R. S. BLAIR.

TESTING DEVICE FOR TENNIS BALLS,

APPLICATION FILED FEB. 23, 1916.

1,335,422. **Patented Mar. 30, 1920.**

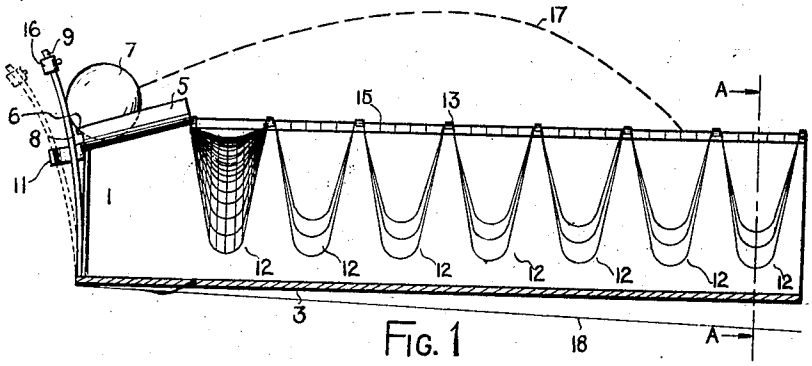


FIG. 1

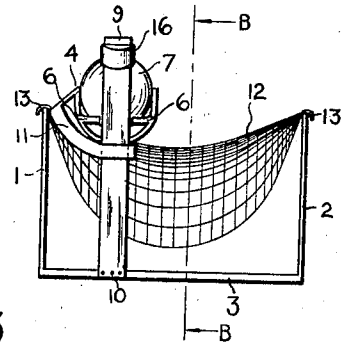


FIG. 3

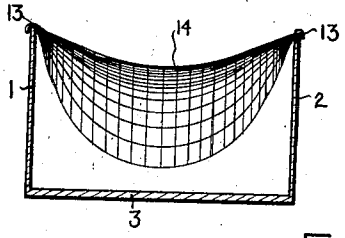


FIG. 4

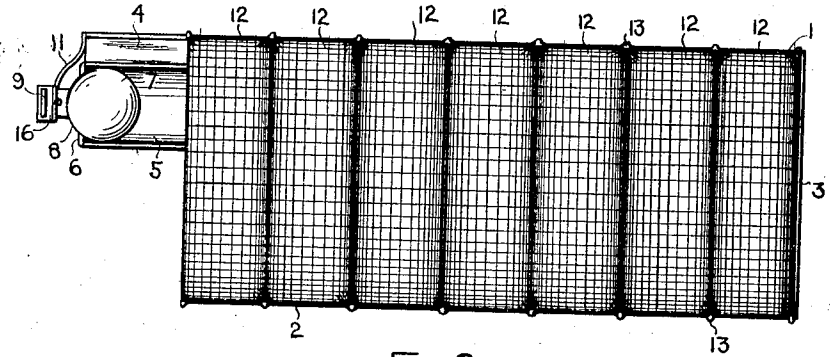


FIG. 2

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TESTING DEVICE FOR TENNIS-BALLS.

1,335,422. Specification of Letters Patent. Patented Mar. 30, 1920.

Application filed February 23, 1916. Serial No. 79,901.

To all whom it may concern:

Be it known that I, ROBERT S. BLAIR, a citizen of the United States, and resident of South Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Testing Devices for Tennis-Balls, of which the following is a specification.

This invention relates to testing devices for tennis balls and the like. One of the objects thereof is to provide a simple and practical device of the above nature of reliable and efficient action. Another object is to provide a device of the above nature, which may be rapidly and conveniently manipulated. Another object is to provide a device of the above nature in which the balls are automatically assorted in accordance with their condition. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts which will be exemplified by the structure hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of various possible embodiments of the invention:

Figure 1 is a section along B—B of Fig. 3.

Fig. 2 is a plan view.

Fig. 3 is an end view.

Fig. 4 is a cross section taken along the line A—A of Fig. 1.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now to Fig. 3 of the drawing there is shown a casing, comprising the side walls 1 and 2 and the bottom 3. This casing is preferably formed of sheet metal. At one end of the casing an extension 4, preferably branching laterally from the side wall 1, terminates in the ball holder or support 5 of concave form and upwardly inclined toward the body of the casing. This holder is provided with integral lugs 6 adapted to support the ball, as for example a tennis ball 7, in a position with its rear lower portion 8 exposed as shown. Mounted at the rear of the ball in this position is a flat spring 9 secured to the casing at 10 rigidly in position at its lower end. This spring normally occupies a position in which it substantially contacts without pressure the rear surface 8 of the ball and its projecting upper edge permits it to be drawn rearwardly away from the ball to the position indicated in dotted lines in Fig. 1 of the drawing in which it engages the stop 11, which may be an integral extension from the portion 4.

In the body of the casing there are provided a plurality of successive compartments 12 here shown as seven in number. These compartments are preferably formed by looping a section of netting, such as tennis netting, into pockets and it may be noted that the dimension of these pockets in the direction lengthwise of the casing is short relative to their depth and width and in this manner accuracy of action, as hereinafter described, is attained and yet the capacity of the pockets maintained large. The pockets are preferably separated by stretching the net crosswise of the casing over the lugs 13 integral with the side walls. The stretched portions of the net, as at 14 in Fig. 4 of the drawing, are not tight but are preferably loose and hang downwardly to a slight extent in order to avoid a rebounding surface for the balls.

Along the upper edge of one of the side walls, as at wall 1, there is preferably formed a scale 15 which may be sighted across in order to enhance the accuracy of the device.

In the use of this apparatus a ball to be tested is placed in the position indicated at 7 and the spring 9 drawn back until it engages with the stop 11, and released. It thereupon snaps forward and subjects the ball to a definite impact, and it may here be noted that although this impact in this device is gained by releasing a resilient member, the broader features of this invention comprehend apparatus in which the ball is subjected to impact, or made to rebound, by other means. It may also be noted that the device is not limited to use in connection with tennis balls, as, for example, golf balls may likewise be tested and that particularly for use with golf balls it is desirable to have on the upper end of the spring 9 a weight 16 to give a hammerlike effect.

When a ball is subjected to impact it re-

bounds forwardly as along the dotted line 17 and the extent of travel of this rebound with a constant impact is substantially proportional to the resilience or playing condition of the ball. For example, if a ball is in good condition it will drop in one of the extreme pockets 12, whereas if its condition is not so good it will drop in a pocket nearer to its starting point. The spring device and its travel are so proportioned that a ball in extremely poor condition will fall in the nearest pocket to its starting point and a ball in the best of condition to the most remote pocket, and balls in intermediate condition into pockets which are remote in proportion to the condition of the balls. It is to be noted that a golf ball will require a different point and degree of impact from a tennis ball and the weight 16 may be slotted and slidably fitted over the end of the spring so that it can be used with golf balls and removed in testing tennis balls. The device is preferably mounted in inclined position, the horizontal being indicated by line 18.

In the use of the above apparatus a series of balls are placed one after another in the holder 5 and subjected to impact and they are automatically assorted into various pockets in accordance with their condition. If the condition is to be more closely determined the travel of the balls may be gaged by sighting across the scale 15 and this scale may be used to the exclusion of the pockets as an indicating means although decided advantages result from the use of the pockets. It will thus be seen that apparatus is provided in which the several objects of this invention are achieved.

As various possible embodiments might be made of the above invention, and as various changes might be made in the construction above described it is to be understood that all matter herein described or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having described this invention, I claim:

1. In a testing device for balls, in combination, means adapted to subject a succession of balls to impact in the same direction, and a plurality of receptacles serially arranged in the direction in which said balls travel from said impact and adapted respectively to receive balls having different degrees of resilience.

2. In a testing device for balls, in combination, means adapted to subject a series of balls to a uniform degree of impact, means adapted to receive said balls and measure the reaction thereof from said impact.

3. In a testing device for balls, in combination, means adapted to subject a series of balls to impact of a substantially constant degree, and means adapted to receive and automatically assort said balls into three or more groups in accordance with their reaction from said impact.

4. In a testing device for balls, in combination, means adapted to subject a series of balls to impact of a substantially constant degree, and means adapted to receive and automatically assort said balls in accordance with their reaction from said impact, said means comprising a series of compartments with yielding dividing means between and arranged substantially in the direction in which the balls travel after impact.

5. In a testing device for balls, in combination, means adapted to subject a series of balls to impact of a substantially constant degree and means adapted to receive said balls substantially at their maximum range from said impact and prevent their return.

6. In a testing device for balls, in combination, means adapted to subject a ball to impact, a series of compartments arranged in the direction in which said ball is thrown by said impact, each of said compartments being open to receive the ball and said compartments having dimensions in a plane transverse to the line of rebound of the ball which is greater than the length of their openings in said direction.

7. In a testing device for balls, in combination, means adapted to subject the balls to impact and a receiving device for said balls after impact comprising a series of compartments arranged serially in the direction of rebound of the balls and separated one from another by netting.

8. In a testing device for balls, in combination, means adapted to subject a series of balls to a substantially constant degree of impact and a receiving device formed of netting looped into pockets serially disposed in the direction of the rebound of said balls.

9. In a testing device for balls, in combination, means adapted to subject a series of balls to a substantially constant degree of impact and a receiving device upwardly inclined from the point at which said balls are subjected to impact and comprising a series of pockets arranged in the direction of the rebound of the balls.

10. In a testing device for balls, in combination, means adapted to support the balls, a resilient member, means adapted to cause said resilient member to strike each ball with a predetermined degree of impact and means adapted to measure the rebound of said balls from said impact.

11. In a testing device for balls, in combination, a support for the balls, a spring arranged to be snapped toward said balls, a stop limiting the retraction of said spring and means adapted to measure the reaction of said balls as said spring is snapped against the same.

12. In a testing device for balls, in combi-

nation, a support for the balls, a spring arranged to be snapped toward said balls, a stop limiting the retraction of said spring and means adapted to measure the reaction of said balls as said spring is snapped against the same, said last means comprising a plurality of compartments arranged in series in the direction of travel of said balls.

13. In a testing device for balls, in combination, a support for the balls, a spring arranged to be snapped toward said balls, a stop limiting the retraction of said spring and means adapted to measure the reaction of said balls as said spring is snapped against the same, said last means comprising a net looped into a series of pockets serially arranged in the direction of travel of said balls.

14. In a testing device for balls, in combination, a sheet metal member comprising a bottom and side walls and a ball support, a net looped into pockets serially arranged lengthwise of said metal member between said side walls a flat spring positioned to be snapped lengthwise of said metal member into engagement with balls upon said support and a stop limiting the amount of retraction of said spring.

Signed at South Orange, in the county of Essex and State of New Jersey, this 12th day of February, A. D. 1916.

ROBERT S. BLAIR.