J. D. MARTIN.

SPLICING NEEDLE.

APPLICATION FILED OCT. 7, 1908.

989,378.

Patented Apr. 11, 1911.

Fig. 1.

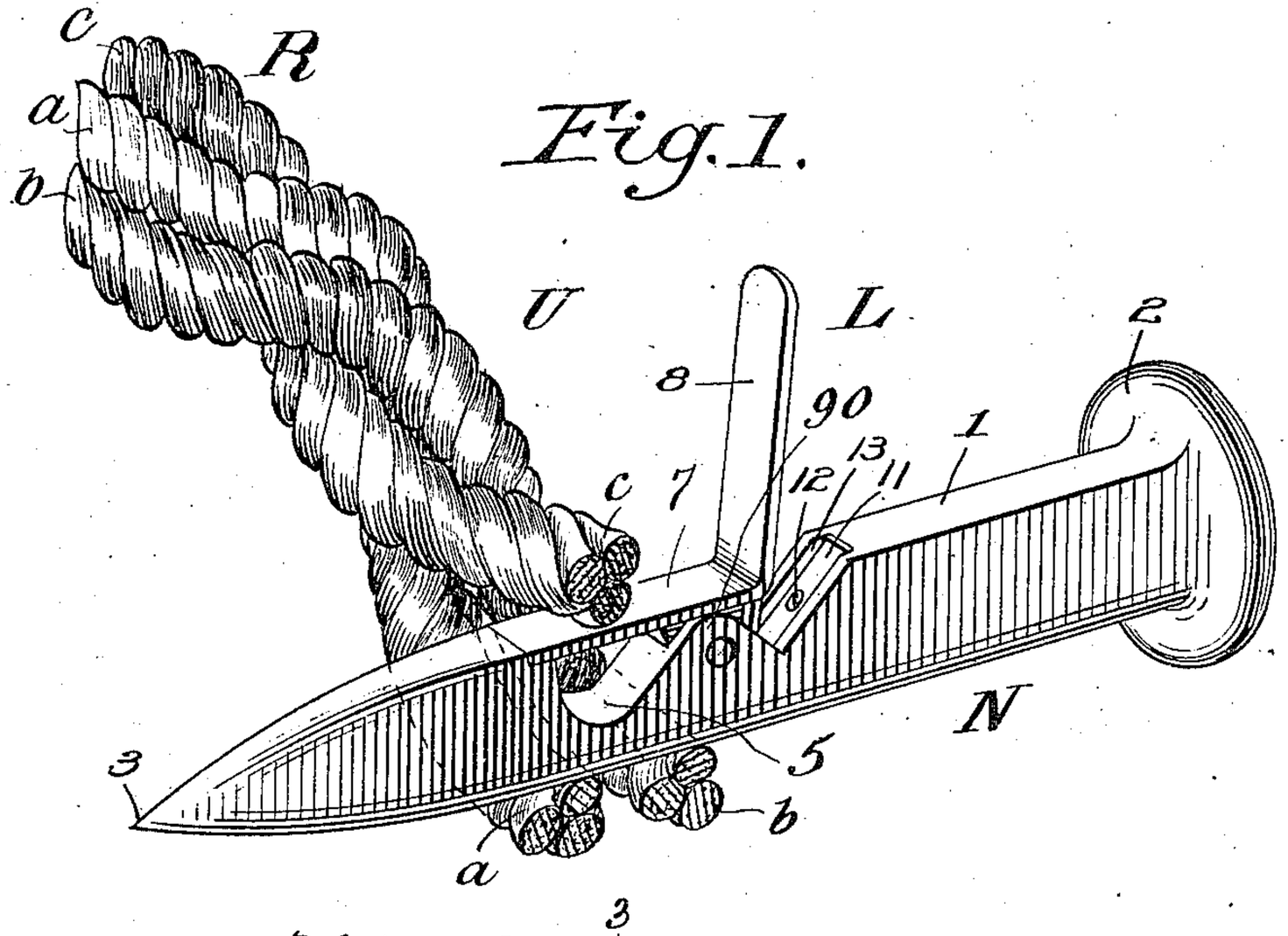


Fig. 2.

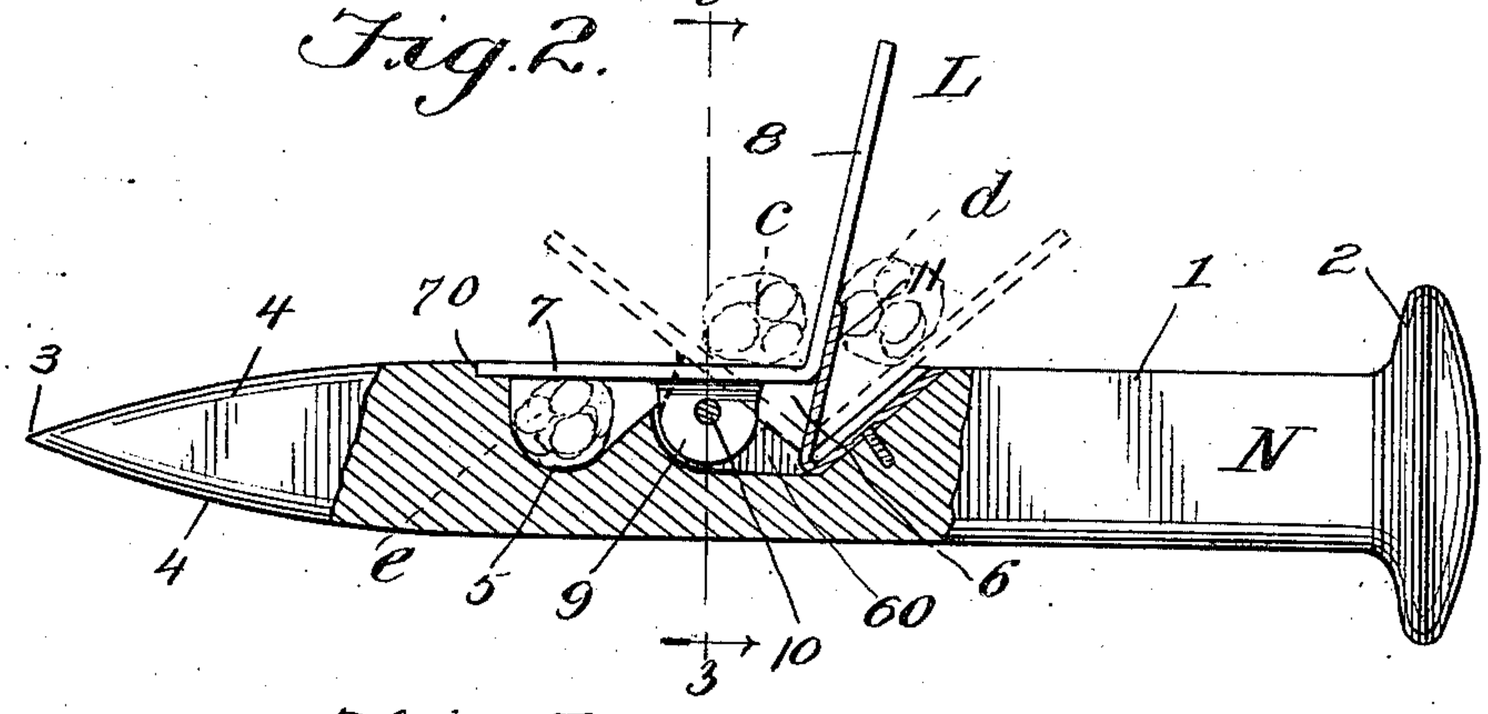
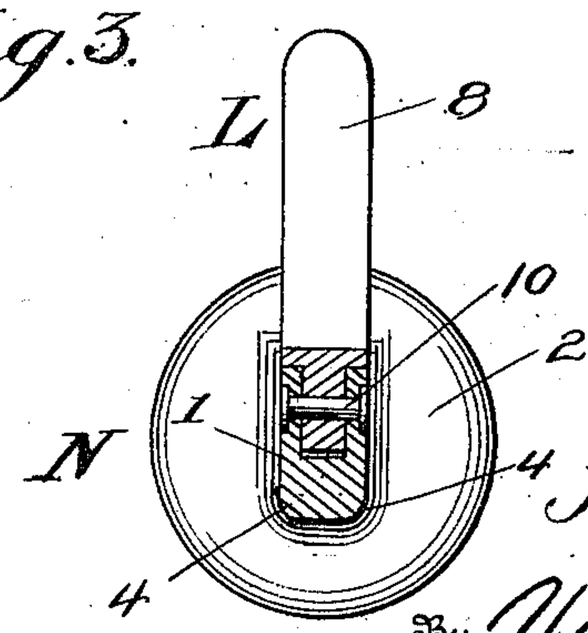


Fig. 3.



Witnesses

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SPLICING-NEEDLE.

989,378. Specification of Letters Patent. Patented Apr. 11, 1911.

Application filed October 7, 1908. Serial No. 456,545.

To all whom it may concern:

Be it known that I, JOHN D. MARTIN, a citizen of the United States, residing at Wilkes-Barre, in the county of Luzerne and State of Pennsylvania, have invented new and useful Improvements in Splicing-Needles, of which the following is a specification.

This invention relates to cordage, and more especially to needles designed for the purpose of splicing the ends of ropes, and one of the principal objects of the same is to provide a simple device for the purpose referred to which in its insertion to form an opening between the strands of the rope will automatically raise a latch and open its eye to such position that the strand to be united can be readily passed through the eye, automatically clamped by the latch, and drawn back between the said opened strands as the act of splicing requires. This object may be attained by means of the construction illustrated in the accompanying drawing, in which,—

Figure 1 is a perspective view of a splicing needle made in accordance with my invention. Fig. 2 is a side elevation and partial section of the same, showing the spring-actuated latch in one of its positions in dotted lines. Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

The act of splicing ropes requires the use of a peculiar needle by reason of the fact that for most of the time both hands are busy holding the ropes or their strands. The meeting ends of the ropes to be spliced are first twisted in directions the reverse of the twist of their strands so that the latter are opened up or uncoiled for a distance of from six to twenty-four inches back from the ends of the ropes, the uncoiled strands of each rope are then alternated with those of the other to about half the extent that they have been uncoiled, and finally the projecting ends of the strands of one rope are carried over the bodies of the strands of the other and tucked under the bodies of the next strand adjacent. This step is then repeated at the other side of the splice on the other rope, then repeated on the first rope, then again on the second, and so on. In a three-strand rope it follows that when the strands are loosened and lapped on each other, there are two strands between which a third strand must be inserted and it is quite obvious that this requires considerable hand work on the part of the operator—hence the desire for a needle which can be used quickly with one hand when the latter is free for a moment, and which will automatically grasp or release a strand at the proper time. Needles of this character have heretofore been made having side-opening eyes or other devices by which a strand could be grasped and released when the needle was properly manipulated by the hand of the operator, but the present invention contemplates the use in such a needle of a spring-actuated latch for closing the throat of the eye and clamping a strand therein, and a heel on the latch to raise it automatically and release the strand when the needle is pressed far enough through the rope.

Referring to the drawings, the letter N designates the needle and L its latch, R is the rope in its coiled condition and U its strands when uncoiled, and the various strands are designated by small letters as described below. The needle proper consists of a shank or body 1, of oval or preferably oblong cross section and at any rate rounded at its corners 4, a head or handle 2 at one end, and a point 3 at the other. Near the point the body is provided with a transverse eye 5 which is preferably curved at its bottom, of a size to receive the strand of a rope with which this needle will be used, and having its throat opening through one edge of the body. In the rear of this eye there is a transverse recess 6 whose front end is connected with the eye by a longitudinal groove 60 between two side ears 90, and whose rear end may be inclined and grooved as at 13. This recess opens out of the same thin edge of the body 1 as the eye, and both are by preference of a depth about equal to half the longest diameter of said body. The latter is made or cast entirely of one piece of metal. The latch L is by preference also a single piece of metal of L-shape side elevation, one arm 7 constituting the latch proper and adapted to extend from the angle in its body completely across the eye 5 so as to lie in a recess 70 beyond the same, and the other arm 8 constituting the heel of the latch and adapted to stand normally upright so as to project outward beyond the body 1 at about right angles thereto. At or near the angle of this latch it is formed with a lug 9 which is mounted on a pivot 10 between the ears 90.

11 is an expansive spring—here shown as of V-shape—with one arm standing behind

the heel 8 and the other arm secured as by a screw 12 within the groove 13. The expansive force of this spring holds the latch normally in the position shown in the drawings, but obviously the screw 12 may be withdrawn in order to replace the spring when necessary.

In the use of this needle, the rope R (here shown as having three strands *a*, *b*, *c*) is uncoiled for a distance from its end as shown at U, and it is to be understood that the uncoiled strands will project toward the reader considerably farther than shown in Fig. 1 in which they are cut off flush with the near side of the needle in order the better to show the construction of parts and their use. It has been thought unnecessary to illustrate the uncoiled strands of the other rope. The needle with its latch in its normal position is inserted from the right and pressed toward the left as seen in Fig. 1, its point and later its body passing over two strands *a*, *b*, and raising the third strand *c* which slides along the upper edge of the body to the position shown in Fig. 1. Pressing the needle farther to the left, the strand *c* strikes the heel 8 as shown in Fig. 2, and further pressure of the needle to the left causes the strand to assume the position *d* and the latch L to turn on its pivot to the position indicated in dotted lines. This movement opens the throat of the eye 5, and the strand of the other rope is then laid in said eye as shown at *e*. A movement of the needle N in the opposite direction thereupon releases pressure of the strand at *d* against the heel 8, said strand returning to the position *c* in Fig. 2 so that the heel 8 rises and the latch-body descends upon the strand *e;* and the withdrawal of the needle by movement to the right carries with it the strand *e* which is therefore passed beneath the strand *c*. To release the strand *e* thus threaded into place, it is only necessary to trip the heel 8 by pulling it to the rear with the thumb. This is the preferred use of my improved needle, but it will be quite obvious that the strand *e* might be placed in the eye first and then the needle inserted from right to left as shown in Fig. 1 so that the strand *e* will be carried under the strand *c* and movement of the latter to the position *d* would automatically release the strand *e;* after which the needle would be withdrawn and the strand *e* would be left threaded in place. The operation in either direction is then of course repeated for the remaining strands of the ropes. Whether the strand *e* is drawn to the right under the strand *c* by the withdrawal of the needle or is passed to the left under it by the insertion of the needle, the action of the latch in holding the strand *e* is the same and the action of the strand *c* in opening the latch is the same; but the resultant splice will differ in the direction in which the strands of one rope are threaded with relation to those of the other.

What is claimed is—

1. A rope-splicing needle comprising a body of oblong cross section having a handle at one end and a point at the other, and provided near said point with a transverse eye whose throat opens through one edge of the body, and a recess in rear of the eye; combined with an L-shaped latch pivoted within said recess, and a spring in the recess throwing the body of the latch normally downward and completely across the throat of said eye and its heel normally outward to a position substantially at right angles to the length of the needle, as and for the purpose set forth.

2. A rope-splicing needle comprising a body having a handle at one end and a point at the other, and provided with a transverse eye whose throat opens through one side of the body and a recess in the rear of the eye connected with it by a groove, and ears at the sides of said groove; combined with an L-shaped latch having a lug pivoted between said ears and standing within said recess, and a spring in the recess throwing the body of the latch normally downward and completely across the throat of said eye and its heel normally outward to a position substantially at right angles to the length of the needle, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN D. MARTIN.

Witnesses:
F. H. Carey,
Mrs. Henery Kruger.