Nov. 4, 1941. C. PAYNE 2,261,447

ROPE SPLICER

Filed May 17, 1941

FIG. 1.

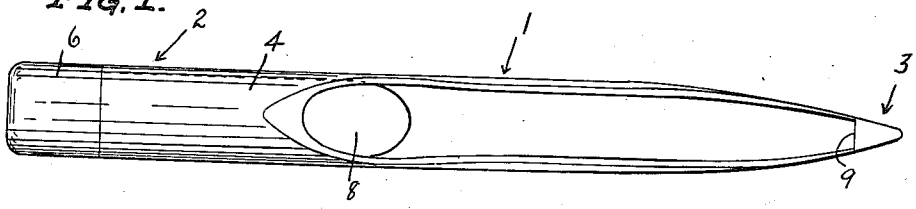


FIG. 2.

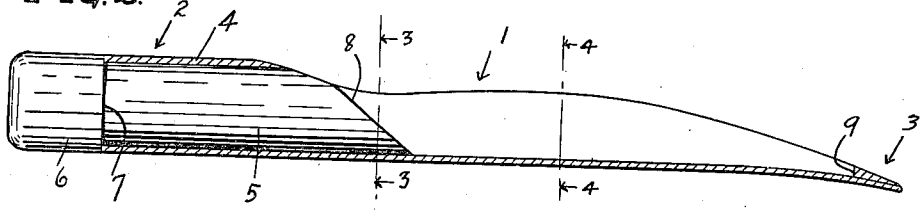


FIG. 3.

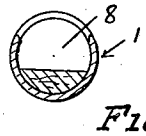


FIG. 4.

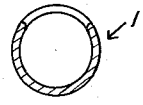


FIG. 5.

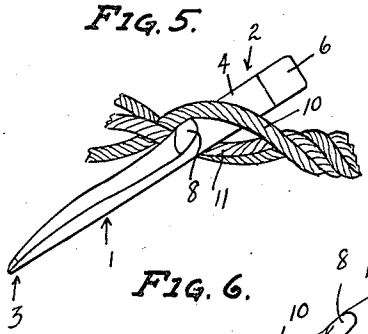


FIG. 7.

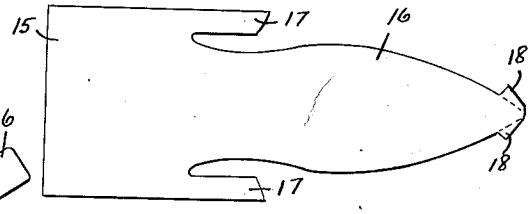


FIG. 6.

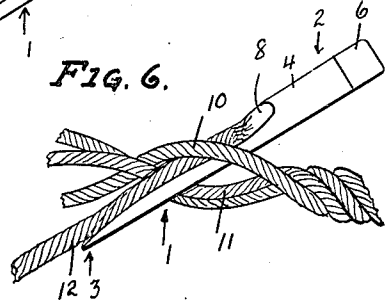
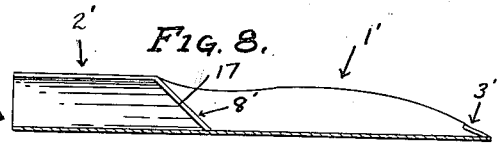


FIG. 8.



INVENTOR.

CARL PAYNE

BY

Boyken & Mobley

ATTORNEYS

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ROPE SPLICER

Carl Payne, Modesto, Calif.

Application May 17, 1941, Serial No. 393,976

7 Claims. (Cl. 57—23)

This invention relates to a rope splicer, and has for several of its objects, a simple, strong device that is economical to make and which device enables an operator to more efficiently splice or thread rope or to make nets, than heretofore. Another object of the invention is a device adapted to be employed by an operator for splicing or threading rope, and which device is adapted to handle a frayed rope end in a splicing or threading operation, substantially as efficiently as were such rope end unfrayed, or bound. A still further object is a device adapted to be used by an operator for handling rope ends in splicing, threading, or weaving the rope, to enable such manipulation of the rope ends without discomfort to the fingers of the operator. Other objects and advantages will appear in the specification and drawing.

In the drawing, Fig. 1 is a plan view of my device.

Fig. 2 is a longitudinal sectional view of the device of Fig. 1, the handle being shown in elevation.

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken along line 4—4 of Fig. 2.

Fig. 5 is a reduced perspective view illustrating the position of the device of Fig. 1 in an initial step in making a splice.

Fig. 6 is a reduced perspective view illustrating the device of Fig. 1 in a second step in making a splice.

Fig. 7 is a plan view of a blank from which one form of the invention may be made.

Fig. 8 is a sectional view taken longitudinally, and centrally of the device formed from the blank of Fig. 7, the said view corresponding generally to the view shown in Fig. 2.

In detail, heretofore, in making a splice, the customary procedure is to use a marlinspike, or the like, for first unlaying the strands of a rope, and after this is done, the operator threads a strand at the end of a rope between the unlaid strands. In making nets, the threading of a rope end between adjacent lengths of rope is done in much the same manner. The rope ends or strands, as the case may be, are generally frayed, and the threading operation is difficult, slow, and soon becomes painful to the fingers of the operator. Even where the fingers of the operator are calloused and no longer susceptible to pain, the splicing, threading, or weaving operation, is slow, since the marlinspike must first be withdrawn from between the strands or overlying portions of rope, and then the unlaid strands or rope must be held apart and the more or less frayed end of a strand, or rope, forced between the overlying, loosened strands or rope portions. With my device, frayed or unfrayed strands or rope ends are easily and quickly drawn between the unlaid or loosened strands or rope portions, by the tool or device that loosens said strands or said portions on the reverse reciprocation of such device in its withdrawal from between said strands or portions, and there are no eyes to thread or clamps to manipulate, or undesirable projections or attachments on my device that would result in slowing up the splicing or threading operation, or in unnecessarily unlaying the rope to which the splice is made.

In general, my device comprises a generally U-shaped, elongated channel 1 provided with a handle 2 at one end in longitudinal extension of the channel, and the opposite end of the channel is provided with a threading point 3.

More in detail, the sides of channel 1 and the bottom thereof, are preferably of relatively thin, but rigid metal of uniform thickness, and may be formed from a blank of sheet metal, or from metal tubing, in either of which instances, the metal at one end of the channel is formed to provide a tubular socket portion 4, the walls of which are in extension of the channel walls. This tubular, socket portion 4 forms part of the handle 2, and fitted in the same is a cylindrical shank 5 (Fig. 2) one end of which projects outwardly of the end of portion 4 that is opposite the channel 1, and which outwardly projecting end portion 6 is cylindrical, and may be formed with its outer cylindrical surface flush with the outer surface of portion 4 so as to provide part of the handle 1, and the shoulder 7 at the juncture between shank 5 and portion 6 may provide a stop to correctly position the end of shank 5 with respect to the end of channel 1 when the shank is driven into the socket 4. The outermost end of portion 6 is preferably rounded at its corners so as not to irritate the hand of the operator manipulating the device, although in many operations, this feature is not absolutely necessary.

The cross-sectional contour of the channel 1, while generally U-shaped, is preferably substantially circular, or of a contour to conform generally in size and shape, to the cross-sectional contour of the strand or rope to be fitted therein. The opposed free edges of the channel for the major length thereof, commencing from the handle 1, are substantially equally spaced apart, but converge slightly in direction from the handle toward the point 3, adjacent said point, and said free edges extend slightly toward each other for substantially the full length of said channel. At a point about intermediate the distance between said point and the handle portion 4, the height of the sides is gradually reduced in direction toward said point, until the sides practically converge to a point centrally of the bottom of the channel at the pointed end of point 3. The linear contour of said converg-

ing free edges of the channel, is convex, which facilitates the unlaying of the rope strands or the tightly engaging adjacent ropes, that are to be unlaid when the point 3 is inserted between such strands or rope, and is pushed longitudinally thereof between said strands or rope.

As seen in Fig. 4, the space between the free edges of the channel is slightly less than the horizontal diameter of the latter, while adjacent the handle 4, said space is slightly wider than it is at a point intermediate the ends of said channel. As will be later explained, this shaping of the channel, by widening the space between said free edges that are adjacent handle 4, facilitates the use of the device.

The end of shank 5 that terminates at one end of the channel, is cut off at an angle and in a slanting direction from the open side of the channel toward its bottom, as indicated at 8, to facilitate the release of the device from a rope or strand end, as will later be explained.

Point 3 terminates in a pointed outer end directed axially outwardly of the channel 1, and is formed with diverging lateral sides that are in extension of the tapered sides of said channel. The upper side of point 3 is flat, and flush with the free edges of the channel at said point. The inner side of point 3 facing toward handle 2, and into said channel, is substantially flat, and extends at right angles to the longitudinal axis of the channel, thus forming a square shoulder 9 that faces axially of the channel toward the handle 2. This shoulder is relatively slight, inasmuch as the channel is shallow adjacent said point, but it is sufficiently pronounced to frictionally resist slipping of a rope or strand longitudinally of the latter when such rope or strand is laid in said channel in a position extending over said shoulder, when slight lateral pressure is exerted on a side of said rope at said shoulder in direction generally toward the bottom of the channel.

It is also important to note that the channel adjacent point 3 curves slightly away from the central longitudinal axis of the channel in direction away from the open side of the channel, but not sufficient to carry shoulder 9 to below a line extended axially of the channel in extension of the inner surface of the bottom.

In operation, assuming a splice is to be made, the point 3 is inserted between a pair of adjacent strands 10, 11 (Fig. 5) of a rope, and the device is then thrust longitudinally thereof to between said strands until substantially the length of the channel 1 is exposed at one side of said pair of strands while the handle 2 is at the other side thereof. The operator then lays the end of a strand 12 (Fig. 6) in said channel through the open side thereof, with the butt end of such strand adjacent the slanted end 8 of the shank 5. In this position, the strand 12 is substantially enclosed in the portion of the channel extending from the handle to a point adjacent point 3, but spaced from the latter. The upper side of the butt end of the strand, in this position, does not project above the upper side of the socket portion 4, and where said butt end is frayed, said frayed end is readily fitted in the channel due to the slightly wider spacing of the free edges of the channel adjacent the handle.

After strand 12 is positioned in channel 1, it will be seen that the opposite sides thereof will be slightly constricted at the point along the length of the channel near point 3, where the said free edges commence to converge and to slant downwardly toward point 3. Also the strand will extend axially of the channel over shoulder 9. The operator then grasps the handle, with the thumb or forefinger of the grasping hand pressed against the exposed side of the strand over or relatively near shoulder 9, and withdraws the device from between strands 10, 11. Upon said withdrawal the strand 12 will not slip longitudinally from the open end of the channel at point 3, due to the convergence of the free edges of the channel adjacent said point, which tends to more tightly grip the strand sides as the device is withdrawn from between strands 10, 11, and also due to the frictional engagement between the edge of shoulder 9 and a side of said rope.

After the strand 12 is pulled to between strands 10, 11 and the channel is free from said latter strands, the strand 12 is quickly released from the channel by lateral movement of the channel away from the strand 12.

Where rope is used, as in making nets, and in some instances in making splices and in weaving, and such rope tends to stay in the channel after being threaded between a pair of ropes, the rope end so secured in the channel may be readily released for removal, by merely moving the channel and rope therein relatively, longitudinally of the channel and rope, to cause the butt end of the latter to slide up the inclined surface 8 and out of the channel.

The slight longitudinal curving of the channel adjacent point 3, as best indicated in Fig. 2 is not absolutely necessary, but facilitates the manipulation of the device in unlaying strands of rope. It has been found to be easier to unlay such strands by moving the device longitudinally in a slight arc as the device is thrust between adjacent strands, and after strand 12 is placed in the channel, there will be a less pronounced hump in the strand where it passes over shoulder 9, by reason of the fact that the shoulder is carried slightly away from the longitudinal axis of the channel, yet there is no loss in the effectiveness of the shoulder to prevent slippage of the strand, or rope in said channel.

The device of Figs. 1, 2, insofar as the socket 4 and channel 1 are concerned, may be readily formed from a length of tubing of the desired diameter, by merely cutting away one side of the tubing to provide the channel 1. After such side is cut away, the two sides of the remaining channel are forced inwardly toward each other from about the point where said edges incline downwardly toward point 3, so as to cause said edges to frictionally engage opposite sides of a rope placed in the channel. The point 3 may be formed integrally with the channel, as by brazing, or by soldering or brazing an insert in the channel.

In Figs. 7, 8, I show a manner of making my device from a blank of flat, sheet metal. The blank, as shown in Fig. 7, comprises an elongated piece of sheet metal formed to provide a substantially rectangular base portion 15 having a tongue 16 coplanar therewith extending from one edge of said portion. A pair of relatively narrow and short tongues 17 extend from said edge of the base along opposite edges of the tongue 16. The outer end of tongue 16 is substantially pointed, and is provided with a pair of short wings 18 extending oppositely from opposite edges of the tongue.

This blank, as described, may be bent around a tapered, elongated mandrel disposed centrally

of tongue 16 and longitudinally thereof, as to bring the two opposite free edges of base 15 to abutting relation, to form a tubular socket 2' (Fig. 8), and to form a channel 1', corresponding substantially to channel 1 of Fig. 2.

The small tongues 17 may then be bent into the channel 1' to provide an inclined surface 8' that corresponds to surface 8 of shank 5, and by folding the wings 18 toward each other, a point 3' is formed at the outer end of the channel 1' that substantially corresponds to point 3. The point 3' thus provides an axially facing edge corresponding to shoulder 9 of Fig. 2. The meeting free edges of base 15 and wings 18 may be brazed or soldered together, and the outer ends of tongues 17 may likewise be secured to the inner sides of the channel should it be deemed desirable to do so. A more rigid and rugged device is provided by so securing said meeting edges together, but this is not absolutely essential.

From the foregoing description, it will be seen that my device is adapted for use in splicing, making nets, weaving, etc., and its size may, of course, be varied to handle any size rope or strands. While I term my device "a rope splicer," this designation is not intended to restrict the scope of the invention.

In referring to the making of nets, with my device, I am referring to nets made of rope, such as the life-saving nets used by fire departments, or any nets made by rope of substantial size, as distinguished from nets made of thread or light cord. In the drawing, Figs. 1 to 4 are actual size drawings of one of the most popular sized devices, although several sizes may obviously be required where the rope or strands vary materially in size.

Having described my invention, I claim:

1. A rope splicer comprising; an elongated channel-strip substantially U-shaped in cross-section with the opposite sides of said channel spaced apart to receive a length of rope therebetween in a position extending longitudinally of the said channel; the opposite sides of said channel tapering to a point at one end of said strip whereby the free edges of said channel strip will extend diagonally across opposite sides of a rope in said position; means adjacent the said point arranged and adapted to frictionally secure a rope in said channel against substantial relative longitudinal movement of the rope and channel when said channel is pulled longitudinally in direction away from said point and the rope is held against the bottom of said channel by pressure against the side of the rope exposed along the open side of said channel, the said point being substantially coincident with the bottom of said channel at said one end of said strip, and the free edges of said opposite sides being slightly bent toward each other, whereby the portions of said edges extending diagonally across said rope, when the latter is disposed in said channel, will frictionally engage opposite sides of said rope to resist slippage of the rope longitudinally in said channel when the latter is pulled in said direction.

2. A device of the character described, comprising; a generally U-shaped channel strip, the opposite sides of which are of progressively increasing width in direction from one end toward the other, and which sides and bottom terminate in substantially a single point at said one end; the width of said channel sides being such as to receive a length of rope or the like therein extending longitudinally of the channel; and means on said sides rigid therewith arranged and adapted to frictionally secure such rope against substantial relative movement of the rope and channel longitudinally when said channel is pulled in one direction and the rope is held against the bottom of said channel by pressure against the side of the rope exposed along the open side of said channel.

3. A device of the character described, comprising; a generally U-shaped channel strip the opposite sides of which are of progressively increasing width in direction from one end toward the other, and which sides, and the bottom of said channel strip terminate in substantially a single point at said end; said channel strip being formed to receive therein through the open side thereof a length of rope extending longitudinally of the channel; means integral with said strip arranged and adapted to frictionally engage opposite sides of such rope free from penetration into the body thereof frictionally securing such rope against substantial longitudinal movement of the rope and strip relatively when said channel is moved longitudinally in one direction.

4. A device of the character described, comprising; a generally U-shaped channel strip, the opposite sides of which are of progressively increasing width in direction from one end toward the other, and which sides, and the bottom of said channel strip terminate in substantially a single point at said one end; the portions of said channel sides along the free edges thereof extending generally toward each other and the spacing between said free edges being such as to pass a rope having a diameter substantially that of the distance between the sides of said channel to between said edges into said channel; means in said channel at said one end thereof forming a relatively square shoulder adjacent the bottom of the channel arranged and adapted to frictionally engage a side of a rope when the latter is positioned in said channel; and a handle extending axially of said channel at the opposite end thereof secured to said channel strip.

5. In a device as defined in claim 2, said portions of said channel being of progressively increasing distance apart from said one end in direction toward said opposite end to a point intermediate the ends of said channel, and the said portions along the remaining length of the channel being substantially uniformly spaced apart.

6. A rope splicer comprising an elongated channel-strip, the cross-sectional contour of which substantially corresponds to the cross-sectional contour of a cylinder; the free edges of said strip adjacent one end thereof being slightly turned inwardly toward each other and extending arcuately to the bottom of said strip at said one end, a handle at the opposite end of said strip extending longitudinally of the latter and means closing the end of said channel opposite said one end.

7. In a construction as defined in claim 6, said last mentioned means having a flat surface facing generally into said channel, said surface extending slantingly from the bottom of said channel to the open side thereof in direction away from said one end whereby a rope positioned longitudinally in said channel with one of its ends adjacent said surface, will be caused to slide over said surface and out of said channel upon movement of said rope in direction toward said surface when the said rope is in said channel.

CARL PAYNE.