inserted through the adjacent eye B² and is straightened out and thus forms an attachment and prevents the rope from slipping from the axle. This method of attachment may be adopted at each end of the tow rope. Because of the reduced scale necessary to show the tow rope it is not shown in full detail. It will be understood that it is braided and made in the same general way and in accordance with the same process as that described above and illustrated in detail in connection with the sling. The braiding process carried out in making the tow rope is generally the same except that four eyes are made instead of two and the resultant tow rope is flat as is the sling.

While I have described my device as a sling and while it may be made up in that form, my invention is not limited to a sling or to the method of forming a sling and my method may be used to form any article of cordage in which it is desired to make up a unitary member having eyes formed from the material of which the member itself is made. For certain purposes it might be desirable to insert thimbles into the eyes and

although usually this is not necessary it is within the contemplation of my invention to do so. If it is found desirable the eyes themselves may be bound with rope, wire, cord, twine, or the like. The device itself may be made of any sort of rope, whether it be hemp, metallic, leather, or any other material.

I claim:

1. As a new article of manufacture a cordage article formed of a single continuous flexible member braided upon itself to form a plurality of integral eyes.
2. As a new article of manufacture a cordage article formed of a single continuous flexible flat member braided upon itself to form a plurality of integral eyes.
3. As a new article of manufacture an article formed of cordage and comprising a plurality of braided eyes, the members forming said eyes joined by a flat integral connecting portion.
4. As a new article of manufacture an article formed of cordage and comprising a plurality of braided eyes, the members forming said eyes joined by a flat integral connecting portion, the portion forming the eyes being flat.
5. As a new article of manufacture, a sling, said sling being formed of a single continuous flexible member, said member being braided to form a plurality of eyes and an integral portion connecting said eyes and integral with them.
6. As a new article of manufacture, a sling, said sling being formed of a single continuous flexible member, said member being braided to form a plurality of eyes and an integral flat portion connecting said eyes and integral with them.
7. As a new article of manufacture, a sling, said sling being formed of a single continuous flexible member, said member being braided to form a plurality of flat eyes and an integral portion connecting said eyes and integral with them.
8. As a new article of manufacture, a sling, said sling being formed of a single continuous flexible member, said member being braided to form a plurality of flat eyes and an integral flat portion connecting said eyes and integral with them.
9. An integral cordage article formed of a single continuous flexible member, such member being braided and forming a plurality of flat loops and a flat unlooped portion.
10. As a new article of manufacture, a tow rope formed of a single flexible member braided to form a flat integral member having eyes at its ends and eyes intermediate its ends, there being fixed in the end eyes relatively rigid attaching bars.
11. The method of forming a braided member from a closed loop of flexible material which includes the following steps; arranging said loop in a composite loop having

more than two strands, braiding alternately from opposite points on said loop until substantially all of the loop has been braided, moving one end of the member through the
5 unbraided portion and thereby completing the braiding and preventing unravelling.

12. The method of forming a sling of a single continuous cord which includes forming such cord into a loop, arranging it to
10 form a triple loop, tying it at two points, braiding it in opposite directions alternately from each of said points toward the other to form a pair of separated braided sections, moving each of such braided sections to form
15 of itself an eye, and braiding alternately from each of such eyes toward the other to form a braided portion extending between the loops, leaving a relatively small unbraided portion, inserting and pulling one end of said sling
20 through said unbraided portion thereby to complete the loop to prevent unravelling.

Signed at Kenosha, county of Kenosha and State of Wisconsin, this 11th day of March 1931.

JAMES F. DREW.