SHAKERBOARD FOR BOWLING PINSETTERS

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Notice: The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

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ABSTRACT

A shakerboard to receive and agitate the bowling pins and ball in the pit of a bowling alley. A frame having upwardly turned rear corner portions supports and shapes a sheet-like outer member formed of fiberglass reinforced polyester resin or polyepoxide resin. Generally tetrahedral shaped compartments are formed in the upwardly turned corner portions of the outer member and these compartments are filled with a fiberglass filler material to strengthen the shakerboard. Apertures are provided at the front edge of the shakerboard to bolt the board to a shaking mechanism. A carpet covering is adhesively secured to the upper surface of the outer member. Lugs are provided to position the shakerboard when mounted. The upper surface of the shakerboard has troughs to direct a bowling ball and pins. The frame has truss members of a minimum height at the front portion of the frame.

8 Claims, 12 Drawing Figures
SHAKERBOARD FOR BOWLING PINSETTERS

REFERENCE TO RELATED APPLICATION

This is a continuation-in-part application based on my application entitled SHAKERBOARD FOR BOWLING PINSETTER, filed Mar. 20, 1972, having Ser. No. 236,075, now U.S. Pat. No. 3,751,036.

BACKGROUND OF THE INVENTION

This invention relates to shakerboards for automatic bowling pinsetters. Numerous types of bowling pinsetters, bowling alley pit clearing devices and bowling pin-setting machines are known in the prior art as operable to receive a quantity of bowling pins and a bowling ball from the end of a bowling alley, separate same, return the ball to the player and reset the pins on the end of the bowling alley in an automatic operation. One type of such automatic bowling pit clearing device utilizes a shakerboard below the surface of the end of the alley receive the bowling pins and the ball and agitate same moving them into the mechanism of the ball return and pin resetting device. The shakerboard is removably mounted in an agitating mechanism which agitates the shakerboard in a generally horizontal plane so as to direct the ball and the pin to the rear of the shakerboard.

A large circular pick-up wheel rotating in a vertical position adjacent to the rear of the shakerboard receives the ball and the pins and delivers them to appropriate parts of the pinsetter. The shakerboard is mounted in a substantially horizontal plane and receives the bowling ball and bowling pins as they move in a generally downward vertical direction after being knocked from the end of the alley and deflected downward by a deflecter portion of the pinsetter. Typically, the bowling ball and bowling pins strike the shakerboard with a substantial force which in the prior art shakerboards tends to destroy the board and its covering after a short time. Typically, the pinsetter or shakerboards consist of a laminated wooden sheet member having metal corner fittings on the rear corners thereof to match the contour of the shakerboard with the general shape of the pick-up wheel; these prior art wooden shakerboards are covered by a high quality carpet material for protection of the board and for protection for the bowling pins and bowling balls. In operation of bowling pinsetter machines using these prior art shakerboards, the boards tend to fracture in the center and along the corner fittings due to high impact forces imparted on the structure by the bowling ball and the bowling pins in combination with agitation of the shakerboard. These prior art shakerboards are substantially rigid in construction and will not be significantly flexed when the bowling ball and bowling pins impact thereupon; therefore, the carpet covering attached to the upper surface of the shakerboard tends to wear excessively in the center portion of the shakerboard and along the juncture of the center portion of the shakerboard and the corner fittings. The life expectancy of this prior art type of shakerboard of course depends upon the amount of usage it receives. A nominal and anticipated life for such shakerboards in a public bowling alley is in the range of 3 weeks to 6 months but seldom longer than 6 months. Ordinarily, during the lifetime of such shakerboards the carpet covering must be replaced in order to prevent the damage to the bowling pins and bowling ball. The carpet covering generally used in practice with this type of prior art shakerboard is very expensive. When a prior art wooden shakerboard fractures or fails the bowling pinsetter must be stopped and considerable time taken to replace the shakerboard before the bowling pinsetter machine can be used again.

SUMMARY OF THE INVENTION

In one preferred specific embodiment of this invention, an improved shakerboard structure includes a frame having upturned corner portions which is enclosed in an outer cover member of a reinforced plastic material, the upturned corner portions are filled with a plastic resin bound filler material. The frame has truss members on the sides thereof with stringer members joining the forward and rear portions of the trusses at the forward and rear portions of the shakerboard, respectively. The covering or outer member of the improved shakerboard provides a smooth contoured trough-like surface between the upturned corners. The interior of the upturned corners have a generally tetrahedrally shaped compartment therein which is filled with a resilient filler material that functions to make the improved shakerboard more resilient and to strengthen same. The covering or outer member is formed completely around the frame enclosing the tetrahedrally shaped compartments. The improved shakerboard is constructed to be mounted with a bowling pinsetter machine in place of the described prior art shakerboard and any other such shakerboards, currently being used. The structure of the side trusses of the improved shakerboard allows it to be mounted with all models of a particular make of bowling pinsetter machines currently in popular use in the field. The shape of the upper surface of the improved shakerboard is contoured specifically to encourage movement of the bowling ball into the center portion of the board and toward the rear thereof. Lugs are provided on the shakerboard for positioning it in the shaking apparatus of a pinsetter. The overall structure of the improved shakerboard is constructed to be more resilient and stronger than shakerboards known in the prior art due to construction of the side trusses, the tetrahedral compartments and the filler material in the tetrahedral compartments.

One object of this invention is to provide an improved shakerboard for bowling pinsetters overcoming the aforementioned disadvantages of the prior art devices.

Still, one other object of this invention is to provide an improved shakerboard for bowling pinsetters which is shaped such that it can replace shakerboards now used in currently popular and existing bowling pinsetter machines without requiring modification to the bowling pinsetter machine.

Still, another object of this invention is to provide an improved shakerboard for bowling pinsetters that has lugs extending therefrom for positioning the shakerboard in the shaking mechanism of a pinsetter.

Another object of this invention is to provide an improved shakerboard for bowling pinsetters having a frame structure enclosed within a fiberglass reinforced plastic material covering which has filler material also enclosed within the covering to resiliently strengthen the shakerboard.

Still, another object of this invention is to provide an improved shakerboard for bowling pinsetters which has a resilient construction and will flex during use thereof,
particularly upon impact of bowling pins and bowling balls and will return to its original form repeatedly. Yet, one further object of this invention is to provide an improved shakerboard structure for bowling pinsetters which has a frame structure including trusses on the sides thereof connected by stringers at the forward and rear portions thereof with the frame being enclosed in a fiberglass reinforced plastic material covering and which has energy absorbing plastic supported filler material in the corner portions of the structure, the frame being of a minimum height in its front portion. Various other objects, advantages, and features of the invention will become apparent to those skilled in the art from the following discussion taken in conjunction with the accompanying drawings, in which:

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the improved shakerboard taken from above the forward end thereof and having a carpet covering on a portion of a corner portion thereof; FIG. 2 is a rear side elevation view of the shakerboard having a portion of one corner portion cut away exposing the corner filler material; FIG. 3 is a front side elevation view of the shakerboard; FIG. 4 is an elevation view of a side of the shakerboard; FIG. 5 is an elevation view of a portion of the agitating mechanism of a bowling pinsetter machine seen from the forward end thereof showing a portion of the clamp apparatus for holding the forward edge portion of the shakerboard, the mechanism being shown with the shakerboard therein; FIG. 6 is a side elevation view of the agitating mechanism shown in FIG. 5; FIG. 7 is a top plan view of the shakerboard frame alone and uncovered; FIG. 8 is a front elevation view of the shakerboard frame alone; FIG. 9 is an enlarged elevation view of the side of the shakerboard frame with the covering shown in outline in dashed lines; FIG. 10 is a reduced size bottom plan view of the shakerboard; FIG. 11 is an elevation view of a corner portion of the shakerboard taken from the rear side thereof with the covering cut away to expose the filler material and the frame; and FIG. 12 is an elevation view of a corner portion of the shakerboard taken from the side thereof with the covering cut away exposing the filler material and the frame.

DESCRIPTION OF THE INVENTION

The following is a discussion and description of preferred specific embodiments of the shakerboard structure of this invention, such being made with reference to the drawings, whereupon the reference numerals are used to indicate the same or similar parts and/or structure. It is to be understood that such discussion and description is not to unduly limit the scope of the invention. Referring to the drawings in detail and in particular to FIG. 1, the improved shakerboard structure of this invention is shown therein and generally indicated at 10. The shakerboard structure 10 includes a frame structure shown in detail in FIGS. 7, 8, and 9 and generally indicated at 12 which is enclosed within an outer member or generally indicated at 14. The shakerboard 10 is preferably shaped as shown in FIG. 1 with the upper surface thereof generally indicated at 16 and having upturned rear corner portions 18 and 20 and a trough like portion 22. The outer member 14 is preferably a fiberglass reinforced plastic resin covering wrapped completely around the frame structure 12 enclosing same. The shakerboard 10 is adapted to have the upper surface 16 thereof covered with a carpet material or pad-like material when used; such as illustrated by the segment of carpet 24 on the upturned corner portion 18 in FIG. 1.

The improved shakerboard structure 10 of this invention is designed to replace prior art wooden shakerboards in use on automatic pinsetters produced by the Brunswick Corporation of Chicago, Illinois. Investigations into the use of the subject shakerboard 10 with the pinsetter machines of the Brunswick Corporation has shown that several models of the automatic pinsetters are and have been produced and are currently being used in bowling alleys, and further that the improved shakerboard 10 of this invention can be used in such machines without modifications to the pinsetter machine or to the shakerboard.

FIGS. 1 through 4 and FIG 10 show the general and preferred configuration of the shakerboard structure. The shakerboard 10 has a forward edge portion 26, a rear edge portion 28, a right side portion 30 and a left side portion 32. The right and left side portions 30 and 32, respectively, of the shakerboard 10 are mirror images with the left side portion 32 shown in FIG. 4. The shakerboard 10 is constructed with a generally rectangular planform as shown in the bottom plan view thereof. FIG. 10.

FIGS. 7, 8, 9, 11 and 12 show in detail the frame structure of the shakerboard 10. The frame structure 12 includes mirror image truss members 36 and 38 on the sides thereof, a forward stringer member 40 and a rear stringer member 42. The frame 12 has lag portions, generally indicated at 44 and 46 extending forward from the trusses 36 and 38, respectively, outwardly past the forward stringer member 40 and the outer member 14. The side truss members 36 and 38 are generally upright relative to the forward stringer member 40 and the rear stringer member 42 as shown in FIG. 8. The forward stringer member 40 is preferably a substantially straight wooden member of an elongated and cross-sectionally rectangular form. The rear stringer member 42 is curved as shown in FIG. 8. The side truss members 36 and 38 are constructed similarly as shown in detail in FIG. 9 wherein the side truss member 36 is shown in solid lines with the stringer members 40 and 42 and having the outer cover member 14 shown in dashed lines therearound. The side truss members can be constructed from a wire-like material formed in the general shape shown in FIG. 9 with the several parts thereof preferably welded. As shown in FIG. 9 the side truss has a straight upper segment 47, a curved upper segment 48 on the rear portion thereof turned upward to a corner 49, a rear upright portion 50 connecting the corner 49 to a straight bottom segment 52, an upwardly curved bottom segment 54 with brace members 56 and 58 connecting the top segments 48 and 47 with the bottom segments 52 and 54, respectively. The top straight segment 47 has the end thereof
extending through the forward stringer member 40 forming the extended end of the lug portion 44. The lug 60 of the frame trusses is used for positioning the shakerboard in the pinsetter shaker apparatus, it extends forwardly from the forward edge of the shakerboard through the outer member 14 or covering. The curved bottom frame segment 54 has the end thereof 62 terminating in the forward stringer member 40. Preferably, the end portion of the frame’s lower curved segment 54 is welded to the straight frame segment 47 along adjacent portions thereof to strengthen the frame structure. The upright frame segments 56 and 58 are preferably welded between the upper and lower portions of the frame in the positions shown. The rear stringer member 42 is secured to the upright frame portion 50 by a pin that is welded to the upright portion 50 and inserting same into a hollow portion of the end of the stringer member 42 as shown. In order to ensure that the forward stringer member 40 retains the proper position relative to the trusses 36 and 38, it is secured with the trusses after it has been assembled and before the covering is placed therein by drilling a hole in the ends of the forward stringer member longitudinally aligning with the elongated axis of the stringer member with the hole passing through the end portion of the truss and inserting a locking pin 64 therein. The locking pin 64 passes through the end portion of the stringer member 40 and through the truss to prevent the truss from being separated from the forward stringer member 40. Both trusses 36 and 38 are similarly attached to the stringer member 40. The curvature of the lower frame segment 54 is important in that it must be properly curved so the side and forward portion of the shakerboard will have the proper clearance around portions of the agitating mechanism on which it is mounted in the bowling pinsetter. The frame structure 12 is preferably constructed to have a minimum height in its forward portion. Curvature of the bottom frame segment 54 is necessary so the shakerboard 10 can be used with the several models of the identified make of pinsetter machines and other machines. It is to be noted that the trusses 36 and 38 are constructed similarly so the frame when viewed from the sides, the sides appear as a mirror image.

The frame structure 12 defines the general shape of the shakerboard and is used as structural support for securing same to the shaking mechanism. The forward and rear stringers 40 and 42, respectively, are constructed to facilitate mounting of the shakerboard. The forward stringer 40 has apertures 68 and 70 through the outer end portions thereof as shown in FIGS. 7 and 8. The rear stringer member 42 has notches therethrough indicated at 72 and 74 in the rear side of its outer end portions, as shown in FIGS. 7 and 8. As shown in FIG. 8 the rear stringer member 42 is curved in the center portion relative to the forward stringer member 40. The frame truss members 36 and 38 are secured with the stringer members 40 and 42 generally in the position shown in FIG. 8. Specifically, the truss members 36 and 38 are secured with the stringer members so the upper portion of the trusses are in a position wherein the angle between the forward stringer member 40 and the plane of the trusses is an acute angle slightly less than a right angle, approximately 10° or less difference.

The exterior of the shakerboard 10 is shown in FIGS. 1 through 4 and FIG. 10. The covering or outer member of the shakerboard 10 is indicated at 14 and con-
The notches 110 and 112 are preferably formed by a suitable cutting procedure after the shakerboard 10 is molded.

In construction of the shakerboard 10 the outer member 14 is preferably molded once the frame 12 has been constructed. The frame 12 is preferably constructed as previously described prior to final assembly of the shakerboard. An open type mold is used to form the outer member 14 and to form same around the frame structure 12. In the preferred construction of the shakerboard 10 of this invention, it is assembled in a mold in an inverted position with the upper surface 16 shaped by the bottom in a horizontal position with side portions generally vertically oriented. In brief, the shakerboard 10 is constructed with layers of fiberglass cloth and plastic-like reinforcing resin being placed in the mold; then the frame structure 12 is placed in the mold in the appropriate position; the filler material 118 is placed in the corner portions 18 and 20; then fiberglass cloth is wrapped around the exposed portions of the frame and over the filler material in the corner portions so as to completely enclose the frame structure 12 in the corner portions. The upturned corner portions 18 and 20 of the shakerboard structure have a generally tetrahedrally shaped compartment heretofore bounded by the outer member 14 which are packed with a filler material 118. The generally tetrahedrally shaped compartments are bounded on their upper portion by the upper portion of the outer member 14, on the rear sides by the rear portion thereof of the shakerboard, on the side portion thereof by the side portions of the shakerboard and on the bottom portions by that portion of the outer member which is laid thereover during the molding process. The outline of the overlaid portion of the covering material is indicated by a solid line indicated at 120 in FIG. 10, the bottom view of the shakerboard 10. Filling the generally tetrahedrally shaped compartments of the upturned corner portions 18 and 20 with the filler material adds a substantial quantity of resiliency and strength to the shakerboard structure. In practice it has been found that the particular size and shape of the upturned corner portions particularly including the tetrahedrally shaped compartments therein give this improved shakerboard structure 10 a property of resiliency heretofore nonexistent in prior art devices. The material from which the outer member 14 is constructed is a fiberglass cloth reinforced with polyester resin or polypoxide resin. The filler material is preferably a combination of materials which is compatible with the material from which the cover member is constructed; one such material usable for the filler material is a particulate cellulosic composition bound with polyester resin or polypoxide resin. In practice, it has been found preferable and desirable to use the polyester resin or the polypoxide resin because they have characteristics of strength and resiliency necessary and desirable here to accomplish the end result. Once the shakerboard structure 10 has been formed in the mold as described, it is removed therefrom, the notches 110 and 112 and apertures 106 and 108 cut, then the carpet or pad-like covering 24 is adhesively secured to the upper surface 16 and the board is ready for installation in a pinsetter machine.

FIGS. 5 and 6 show a portion of the agitating apparatus of a bowling pinsetter machine with the shakerboard 10 installed therein. The shaking mechanism which is partially shown in the drawings is a type which is used by the identified pinsetter manufacturer in its bowling pinsetters and is described in the patent of A. P. Rogers et al. U.S. Pat. No. 3,188,085. The agitator mechanism includes a frame structure 119 having a vibratory frame 120 mounted thereon which is agitated from an eccentric 122 connected therewith by a link 123. A pair of quick release clamps 124 on the forward sides of the end portions of the agitating mechanism are used to position a shakerboard holding member 126. The holding member 126 is pivotally mounted by a pin 128 with the vibratory frame 120 and is pivotally attached by another pin 130 to the clamp handle 132. A spring and guide rod assembly indicated at 134 are connected between the clamp handle 132 and a downwardly depending member 136 that is used to resiliently urge the clamp 124 into the position shown in FIG. 6 for clamping the forward end of the shakerboard. Another holding clamp or retaining clip (not shown in the drawings) is secured to the rear portion of the vibratory frame 120 and has an upwardly and forwardly extending portion engangeable with the center portion of the rear edge portion of the shakerboard. The rear edge retaining clip functions in cooperation with the holding member 126 to position and retain the shakerboard. As shown in FIG. 5 the lug 60 of the improved shakerboard 10 of this invention is positioned adjacent to the outer side of the holding member 126; this prevents substantial lateral movement of the shakerboard during the agitating operation. The lugs 60 provide a positive positioning of the shakerboard 10 in the horizontal plane of the agitating mechanism, a feature nonexistent in the prior art shakerboards. The shaking mechanism frame 119 has on the opposed sides of the forward edge portion thereof of upright support members 136 which mount a transverse forward end shakerboard support member 138 and have resilient shock absorber pads 139 and 140 held in place by a fastener. The forward edge portion of the shakerboard rests on the transverse member 138 and can have a strip of resilient material placed between the shakerboard and the transverse members (not shown in the drawings) for noise reducing purposes. The upper shock absorber pad is indicated at 140 and is enclosed in the aperture 106 of the forward edge portion of the shakerboard. The agitating mechanism is constructed similarly on both sides thereof and the side thereof not shown in the drawings is similar to that shown in FIG. 5. The rear edge portion of the shakerboard agitating mechanism has fasteners securing same together with the notches 110 and 112 in the shakerboard fit over. Additionally, at the rear edge portion of the shakerboard a strip of resilient material (not shown in the drawings) can be placed between the bottom of the shakerboard’s rear edge and the upper surface of the shakerboard support on the agitating mechanism for noise reducing purposes. The shakerboard structure 10 of this invention is shown and described herein in mounted relation with one model of a bowling pinsetter machine, and in practice it has been found that the shakerboard structure 10 can be used in several models of bowling pinsetters without modification to the shakerboard or to the bowling pinsetter machine.

In brief, operation of the improved shakerboard 10 of this invention is somewhat similar to the operation of the prior art shakerboards. The agitating mechanism moves the supporting frame 120 in a front to rear motion which aligns with the elongated alley. The im-
proved shakerboard provides improved bowling ball and bowling pin handling characteristics due to the contour of its upper surface. The trench 101 and center trough portion 96 in the center portion of the upper surface functions to guide the bowling ball to the center of the rear edge portion 28 in a directed fashion. The center trough portion and adjacent trough portions of the upper surface function to direct the pins to the central portion of the rear edge portion 28. As the bowling ball and pins strike the shakerboard (usually in the central portion but not always), the center portion of the shakerboard will flex downward causing the corners 102 and 104 to move inwardly slightly and the bottom portion of the sides to move outward slightly. After the duration of the impact force, the shakerboard will return to its original unflexed shape. The resilient nature of the improved shakerboard permits it to flex and rebound in the described manner repeatedly.

In the manufacture of the improved shakerboard structure 10 of this invention, it is constructed in a substantially resilient nature to achieve the end product and provide a significant improvement in bowling pinsetter shakerboards. The shakerboard structure is significantly stronger than the prior art shakerboards due to the welded construction of the trusses, the positively attached stringer members in the particular category and type of filler material used in the generally tetrahedrally shaped compartments thereof. The improved shakerboard structure 10 can be manufactured as a replacement item for the identified make of automatic bowling pinsetters and other similarly constructed units. The shakerboard 10 can be manufactured by techniques currently used in the manufacture of cloth reinforced plastic resin structures by using the described materials and briefly described process. The identified and preferred materials of construction have been used in practice and found through experience and testing to impart the needed strength in resiliency into the shakerboard to achieve the desired end product.

In use and operation of the improved shakerboard for bowling pinsetters of this invention it is seen that same provides a replacement item for conventional automatic bowling pinsetters which is a significant improvement in the art. The improved shakerboard is constructed to be mounted with several models of bowling pinsetter machines without requiring modifications. The resilient nature of the improved shakerboard of this invention provides for a longer use of a shakerboard without failure of the shakerboard 10 itself and without replacement of the pad or carpet covering 24. An additional feature of the resilient nature of the improved shakerboard 10 is that it will yield substantially under the high impact forces imparted on it by the bowling pins and bowling ball striking same, therefore, the ball, pins and shakerboard are less apt to be damaged after sustained usage. In actual practice of the shakerboard structure of this invention it has been found that a carpet covering or pad can be used which is of a lesser grade than the type required on the prior art shakerboards. As will become apparent from the foregoing description of the applicant’s improved shakerboard for bowling pinsetters, relatively inexpensive and simple means have been provided to improve the shakerboard fixture of an automatic bowling pinsetter. The improved shakerboard structure is easily manufactured by techniques well known in the art of making fiberglass reinforced plastic resin structures. The shakerboard structure is adapted to replace conventional or prior art shakerboards in automatic bowling pinsetters and in practice has been found to have a substantially longer, almost permanent life as compared with the prior art shakerboards. The improved shakerboard structure due to its resilient and long lasting nature eliminates the necessity of periodical placement of shakerboards as has been done previously in the art. It will become apparent to one skilled in the art that the improved shakerboard structure of this invention fulfills a long recognized need in the art, namely shakerboards for automatic bowling pinsetters which are inexpensive to maintain, do not require frequent periodic replacement, and further which do not require frequent periodic replacement or repair.

While the invention has been described in conjunction with preferred specific embodiments thereof, it will be understood that this description is intended to illustrate and not to limit the scope of the invention, which is defined by the following claims.

1. A shakerboard, comprising:
   a. a trough-like and sheet-like outer integrally formed resilient member of a reinforced plastic material and having upwardly turned rear corner portions having a smooth and arcuate surface and each of said corner portions having a generally tetrahedral shaped compartment therein,
   b. frame means having upwardly turned corner portions supporting and shaping said upwardly turned corner portions of said outer member, with said outer member being mounted on and completely around the same frame means,
   c. positioning lug means extending from a front portion of said frame through said outer member,
   d. means on said frame means and said outer member to mount said shakerboard means on a means to shake same having means receiving said lug means to position said shakerboard, and
   e. filler material means substantially filling said compartments to resiliently strengthen same.

2. The shakerboard of claim 1, wherein:
   a. said outer member and said frame means have upright sides extending downward relative the upper surface on a rear edge portion and on the sides thereof, and
   b. said frame means have mirror-image truss members on said sides, said truss members in the lower forward portions being of minimum height at the front of said frame.

3. The shakerboard of claim 2, wherein, said lug means has a lug member extending forwardly from one of said truss members in a plane parallel to that of said frame means.

4. The shakerboard of claim 1, wherein, the upper surface of said outer member has a center trough portion sloping from a center portion of said front portion to the center portion of a rear edge portion and other trough portions adjacent said center trough portion to in operation direct a bowling ball and bowling pins to
said center portion of said rear edge portion of said shakerboard.

5. The shakerboard of claim 3, wherein, said means to mount said shakerboard includes apertures through said front portion, positioning notches in said rear edge portion thereof, and two of said lug members in spaced relation.

6. The shakerboard of claim 3, wherein, the upper surface of said outer member has a center trough portion sloping from a center portion of said front portion to the center portion of said rear edge portion and other trough portions adjacent said center trough portion to in operation direct a bowling ball and bowling pins to said center portion of said rear edge portion, and each of said corner portions having a generally tetrahedral shaped compartment therein.

7. The shakerboard of claim 6, wherein, said means to mount said shakerboard includes apertures through said front portion, positioning notches in said rear edge portion, and two of said lug members in spaced relation.

8. A shakerboard, comprising:
a. a trough-like sheet-like outer integrally formed resilient member of a reinforced plastic material, having upwardly turned rear corner portions, hav-

9. The shakerboard of claim 8, wherein, said means to mount said shakerboard includes apertures through said front portion, positioning notches in said rear edge portion, and two of said lug members in spaced relation.

10. The shakerboard of claim 8, wherein, said means to mount said shakerboard includes apertures through said front portion, positioning notches in said rear edge portion, and two of said lug members in spaced relation.

11. The shakerboard of claim 8, wherein, said means to mount said shakerboard includes apertures through said front portion, positioning notches in said rear edge portion, and two of said lug members in spaced relation.

12. The shakerboard of claim 8, wherein, said means to mount said shakerboard includes apertures through said front portion, positioning notches in said rear edge portion, and two of said lug members in spaced relation.