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MECHANISM FOR GRADING AND CULLING GOLF BALLS

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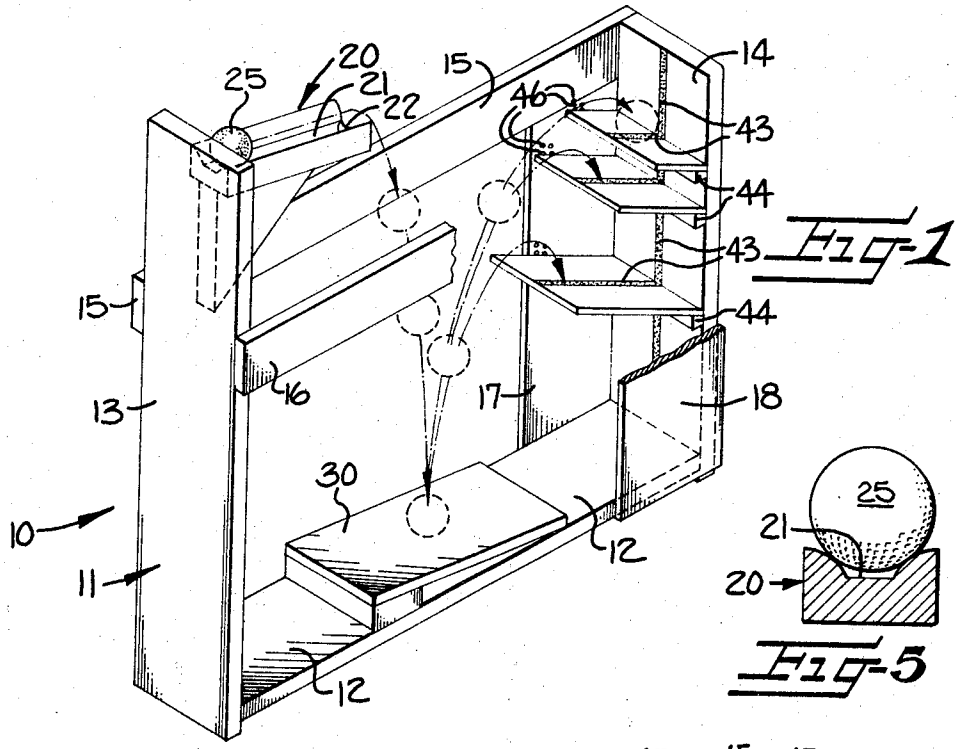


Fig-1

Fig-5

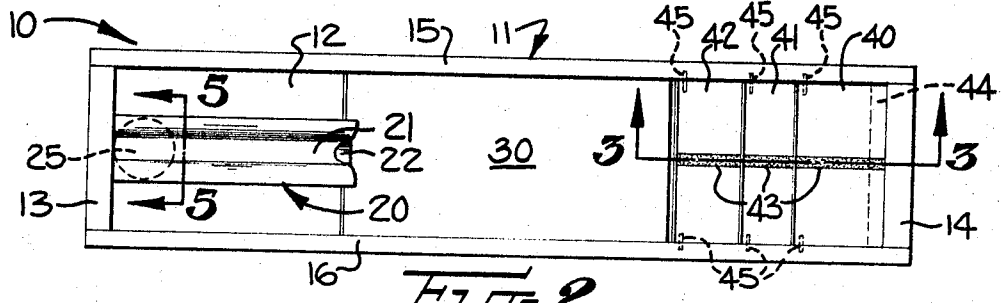


Fig-2

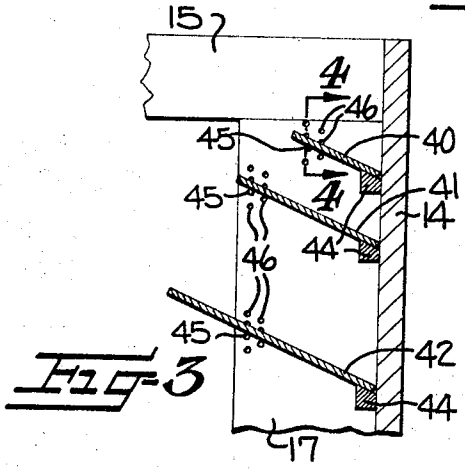


Fig-3

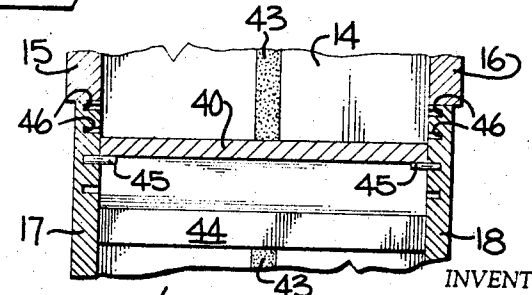


Fig-4

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MECHANISM FOR GRADING AND CULLING GOLF BALLS

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ABSTRACT OF THE DISCLOSURE

A mechanism for grading and culling golf balls and the like according to their compression and balance characteristics. The mechanism comprises a forwardly extending inclined means adapted to successively receive balls, impart under the force of gravity an equal, constant velocity and straight-line, forward motion to each ball, and release each ball to travel under the force of gravity in a forward, downward, arcuate path of travel; inclined striking plate means disposed below the inclined means in the downward path of travel of the balls released therefrom and adapted for striking by the released balls so that the balls will rebound in variable, predetermined, spaced, upward, arcuate paths of travel, the rebound paths of travel being determined by and directly related to variable compression and balance characteristics of the balls; and a plurality of shelf means disposed at predetermined spaced positions in the variable, rebound paths of travel of the balls and adapted to receive and retain the balls from the particular rebound paths of travel. The compression characteristics of the balls are readily indicated by the particular shelf upon which a ball is received and retained and the balance characteristics of the balls are readily indicated by the position of a ball within the shelf.

This invention relates to a mechanism for grading and culling golf balls and the like according to their compression and balance characteristics.

The majority of golfers find that certain makes of golf balls perform better for them than others. The difference, other than quality and workmanship, is primarily what is termed by manufacturers as ball compression and which is, in reality, elasticity or rebound characteristics. Most golf ball manufacturers today advertise and sell balls with different compression ratings to cover all types of swingers and there appears to be a consensus of opinion that the greatest distance can be obtained by the golfer matching a ball of a known compression to his swinging capabilities. For instance, the higher compression ball is normally designed for the very accurate and extremely hard hitting golfers inasmuch as only the most powerful, accurate swing can compress this ball enough for maximum performance. The lower compression balls are normally designed for the less powerful hitters and less accurate hitters and require a less powerful stroke to compress the ball for maximum performance.

Once a ball leaves the manufacturer, it is very hard to determine what might happen to the advertised compression until the ball is put into play and what might happen to the advertised compression after the ball is used by the golfer. The compression or elasticity of a ball is affected by many conditions inasmuch as golf balls are primarily made of rubber and it is a known fact that rubber deteriorates with use, age, heat, moisture, ultraviolet rays, changes in temperature, etc. A ball can be classified a cull or dud when it has lost practically all of its elasticity due to repeated use, improper manufacture, etc. Also, an important characteristic of a golf ball is balance and an improperly balanced ball resulting from cuts, improper manufacture, etc., will not provide satisfactory performance for the golfer.

Therefore, it is an object of this invention to provide a grading and culling mechanism for golf balls and the like whereby the compression and balance characteristics of the golf balls may be readily and accurately determined.

Advantageously with the mechanism of this invention, a golfer is provided with a device which he can use with extreme confidence that will enable him to grade balls to his liking and cull out duds. The grading and culling can be done at his leisure prior to play or otherwise, thus eliminating one of the many variables of this complicated game. One of the greatest benefits to be derived from the mechanism of this invention is the confidence the golfer obtains to play his game with a ball more properly matched to his game, knowing each ball he uses, whether new or old, will perform to his satisfaction.

It has been found by this invention that the above object and advantages may be accomplished by providing a mechanism of the type broadly set forth in the above abstract of invention and more fully described hereinafter. This mechanism may be in the form of a relatively small, unitary, portable device which may be set up in the home, in the club house, or otherwise, and used quickly and reliably by the golfer for grading and culling his balls prior to or after play.

Some of the objects and advantages of this invention having been stated, other objects and advantages will appear as the description proceeds when taken in conjunction with the accompanying drawings, in which—

FIGURE 1 is a perspective view, broken away, of a mechanism for grading and culling golf balls constructed according to this invention and illustrating in broken lines golf balls or the like;

FIGURE 2 is a top plan view of the mechanism of FIGURE 1;

FIGURE 3 is a partial side elevational view taken along the line 3—3 of FIGURE 2 and illustrating the ball receiving and retaining shelf means;

FIGURE 4 is an enlarged, partial elevational view taken along the line 4—4 of FIGURE 3 and illustrating one of the ball receiving and retaining shelf means and specifically its adjustable mounting on the frame of the mechanism; and

FIGURE 5 is a side elevational view of the inclined means of the mechanism of this invention taken along the line 5—5 of FIGURE 2.

Referring now to the drawings wherein a preferred, but non-limiting, embodiment of this invention is illustrated, there is shown in FIGURE 1 a mechanism for grading and culling golf balls and the like, generally indicated by the reference numeral **10**, according to their compression and balance characteristics.

The mechanism **10** comprises a frame, generally indicated by **11**, which may be constructed of wood, plastic or other suitable materials and includes an elongate, generally horizontally extending, bottom portion **12** and elongate, generally vertically extending, spaced end portions **13** and **14** secured to each end of the bottom portion **12**. The frame may further include elongate, generally horizontally extending side portions **15** and **16** connecting and secured to generally the upper ends of end portions **13** and **14**, and elongate, generally vertically extending side portions **17** and **18** connected to each side of end portion **14**. The above described members form the generally rectangular, box-shaped frame, illustrated in FIGURES 1 and 2.

The grading and culling mechanism **10** further includes an elongate, forwardly extending inclined member **20** constructed of wood, plastic or other suitable material and attached to and disposed generally at the top of the vertically extending end portion **13** of the frame **11**. As may be seen in FIGURES 1, 2 and 5, the inclined member **20**

is in the form of a generally flattened, U-shaped, elongate, downwardly inclined member defining a straight-line, elongate trough **21** therein for successively receiving balls, generally indicated by **25**, at one end thereof and for allowing equal travel of each ball to the other releasing end thereof, as shown by the dotted line in FIGURE 1, for the attainment of substantially equal velocities by each ball. The trough **21** has upwardly diverging sides, as may be clearly seen in FIGURE 5, spaced apart in such a manner that the balls received therein cannot move laterally so that a straight-line movement is imparted to each ball, and the trough **21** has a depression **22** in the bottom portion at the releasing end thereof so that each ball is smoothly released therefrom to travel under the force of gravity in a forward, downward, arcuate path of travel, as illustrated in FIGURE 1, toward the horizontally extending, bottom portion **12** of the frame **11**.

The grading and culling mechanism **10** further includes a forwardly inclined striking plate **30** secured to the horizontally extending bottom portion **12** of the frame **11** in the downward path of travel of the balls **25** released from the inclined member **20** and adapted for striking by the released balls so that the balls will rebound in variable, predetermined, spaced, upward, arcuate, forward paths of travel toward the vertically extending end portion **14** of the frame **11**. The variable rebound paths of travel, shown in FIGURE 1, are determined by and directly related to the variable compression and balance characteristics of the balls.

The striking plate **30** may be constructed of metal, concrete, stone, or other suitable material to impart a proper rebound to the ball. The striking plate **30** should also be of suitable mass to impart the proper rebound to the balls striking same. It has been found that a steel plate having dimensions of approximately 9¾ inches long, 5 inches wide, and 9/16 inch thick will have sufficient mass to cause the balls to rebound properly.

The grading and culling mechanism further includes a plurality of shelves, three of which are indicated in the drawings at **40**, **41**, and **42**, constructed of wood, plastic or other suitable material and secured to the vertically extending end portion **14** of the frame **11** in vertically spaced positions in the variable, rebound paths of travel of the balls. These shelves are adapted to receive and retain the balls from the particular rebound paths of travel, as indicated by the dotted lines in FIGURE 1.

Although any number of shelves may be utilized according to the degree of grading and culling desired, the three shelves indicated in the drawings of this application would indicate a high compression ball, a low compression ball, and a cull or dud ball. For example, the top shelf **40** indicates a high compression ball, the middle shelf **41** indicates a low compression ball, and the bottom shelf **42** indicates a cull or dud ball. The shelves also include a center line indicating means **43** which indicates a true balance characteristic for the balls. It has been found that properly balanced balls will practically always assume a position within the shelves along the center line indicating means; whereas, an improperly balanced ball will follow an erratic path of travel and assume a position to the right or left of the center line indicating means.

The ball receiving and retaining shelves **40**, **41** and **42** are preferably of rectangular shape and of varying lengths to compensate for the variable, arcuate paths of travel of the balls and are preferably loosely mounted at upwardly extending angles on the frame **11** for providing a dampening effect to eliminate any bouncing of the balls received therein to insure that the balls remain in the relative positions received for efficient grading and culling of the balls. This is accomplished by loosely mounting each shelf on vertically spaced blocks **44** secured to the end portion **14** and on pegs **45** mounted in staggered apertures **46** in side portions **17** and **18** of the frame **11**. As may be readily seen, the staggered apertures **46** provide minute adjustments for positioning the shelves **40**, **41** and **42** to provide more accurate grading and culling of the balls as desired by the user.

In use, the grading and culling mechanism **10** may be placed on the floor or on a table and arranged to be reasonably level and firm. Balls **25** are successively placed on the inclined member **20** at the rear thereof against the end portion **13** of the frame **11** and released so that they will roll under the influence of gravity down the trough **21** in the inclined member **20** toward the other end thereof. The balls **25** will follow a straight-line, forward motion and will obtain a substantially equal velocity as they reach the ball releasing end of the inclined member **20** to be released therefrom for travel under the influence of gravity in a forward, downward, arcuate path of travel toward the forwardly inclined striking plate **30**. The balls **25** will then strike the striking plate **30** and rebound in upward, variable, predetermined, spaced, arcuate, forward paths of travel toward the ball receiving and retaining shelves **40**, **41** and **42**. The rebound path of travel of each ball is determined by and directly related to the variable compression and balance characteristics of the ball, i.e. a high compression ball will follow a higher and longer rebound path of travel, a low compression ball will follow a lower and shorter rebound path of travel and a dud or cull ball will follow a still lower and shorter path of travel, and a properly balanced ball will follow a generally straight-line path of travel while an improperly balanced ball will follow an erratic path of travel.

From the rebound paths of travel, the balls will be received and retained within a particular one of the shelves **40**, **41** and **42** for readily indicating the compression characteristic of the ball, and the balls will assume a position either along the center line indicating means **43** or to the left or right indicating whether the ball is properly balanced or not.

While the relative positions, size, angular relationship, etc. of the various elements of the grading and culling mechanism of this invention and their relationship to the paths of travel of the golf balls, as illustrated in the drawings and specifically described hereinbefore, have provided a workable embodiment of this invention, other arrangements of the essential elements of this invention are possible and the invention is not intended to be limited by the embodiment specifically illustrated and described. The scope of this invention is set forth and defined in the appended claims.

What is claimed is:

1. A mechanism for grading and culling golf balls and the like according to their compression and balance characteristics, said mechanism comprising:

(a) forwardly extending incline means adapted to successively receive balls, impart under the force of gravity an equal, constant velocity and straight-line, forward motion to each ball, and release each ball to travel under the force of gravity in a forward, downward, arcuate path of travel;

(b) forwardly inclined striking plate means disposed below said incline means in the downward path of travel of the balls released therefrom and adapted for striking by the released balls so that the balls will rebound in variable, predetermined, spaced, upward, arcuate forward paths of travel, said rebound paths of travel being determined by and directly related to variable compression and balance characteristics of the balls; and

(c) a plurality of shelf means disposed at predetermined spaced positions in the variable, rebound forward paths of travel of the balls and adapted to receive and retain the balls from the particular rebound paths of travel; whereby the compression characteristics of the balls are readily indicated by the particular shelf upon which a ball is received and retained and the balance characteristics of the balls

are readily indicated by the position of a ball within the shelf.

2. A mechanism for grading and culling golf balls and the like, as set forth in claim 1, in which said incline means comprises a generally flattened, U-shaped, elongate, downwardly inclined member defining a straight-line, elongate trough therein for successively receiving balls at one end thereof and for allowing equal travel of each ball to the other releasing end thereof for the attainment of substantially equal velocities by each ball, said trough having upwardly, diverging sides spaced apart in such a manner that the balls received therein cannot move laterally so that a straight-line movement is imparted thereto, and said trough having a depression in the bottom portion at the releasing end thereof so that each ball is smoothly released therefrom for its downward path of travel.

3. A mechanism for grading and culling golf balls and the like, as set forth in claim 1, in which said shelf means are loosely mounted for providing a dampening effect to eliminate any bouncing of the balls received therein to insure that the balls remain in the relative positions received therein for efficient grading and culling thereof.

4. A mechanism for grading and culling golf balls and the like according to their compression and balance characteristics, said mechanism comprising:

(a) a frame including an elongate, generally horizontally extending bottom portion and elongate, generally vertically extending, spaced end portions secured to each end of said bottom portion;

(b) an elongate, forwardly extending inclined member attached to and disposed generally at the top of one of said vertically extending end portions of said frame and adapted to successively receive balls at one end thereof, impart under the force of gravity an equal, constant velocity and straight-line, forward motion to each ball as the ball travels down the incline to the other side thereof, and release each ball from the other side thereof to travel under the force of gravity in a forward, downward, arcuate path of travel toward said horizontally extending bottom portion of said frame;

(c) a forwardly inclined striking plate secured to said horizontally extending bottom portion of said frame in the downward path of travel of the balls released from said inclined member and adapted for striking by the released balls so that the balls will rebound in variable, predetermined, spaced, upward, arcuate, forward paths of travel toward the other of said vertically extending side portions of said frame, said rebound paths of travel being determined by and directly related to variable compression and balance characteristics of the balls; and

(d) a plurality of shelves secured to the other of said vertically extending end portions of said frame in vertically spaced positions in the variable, rebound paths of travel of the balls and adapted to receive and retain the balls from the particular rebound paths of travel; whereby the compression characteristics of the balls are readily indicated by the particular shelf upon which a ball is received and retained and the balance characteristics of the balls are readily indicated by the position of a ball within the shelf.

5. A mechanism for grading and culling golf balls and the like, as set forth in claim 4, in which said inclined member comprises a generally flattened, U-shaped, elongate, downwardly inclined member defining a straight-line, elongate trough therein for sucessively receiving balls at one end thereof and for allowing equal travel of each ball to the other releasing end thereof for the attainment of substantially equal velocities by each ball, said trough having upwardly, diverging sides spaced apart in such a manner that the balls received therein cannot move laterally so that a straight-line movement is imparted thereto, and said trough having a depression in the bottom portion at the releasing end thereof so that each ball is smoothly released therefrom for its downward path of travel.

6. A mechanism for grading and culling golf balls and the like, as set forth in claim 4, in which said shelves are adjustably mounted for varying the positions thereof to obtain more accurate grading and culling of the balls, and in which said shelves are loosely mounted for providing a dampening effect to eliminate any bouncing of the balls received therein to insure that the balls remain in the relative positions received therein for efficient grading and culling of the balls.

7. A mechanism for grading and culling golf balls and the like, as set forth in claim 6, in which said shelves comprise three vertically spaced shelves, the top shelf indicating a high compression ball, the middle shelf indicating a low compression ball and the bottom shelf indicating a cull ball; and in which each of said shelves includes a center line indicating means for indicating a true balance characteristic for the balls.

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