NON-PLANAR BALL REBOUND WALL

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ABSTRACT

A wall structure for practicing tennis or similar games. The structure provides a rebound surface which is non-planar so that rebound characteristics are obtained which differ from those of a conventional flat practice wall. In particular the rebound surface defines a generally concave configuration coupled with indented or projecting formations so that generally a ball rebounds towards a center line of the wall but an unexpected bounce is obtained when the ball strikes a formation.

7 Claims, 11 Drawing Figures
NON-PLANAR BALL REBOUND WALL

This invention relates broadly to sporting equipment and more particularly to a practice wall structure useful in the practice of tennis and similar games where a ball is continually struck, hit or thrown by a player against such wall. Thus the term "practice wall" and the phrase "tennis balls and the like" are to be construed in this context.

Hitherto a tennis player practicing alone has been limited to hitting the ball against a substantially normal, planar smooth practice wall. While this type of practice device is adequate for the beginner, it is less useful for the more advanced player since the rebounds follow reasonably expected paths and it fails to supply an element of surprise or the need for relatively quick action on the part of the player.

It is an object of the present invention to provide a novel practice wall structure which it is believed will provide useful advantages in the practice needs of a better than average player and which may also be used beneficially by a less experienced player.

According to the invention there is provided a practice wall structure defining a non-planar rebound surface against which tennis balls and the like may be projected to give rebound characteristics different from those of a planar wall.

Thus in one structure according to the invention the wall is curved to provide a concave face defining at least part of the rebound surface.

In an alternative arrangement the wall includes a plurality of panel zones disposed at an angle to one another, the panel zones defining at least part of the rebound surface.

In yet another structure according to the invention the wall is characterized in a general surface zone provided with formations indented and/or in relief relative thereto, the surfaces of the formations together with the general surface zone defining the said rebound surface.

Thus the general surface zone may be planar, the planar nature of the surface being relieved only by the formations which operate to give the said different rebound characteristics.

Preferably, however, the general surface zone is concave.

Preferably also the formations provided in the general surface zone are polyhedral.

It will be appreciated that with the wall arrangement characterized in the general surface zone provided with formations as described above a ball rebounding from the wall surface will move in a direction which is dependent on the zone of impact on the wall. Thus the ball will return at relatively unexpected angles and so give a more realistic type of return to the player.

According to the invention permanent markings on the rebound surface representing a tennis net may be provided. Alternatively catch formations may be associated with the wall structure to secure a net adjacent thereto.

The wall may be cast in its desired shape or it may be built up of elements such as building blocks. For this purpose, where a curved or concave rebound surface is desired, blocks may be used which taper from their rear to their front faces. Preferably such a block would taper in both width and height so that the blocks would give rise to both horizontal and vertical curvature in the wall.

Alternatively, however, ordinary parallel sided blocks can be used and the structure so formed that formations are built into the wall which relieve the surface and give the different rebound characteristics. Preferably, special blocks are utilized which themselves define non-planar faces and together with plane sided blocks provide the required rebound surface.

In all preferred embodiments of the wall structure however it is formed by a sheet member defining said rebound surface and preferably also the sheet is provided with a backing member and a support located between the sheet and backing members. Thus the sheet may be made of a suitable polymer including material such as fiber glass and a space between the backing and sheet members may be filled with a suitable material such as cellular polyurethane to enhance the rebound of a ball projected against the wall.

Further according to the invention the wall structure includes a sheet comprising at least two sections adapted to be coupled to one another. In this way transportation of the wall may be made easier. Furthermore the sections may be erected at an angle to one another in effect to provide panel zones as described above.

Preferably the structure will include at least two sections hinged or adapted to be hinged to define the said sheet. Thus, the hinge line may be located centrally relative to the sheet or a plurality of hinge lines may be provided preferably between substantially equal sections, the hinge lines being located vertically with the structure in operative condition. Horizontal hinge lines between panels may of course also be provided.

The invention also includes within its ambit a court including a prepared surface, surrounding fencing and practice wall structure against which tennis balls and the like may be projected, characterized in that the wall structure is one defining a rebound surface as described above.

Further aspects of the invention will become clear from the following description with reference to the drawings in which:

FIG. 1 is a perspective view of one form of practice wall structure of the invention;
FIG. 2 is an orthographic view of a part of the wall;
FIG. 3 is an enlarged section, partly broken away, on the line III—III in FIG. 2;
FIG. 4 is a further enlarged detail in perspective of a portion of the wall;
FIG. 5 is a vertical section through an alternative practice wall according to the invention;
FIG. 6 is a horizontal section on the line VI—VI in FIG. 5;
FIG. 7 is a perspective view of a special building block utilized in the construction of the wall of FIG. 5;
FIG. 8 is a front elevation of the building block of FIG. 7;
FIG. 9 is a front view, with parts broken away, of a straight wall made from building blocks;
FIG. 10 is a front view, with parts broken away, of yet a further practice wall structure according to the invention; and
FIG. 11 is a perspective view of a practice court including the practice wall of FIG. 1.
Referring to FIGS. 1 to 4 of the drawings the practice wall structure 1 is approximately 18 feet long and 8 feet high and is curved in both horizontal and vertical directions so as to provide a general surface zone defining non-planar rebound surface 2 which is concave. The horizontal radius of curvature is 29½ feet long and the vertical radius of curvature is 23 feet long. In a variation of this type of wall the latter may be shaped in the form of a portion of a sphere.

The rebound surface is broken by dished inwardly extending or indented formations 3 located above the net line 4 of a net 5 permanently formed, as will be described hereunder, on the surface 2. The formations 3 assist the action of the concave rebound surface 2 in effecting rebound characteristics different from those of a planar wall. In fact the formations 3 introduce an irregular rebound of a tennis ball or the like projected against the surface 2. However, this rebound will not be so irregular as to render practice erratic, it will merely introduce an unexpected element into the practice play.

The wall structure is formed by means of a pattern (not shown) in plaster or par close mouldable material shaped in any suitable fashion to the desired curve. On this curve may be placed projecting polyhedral or pyramidal shaped members corresponding in shape and location to the dished formations 3. Also a net line is defined by a projection on the surface while the net itself is defined by a series of lateral and vertical grooves in the plaster of par close.

To form the wall 1 a fiber glass layer 6 (FIG. 4) is placed over the patterned surface and this, as shown clearly in FIGS. 1, 3 and 4, takes up the curve and dished and relief configuration of the pattern (not shown). Thus in the fiber glass skin 6 there will be, in its concave surface, dished polyhedral formations 3, a net line groove 4 which is later filled with a white resin material and projections 5 which define the net.

The skin 6 is formed with rearwardly extending peripheral flanges 7 against which is located a rectangular frame 8 made of rigid tubular piping. This frame is located in position only after the tray-like skin 6 has been filled with a foaming polyurethane material 9 which, when it sets to a cellular form, anchors the skin 6, frame 8 and filler 9 together.

A backing 10 which may also be of fiber glass is mounted on the structure. As may be seen from FIG. 3 the frame 8 has rearwardly extending lugs 11 on its upper side and similar lugs 12 on its lower side. When erecting the wall structure stays 13 are pinned to the ground by their feet 13a and to the lugs 11 by suitable bolts. Also pins are inserted through lugs 12 into the ground and the wall is then ready for use.

The wall 1 may be associated with its own miniature court as diagrammatically illustrated in FIG. 11 with hardcoating 14 and fencing 15 especially sized for the wall itself. Alternatively the wall 1 can be mounted as a border portion of a normal court.

The concave rebound surface 2 and the dish formation 3 which are about 1½ inches deep at their apices 3a and located above the net line give an unexpected element in the rebound of a ball and an enhanced practice effect. With the wall 1 it is possible for a ball to strike an outwardly directed face 3b of a formation 3 and be deflected into the fencing 15 at an angle which is too sharp to give a player much hope of effecting a return. In order to minimize this effect, the outward faces 3b of the formations 3 are made smaller than the other faces 3c, d and e and particularly face 3d which is directed inwardly relative to the curvature of the wall 1.

Although the invention has been described with reference to FIGS. 1 to 4 as a prefabricated wall structure it will be understood that the invention covers a wall built in situ from blocks or the like as described previously.

Thus referring to FIGS. 5 to 8 such a wall 20 is built from blocks 21 and 22. The latter tapper from their rear faces 22a to their front faces 22b, both in their horizontal and vertical widths, and the front faces 22b, are not flat but themselves define a projection. The blocks 21 are identical to blocks 22 except that their front faces 21b are flat.

It will be realized that in erecting a wall 20 from blocks 21 and 22 a vertical curve is obtained as shown in FIG. 5 due to the vertical taper of the blocks as well as a horizontal curve as shown in FIG. 6 due to the taper in their horizontal widths. Also the special blocks 22, which preferably are used only above a normal tennis net line height, provide projecting formations 22b extending from the general curved or concave front rebound surface 20a of the wall 20. Like the indented formations 3 of wall 1 these projecting formations 22b cause an unexpected bounce when struck by a tennis ball projected against rebound surface 20a.

Wall 20 is preferably erected on a foundation 23 and reinforcements 24 may be embedded in concrete cast into the cavities 25 of the blocks to strengthen the wall.

It is not essential to curve the practice wall structure of the invention and in FIG. 9 there is illustrated a flat wall 30 constructed from blocks 31 and 32 which correspond to blocks 21 and 22 except that they do not taper. Blocks 32 do, however, provide projecting formations 32a so that the wall rebound surface 30a, which is defined by a planar general surface zone together with the surface of formations 32a, is non-planar overall and an unexpected bounce of a ball is sometimes achieved, that is when the ball strikes a projection 32a. As shown in FIG. 9 a net 33 is suspended from hooks 34 provided on the wall 30. It will be appreciated that a wall structure in the form of walls 1, 20 and 30 could be cast in concrete or asbestos cement or a polymer material in a suitable mould if desired.

It is also not essential to provide indented or projecting formations relative to a non-planar general surface zone. Thus in FIG. 10 there is illustrated a further wall 40 made, as with wall 1, from fiber glass. In this case the wall defines panel zones 40b, 40c, 40d and 40e which are disposed at an angle to one another in much the same way as the faces 3b, c, d and e of the dish formations 3 of wall 1 except that the panel zones are, of course, much larger and together defines the entire rebound surface 41. In other words, the rebound surface 41 is in the nature of a dished polyhedron having apex 41a.

The wall 40 is divided into three sections 42, 43 and 44 and these are connected by hinges (not shown). Thus in transporting the wall it may be folded and when erected the sections 42, 43 and 44 can be set at angles to one another if desired.
As stated above the practice wall structure of the invention may form part of a miniature court as shown in Fig. 11. Although the wall 1 is here illustrated any of the walls 20, 30 and 40 or any other wall falling within the scope of the invention may replace such wall 1. For example a wall similar to 1 but excluding the formations 3 may be used.

The hardcoating 14 of such a miniature court may be specially marked as shown in Fig. 11 to enable two persons to play against the wall in accordance with a set of rules for which the markings have been designed.

I claim:

1. A practice wall structure defining a rebound surface against which play balls may be projected, said rebound surface including a general non-planar surface zone having a concave shape and being curved in both horizontal and vertical directions, said surface zone being provided with multi-faceted formations disposed at spaced locations in said surface zone, each facet of said multi-faceted formations being disposed in a plane different from said surface zone, the surfaces of said formations together with said general surface zone defining said rebound surface.

2. The wall structure of claim 1, wherein said multi-faceted formations are indented relative to said general surface zone.

3. The wall structure of claim 1, wherein said formations are in relief relative to said general surface zone.

4. The wall structure of claim 1, wherein said formations are selectively indented and in relief relative to said general surface zone.

5. The wall structure of claim 1, wherein said multi-faceted formations are polyhedral.

6. The wall structure of claim 1, further comprising a sheet member of polymer material defining said rebound surface, a backing member for said sheet, said sheet and backing member being spaced apart from each other, and a filler material located between said sheet and backing members.

7. The wall structure of claim 1, in which said sheet member includes a permanent marking thereon representing a tennis net, said rebound surface being defined above said marking.

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