United States Patent [19]

Koch

[11] **3,860,240**

[45] **Jan. 14, 1975**

[54] **VOLLEYBALL NET ANTENNA CLAMP**

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[22] Filed: **Mar. 11, 1974**

[21] Appl. No.: **449,603**

[52] **U.S. Cl.** ..... **273/95 R,** 273/29 B, 403/391, 248/41

[51] **Int. Cl.** **A63b 71/02**

[58] **Field of Search** ..... 292/256, 257, 305; 403/289, 290, 373, 391, 396; 339/246, 244, 269, 270; 273/95 R, 55 R, 29 R, 29 B; 248/41

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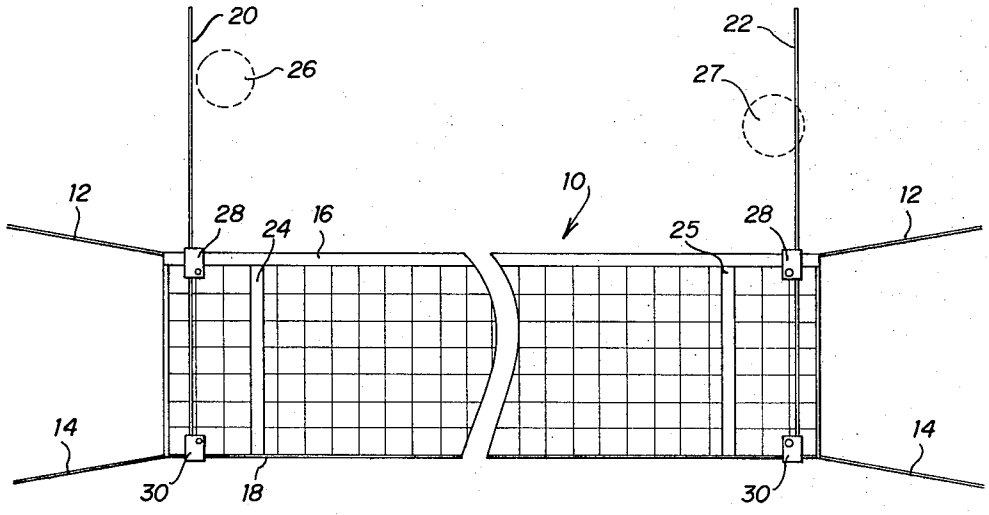
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Attorney, Agent, or Firm—Richards, Harris & Medlock

[57] **ABSTRACT**

The specification discloses upper and lower clamps which secure an antenna at each sideline of a volleyball net such that the antenna extends vertically above the net as an assist to volleyball officials. The upper clamp includes a slot for receiving the upper portion of the volleyball net and further includes an aperture for receiving the antenna. Bolt structure deforms the clamp in order to securely grip the upper edge portion of the net within the slot. The lower clamp includes a slot for receiving the lower edge of the net and further includes an aperture for receiving the lower end of the antenna. Bolt structure is provided to also deform the lower clamp such that the lower edge of the net is securely gripped within the slot.

9 Claims, 5 Drawing Figures



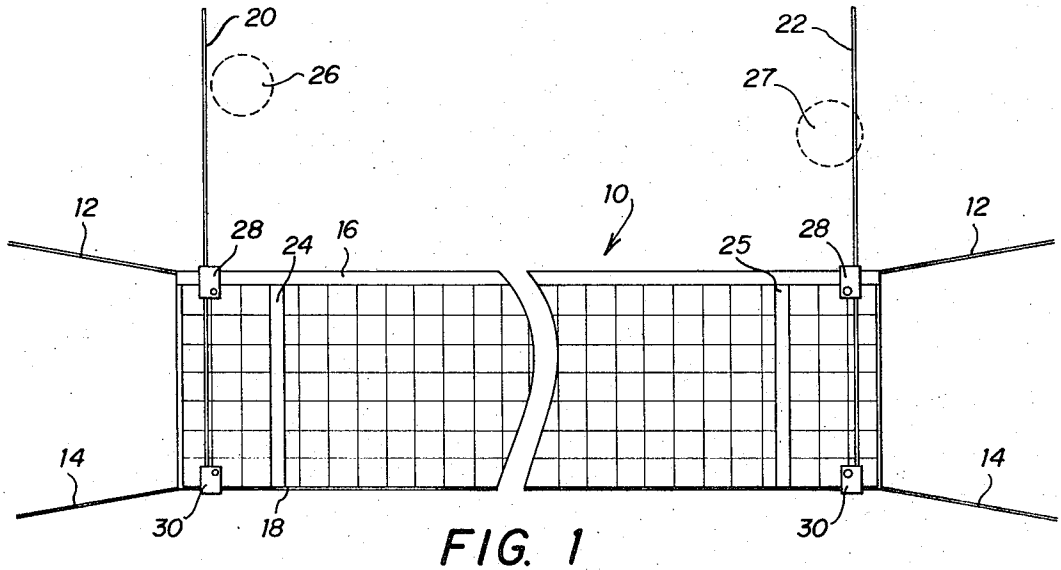


FIG. 1

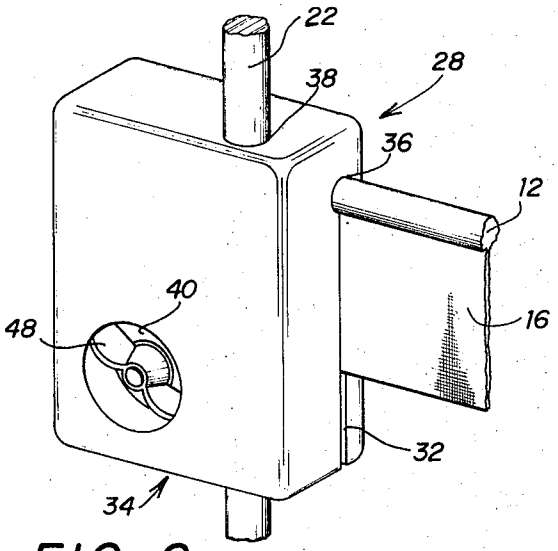


FIG. 2

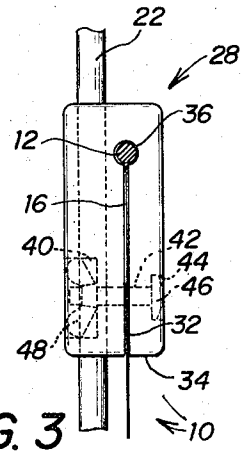


FIG. 3

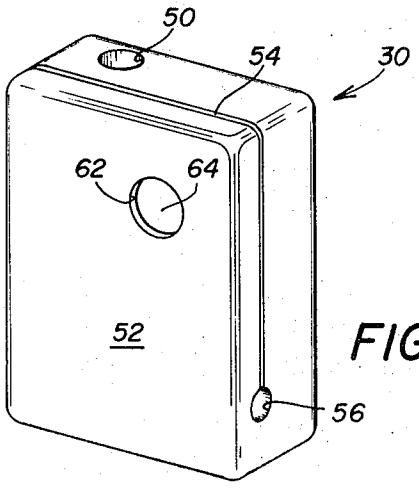


FIG. 4

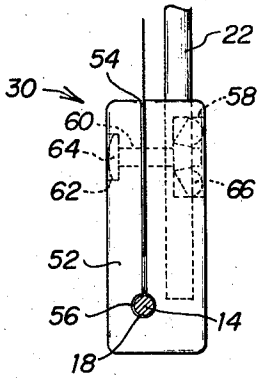


FIG. 5

VOLLEYBALL NET ANTENNA CLAMP

FIELD OF THE INVENTION

This invention relates to the game of volleyball and more specifically relates to the use of vertical antennas which extend above a volleyball net in order to mark the sidelines of a volleyball court.

THE PRIOR ART

Problems have heretofore occurred during volleyball games in determining when the volleyball passes over the net out of bounds. In order to assist officials in this matter, Section 2.23 of the Official 1974 Rules of the United States Volleyball Association requires that a vertical antenna be mounted on the net at each sideline to extend vertically from the bottom of the net to a height of 2½ feet minimum and 3½ feet maximum above the net. The rules require that the antenna shall be so positioned that the distance from the outside edge of the two inch tape on the net above the sidelines to the inside edge of the antenna is 8½ inches. Therefore, when the volleyball touches the antenna, the official may easily determine that the volleyball is out of bounds.

Previously developed devices have been utilized in an attempt to secure such antennas to the side of a volleyball net. Such devices have often utilized laces or the like to tie the supporting members to the net. However, such prior devices have not securely held the antenna and the antenna has often vibrated out of position. In addition, such previously developed support devices have also been somewhat difficult to attach to the net and have tended to slip relatively to the net such that the position of the antenna varies.

SUMMARY OF THE INVENTION

In accordance with the present invention, clamps are provided to securely position a vertical antenna at the sidelines of a volleyball net. The present clamps maintain the antenna in the proper position at all times and securely attach the antenna to the net such that the vibration of the net does not tend to dislodge the antenna from its desired position.

In accordance with the invention, apparatus is provided for supporting a vertical antenna at the sidelines of a volleyball net which include an upper clamp having a slot for receiving the upper edge portion of the volleyball net and further including an aperture for receiving the antenna. Structure on the upper clamp is operable to securely grip the upper edge portion of the net within the slot. A lower clamp has a slot for receiving the lower edge of the net and further includes an aperture for receiving the lower end of the antenna. Structure on the lower clamp is provided to securely grip the lower edge of the net within the slot. The upper and lower clamps are vertically aligned and clamp to the net in order to securely support the antenna such that the antenna extends vertically above the net to mark the sidelines of the volleyball court.

In accordance with a more specific aspect of the invention, apparatus for attaching a vertical antenna to a volleyball net includes a body having a resilient clamp portion. A slit is formed within the resilient clamp portion for receiving an edge of the volleyball net. Structure is provided to deform the resilient clamp portion to securely clamp the body to the edge of the volleyball net. An aperture is formed in the body for receiving the vertical antenna.

DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and for further objects and advantages thereof, reference is now made to the following description taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a view, partially broken away, of a volleyball net illustrating antennas supported by the present clamp devices;

FIG. **2** is a perspective view of one of the upper antenna supporting clamps according to the invention;

FIG. **3** is a side view of the upper clamp shown in FIG. **2**;

FIG. **4** is a perspective view of one of the lower antenna supporting clamps according to the invention; and

FIG. **5** is a side view of the clamp shown in FIG. **4** when attached to the bottom portion of a net.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** illustrates a volleyball net generally illustrated by the numeral **10** and which is conventionally supported across the volleyball court by cables **12** and **14.** Cable **12** runs through a double thickness canvas strip **16,** while cable **14** is disposed through a canvas loop **18** or a canvas strip similar to **16.** Net **10** is approximately 3 feet wide and 32 feet in length when stretched across the volleyball court. It is preferably made of 4 inch square mesh of linen twine and is rigged at the top ends and bottom to manilla rope in the conventional manner.

In accordance with Rule 2.23 of the 1974 Official Rules of the United States Volleyball Association, it is necessary to suspend 6 feet long antennas **20** and **22** at each sideline of the volleyball court such that the antennas extend to a height of 2½ feet minimum and 3½ feet maximum above the net **10.** Antennas **20** and **22** must be positioned that the distance from the outside edge of the tapes **24** and **25** to the inside edges of the antennas **20** and **22** is 8½ inches. Antennas **20** and **22** should not exceed ⅜ inch in diameter and may be tapered with a minimum diameter at the top and are made of break-resistant material such as fiber glass or the like.

The above-noted Rule 2.23 requires that the antenna fastenings at the top and bottom of the net shall be such as to hold the antennas **20** and **22** securely and to allow adjustments for proper position. When the antennas **20** and **22** are properly positioned, if a volleyball passes between the antennas as illustrated by the dotted line position **26** without touching an antenna, the ball remains in play. However, if the ball touches one of the antennas as shown by the dotted line position **27,** the ball is considered out of bounds. In accordance with the present invention, upper antenna clamps **28** are attached to the top of the net **10** in order to support the antennas **20** and **22,** while lower antenna clamps **30** are connected to the bottom of the net **10** in order to receive the bottom ends of the antennas **20** and **22.**

FIGS. **2** and **3** illustrate the upper antenna clamps **28** in greater detail. The upper antenna clamp **28** is preferably made from an elastomeric material such as neoprene or the like. Clamp **28** comprises a rectangular

body of elastomeric flexible material with a slot **32** formed across the lower end **34** of the rectangular body and extending upwardly to a generally cylindrical opening **36.** Opening **36** is dimensioned to receive the cable **12** and the upper portion of the strip **16,** as shown in FIGS. **2** and **3.** A cylindrical aperture **38** is formed through the elastomeric body and is dimensioned to snugly receive the antenna **22** in order to allow upward and downward movement of the antenna **22** and to support the antenna **22** in the desired position.

A countersunk portion **40** is formed in one face of the elastomeric body and communicates with a cylindrical aperture **42** which extends to a second countersunk portion **44** in the other face of the elastomeric body. A bolt **46** is positioned with the bolt head in the countersunk portion **44** and extends through the aperture **42.** A wing nut **48** is threaded on the end of the bolt **46** and is received within the countersunk portion **40.**

In order to attach the upper clamps **28** to the net, the wing nut **48** is loosened and the bolt **46** is removed. Due to the flexible nature of the elastomeric body, the slot **32** may be opened to a sufficient extent to receive the cable **12** and the tape **16** as shown in FIGS. **2** and **3.** The bolt **46** is then inserted through the aperture **42** and the wing nut **48** tightened to a sufficient extent such that the elastomeric body is deformed and the strip **16** is tightly gripped by the slot **32.** The antenna **22** may then be adjusted vertically with respect to the upper clamp **28** to properly vertically position the antenna. As shown in FIG. **1,** two of the upper clamps **28** are clamped to the top of the volleyball net **10** on opposite sides thereof.

FIGS. **4** and **5** illustrate in detail one of the lower clamps **30.** Clamps **30** are formed in a similar manner to the upper clamps, except that an aperture **50** extends only part way through the elastomeric rectangular clamp body **52.** Aperture **50** is adapted to receive the bottom end of the antenna **22** and to hold it securely and permanently without any slippage. A slot **54** is formed across the upper end of the rectangular body **52** and extends downwardly through the body to a cylindrical opening **56.** As shown in FIG. **5,** cylindrical opening **56** is dimensioned to receive the cable **14** and canvas loop **18** or a double thickness canvas strip similar to **16,** with the lower portion of the net being received by the slot **54.** A countersunk portion **58** is formed in one face of the body **50** and communicates through a circular aperture **60** with a countersunk portion **62.**

A bolt **64** is positioned through the circular apertures **60,** with the head of the bolt **64** being received by the countersunk portion **62.** A wing nut **66** is threadedly attached to the end of the bolt **64** and is received within the countersunk portion **58** as shown in FIG. **5.**

In order to attach the lower clamps **30** to the volleyball net **10,** the bolt **64** is removed and the body **52** is manually opened such that the slot **54** may receive the cable **14** and canvas loop **18** or double canvas strip similar to **16** as shown in FIG. **5.** The bolt **64** is then inserted through the apertures **60** and the wing nut **66** tightened to deform the elastomeric body such that the clamp securely grips the bottom portion of the net. The lower end of the antenna **22** is fitted into the aperture **50** such that the antenna is securely positioned.

Due to the flexible nature of the present clamps, the wing nuts **48** and **66** may be tightened such that the clamps very securely grip the volleyball net and are thus not easily dislodged due to vibration of the net. Due to the elastomeric nature of the present clamps, the clamps do not slip relative to the net and the positions of the antennas are constantly maintained in the desired truly vertical locations. The present clamps are easily installed and removed and are easily maintained.

Whereas the present invention has been described with respect to specific embodiments thereof, it will be understood that various changes and modifications will be suggested to one skilled in the art, and it is intended to encompass such changes and modifications as fall within the scope of the appended claims.

What is claimed is:

1. In clamp apparatus for supporting a vertical antenna adjacent the sideline of a volleyball net, the combination comprising:

an upper clamp having a slot for receiving the upper edge portion of the volleyball net and further including an aperture extending through said upper clamp for receiving the antenna,

means on said upper clamp for securely gripping the upper edge portion of the net within said slot,

a lower clamp having a slot for receiving the lower edge of the net and further including an aperture extending partially through said lower clamp for receiving the lower edge of the antenna, and

means on said lower clamp for securely gripping the lower edge of the net within said slot, wherein said upper and lower clamps may be vertically aligned and clamped to the net in order to securely support the antenna such that it extends vertically above the net adjacent the sideline of the volleyball court.

2. The apparatus of claim **1** wherein said upper and lower clamps are constructed from resilient material and wherein said means for gripping comprise bolt means for deforming said resilient material to grip the volleyball net.

3. The apparatus of claim **1** and further comprising:

a bolt extending through each of said clamps and across each of said slots,

a nut adjustable on each of said bolts for tightening said clamps on the volleyball net.

4. The apparatus of claim **3** and further comprising:

a recess in each of said clamps for receiving said nuts.

5. In clamp apparatus for attaching a vertical antenna to a volleyball net, the combination comprising:

a body having a resilient clamp portion,

a slit formed within said resilient clamp portion for receiving an edge of the volleyball net,

means for deforming said resilient clamp portion to securely clamp said body to the edge of the volleyball net, and

an aperture extending only to the interior of said body for receiving the bottom of the vertical antenna.

6. The apparatus of claim **5** wherein said means for deforming comprises:

a bolt extending through said clamp portion, and

a nut for being tightened on the end of said bolt in order to compress the edge of the volleyball net within said slit.

7. The apparatus of claim **6** and further comprising:

a recess formed in the side of said body for receiving said nut.

8. The apparatus of claim **5** wherein said body is comprised of elastomeric material.

9. In clamp apparatus for supporting a vertical antenna adjacent the sidelines of a volleyball net, the combination comprising:

an upper clamp having a slot for receiving the upper edge portion of the volleyball net and further including an aperture for receiving the antenna,

means on said upper clamp for securely gripping the upper edge portion of the net within said slot,

a lower clamp having a slot for receiving the lower edge of the net and further including an aperture for receiving the lower end of the antenna,

means on said lower clamp for securely gripping the lower edge of the net within said slot, wherein said upper and lower clamps may be vertically aligned and clamped to the net in order to securely support the antenna such that it extends vertically above the net adjacent the sideline of the volleyball court,

the depth of the aperture in said upper clamp being greater than the depth of the aperture in said lower clamp, wherein the antenna slides relative to said upper clamp but is securely attached to said lower clamp.

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