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W. M. CAMP
SPLICING THREAD AND YARN

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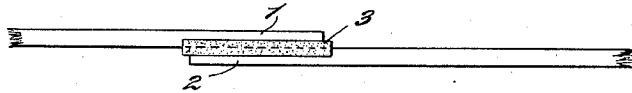


Fig. 1.

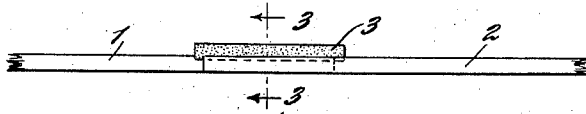


Fig. 2.

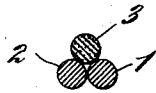


Fig. 3.



Fig. 4.

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SPLICING THREAD AND YARN

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2 Claims. (Cl. 28—1)

This invention relates to a novel and improved method of splicing thread and yarn and to the product resulting from the practice of the method. In the prior art of splicing yarn and thread, gums and resins in a dissolved state have been applied directly to the threads by the fingers and the two ends rolled together. This leaves a bulky splice as there is no compression of the ends and also the fingers of the operator become stuck up with the cement used and therefore decreasing the efficiency of the operator. Splicings made in this way are not uniform in strength because of the varying pressure and amount of cement applied by the operator. Also where splicings are made normally with gums or liquid cements, the splicings are bound to be soiled through coming in contact with the fingers. In the present invention these deficiencies are overcome by a new splicing method which will be better understood from the following description and the annexed drawing, in which I have shown one manner in which the invention may be practiced, and in that drawing:

Fig. 1 is a view illustrating the first step of the method;

Fig. 2 is a view taken at right angles to Fig. 1; Fig. 3 is a view on the line 3—3 of Fig. 2;

Fig. 4 is a view showing the completed splice.

I shall assume that the splice is to be formed with ends of cotton thread or yarn which, for the sake of convenience, I shall hereinafter refer to as thread. In forming the splice, I lay two ends 1 and 2 of thread adjacent each other and preferably overlapping, as best shown in Fig. 1. Then I lay in contact with the ends 1 and 2 a length of splicing thread 3.

The splicing thread is of a special composition. Preferably, it is made partly of the same composition as the ends which are to be spliced together and partly of some material which will act to cement together the ends. For the sake of convenience I shall refer to this material as cementitious material, although any material which will act to cause the ends to be held together may be used. The action may not be a cementing action in the strict sense of the term, but nevertheless I shall use the above expression for the sake of convenience.

The splicing thread is preferably of a length slightly greater than the amount of overlap of the two ends 1 and 2, as plainly shown in Figs. 1 and 2. For example, if the overlap of the ends is about an inch, then the length of the splicing thread may be $1\frac{1}{2}$ inches. The object of having the splicing thread longer than the two ends

to be spliced is that the non-cementitious fibers similar to the fibers in the yarn to be spliced form an overlapping medium to cover up the cut ends of the thread being spliced and therefore make a smoother splice on each end. Also these noncementitious fibers contained in the splicing yarn help to cause the cementitious material to flow evenly into the ends to be spliced.

The materials selected for the splicing thread should be of such a nature that it can be readily pressed to a size smaller than its normal diameter. For example, I may make the splicing thread out of 25% of cotton fibers and 75% of cellulose acetate fibers. Then after the parts are laid together as in Figs. 1, 2, and 3, pressure is applied to the joint at the same time as a solvent is applied thereto. Thus the cellulose acetate will be dissolved and will flow freely through the ends 1 and 2 and, since pressure is being applied, the cotton fibers of the splicing thread will be thoroughly combined and intermingled with the fibers of the two ends and the result will be a splice of some such appearance as shown in Fig. 4, where it will be seen that the overlapping parts of the two ends have been compressed until the overlap is approximately the same diameter as either one of the ends. The outline shown by broken lines in Fig. 4 indicates the approximate space which will be occupied by the remains of the splicing thread.

Instead of cellulose acetate, the splicing thread may be made in part of any other fibrous material, which is capable of being dissolved by a solvent or melted by the application of heat, which would turn it into a cementitious material. Such materials are Vinyon, ethers and esters of cellulose, derivatives of polymerized acrylic acid, etc. The materials referred to in the foregoing may be treated with a solvent alone or heat alone to cause them to become effective as a binder or it may be preferable to use both solvent and heat to get the secure binding qualities necessary in a splice made in yarn or thread. Noncementitious fibers would be those which could be combined with other fibers and not be dissolved by the solvent or heat treatment applied to dissolved or liquify, cementitious fibers used. When such materials are used in the splicing thread, pressure will be applied as before, using either a solvent or heat, or both.

I claim:

1. A method of splicing the ends of cotton thread which comprises overlapping to a predetermined extent the two ends to be spliced, thus determining the length of overlap, placing in con-

tact with the said overlapped ends a composite splicing thread having a length at least approximately equal to the length of overlap, said composite splicing thread being normally non-adhesive and containing a potentially adhesive component which develops adhesiveness only upon the application of an agency selected from the group consisting of melting and dissolving agencies, the balance of the splicing thread being composed of cotton fibers, applying to the splicing thread said adhesion-developing agency and thereby rendering the same adhesive, and intermingling the splicing thread with the said ends by the application of pressure whereby the cotton fibers of the said ends and the cotton fibers of the splicing thread become united by the said adhesive.

2. A method of splicing the ends of thread which comprises overlapping to a predetermined extent the two ends to be spliced, thus determin-

ing the length of overlap, placing in contact with the said overlapped ends a splicing thread having a length at least approximately equal to the length of overlap, said splicing thread being normally non-adhesive and containing a potentially adhesive component which develops adhesiveness only upon the application of an agency selected from the group consisting of melting and dissolving agencies, the balance of the splicing thread being composed of non-adhesive fibers which are not soluble or fusible, applying to the splicing thread said adhesion-developing agency and thereby rendering the same adhesive, and intermingling the splicing thread with the said ends by the application of pressure whereby the fibers of the said ends of thread and the fibers of the splicing thread become united by the said adhesive.

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