Jan. 8, 1935. F. W. THOMAS ET AL 1,987,453

THREAD

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Fig. 1.

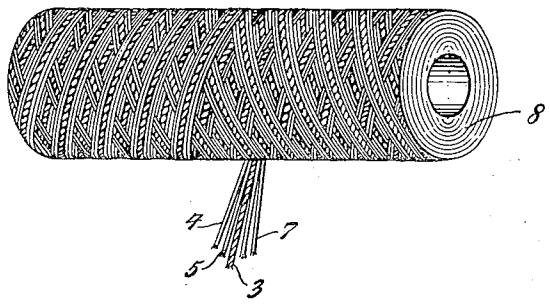


Fig. 2.

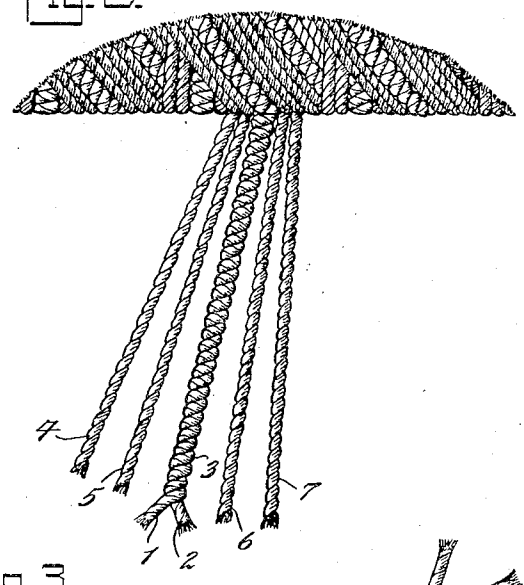
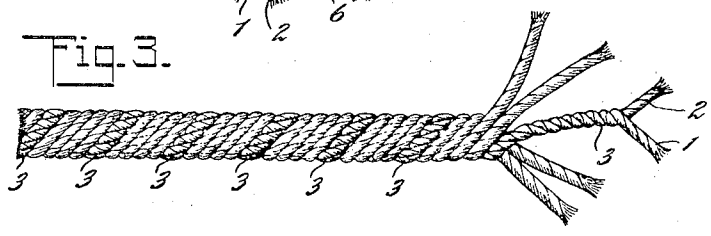


Fig. 3.



Frederick W. Thomas
John Colby Lewis INVENTORS.

BY Gifford, Smith & Burgess
ATTORNEYS

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THREAD

Frederick W. Thomas, Englewood, and John Colby Lewis, Newark, N. J., assignors to The Clark Thread Company, Newark, N. J., a corporation of New Jersey

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16 Claims. (Cl. 117—52)

This invention relates to a novel and improved form of thread, the novel features of which will be best understood from the following description and the annexed drawing, in which we have shown a selected embodiment of the thread and have illustrated a method by which it may be made. In that drawing:

Fig. 1 is a perspective view of a cheese formed of the various elements or ends which are to be made into the thread;

Fig. 2 is a view on a greatly enlarged scale of a portion of the structure appearing in Fig. 1;

Fig. 3 is a view of a fragment of the finished thread, with the end portion thereof opened out to show the construction of the different elements or ends.

According to our invention, the thread is formed by twisting together a plurality of strands or ends, as they are known in the art, to form a multiple end and then twisting that multiple end together with one or more single ends. Each single end may be made of any suitable yarn formed by standard practice, for example the yarn as it comes from a spinning ring frame or mule, in which condition the yarn has what may for convenience be termed an ordinary twist. We do not, however, desire to limit ourselves to any particular form of end, although in actual practice we have found very good results to follow from using, as the single ends, yarn of the kind just mentioned above.

In the illustrated embodiment, the finished thread is formed of six single ends, all told, and all having the same order of twist. Two of those single ends are first twisted together to form a double-ply end and then twisted together with the other four single ends to form the finished thread. The two single ends 1 and 2 are shown as having been twisted together to form the double end 3. Each end 1 and 2 has been previously twisted to the left and then formed into the double-ply end by a left twist. That is to say, the twist in each of the individual ends 1 and 2 is the same in direction as the twist in the double-ply end formed from these two single ends, thus giving a construction which may be termed a twist on twist arrangement.

The double-ply end 3 may be wound very conveniently with the single ends 4, 5, 6, and 7 into a cheese 8, with the double-ply end 3 having two single ends on either side thereof.

Then the five elements, consisting of the four single ends, and the one double-ply end, may be twisted into the finished thread illustrated in Fig. 3. In this twisting operation, as in the formation of the double-ply end, any suitable twister may be used. Preferably, this final twisting operation is performed in a direction opposite to the twist of the individual ends and of the double-ply end. In this particular instance then, in which the single ends and the double-ply end have been twisted to the left, the twist of the finished thread is to the right. By this arrangement, a better balanced thread is obtained, giving the required strength and reducing the tendency of the thread to kink.

The end 3, here shown as of double-ply construction, forms a multiple-ply end twisted with single-ply ends to form the thread. It will be seen that the thread thus formed comprises single ends twisted together, with the multiple-ply end running lengthwise of the thread and following the twist thereof, giving the thread a cable appearance. While the multiple-ply end is shown as formed of two ends, this number may be increased where found desirable.

We have found that a thread made as described above has several advantages over the prior art thread. One of these advantages is that much greater strength is obtained. As is well known in the art, American cotton, since Sea Island cotton is no longer grown commercially, has a shorter staple and coarser fiber than Egyptian cotton, for example, and therefore the Egyptian cotton normally gives a stronger thread than American cotton. The Egyptian cotton, however, requires an extra bleaching over that given to American cotton. With our invention, we are enabled to use American cotton and get a thread approximately as strong as a thread made with Egyptian cotton according to the prior art practice. Similarly, with Egyptian cotton or other relatively long staple cottons, a correspondingly stronger thread is obtained.

While we have shown the invention embodied in a certain form, we, of course, appreciate the fact that various changes may be made without departing from the scope of the invention. The amount of twist per inch in each single end and in the multiple-ply end may be varied as found desirable, and likewise the number of ends may be changed, although we have found that the number shown herein gives excellent results. Therefore we do not intend to limit ourselves except by the appended claims.

We claim:

1. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted and then twisted together to form the multiple-ply end, said multiple-ply end being

twisted together with other individually twisted single ends each having an ordinary twist, to form the completed thread.

2. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted, all in the same direction, and then twisted together to form the multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends each having an ordinary twist, to form the completed thread.

3. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted, all in the same direction, and then twisted together in the same direction as the twist in the single ends thereof to form the multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends each having an ordinary twist, to form the completed thread.

4. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted and then twisted together to form the multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends to form the completed thread, all of said single ends being individually twisted in the same direction and all having individual twists of the same order.

5. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted and then twisted together to form the multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends to form the completed thread, each of said single ends being individually twisted in the same direction and with an ordinary twist, and the twist of the multiple-ply end with said other single ends being opposite in direction to that of the single ends.

6. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted in the same direction and then twisted together in the same direction as the individual ends thereof, to form the multiple-ply end, said multiple-ply end being twisted together with single ends in a direction opposite to that of the twist of the multiple-ply end and of the single ends thereof.

7. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted in the same direction and then twisted together in the same direction as the individual ends thereof, to form the multiple-ply end, said multiple-ply end being twisted together with single ends in a direction opposite to that of the twist of the multiple-ply end and of the single ends thereof, and each of said single ends which are twisted together with the multiple-ply end being individually twisted in the same direction as the twist of the multiple-ply end and of the single ends thereof.

8. In a thread, a double-ply end formed of two single ends, said single ends being individually twisted in the same direction and then twisted together in the same direction as the individual ends thereof, to form the double-ply end, said double-ply end being twisted together with four single ends in a direction opposite to that of the twist of the double-ply end and of the single ends thereof.

9. In a thread, a double-ply end formed of two single ends, said single ends being individually twisted in the same direction and then twisted together in the same direction as the individual ends thereof, to form the double-ply end, said double-ply end being twisted together with four single ends in a direction opposite to that of the twist of the double-ply end and of the single ends thereof, and each of said single ends which are twisted together with the double-ply end being individually twisted in the same direction as the twist of the double-ply end and of the single ends thereof.

10. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted and then twisted together to form the multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends, each having an ordinary twist, the twist of the multiple-ply end with said other single ends being opposite in direction to the twist of the multiple-ply end.

11. In a thread, a multiple-ply end formed of single ends, said single ends being individually twisted and then twisted together to form the multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends, to form the completed thread, the twists in all of said single ends being of the same order.

12. A thread formed of single ends of cotton fiber, a plurality of said single ends being individually twisted and then twisted together to form a multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends, each having an ordinary twist, to form the completed thread.

13. A thread formed of single ends of cotton fiber, a plurality of said single ends being individually twisted and then twisted together to form a multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends, each having an ordinary twist, to form the completed thread, and the twist of the multiple-ply end with said other single ends being opposite in direction to the twist of the multiple-ply end.

14. A thread formed of single ends of cotton fiber, a plurality of said single ends being individually twisted and then twisted together to form a multiple-ply end, said multiple-ply end being twisted together with other individually twisted single ends, each having an ordinary twist, to form the completed thread, the twist of the multiple-ply end with said other single ends being opposite in direction to the twist of the multiple-ply end, and all of said single ends being individually twisted in the same direction.

15. A thread formed of six single ends of cotton fiber, two of said single ends being individually twisted in the same direction and then twisted together in the same direction as the individual ends thereof, to form a double-ply end, said double-ply end being twisted together with four single ends, each having an ordinary twist.

16. A thread formed of six single ends of cotton fiber, two of said single ends being individually twisted in the same direction and then twisted together in the same direction as the individual ends thereof, to form a double-ply end, said double-ply end being twisted together with four single ends, each having an ordinary twist, the twist of said double-ply end with said single ends being in a direction opposite to that of the twist of the double-ply end and of the single ends thereof.

FREDERICK W. THOMAS.
JOHN COLBY LEWIS.