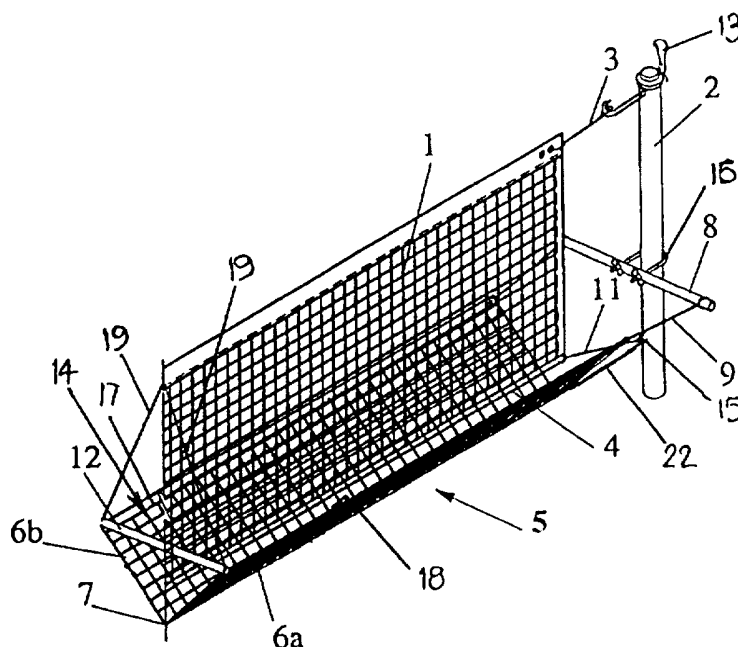




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A63B 61/00, 69/38	A1	(11) International Publication Number: WO 97/19731 (43) International Publication Date: 5 June 1997 (05.06.97)
(21) International Application Number: PCT/AU96/00772 (22) International Filing Date: 29 November 1996 (29.11.96) (30) Priority Data: PN 6913 30 November 1995 (30.11.95) AU (71) Applicant (for all designated States except US): BELSTAR SERVICES B.V. [NL/NL]; 4th floor, Aert Van Nesstraat 45, NL-3012 CA Rotterdam (NL). (72) Inventor; and (75) Inventor/Applicant (for US only): CASH, Patrick, Hart [AU/AU]; Patrick Cash & Associates, 10 Nicholson Street, Footscray, VIC 3011 (AU). (74) Agent: WATERMARK; 2nd floor, 290 Burwood Road, Hawthorn, VIC 3122 (AU).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: IMPROVEMENTS RELATING TO THE GAME OF TENNIS



(57) Abstract

The present invention relates to a net arrangement utilised while playing or practising tennis to enable ready collection of tennis balls so that they are not widely distributed around the playing court, the arrangement comprising a retaining net (5) positioned underneath the main playing net (1) and formed into a channel shape with an open upper face (14) so that the upper longitudinal edges (17, 18) of the retaining net (5) are laterally spaced on either side of the playing net (1), whereby any ball hitting the net (1) will be deflected downwardly and be collected by the retaining net (5).

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IMPROVEMENTS RELATING TO THE GAME OF TENNIS

The present invention relates to the game of tennis, and in particular to the equipment used in practising and playing tennis.

In practising various shots for the game of tennis a player may use many
5 tennis balls and may wish to repeat a particular shot numerous times in order to refine his or her technique. Typically many of the practice shots strike the playing net which divides the tennis court. Ordinarily a high percentage of the balls which strike the playing net are deflected onto the playing surface. Thus during a period of practice many tennis balls may accumulate on the tennis
10 court where they can represent a hazard when a player is moving to play a shot. Should a player step upon a stray ball lying on the tennis court injury to the player may result.

Furthermore during a session of practice the time required to collect used tennis balls from various locations on or around the tennis court can represent a
15 significant proportion of the total practice time. The amount of time wasted in collecting tennis balls after a series of shots is undesirable, particularly in situations where the player is receiving paid tuition from a tennis coach.

It is therefore one object of the present invention to provide an arrangement for practising or playing tennis wherein the hazard of stray balls on
20 the playing surface is reduced.

It is a further object of the present invention to provide an arrangement for practising or playing tennis which enables a reduction in the time required to collect tennis balls after a series of shots has been made.

To this end, the present invention provides a tennis ball retaining means
25 for use in conjunction with a playing net for the game of tennis, said tennis ball retaining means being adapted to be positioned below said playing net and to extend substantially along the length of the playing net so as to retain a tennis ball upon said tennis ball striking and being deflected by the playing net into the retaining means.

30 The present invention also provides an arrangement for playing or practising the game of tennis, said arrangement comprising a playing net in conjunction with a tennis ball retaining means positioned below said playing net and extending substantially along the length of said playing net so as to act to

retain a tennis ball upon said ball striking and being deflected by the playing net into the retaining means.

Preferably, the retaining means forms a channel beneath the playing net with an open face of said channel facing upwardly and extending substantially
5 along the length of said playing net. Conveniently, the open face of the channel extends laterally from both sides of the playing net. Preferably the retaining means is formed from a flexible walled material and more particularly from a net material. The net material may be of the same type as that used for the playing net.

10 In one preferred arrangement, at least one spreader member is provided along the length of the retaining means being adapted to maintain the lateral width of the open face of said channel. Conveniently, at least one hanger means is provided along the length of the retaining means to support lateral upper edges of said retaining means from said playing net whereby said lateral
15 upper edges are supported at a predetermined height relative to a lower edge of said playing net. There may be provided one hanger means for the or each of said spreader members. Conveniently, the hanger means are adjustable to enable the height of said lateral upper edges of the retaining means to be varied relative to the lower edge of said playing net.

20 In a still further preferred arrangement a spreader means is provided associated with longitudinal ends of the retaining means to maintain a desired lateral width of the open face of said channel at or adjacent said longitudinal ends. Conveniently, the spreader means are adapted to be raised or lowered to raise or lower the open face of said channel at or adjacent said longitudinal
25 ends of the retaining means relative to a lower edge of said playing net.

Preferably, the lower edge of said playing net is located below the upper lateral edges of said retaining means. Conveniently the channel of the retaining means includes a lower trough section with one or more sloping regions whereby tennis balls are caused to collect in one or more separate sections.

30 It is further preferable that the playing net be tensioned between supporting posts on opposing sides of the court so as to act to absorb energy from an incident tennis ball and deflect the ball into the retaining means.

The present invention will be better understood and appreciated from the following discussion of the features of a preferred embodiment. Reference is made to the accompanying drawings in which :-

Figure 1 depicts a front view of a playing net used in the game of tennis
5 with a preferred embodiment of the tennis ball retaining means located in position beneath the playing net;

Figure 2 is a perspective view of one end of a preferred arrangement of the playing net and the tennis ball retaining means; and

Figure 3 is a perspective view of the opposing end of a preferred
10 arrangement of the playing net and tennis ball retaining means.

Referring to Figure 1, a playing net 1 as used in the game of tennis is depicted. When in use, the playing net 1 lies in a vertical plane and extends across the width of the tennis court so as to define the two halves of the court. The playing net 1 is suspended from vertical posts 2 positioned on each side of
15 the court by means of guy lines 3 with one end being adapted to be tensioned via a winding mechanism 13. The lower edge 4 of the playing net 1 is conveniently connected via guy lines 11 to a connection ring 15 located on each of the posts 2.

Referring to Figure 2, the tennis ball retaining means 5 is arranged
20 beneath the lower edge 4 of the playing net 1. In the preferred embodiment depicted, the retaining means 5 takes the form of a net which extends on both sides of the playing net 1 and across the width of the net. The retaining net 5 is in the form of a channel with an open upper face 14 and a lower trough section 7 suspended from support members 8 by means of guy lines 9. The support
25 members 8 comprise bars 8 attached to the posts 2 via U bolts 16 such that the bars 8 can be raised or lowered as desired. The guy lines 9 are connected to the ends of the bars 8 so that the bars 8 also act as a spreader member to enable the longitudinal ends of the retaining net to be spread as desired. In an alternative arrangement the retaining net 5 may be suspended from the playing
30 net 1 with a spreader bar connecting the top longitudinal edges 17, 18 of the retaining net at their longitudinal ends. The retaining net 5 is arranged to form a channel comprising two walls 6a and 6b which lie on opposing sides of the playing net 1. The net adopts a V or U shaped cross-sectional profile which acts

to accumulate tennis balls in the lower trough region or bottom 7 of the net. Thus the tennis balls are retained in the net 5 where they can be collected after a series of practice shots have been completed.

One or more transversely extending spreader elements 12 may be used
5 along the length of the retaining net 5 so as to ensure the net 5 retains a V or U shaped profile and is appropriately spaced from the playing net 1. The spreader elements 12 may be suspended via hanger ropes 19 or the like from the net 1. The hanger ropes 19 may be adjustable to enable the height of the top edges 17, 18 of the retaining net 5 to be varied as may be desired.

10 The retaining net 5 may be shaped or configured so that tennis balls falling into the net roll to a defined position in the net such as, for example, the middle or either end of the net. This may be achieved by appropriately adjusting the relative heights of the retaining net 5 via its various supporting means such as the support bars 8 and the hanger ropes 19. The balls may then be collected
15 from this location in the net. Alternatively, the balls may then be transferred from the net into a ball return means so as to return the tennis balls to the player. In this way it is not necessary to gather the balls from the retaining net after a series of shots.

The lower corners of the playing net 1 are preferably attached by means
20 of guy lines 11 to points on the respective support posts 2. These guy lines 11 can be tensioned so as to ensure the playing net has the desired degree of movement so as to absorb the energy of an incident tennis ball and deflect the ball into the retaining net 5. Energy absorbing means, such as damper units, may be utilised in connecting the net to the support posts so as to ensure the
25 desired degree of energy absorption is obtained when a tennis ball is hit into the playing net 5. Further, the lower ends 20, 21 of the retaining net 5 may be connected via guy lines 22 to the connection ring 15 on the support posts 2.

Thus it can be appreciated that the present invention provides an arrangement for practising or playing tennis wherein the hazard of stray balls on
30 the playing surface is reduced and which also enables a reduction in the time required to collect tennis balls after a series of shots has been made.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A tennis ball retaining means for use in conjunction with a playing net for the game of tennis, said tennis ball retaining means being adapted to be positioned below said playing net and to extend substantially along the length of the playing net so as to retain a tennis ball upon said tennis ball striking and being deflected by the playing net into the retaining means.
2. A tennis ball retaining means according to Claim 1, wherein said retaining means is adapted to form a channel beneath said playing net with an open face of said channel facing upwardly and extending substantially along the length of the playing net.
3. A tennis ball retaining means according to Claim 2, wherein said open face of said channel is adapted to extend laterally from both sides of said playing net.
4. A tennis ball retaining means according to Claim 2 or Claim 3, wherein said retaining means is formed from a flexible walled material.
5. A tennis ball retaining means according to Claim 4, wherein said flexible walled material is a net material.
6. A tennis ball retaining means according to Claim 4 or Claim 5, wherein at least one spreader member is provided along the length of the retaining means being adapted to maintain the lateral width of the open face of said channel.
7. A tennis ball retaining means according to any one of Claims 4, 5 or 6, wherein a spreader means associated with longitudinal ends of the retaining means is provided to maintain a desired lateral width of the open face of said channel at or adjacent said longitudinal ends.

8. A tennis ball retaining means according to Claim 7, wherein said spreader means are adapted to be raised or lowered to raise or lower the open face of said channel at or adjacent said longitudinal ends relative to a lower edge of said playing net.

9. An arrangement for playing or practising the game of tennis, said arrangement comprising a playing net in conjunction with a tennis ball retaining means positioned below said playing net and extending substantially along the length of said playing net so as to act to retain a tennis ball upon said ball striking and being deflected by the playing net into the retaining means.

10. An arrangement according to Claim 9, wherein said retaining means forms a channel beneath the playing net with an open face of said channel facing upwardly and extending substantially along the length of said playing net. Conveniently, the open face of the channel extends laterally from both sides of the playing net.

11. An arrangement according to Claim 10, wherein said open face of said channel extends laterally from both sides of said playing net.

12. An arrangement according to Claim 10 or Claim 11, wherein said retaining means is formed from a flexible walled material.

13. An arrangement according to Claim 12, wherein said flexible walled material is a net material.

14. An arrangement according to Claim 12 or Claim 13, wherein at least one spreader member is provided along the length of the retaining means being adapted to maintain the lateral width of the open face of said channel.

15. An arrangement according to Claim 14, wherein at least one spreader member is provided along the length of the retaining means being adapted to maintain the lateral width of the open face of said channel. Conveniently, at least one hanger means is provided along the length of the retaining means to support lateral upper edges of said retaining means from said playing net whereby said lateral upper edges are supported at a predetermined height relative to a lower edge of said playing net.

16. An arrangement according to Claim 15, wherein said hanger means are associated with the or each said spreader member.

17. An arrangement according to Claim 15 or 16, wherein said hanger means are adjustable to enable the height of said lateral upper edges of the retaining means to be varied relative to the lower edge of said playing net.

18. An arrangement according to any one of Claims 12 to 17, wherein a spreader means associated with longitudinal ends of the retaining means is provided to maintain a desired lateral width of the open face of said channel at or adjacent said longitudinal ends.

19. An arrangement according to Claim 18, wherein said spreader means are adapted to be raised or lowered to raise or lower the open face of said channel at or adjacent said longitudinal ends of the retaining means relative to a lower edge of said playing net.

20. An arrangement according to any one of Claims 12 to 19, wherein the lower edge of said playing net is located below the upper lateral edges of said retaining means.

21. An arrangement according to any one of Claims 10 to 20, wherein a lower trough section of said channel includes one or more longitudinally sloping regions whereby tennis balls are caused to collect in one or more separate sections.

1/1

Fig 1.

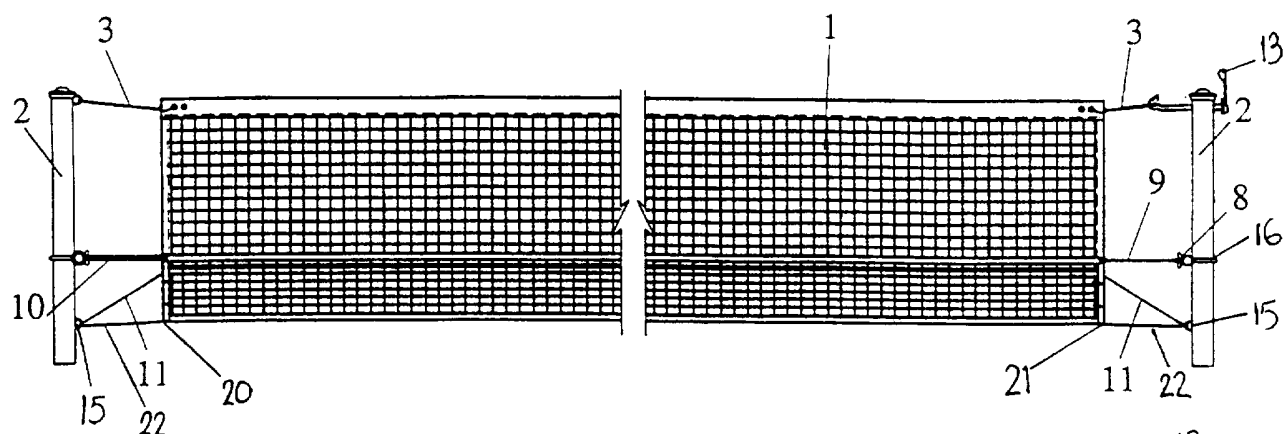


Fig 2.

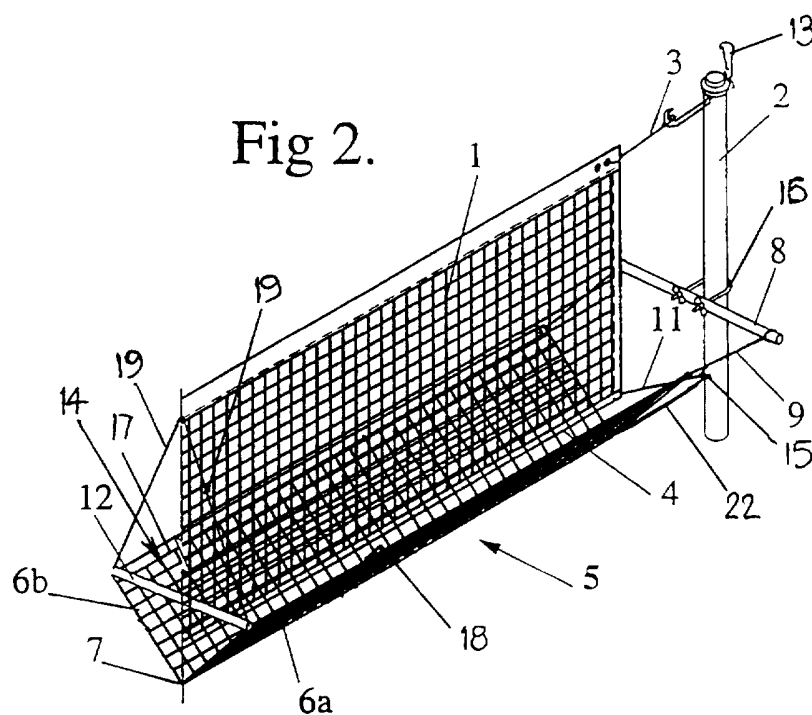
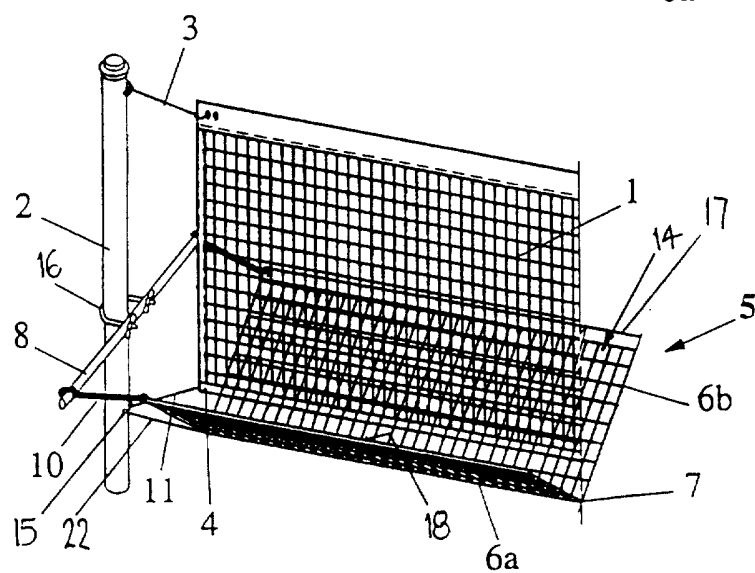


Fig 3.



A. CLASSIFICATION OF SUBJECT MATTER																						
Int Cl ⁶ : A63B 61/00, 69/38																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
B. FIELDS SEARCHED																						
Minimum documentation searched (classification system followed by classification symbols) IPC6: A63 B61/00, 69/38																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC as above																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT, JOPAL, JAPIO																						
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
X	US 4886268 A (LANGALET) 12 December 1989 - see abstract and figures	1-21																				
X	US 4919421 A (VANDEVELD) 24 April 1990 - see abstract and figures	1, 2, 9, 10, 11																				
X	AU 28178/77 A (FERREIRA-GODINHO) 1 March 1979 - see page 3 lines 11-24 and figures	1-21																				
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex																						
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Date of the actual completion of the international search 27 February 1997		Date of mailing of the international search report 05.03.97																				
Name and mailing address of the ISA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (06) 285 3929		Authorized officer J.W. THOMSON Telephone No.: (06) 283 2214																				

INTERNATIONAL SEARCH REPORT

PCT/AU 96/00772

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4971319 A (LUTRONE) 20 November 1990 - see whole document	1-21

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No.
PCT/AU 96/00772

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Patent Document Cited in Search Report	Patent Family Member
US 4886268	NONE
US 4919421	NONE
AU 28178/77	DE 2638037 FR 2362644 GB 1549956 US 4243221
US 4971319	NONE
END OF ANNEX	