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AIMING AND PROJECTING PLAY APPARATUS

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This invention relates to an amusement device which may be used as a competitive game by adults as well as for mere play by children. The improvements particularly concern a device of this type wherein a ball or missile is projected in pre-aimed direction with controlled force. A striking mallet and a target are usually employed in the game.

The ability of ball or missile throwing game apparatus to afford continued appeal to users depends upon the nature and relationship of the elements of skill and of chance involved in its use. Most amusement devices for projecting a ball are so limited in versatility of play or in the variety of different possible ways of executing the play that they soon become monotonous and fall into disuse. Games such as bowling or the widely used bagatelle games confine a rolling sphere to a planar course of movement. Most games of ball wherein the ball is projected freely into space and aimed merely by the direction of blow of a club or bat, depending on the dexterity with which the player wields the striking implement, afford no opportunity for a novice to win, and require too much skill to provide an interesting contest except between players who are well matched in aptitude and experience.

It is an object of the present invention to provide an apparatus for projecting a variety of sizes of balls or other forms of missiles or projectiles by a series of manipulations involving two distinct stages and performances of judgment or skill, neither of which performances exceeds the ability of a novice to master quickly and effectively. Thus my approved game may readily be entered into by any number of people, who though formerly unacquainted with the apparatus, are certain to possess sufficient aptitude and skill to give each player a reasonably equal chance of winning. At the same time there is maintained the desirable feature that skill shall be a larger factor than chance in running up a winning score.

Another object of the invention is to provide a ball or missile projecting device which is aimed by a deliberative operation of adjusting setting distinct from and preliminary to the rapid action of striking the ball, so that a share of the skill contributing to a winning score may reside in the leisurely exercise of the player's aiming judgment, while another share of the skill resides solely in the speed and force of the blow which is to be struck manually without the requirement for simultaneous attention to the problem of directing the ball by the blow which is struck.

By this contrast between the leisurely operation of aiming and the rapid operation of striking, it will be recognized that a sharp change of pace attends the manipulation of the device which is a psychological factor enhancing the suspense and excitement attending each play.

A further object of the invention is to incorporate an apparatus having the foregoing features of performance in a simple and uncostly device which, while preferably of readily portable nature, will stand stably upon the floor or upon a table top, instead of requiring to be held in the hand of the player.

A further object is to make the device of the fewest possible and most simple forms of parts, preferably of sheet metal, and devoid of springs so that it will be low in cost and light in weight, yet rugged and durable in use.

A still further object is to confine the movable parts of the ball projecting device to a simple adjustable ball holding support and ball striker both of which for still further simplicity may employ a common pivot.

A still further object is to provide a means for aiming the ball which can utilize a full 360 degrees of horizontal sweep and a full quadrant of inclination from the true horizontal to the true vertical.

The above and other objects of the invention will become clearer from the following detailed description, in which reference is had to the accompanying drawings wherein:

Fig. 1 is a perspective view of a ball aiming and projecting device embodying the present improvements, together with a representation of a player's hand holding a suitable striking mallet.

Fig. 2 is a view in elevation drawn on an enlarged scale showing the opposite side of the working parts of the device from that visible in Fig. 1.

Fig. 3 is a fragmentary view of parts appearing in Fig. 2 swung to different positions.

Fig. 4 is a fragmentary view taken in central vertical section through the complete apparatus of Fig. 2 showing the movable parts thereof in section on the plane 4—4 looking in the direction of the arrows in Fig. 3 with said parts positioned as in Fig. 3.

Fig. 5 is a still further enlarged fragmentary view taken in section on the planes 5—5—6 in Fig. 2 looking in the direction of the arrows.

Fig. 6 is a correspondingly enlarged sectional view taken on the plane 4—4 in Fig. 4 looking in the direction of the arrows.

Fig. 7 is an enlarged fragmentary view show-
ing a section of the edge of the tripod table and one of the folding tripod legs hinged thereto.

Fig. 8 is a fragmentary view taken in section on the plane 8—8 in Fig. 7 looking downward.

Fig. 9 shows a modified form of foot pad for the tripod legs to protect floors or furniture during indoor play.

Fig. 10 shows the ball holder of Fig. 2 equipped with adapter arms in retracted positions.

Fig. 11 shows the adapter arms of Fig. 10 shifted to usable positions, together with a ball too large to nest fully within the holder barrel.

Fig. 12 shows the adapter arms of Fig. 11 assisting in the holding of a still larger ball.

Fig. 13 shows the adapter arms supporting a ball that is too large to touch the support barrel at all.

As the ball aiming and projecting device of these improvements is intended to be played with while in standing position yet it is desired to be easily portable as well as stable in use, a preferred form of base structure is the tripod indicated as a whole by 10 in Fig. 1. This makes the unitary piece of apparatus readily collapsible so that it can be stored or transported with minimum space requirement. The tripod employed may be of the table type having very short legs, but it is preferably of the type adapted to have long legs 11 standing on a floor and supporting the platform 12 at approximately table height from the floor. Legs 11 may be hinged to platform 12 with the help of a U-shaped bracket 13, best shown in Figs. 7 and 8, which is secured to the turned down rim 14 of the sheet metal platform 12 by one or more rivets 15, or by any other suitable fastening means as by welding. The side flanges of bracket 13 support a bolt 16 which is retained by nut 17 and which projects through opposite walls of the somewhat flattened end portion 18 of a tubular leg 11. At its bottom end each leg 11 carries the removable spike 19, shown in Fig. 7, which is readily replaceable by a rubber foot pad 20, Fig. 9, if preferred when the device is standing on slippery or easily marred surfaces.

A turret-like standard 25 is held in swiveled relation to and on the top surface of platform 12 by the central vertical pivot screw 26 with which the wing nut 27 has threaded engagement in a manner to squeeze standard 25 and platform 12 yielded together through the medium of a resilient friction washer 28. Fig. 6 shows this washer to comprise a radially slotted cupped disc of springy material. A thrust washer 29 separates the head of screw 26 from the standard 25 and another thrust washer 30 separates the friction washer 28 from the wing nut 27.

The upstanding free arms 34 of standard 25, which are preferably made of sheet metal or other resilient material, are spaced apart and may have a resilient tendency to separate laterally.

A horizontal pivot screw 35 penetrates and is supported by both arms 34 and has threaded engagement with the retaining nut 36. Screw 35 further passes through and serves as pivot for the slightly spaced free ends 37 of a ball or missile aiming and holding support 38. This support may comprise a strip of elongated metal or other preferably springy material looped around to form the ball holding barrel 39 having circumferentially spaced tabs 40 projecting radially inward against which the ball 41 may rest at the bottom or rear end of barrel 39 opposite its muzzle end from which the ball is to be projected. If the metal of which the ball support 38 is made has good resilient properties the free ends 37 of the ball support will tend to separate so that when constrained or forced together against the opposite faces of a spacer collar 42 by tightening the nut 36 on screw 35, substantial friction will be set up between the outer surfaces of the strip ends 37 and the inner surfaces of arms 34 which will be sufficient to hold the ball support 38 at any desired angle of inclination between its horizontal position in which it trains the ball vertically upward in Fig. 2, and its upright or vertical position in which it trains the ball horizontally toward the right in Fig. 3. Stop 43 limits the range of ball support adjustment.

A ball striker, indicated as a whole by 44, includes a lever 47 pivoted at a mean point in its length on spacer collar 42 and is sufficiently thinner than the thickness of collar 42 to swing freely between the hinged ends 37 of the ball aiming support. At its ball striking end, lever 47 carries a screw 48 having threaded engagement therewith which screw is provided with a ball striking button head 49 together with locating units 40 and 51. The button head 49 may hence be adjustably positioned relative to lever 47 by loosening these lock nuts and turning screw 48, and then locked in position by retightening the nuts. Stops 52 and 53 limit the range of striker swing.

On the other, or blow receiving, end of lever 47 a shock absorbing pad 54 of rubber is secured by a screw 55 which passes through a hole formed by the curved end of the lever and takes the retaining nut 56. Further shown in Fig. 1 is a long handled mallet 57 represented as wielded by the hand 58 of a player assumed to be standing on the same floor level as is the tripod 10.

In Fig. 10 are shown two of three adapter arms 60, each of which has one end anchored in swiveled relation to the outside of ball holding barrel 39 by a rivet 61 or other suitable means preferably permitting arms 60 to be shifted around into their playing positions indicated in Fig. 11 where they will be held by the tightness of the rivet 61 until intentionally retracted to their positions shown in Fig. 10. The two arms 60 which are nearest the hold end 71 of barrel 39 and bracket 34 (Figs. 11 and 12) may be further retracted to a position wherein their length which projects from the barrel will parallel and flank or lie closely and compactly beside the flat outer surfaces of said holder strips 71, respectively. In Fig. 11 a ball 52, larger than ball 41, is shown resting on the muzzle end of barrel 39, because too large to really enter this barrel and rest on the tabs 40 as does ball 41. In Fig. 12 a ball 63 is shown which is so large that it derives its support at least in part from the arms 60. In Fig. 13 an even larger ball 64 is shown which derives its sole support from the adapter arms 60. Thus it will be observed that a considerable variety of sizes of balls can be aimed and projected by my improved playing device.

It may term this improved playing device a ball cannon particularly in its form wherein the barrel 39 serves in part to guide the direction of the initial movement of ball 41 before the latter is projected into free space. Obviously by elongating the front or muzzle end of the cylindrical formation of the ball barrel, a great deal of guidance similar to the function of a gun barrel will come into play.
It will be noted that the ball holding barrel is circumferentially discontinuous and that the narrow space between the side walls of the hinged ends 37 of ball support 38 admits the striker head 49 freely thereinto so that the striker head 49 can pass from its full line position to its broken line position in Fig. 2 while the ball holding support 38 remains stationary in its position shown in said figure or any other of its positions.

It will have become more or less apparent from the foregoing description that a game may be played with my improved ball aiming and projecting apparatus in the following way, understanding that the distribution of weight of the combined lever 47, striking head 49 and blow receiving pad 54 is such in relation to pivot 36 that gravity causes the ball striker 46 normally to assume the position shown in Fig. 1 or full lines in Fig. 2 with the lower edge of lever 47 resting against stop 52. Assuming that a target is provided which may take the form of any unstable article to be knocked over or of a receptacle to catch and hold the ball, tripod 45 will be stood on the floor or on the ground at a suitable distance from such target with the parts positioned, say, as shown in Fig. 1. The player will first swing the standard 25 about its pivot 26 until he considers the vertical plane in which the ball striker 35 swings to be aligned with his target. He will then train the ball or missile, by adjusting the ball holding support 38 to the angle of elevation or inclination which he considers should cause the trajectory of the ball to carry it to the target. This operation is in the nature of "tuning in" and position 25 will be stable fire with the difference that the projecting force of an ammunition explosive is substantially a constant quantity whereas in my improved gaming apparatus the force with which the projectile is struck will vary with the strength of blow exerted through mallet 57 upon ball striker 33 by the player’s hand 65. Hence this variable brings into play an additional factor of skill involving control of the force exerted by muscular action. Thus there is introduced into the play two quite different phases of judgment or skill combination, these being the slow deliberate constructive aiming adjustment followed by rapid striking action of the player’s arm.

As the mallet 57 hits downward upon the shock absorbing lever pad 54, the striking head 45 is flung up against ball 41, which for the sake of illustration, may be a soft sponge rubber ball of about one and three eighths inches diameter, a ping-pong ball, or any harder, larger or more solid form of ball. The projectile also may consist of any form of dart, shuttle-cock or other game piece intended to perform free flight. If the ball is supported by ball pad 59 in position shown in Fig. 2, it will be struck initially in a straight upward direction as indicated by arrow A. In following through, or continuing its impelling contact with the ball after initial contact, the ball striking head 49 will travel in the trajectory given by arrow B and the certain amount of spin may be imparted to the ball as it is projected from its holding barrel 39. Responsive to light blows of the mallet for producing relatively short distances of ball travel, this spin may not be a considerable factor in the trajectory, but for long distance play where the ball is struck with considerable force it introduces an additional element of variation and interest into the play. Regardless of what spin, if any, is imparted to the ball by the follow-through action of the striking head, the degree of this follow-through, or that extent of the arc of travel of the striking head 49 over which it remains in contact with the ball, is obviously much greater when the ball is struck vertically upward as in Fig. 2 than when the ball is struck horizontally as in Fig. 3 or at angles of less elevation than in Fig. 2. This in part is due to the fact the ball holding support 38 is adjusted about, and the striker 45 swings upon, the same pivot so that the ball may be held at various points in the permissible range of travel of striker head 49. It enables the force of the mallet blow to be more fully transmitted to the ball under circumstances where that force is most needed to cause the ball to rise high in the air for traveling a large distance to reach its objective. The tongues or stops 43 not only serve to limit the downward adjustable swing of ball holder 36 to its position shown in Fig. 2, but as shown in Fig. 3 also limit the upward adjustable swing of this same holder by contact at a different point with the same edge of the hinged ends 37 of the ball support.

Wholly independent of the ball support 38 and its limiting stops 43 are the tongues 52 and 53 struck from the metal of standard 25 to act as stops for the ball striker lever 47. The latter, when struck by a mallet, swings from its position in contact with stop 52 in Fig. 2 to its position in contact with stop 53 in Fig. 3 regardless of the position of the ball support 28. Although the swing of the ball striker is stopped abruptly, the play is accomplished without objectionable noise or undue wear on the parts through the help of the sound deadening and shock absorbing action of the resilient pad 54. The resilience of this pad may also help in part to produce a lively more satisfactory response of the ball striker to the blow of the mallet. After being hit by the mallet the ball striker 45 automatically returns by gravity to its position in Fig. 2. A spring might be used for, or to assist in, this purpose.

The foregoing description of the adapters 60 shown in Figs. 10 to 13 and their use will for the most part be self explanatory. These three or more adapters in no way interfere with the free passing of the ball striker 45 and through the ball holding barrel 39. Where desired for greater surface contact with larger or softer balls the striking head shown at 49 may be replaced with one of larger diameter or its striking surface may be cupped to conform to the spherical surface of the ball. Obviously the legs 11 of the tripod may be of telescopic construction to permit adjustment of the height of the tripod platform 12 from the floor. Other modifications are possible.

A playing apparatus of great versatility is provided by this invention which offers strong psychological appeal because of the balance of skill and chance involved in its operation by inexperienced players. It has proven to possess enduring appeal in use. As there are many obvious substitutes and equivalents for the exact forms and arrangement of parts herein disclosed to illustrate the principle of the invention, all such are intended to be defined and covered by the appended claims in so far as they come within the full and fair meaning of the language thereof.

I claim:

1. A ball pre-aiming and projecting device for gaming and like purposes, including the combi-
nation of, a standard, a ball holding and pre-aiming support carried on said standard, a pivotal connection between said support and said standard enabling the former to be swung adjustably about a definite axis for shifting said support to selective preset angles of inclination relative to said standard, and a ball striker pivotally mounted on said standard for free swinging movement about said axis relative to said standard and relative to said ball support through a sufficient arc to impinge the ball while the latter is held by said support and thereby project the ball in a trajectory of selective elevation determined by the preset angle of inclination of said support.

2. A direct ball projecting amusement or gaming device, including the combination of, a base platform, a turret-like standard pivotally mounted on said platform for manually adjustable direct setting about a vertical axis relative thereto, means to maintain said standard in selective set positions, a ball aiming support adapted to hold the ball with a portion of its surface exposed pivotally mounted on said standard for manually adjustable directional setting about a vertical axis relative thereto, and a ball striker pivotally mounted on said standard for manually impelled free swinging movement about said horizontal axis relative to said ball support thereby to impinge said exposed surface of the ball while the latter is held by said support.

3. A direct ball projecting amusement or gaming device, including the combination of, a base platform, a turret-like standard pivotally mounted on said platform for manually adjustable direct setting about a vertical axis relative thereto, a ball aiming support adapted to hold the ball with a portion of its surface exposed pivotally mounted on said standard for manually adjustable directional setting relative thereto about a horizontal axis intersecting said vertical axis, and a ball striker operatively separate from said ball support pivotally mounted directly on said standard for manually impelled free swinging movement about a horizontal axis relative to said ball support thereby to impinge said exposed surface of the ball while the latter is held by said support.

4. A direct ball projecting amusement or gaming device, including the combination of, a tripod having a top platform, a turret-like standard pivotally mounted on said platform for adjustable setting about a vertical axis relative thereto, means to maintain said standard in selective set positions, a ball holding and aiming support pivotally mounted on said standard for adjustable setting about a horizontal axis relative thereto, and a ball striker pivotally mounted on said standard for free swinging movement about said horizontal axis relative to said ball support thereby to impinge said ball holding barrel through one open end thereof and impact a ball occupying said barrel.

5. In amusement or gaming apparatus, a ball holding and aiming device embodying in combination a supporting standard comprising a U-shaped structure having spaced upward arms, and a ball aiming structure comprising a strip of resilient sheet metal looped in a manner to form a ball holding barrel and having its free ends elongated and located between and hinged to the said upward arms of the supporting standard, said free ends being biased to spring apart by the resilience of said metal thereby to press against said standard arms with friction producing force whereby said ball aiming structure may be swingably adjusted to and maintained in different ball aiming positions relative to said standard.

6. In amusement or gaming apparatus, a ball holding and aiming device embodying in combination a supporting standard comprising a U-shaped structure having spaced upward arms, and a ball aiming structure comprising a strip of resilient sheet metal looped in a manner to form a ball holding barrel and having its free ends elongated and located between and hinged to the said upward arms of the supporting standard, said free ends being biased to spring apart by the resilience of said metal thereby to press against said standard arms with friction producing force whereby said ball aiming structure may be swingably adjusted to and maintained in different ball aiming positions relative to said standard.

7. In amusement or gaming apparatus, a ball holding and aiming device embodying in combination, a supporting standard comprising a U-shaped structure having spaced upward arms, and a ball aiming structure comprising a strip of resilient sheet metal looped in a manner to form a ball holding barrel and having its free ends elongated and located between and hinged to the said upward arms of the supporting standard, said free ends being biased to spring apart by the resilience of said metal thereby to press against said standard arms with friction producing force whereby said ball aiming structure may be swingably adjusted to and maintained in different ball aiming positions relative to said standard.

8. In amusement or gaming apparatus, a ball holding and aiming device embodying in combination, a supporting standard comprising a U-shaped structure having spaced upward arms, and a ball aiming structure comprising a strip of resilient sheet metal looped in a manner to form a ball holding barrel and having its free ends elongated and located between and hinged to the said upward arms of the supporting standard, said free ends being biased to spring apart by the resilience of said metal thereby to press against said standard arms with friction producing force whereby said ball aiming structure may be swingably adjusted to and maintained in different ball aiming positions relative to said standard.

9. In amusement or gaming apparatus, a ball holding and aiming device embodying in combination, a supporting standard comprising a U-shaped structure having spaced upward arms, and a ball aiming structure comprising a strip of resilient sheet metal looped in a manner to form a ball holding barrel and having its free ends elongated and located between and hinged to the said upward arms of the supporting standard, said free ends being biased to spring apart by the resilience of said metal thereby to press against said standard arms with friction producing force whereby said ball aiming structure may be swingably adjusted to and maintained in different ball aiming positions relative to said standard.
relative to said support through a path to impinge and project said missile at an incline predetermined at least in part by the preset inclination of said support relative to said standard, and stop means carried by said standard arranged to restrict the swing of said striker to movement between its said normal position and a position beyond its point of contact with said missile.

10. An amusement and gaming device for first pre stressing a missile in a selectively elevated direction and thereafter separately striking said missile to project it in said direction, including the combination of, a standard, a missile holding and aiming support pivotally mounted on said standard in a manner to be swung adjustably relative to said standard about a substantially horizontal axis into preset positions of selective inclination said support being constructed and arranged to hold said missile poised in a substantial range of said set positions, stop means carried by said standard arranged to establish and limit said range of set positions, a ball striker pivotally mounted on said standard in a manner to remain in a constant normal position while said support is shifted to its various set positions and to be free for swinging movement about said axis relative to said support through a path to impinge and project said missile at an incline predetermined at least in part by the preset inclination of said support relative to said standard, and stop means carried by said standard arranged to restrict the swing of said striker to movement between its said normal position and a position beyond its point of contact with said missile.

11. An amusement and gaming device as described in claim 8, including the combination defined in said claim, wherein the said missile holding and aiming support comprises a looped strip of metal forming barrel adapted incompletely to encompass the missile and of sufficient axial extent to hold the encompassed missile poised to receive an impelling blow from the said striker in any of the said substantial range of set positions of said inclinable support, said looped strip having its free ends hinged on the said means of support and spaced axially apart therein thereby to afford a steadying length of bearing prop for said hinged ends of the looped strip.

12. An amusement and gaming device as described in claim 8, including the combination defined in said claim, wherein the said missile holding and aiming support comprises a looped strip of metal forming a barrel adapted incompletely to encompass the missile and of sufficient axial extent to hold the encompassed missile poised to receive an impelling blow from the said striker in any of the said substantial range of set positions of said inclinable support, said looped strip having its free ends hinged on the said means of support and spaced axially apart therein thereby to afford a steadying length of bearing prop for said hinged ends of the looped strip and said barrel being free of obstruction to passage of the missile through one end thereof while provided with radially inward turned projections at its opposite end for supporting the missile exposed to said impelling blow of the striker.

13. In a ball projecting device, the combination of a bearing bracket having upstanding laterally spaced support arms, a ball holder having resilient elongated mounting arms whose ends are positioned between said support arms, a ball striking lever, a common pivot spindle extending through said lever and all of said arms, and a bearing sleeve on said pivot, said sleeve being thicker than said striking lever and being interposed between said resilient mounting arms of the ball holder said lever being pivoted on said sleeve.

14. In amusement or gaming apparatus the combination of a ball striker, a hollow cylindrical barrel open at both ends adapted to support a ball of relatively smaller size therewithin substantially centered with the axis of said barrel and constructed to admit a portion of said striker to pass through said barrel for projecting said ball therefrom, and extension elements for supporting interchangeable balls in the path of movement of said striker which are too large to enter said barrel, said elements being fixedly secured to said barrel and projecting beyond the muzzle thereof in fixedly diverging manner thereby to support in centered relation to the axis of said barrel balls of various larger sizes.

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