Aug. 3, 1937. J. SALADINO 2,088,822

METHOD OF MAKING RACKET STRINGS

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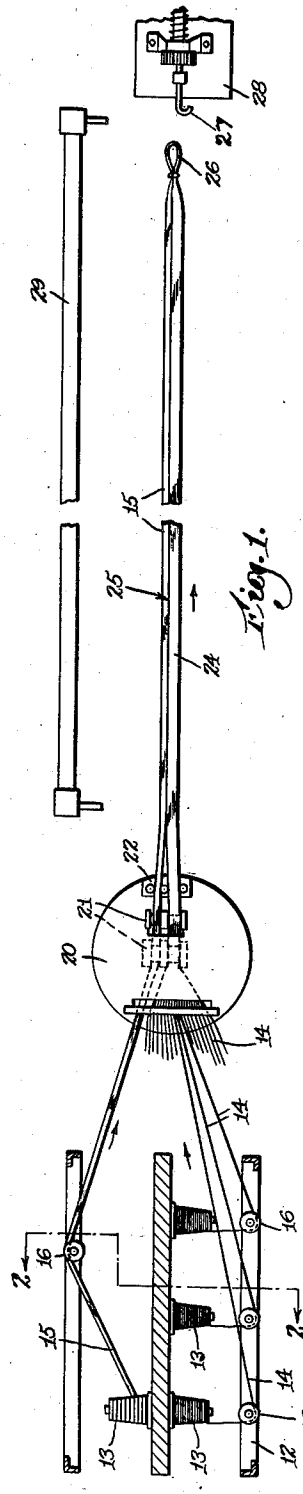


Fig. 1.

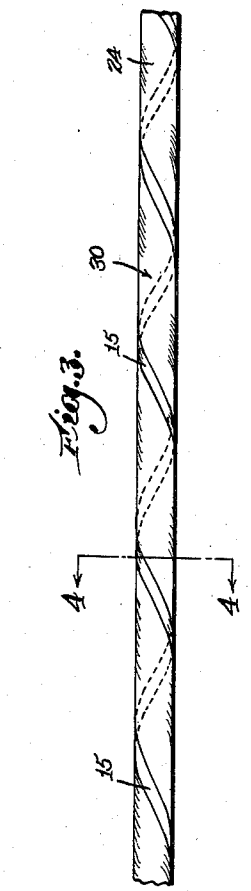


Fig. 3.

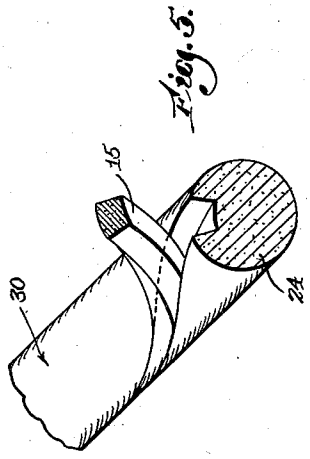


Fig. 5.

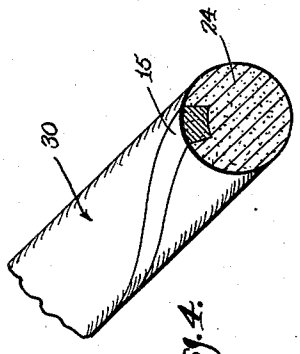


Fig. 4.

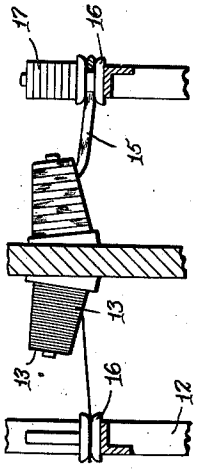


Fig. 2.

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METHOD OF MAKING RACKET STRINGS

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5 Claims. (Cl. 117—21)

This invention relates to a method of making racket strings such as are used to play tennis, squash and other like games, and to the article resulting therefrom. Racket strings are commonly made of silk, gut or fiber or combinations thereof.

Racket strings which have a colored spiral or cord extending lenthwise and spirally of the string for decorative purposes are quite popular. The plainness of the silk, gut or fiber string is relieved by twisting the colored spiral around it. The obvious and only known way of making such a string was to start with the spiral under less tension and of greater length than the regular string and twist the two together. The spiral, being under less tension, remained on the outside surface of the string, where it will be clearly visible because it is colored. However, being on the surface, and under less tension than the regular string, it adds nothing to the strength of the string, making it so much thicker; but no stronger. Also the spiral often loosens from the surface of the string and unravels, which makes it appear as though the strands of the whole string were loosening.

One object of my invention has been to provide a method of making a racket string with a spiral so that the spiral actually becomes an integral part of the string and adds as much to the strength of the string as the regular strands. Another object is to make the spiral visible on the surface of the string its entire length and at the same time have it form an integral part of the string in every respect. Another object is to save material in making a racket string by using a spiral of the same length as the regular strands in the string, instead of using a spiral which is longer than the regular strands, as has heretofore been the practice. Still another object is to avoid having the spiral individually exposed to surface wear.

The foregoing and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, arrangement of parts and by a method such as is herein disclosed and shown by the drawing. The nature of the invention is such as to render it susceptible to various changes and modifications, and, therefore, I am not to be limited to what is disclosed by the drawing; but am entitled to all such changes therefrom as fall within the scope of my claims.

In the drawing:

Figure 1 is a diagrammatic plan view showing the strands forming a racket string coming off the bobbins and later being lined up together ready for drying and twisting.

Figure 2 is a section taken on the line 2—2 of Figure 1, illustrating the tension means through which the strands pass after coming off the bobbins.

Figure 3 is an enlarged fragmentary view of a finished racket string.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3 greatly enlarged.

Figure 5 is the same view as Figure 4; but showing the spiral partly separated from the remainder of the racket string, in order to clearly illustrate its position as an integral part of the string.

As illustrated there is the usual supporting frame 12 on which bobbins 13 are mounted, around which are wound the strands 14 of silk, or other material which form the regular string. In making a spiral string the identifying spiral or marker 15 is kept to one side of the other strands while being unwound from the bobbin, as illustrated in Figure 1 of the drawing. The finished strings to which this invention relates are commonly called spiral strings, and the colored or identifying part of the string is commonly called the spiral to distinguish it from the rest of the string. In my invention the spiral becomes an integral part of the string in every way, being under the same tension; but remains visible throughout. In the usual spiral string the spiral is purposely wound under less tension so that it will be on the outside surface and does not really become an integral part of the string; being more or less loosely wound on the string.

The spiral 15 is thicker than the single strands 14, usually coming from the manufacturer in the form of a single coarse strand. The spiral whether made of a single or plurality of strands, is always thicker than the single strands which make up the rest of the string. In making spiral silk strings I have used a spiral 15 seven times thicker than a single strand 14, although more or less could be used. The spiral must be thick enough so that a portion of it will be part of the outside surface of the string throughout, thereby making it as visible as though it were wound around the surface of the string.

The strands 14 and spiral 15 pass through the usual tensioning devices 16, weights 17 being used on the tension device through which the spiral 15 passes because it is thicker, and it is necessary to put more pressure on it to attain the same tension as is attained by drawing said strands 14 through said tensioning devices 16. Thus the strands 14 and spiral 15 will be sub-

stantially under the same tension when ready for the twisting operation, and also be of the same length, thus assuring that the spiral will form part of the string itself. The total heft of the weights 17 depends, of course, upon the pressure needed to be applied on the spiral 15, which in turn depends upon its thickness.

After passing through said tensioning devices 16 the strands 14 and spiral 15 pass through the usual tank 20 containing a compound which imparts adhesiveness and other qualities to the strands and spiral passing through it. Said tank 20 has rollers 21, under and over which the strands and spiral pass, and thence pass between pins or guides 22, or other devices providing a narrow passage, which are mounted on said tank. Two of these pins 22 provide a passage through which said strands 14 pass, which passage is narrow enough to bring said strands into contact with each other so they will form a loose and untwisted cord 24 at this point. The other said pin 22 keeps the spiral 15 separate from the strands at this point, as it is desired to have the spiral alongside the strands when the twisting operation begins and not intermixed with them. After passing between said pins 22 said strands 14 and spiral 15 come alongside each other and the adhesive compound, which I indicate by the numeral 25, holds them together. A loop 26 is fastened to the ends of the strands 14 and spiral 15, and after they are dried somewhat on the drying frame 29 the compound still being somewhat tacky, the said loop is slipped over the hook on the twisting device 27 commonly used to twist racket strings, and the said device set in operation. The spiral 15 is twisted with the strands 14, and as they start under the same tension and are of equal length, the twisting operation makes the spiral 15 an integral part of the finished string 30. A portion of the spiral always is visible on the surface, however, due to the fact that it is thicker than any of the strands 14, and, therefore, does not become completely covered by said strands 14. In the finished string 30 throughout its length the colored spiral is always visible, thereby giving color and adding to the attractiveness of the string, as well as providing a string with a spiral which is as strong as a plain string of equal thickness, no part of which string will independently separate from the rest and loosen and unravel.

What I claim is:

1. The method of making a racket string comprising drawing a plurality of strands from a source of supply while keeping them under tension and drawing a spiral which is thicker than any of said strands from a source of supply and keeping it under tension substantially the same as the tension of said strands, bringing said strands together and drawing said spiral beside said strands, and twisting said strands and spiral together and thereby forming a racket string.

2. The method of making a racket string comprising drawing a plurality of strands from a source of supply through individual tensioning devices and bringing said strands together, keeping a spiral which is thicker than any of said strands under substantially the same tension as said strands by drawing it through a tensioning device of greater pressure than any of said first-mentioned tensioning devices, and laying said spiral beside said strands, and twisting said strands and spiral together and thereby forming a racket string.

3. The method of making a racket string comprising drawing a plurality of strands from a source of supply while keeping them under tension and drawing a spiral which is thicker than any of said strands from a source of supply and keeping it under tension substantially the same as the tension of said strands, applying an adhesive material to said strands and spiral, bringing said strands together and drawing said spiral beside said strands, joining said strands and spiral together at one end, leaving said strands and spiral to dry, and twisting said strands and spiral together while said adhesive material is still tacky and thereby forming a racket string.

4. The method of making a racket string comprising drawing a plurality of strands from a source of supply while keeping them under tension and drawing a spiral which is thicker than any of said strands from a source of supply and keeping it under tension substantially the same as the tension of said strands, bringing said strands together and drawing said spiral beside said strands, said spiral and strands being substantially the same length, and twisting said strands and spiral together and thereby forming a racket string.

5. The method of making a racket string comprising drawing a plurality of strands from a source of supply through individual tensioning devices under substantially the same pressure and through guiding means to thereby bring said strands together, drawing a spiral which is thicker than any of said strands through a tensioning device which applies sufficiently greater pressure to said thicker spiral than any of said first-mentioned tensioning devices to thereby place said spiral under substantially the same pressure as said strands, drawing said spiral through separate guiding means and laying said spiral alongside said strands with the length of said spiral substantially the same as the length of said strands, and twisting said strands and spiral together and thereby forming a racket string.

JOSEPH SALADINO.