

Bramley

[45] **Sept. 5, 1972**

- [54] **TENNIS NET AND METHOD OF MAKING**
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- [30] Foreign Application Priority Data**
 July 14, 1969 Great Britain.....35,381/69

- [52] **U.S. Cl.**.....273/29 B, 156/202, 156/383,
156/479
- [51] **Int. Cl.**.....**A63b 61/00**
- [58] **Field of Search**...273/29 B, 29 BA, 30; 160/349,
160/387, 330; 24/202; 161/44, 100; 2/274

- [56]
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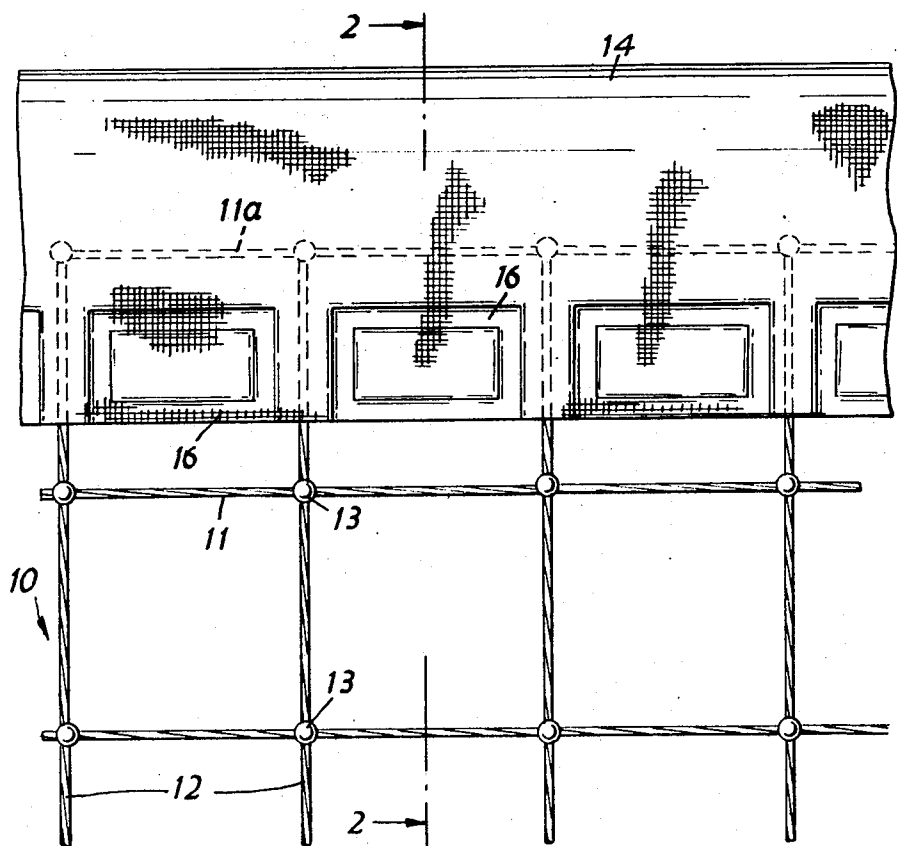
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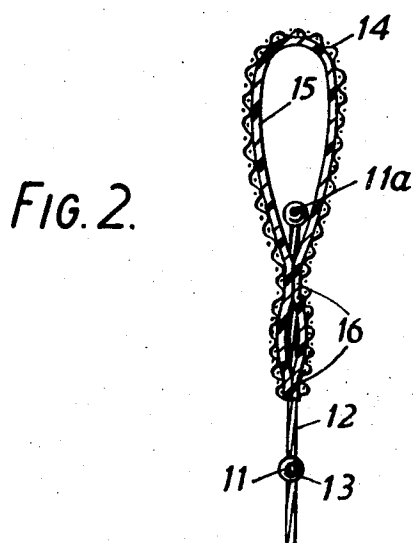
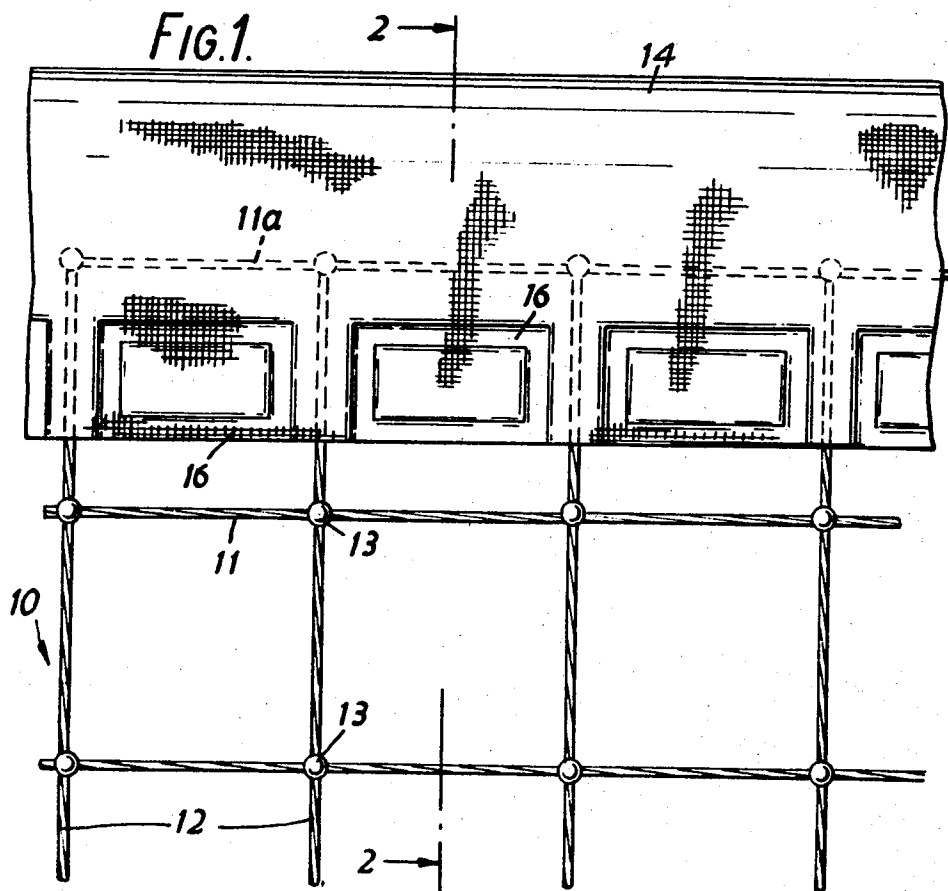
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[57] **ABSTRACT**

The suspended nets of this invention may be used for sports purposes, for example in lawn tennis, or for other purposes, for example as conveyor netting in drying agricultural produce. The nets are formed from a length of netting with rectilinear mesh and have at least one edge an edge band containing an organic thermoplastic, the band being folded upon itself and welded to itself within the mesh openings along the edge of the net. The looped portion of the band can receive a cord for suspending the net. Similar bands can be applied along other edges for protection or suspension of the net.

7 Claims, 2 Drawing Figures





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TENNIS NET AND METHOD OF MAKING

The present invention relates to nets provided with edging bands and more particularly to suspended nets, especially sports nets comprising a headband and a length of netting dependent therefrom. The best known example of such a net is the center net of a lawn tennis court.

In the past, tennis nets have been made from lengths of netting produced in the conventional way from knotted threads, and this netting has a diamond-shaped mesh. In making up the nets, the netting is converted from diamond to square mesh by cutting it on the bias, whereafter any unwanted triangular end portions are cut away, or triangular portions joined on by knotting to make square ends to the net. The cut edges are then made good by selvaging and the headband stitched to the upper edge of the resulting net. This process is time consuming and costly.

The present invention provides suspended nets, suitable for use as sports nets, for example in lawn tennis, which can be produced much more cheaply than conventional nets and moreover have other advantages such as ease of handling and use or erection.

In accordance with this invention a suspended net comprises a length of netting of rectilinear mesh and an edge band comprising organic thermoplastic material folded upon itself to enclose at least part of each mesh of the outermost row of meshes along an edge of the netting and welded to itself within each such mesh whereby the band is retained on the netting. The welding is most conveniently carried out by high frequency heating techniques, although other heating or softening techniques may be employed. If solvents are employed to promote softening of the parts to be welded they may contain dissolved materials to assist in achieving a bond.

The thermoplastic material of the edge band is preferably reinforced by, or supported on, a fibrous web. The edge band is most conveniently formed from strong textile material having a face coated with a thermoplastic synthetic resin, the said face being welded to itself when the band is folded about the edge of the netting. If desired, the band may be coated on both faces or impregnated with the resin, to give increased weather resistance.

In the preferred nets of this invention the netting is formed of threads which include organic thermoplastic material and are arranged in a rectilinear mesh, the threads being bonded together where they cross by small individual moulded elements of thermoplastic material.

Such netting is conveniently produced by drawing longitudinal and transverse threads, each including thermoplastic filaments, through a multiple die head in which the small elements of thermoplastic material are injection moulded about the crossing of the threads to bond them to each other. Netting of this type and its production are described and claimed in British Specification No. 3,501,366 and co-pending U.S. Application Ser. No. 879,424, now U.S. Pat. No. 3,608,034.

Nets according to the invention and based on such netting have the advantage that the netting of which they are composed can be produced quickly and cheaply, below the cost of conventional knotted netting. The accuracy and stability of the mesh configuration of such netting makes it possible for the headband to be attached simply and cheaply, and without the necessity for previous conversion of the netting from a diamond to a rectangular mesh. The nets are easier to handle than conventional nets and show no tendency to draw up when extended, in contrast to conventional nets which tend to adopt a diamond mesh configuration when released from tension. By virtue of their fabrication from organic thermoplastics they are exceptionally resistant to rot and weathering. Tennis nets, for example, can be left in position in wet weather.

Furthermore, it has been a disadvantage of conventional tennis nets that their head bands require replacement from time to time owing to deterioration of the stitching by which they are attached. The invention makes it possible to provide a permanent headband which remains securely attached to the netting throughout the life of the net.

Apart from the uses of the invention in the sports field, the characteristic edging technique is valuable for other forms of suspended netting, for example at opposite edges of horizontally suspended conveyor netting, as used in drying certain agricultural produce. More generally, the edging can be used wherever it is desirable to provide protection or reinforcement for the edge of rectilinear mesh netting.

In the accompanying drawings, which are given by way of example:
FIG. 1 is a plan view of a portion of netting bearing an edge band according to this invention; and
FIG. 2 is a cross section along the line 2—2 in FIG. 1.

The following is one example of a suspended net according to the invention and of the way in which it can be produced, which will be described with reference to the drawings.

Netting 10 shown in the drawing is produced in a continuous length in the manner described in British Specification No. 3,501,366, and co-pending Application Ser. No. 879,424, using for both longitudinal threads 11 and transverse threads 12 black polyethylene twine composed of three plies each of five filaments twisted together, the direction of twist of the plies being opposite to that of the filaments in the plies. The bonding elements 13 are also of black polyethylene. For lawn tennis purposes, the netting is produced in a width which is appropriate for a tennis net of standard height (42 inches) and to an approved mesh size.

A strip of heavy cotton fabric 14, coated on one side with polyvinyl chloride 15, is double over about its longitudinal middle line with the coated surface 15 inside, and with the outermost longitudinal thread 11a of the netting and portions of each transverse thread 12 defining the outermost meshes enclosed between the folded portions of the strip.

The folded strip 14, with the outer edge of the net 10 located as described, is then passed through a high frequency welding device constructed in accordance with conventional principles, which welds the opposing portions of the coated surface 15 together in areas 16 lying within each successive outermost mesh opening, leaving the longitudinal and transverse threads themselves unwelded and capable of a very limited degree of movement. A suitable welding pattern consists of a horizontal line of welds across the width of the netting, and a series of vertical welds spaced at intervals along the length of the netting.

The folded strip 14, with the outer edge of the net 10 located as described, is then passed through a high frequency welding device constructed in accordance with conventional principles, which welds the opposing portions of the coated surface 15 together in areas 16 lying within each successive outermost mesh opening, leaving the longitudinal and transverse threads themselves unwelded and capable of a very limited degree of movement. A suitable welding pattern consists of a horizontal line of welds across the width of the netting, and a series of vertical welds spaced at intervals along the length of the netting.

The folded strip 14, with the outer edge of the net 10 located as described, is then passed through a high frequency welding device constructed in accordance with conventional principles, which welds the opposing portions of the coated surface 15 together in areas 16 lying within each successive outermost mesh opening, leaving the longitudinal and transverse threads themselves unwelded and capable of a very limited degree of movement. A suitable welding pattern consists of a horizontal line of welds across the width of the netting, and a series of vertical welds spaced at intervals along the length of the netting.

low rectangle lying wholly within the area of each mesh opening, as shown in the drawing, and it is convenient that the welded areas should be separated by unwelded strips of, say one-quarter to one-half inch (6-12 mm.) in width, through which the transverse threads 12, extend. Such spacing assists in avoiding damage to the threads in the welding operation.

This attaches the folded strip, as an edge band, securely to the edge of the netting, without any weakening of the thread structure of the net. If desired, a second band can be similarly attached to the opposite edge of the netting either after or simultaneously with the attachment of the first band. If the ends of a cut length of netting require protection, a similar band can also be applied to them, by the same technique.

For use as a lawn tennis net, however, the netting requires only a band along one longitudinal edge, to serve as a headband. The looped portion of the headband, within which can be seen the outermost longitudinal thread and its associated moulded elements, then serves to receive the suspensory cord for the net. A narrow band may, however, be attached by the same technique along the lower longitudinal edge of the net, to protect the edge in contact with the ground.

Finally, the netting and its associated edge band or bands are cut to appropriate lengths. In the case of a tennis net no other preparation or finishing is necessary, and the net is ready for erection.

I claim:

1. A net comprising:

a length of netting having edges, said netting being composed of flexible nonmetallic threads disposed in a rectilinear mesh; and

an edge band comprising organic thermoplastic material folded upon itself to enclose at least part of each mesh of the outermost row of meshes along at least one of said edges of the netting and welded to itself only within each such mesh whereby the band is retained on the netting.

2. A net according to claim 1 wherein said edge band comprises: a band of strong textile material having opposite faces; and a coating of thermoplastic synthetic resin on at least one face, said face being welded to itself as aforesaid.

3. A net according to claim 1 wherein said netting comprises: threads which include organic thermoplastic fibers or filaments, said threads crossing one another in a rectilinear mesh; and small molded ele-

ments of thermoplastic material individually molded about each crossing of said threads and bonding said threads together.

4. A net according to claim 1 wherein said edge band extends along one longitudinal edge of said netting, said band being folded to form a loop cable of receiving a suspensory cord for suspending the net by the said edge.

5. A net according to claim 1, wherein said edge band encloses at least part of each mesh of only the outermost row of said meshes along said one edge of said length of netting, the threads of said netting being of a plastic material, and said band being welded only to itself in areas located within the meshes of the outermost row, whereby the band and the threads defining the outermost row of meshes are not directly welded together.

6. A lawn tennis net comprising:
a length of netting having edges, said netting being composed of flexible nonmetallic threads disposed in a rectilinear mesh; and

an edge band comprising organic thermoplastic material folded upon itself to enclose at least part of each mesh of only the outermost row of meshes along at least one of said edges of the netting and welded to itself only within each such mesh whereby the band is retained on the netting and a looped portion is formed at the fold; and
a suspensory cord passing through the looped portion of the edge band.

7. A method of making a net which comprises the steps of:

providing a length of netting of flexible nonmetallic threads disposed in a rectilinear mesh;

providing a band having thermoplastic material on at least one face thereof;

relatively positioning said band adjacent an edge of said length of netting; then

folding said band laterally upon itself to enclose at least part of each mesh of only the outermost row of meshes along said edge of said length of netting, said band being folded so that said one face is folded upon itself; and then

welding said band to itself only in an area within each such mesh while avoiding contact between the threads of the netting and the areas of the band being welded to prevent said threads from being welded to said band.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3 689 067

Dated September 5, 1972

Inventor~~s~~ Anthony Bramley

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 4, line 6; change "cable" to ---capable---.

Signed and sealed this 1st day of October 1974.

(SEAL)

Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents