

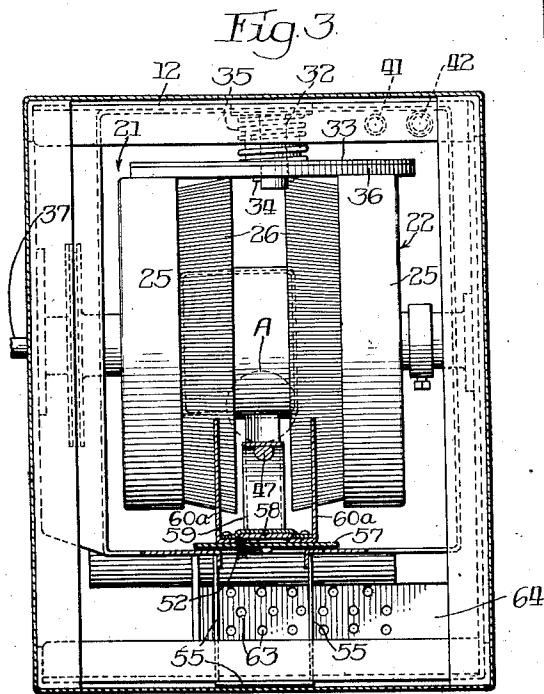
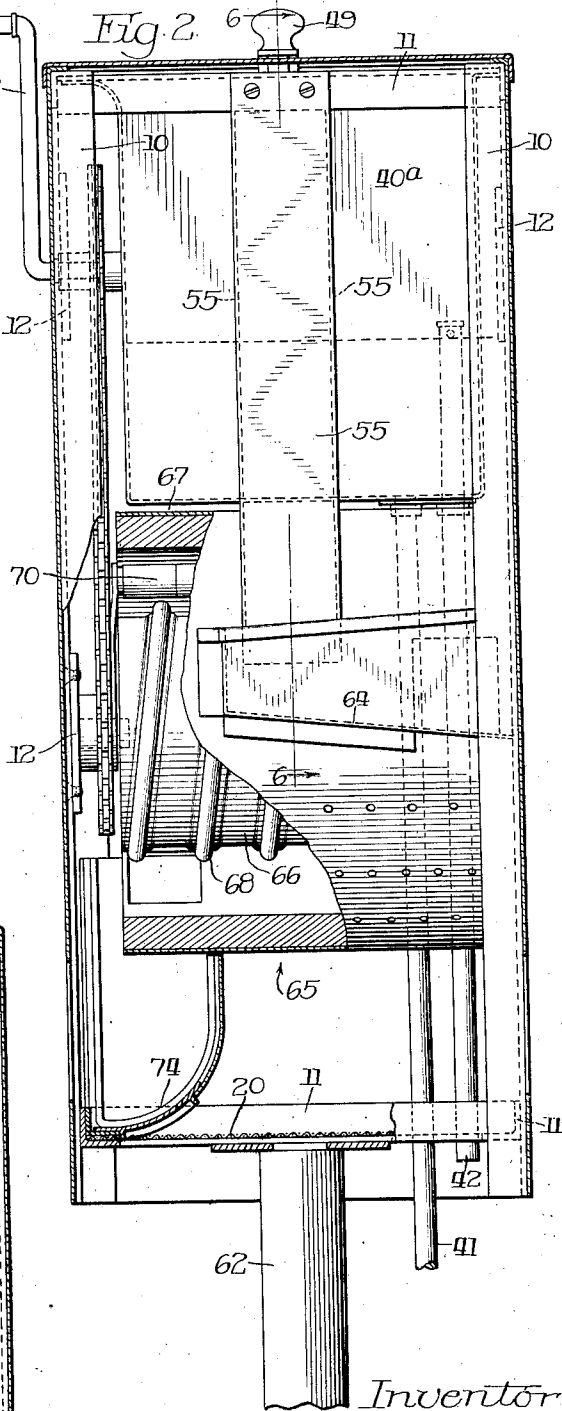
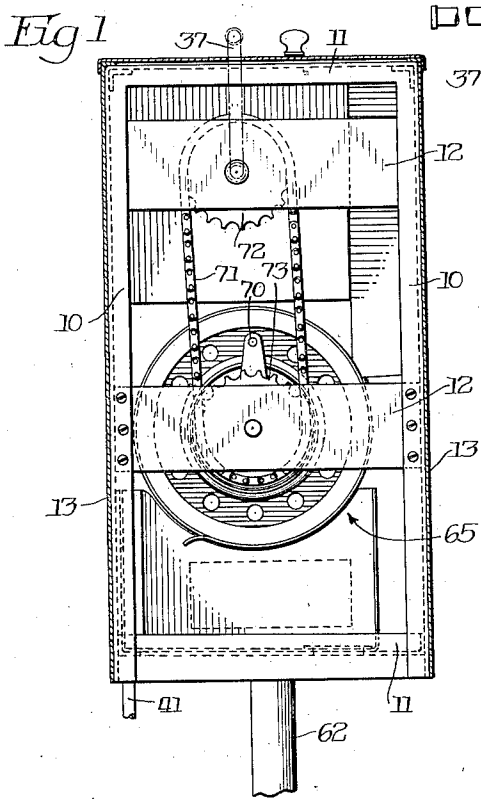
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MACHINE FOR CLEANING GOLF BALLS OR THE LIKE

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# UNITED STATES PATENT OFFICE

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## MACHINE FOR CLEANING GOLF BALLS OR THE LIKE

Otto E. Heisser, Minocqua, Wis.

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Renewed May 4, 1935

11 Claims. (Cl. 15—21)

The invention relates generally to a machine for cleaning golf balls and more particularly to a machine of the type described in my copending application Serial No. 433,575 filed March 6, 1930, of which application this is in part a division and in part a continuation.

An object of the invention is to provide a new and improved device of this character embodying a continuous passageway along which the ball travels for operation thereon by a washing and scrubbing mechanism and subsequently by a drying mechanism to clean the ball thoroughly and discharge the ball in a clean, dry condition.

A further object of the invention is to provide a novel device of this character embodying means for presenting a golf ball to the action of a washing and scrubbing mechanism and subsequently discharging said ball therefrom for conducted movement to other ball conditioning devices.

More specifically stated, an object of the invention resides in the provision of a new and improved means for cleaning a golf ball embodying a casing having a passageway therethrough into which a ball to be cleaned is fed and which guidingly conducts a ball to a position intermediate a pair of oppositely rotating scrubbing brushes moving at different speeds and effective to wash and scrub every part of the ball surface, means being provided for holding the ball in such position until cleaned whereupon said means is movable to release the ball from its position intermediate the brushes to permit the ball to continue its movement through the casing.

In conjunction with the foregoing objects, other objects of the invention reside in the provision of novel means for supplying ball cleaning fluid to the brushes; for confining said fluid against leakage by splashing during the operation of the machine; for driving said cleaning brushes; and for temporarily holding the ball in its position intermediate said brushes.

Another object of the invention is to provide a novel ball cleaning device in which the operative mechanisms are readily accessible for inspection, cleaning, repair and replacement of parts when necessary.

Other objects and advantages will become apparent in the following description and from the accompanying drawings, in which:

Figure 1 is a side elevation on a reduced scale of a machine embodying the features of the present invention, the front casing wall being removed to show the interior of the machine.

Fig. 2 is a similar view on a larger scale, being a

side elevation from the right-hand side of the machine as it appears in Fig. 1.

Fig. 3 is a plan view of the machine with the cover removed.

Fig. 4 is a transverse vertical section of a part of the machine taken substantially on the axis of the drive shaft of the machine as indicated by the line 4—4 in Fig. 6, and illustrating the ball washing and scrubbing mechanism.

Fig. 5 is a fragmentary detail section on an enlarged scale taken substantially along the line 5—5 of Fig. 6.

Fig. 6 is a fragmentary vertical section through the washing mechanism taken substantially along the line 6—6 of Fig. 2.

Fig. 7 is a fragmentary plan view of a modified form of driving mechanism for the ball brushing members.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Generally the preferred embodiment of the invention contemplates the provision of a casing which may be readily taken apart completely to expose the mechanisms therein. Within the casing a continuous passageway is formed along which the ball travels from an entrance or inlet in the top to an exit or outlet at the bottom of the casing. A golf ball inserted in the inlet is conveyed along said passageway to a point intermediate a pair of oppositely rotating brushes, one of which is driven at a higher rate of speed than the other to produce a turning, twisting movement of the ball by which every portion of the ball surface is subjected to the scrubbing action of the brushes. Means are provided for temporarily maintaining the ball in its position intermediate said brushes, said means being retractible manually to permit the ball to be discharged from between the brushes for continued travel along said passageway to another ball-conditioning mechanism, which, in the present machine, is a ball dryer. In the present instance the driving mechanism is manually actuated but, of course, may be easily adapted to be power driven if a machine of that nature is desired.

Referring more particularly to the preferred construction illustrated herein, a supporting

frame is provided on which the operating mechanisms are mounted, which frame is in the form of an elongated, substantially rectangular member comprising side frame members 10 connected by top and bottom transverse frame members 11. If desired, a plurality of intermediate transversely extending supporting bars 12 may be employed. Surrounding the elongated frame is a closure member in the form of a tubular casing 13 of substantially rectangular cross-section arranged to slide over one end of the casing and to fit snugly about the side frame members 10. An inturned flange 14 on one end of the casing engages the transverse frame members at one end of the frame to properly locate the casing relative to the frame.

A cover (see Fig. 6) closes this end of the casing and is arranged to lock the casing on the frame. Thus, a flat closure plate 15 has marginal flanges 16 arranged to fit snugly over the end of the casing. The inner face of the plate 15 carries one or more lugs 17 positioned to fit under one of the transverse frame members 11 at one side of the frame. An oppositely positioned rotatable member 18 carried by the cover engages the opposite transverse frame member 11 to hold the cover in place and this rotatable member 18 may, if desired, be actuated by a key-operated locking mechanism 19 of any well-known construction. The opposite end of the casing is closed by a foraminous member 20, such as a screen, suitably secured to the transverse frame members 11 at that end of the casing.

The ball washing and scrubbing mechanism is located within one end of the casing, arbitrarily designated the inlet end, and located at the top of the frame as illustrated in Figs. 1, 2, 4 and 6. This mechanism comprises generally a pair of oppositely facing brush members 21 and 22 (Figs. 3, 4 and 6) mounted for rotation on the same axis and spaced apart a distance less than the diameter of the ball to be cleaned. To this end, a shaft 23 (Figs. 4 and 6) extends transversely of the frame and is journaled in suitable bearings 24 welded or otherwise rigidly secured to opposed supporting bars 12. The brush members 21 and 22 are substantially similar in construction and comprise thick, circularly-shaped backs 25 having bristles 26 on their adjacent faces. The brush members 21 and 22 are detachably affixed to axially extending sleeves 27 and 28 (Fig. 4) which are adapted to be received upon the shaft 23.

It is preferred that the brush members have a rotational movement relative to each other of such nature that a ball positioned therebetween will be turned in all directions during the washing and scrubbing operation. This is effected in one form of the device by causing said brushes to rotate in opposite directions with one of the brushes having a greater rotational speed than the other. Thus, the brush member 21 is rigidly fixed to the shaft 23 for rotation therewith by means of a cotter pin 29, or the like, extending through the sleeve 27 and shaft 23. The other brush member 22 is not affixed to the shaft and rotates freely relative thereto upon its sleeve 28. One or more spacing washers 30 are interposed between the adjacent ends of the sleeves 27 and 28, and a collar 31, adjustable by means of a set screw 31<sup>a</sup>, is arranged on the shaft to abut the outer end of the sleeve 28 and prevent relative axial movement of the parts.

The freely rotatable brush member 22 is preferably driven through suitable connections by

the brush member 21, which connections are such as to impart a different speed of rotation to the driven brush. As may be seen in Figs. 3 and 6, a properly disposed transverse supporting bar 12 on the frame carries an inwardly projecting stub shaft 32 positioned between the brush members 21 and 22 in the horizontal plane of the shaft 23. A driving disk 33 is rotatably maintained on the stub shaft 32 by a pin 34 and is preferably urged away from the supporting bar 12 by a spring 35 interposed between the face of the disk and a stationary part. In diameter, the disk is of a size to extend into juxtaposition with the peripheries of the brush backs 25, and a facing 36 of rubber, or other suitable friction material, is carried by the disk for engagement by the peripheries of the brush backs.

The arrangement and disposition of the parts, as may be seen in Fig. 4, is such that the freely rotatable brush member 22 engages the driving disk 33 at a point closer to the axis of the driving disk than the point of engagement of the other brush member 21. Consequently, upon rotation of the shaft 23 to drive the brush member 21 therewith, engagement of said brush member 22 with the driving disk 33 produces a rotation of the brush member 22 in an opposite direction and at a decreased rate of speed. Manual rotation of the shaft 23 is effected in any suitable manner, as by means of a hand crank 37 having a screw threaded engagement with the shaft through an appropriately positioned aperture in one side wall of the casing 13.

A modified form of driving mechanism is illustrated in Fig. 7, in which the general arrangement of the brush members on the shaft and the driving disk 33 is not changed, except that the driving disk 33 rotates on an axis which is located substantially centrally of the space between the opposed brush members. The freely rotating brush member 22, in this modification, has an annular peripherally extending ring 38 secured thereto for permanent engagement with the friction facing 36 on the driving disk 33. The driving disk 33 is intermittently driven from the rotating brush member 21 by the successive engagement of a plurality of oppositely disposed projections or bosses 39 on the periphery of the driven brush member 20 with the friction face 36 on the driving disk. In consequence of this construction, rotation of the shaft 23 rotates the brush member 21 constantly, said brush member in turn operating to intermittently advance the driving disk 33 and the freely rotatable brush member 22. Said movement of the freely rotatable brush member, of course, is in a direction opposite to that of the brush member 21 and, being intermittent, may be said to be at a less rate of speed than that of the constantly rotating brush member 21.

The brushes in the present device are adapted for using water for a cleansing fluid for the golf balls and, in order to supply water to the brushes, a water tank or container 40 is mounted in the frame in such manner that the lower portions of the brush members extend into a supply of water in the tank. The water tank is of any well-known construction, herein being shown as a container having an open top face. For convenience, in filling or draining the water tank, a conduit 41 (Figs. 2 and 4) may be alternately connected in any well-known manner with a drain or with a source of water supply. Furthermore, the device may include an overflow drain

42 for definitely maintaining the water level in the water tank below a predetermined point.

Means is provided within the casing which defines a passageway for a golf ball to be cleaned.

5 This passageway first positions a ball, indicated at A (Figs. 3 and 6), between the brush members where it is held until, in the opinion of the operator, it has been amply scrubbed and washed. In the cover plate 15 intermediate and adjacent  
10 the brush members 21 and 22, an aperture 43 (Figs. 4 and 6) is provided through which a golf ball may pass into the interior of the casing. At one side of the aperture 43, the cover plate 15 carries a projecting finger 44 arranged to extend  
15 inwardly of the frame, when the cover is assembled therewith, to a position intermediate the opposed brushes. Preferably, the finger 44 has a somewhat angular relationship with respect to the cover.

20 If we consider, referring to Fig. 6, that the brushes are being driven so that the slower moving brush 22 is rotating in a counterclockwise direction, while the opposed brush 21 (which can not be seen in Fig. 6) is rotating in a clockwise  
25 direction, it will be apparent that, when a golf ball is inserted in the aperture 43, the ball will be directed by the finger 44 to a position intermediate the brushes, whereupon the more rapidly rotating brush member 21 will produce a traveling  
30 movement of the ball between the brushes away from the finger 44. A circular drum-like member 45, having an outer surface 46 of rubber or the like, is interposed between the brushes and is rigidly secured to the brush member 21 for  
35 rotation therewith. This drum-like member maintains the golf ball adjacent the peripheries of the rotating brush members.

In order to prevent the ball from moving from between the brush members until it has been  
40 thoroughly cleaned, a retractible stop member is provided. This member (see Fig. 6) comprises an elongated rod 47 extending through the cover plate 15 on the opposite side of the aperture 43 from the finger 44. The rod 47 is angular in  
45 cross-section and is supported by a depending bracket 48 on the cover plate 15 for vertical sliding movement into and out of a ball-engaging position intermediate the brushes. The disposition of these elements is such that when the ball  
50 moves away from the finger 44 it engages the depending end of the rod 47 which, together with the drum 45, holds the ball in position to be scrubbed. While the ball is so held, the opposite  
55 directions of rotation of the brush members, as well as the difference in rotational speeds, produce a turning, twisting movement of the ball to subject every portion of the ball surface to the scrubbing action. When the freely revolving  
60 brush member 22 is intermittently driven by the mechanism illustrated in Fig. 7, said intermittent rotation of the brush effects a shifting movement of the ball from time to time, to expose the entire surface of the ball to the brush action.

When the operator believes that the ball has  
65 been thoroughly scrubbed, the rod 47 is retracted from its normal position, a finger piece 49 or the like being provided to facilitate such movement, to permit the ball to be discharged from between the brushes and to continue its travel along the  
70 passageway. The portion of the passageway which the ball traverses in passing from its scrubbing position between the brushes, is defined by an arcuately cross-sectioned plate 50 (Figs. 5 and 6) which extends from a position intermediate the brush members and adjacent the lower  
75

end of the rod 47 substantially to the adjacent side 40<sup>a</sup> of the water tank 40. The plate 50 slopes toward the wall 40<sup>a</sup> and is supported in this position in any suitable manner, as by means of a pair of upstanding flanges 51 secured to the  
5 water tank wall. The wall 40<sup>a</sup> has an aperture 52 registering with the end of the plate 50 of such size that a golf ball may pass therethrough to enter an elongated conduit 53 defined by the side wall 40<sup>a</sup>, a short wall 54 forming a continuing  
10 part of the water tank wall, side walls 55 (Figs. 2, 3 and 6), and a bottom wall 56.

In order to prevent water from being splashed out of the water tank through the aperture 52 in the wall 40<sup>a</sup> during the operation of scrubbing  
15 the ball, means is provided for closing the aperture 52, which means is movable to open the aperture when the rod 47 is retracted to release the balls from between the brushes. Herein this means is shown as comprising a pair of closure  
20 plates 57 and 58 disposed substantially end to end. The plate 57 is connected to the rod 47 by an arm 59 which has an angular end portion abutting and secured to the plate 57. The plate 58 is mounted in guides 60 for sliding movement in  
25 a direction paralleling the direction of movement of the rod 47. Movement of the plate 58 is effected by an interengagement with the plate 57 upon movement of the plate 57 a predetermined distance, said interengagement being effected in  
30 this instance by providing a flange 61 (Figs. 5 and 6) on the plate 58 arranged to be engaged by the end of the arm 59 as the arm moves with the rod 47. A stationary pin 61<sup>a</sup> or the like limits the return movement of the plate 58. If desired,  
35 flanges 60<sup>a</sup> (Fig. 3) rigid with the side wall 40<sup>a</sup> may be provided to extend therefrom on either side and above the arcuate plate 50 to prevent lateral movement of the ball as it moves from the brushes to the aperture.  
40

In use, the device is adapted to be mounted in an upright position, that is to say, with its longitudinal axis disposed vertically. Where desired, the device may be supported upon the upper end of a suitable pedestal 62 or the like (Figs. 1  
45 and 2). In this position of the machine, the rod 47 as well as the plates 57 and 58 are normally maintained by gravity in their inwardly extending position relative to the casing so that the mechanism is always ready for operation. The  
50 elongated conduit 53 of the ball passageway extends vertically of the casing so that, when the ball passes between the washing brushes across the arcuate plate 50, it drops into the conduit 53. The bottom 56 of the conduit 53 is apertured, as  
55 at 63, to provide a drainage for any excess water carried thereto on the surface of the balls. The bottom of the conduit 53 communicates with one side of a laterally extending and slightly sloping trough 64 (Figs. 2 and 3) which, in turn, com-  
60 municates with a second ball conditioning device, in this instance, a dryer mechanism 65 (Figs. 1, 2 and 6).

This dryer mechanism is fully described in my  
65 copending application and need not be fully described herein. Generally stated, said drying mechanism comprises a pair of concentrically arranged drums 66 and 67, the inner one 66 of which carries raised members 68 defining a helical passageway between the drums which the  
70 ball follows while engaging a drying surface 69 presented on the inner surface of the outer drum 67. A crank arm 70 positioned for circumferential movement between the two drums 66 and 67 is driven, by a chain and sprocket connection 75

71, 72 and 73 (Fig. 1) with the shaft 23 of the washer mechanism, to carry the ball through the drying mechanism. Ultimately the ball is discharged into a receptacle 74 located near the bottom of the machine from which it may be removed by the operator.

It will be apparent from the foregoing that the device is entirely automatic in its washing and scrubbing operation since the operator need only insert a ball in the aperture 43 in the top of the casing, rotate the crank 37 until he believes that the ball has been thoroughly washed and scrubbed, then retract the rod 47 to allow the ball to continue its movement along the passageway to the drying mechanism, and thence to the receptacle 74. Due to the rotational movement of the opposed brush members 21 and 22, at different speeds, in opposite directions, the ball is thoroughly cleaned and scrubbed throughout its entire surface. Moreover, the faster movement of the brush member 21 positively discharges the ball from between the brushes for its continued movement along the passageway when the rod 47 is withdrawn from its holding engagement with the ball. The depending finger 44 prevents the ball from being drawn into the washing mechanism should the shaft 23 (for any reason) be rotated in a reverse direction. The device is simple in construction, is efficient and thorough in its operation, and it will be observed that each constructional part of the device is readily accessible for inspection, repair or replacement of parts whenever necessary.

I claim as my invention:

1. A device for cleaning golf balls comprising, in combination, a casing having means therein providing a continuous ball guideway therethrough, a rotatable shaft, a brush member mounted for rotation with said shaft at one side of said guideway, a second brush member mounted on said shaft for rotation relative thereto and disposed on the opposite side of said guideway, and means for drivingly connecting said second brush member with said first brush member.

2. A device for cleaning golf balls comprising, in combination, a casing having means therein providing a continuous ball guideway therethrough, a rotatable shaft, a brush member mounted for rotation with said shaft at one side of said guideway, a second brush member mounted on said shaft for rotation relative thereto and disposed on the opposite side of said guideway, and means including an interposed disk positioned to be driven by the periphery of the first mentioned brush member and to drivingly engage the periphery of said second brush member to drive one from the other in opposite directions.

3. A device for cleaning golf balls comprising, in combination, a casing having means therein providing a continuous ball guideway therethrough, a rotatable shaft, a brush member mounted for rotation with said shaft at one side of said guideway, a second brush member mounted on said shaft for rotation relative thereto and disposed on the opposite side of said guideway, and means intermittently establishing a driving connection between said first and second brush members.

4. In a golf ball conditioning device, the combination of opposed ball treating members arranged to receive a golf ball therebetween, means for supporting a golf ball between said members and for guiding the movement of said ball from between said members, means for moving said members in opposite directions at different rates

of speed whereby the force exerted by the faster moving member tends to move said ball from between said members, and manipulable stop means positioned normally to engage the ball and hold it between said members in opposition to the force exerted thereon by the faster moving member during a treating operation, said means being immovable in the direction in which the ball tends to move and being movable upon manipulation to release the ball for discharge between said members along the ball supporting and guiding means by the force exerted thereon by the faster moving member.

5. In a golf ball conditioning device, the combination of a pair of opposed ball treating brushes, means for supporting said brushes for rotational movement, means for supporting a ball between said brushes, means for rotating the brushes in opposite directions at different rates of speed whereby the force of the faster moving brush during a treating operation on a ball positioned between the brushes tends to move said ball out of its position between the brushes, stop means normally positioned to engage a ball disposed between said brushes and being immovable in the direction in which the ball tends to move it, and means for withdrawing the stop means to release the ball for ejection by said force of the faster moving brush.

6. In a device of the character described, the combination of a casing, a container for water mounted in said casing, a shaft journaled in said casing and traversing said container, a pair of brushes mounted on said shaft and extending in part into water in said container, means for driving said brushes, said brushes being opposed to each other to define therebetween a golf ball receiving space, retractible means normally positioned between said brushes to engage and hold a golf ball therebetween, and a guideway positioned adjacent said retractible means to receive and convey said ball from said brushes upon movement of said retractible means out of engagement with the ball.

7. In a device of the character described, the combination of a shaft, a pair of disk-shaped brush members, means for mounting one of said brush members on said shaft for movement therewith, means for mounting the other of said brush members on said shaft for movement relative thereto, said brush members being oppositely disposed on said shaft to receive a golf ball therebetween, and a driving disk journaled for rotation in a plane tangential to the peripheries of said brush members and engaging said peripheries drivingly to connect said brush members.

8. In a device of the character described, the combination of a shaft, a pair of disk-shaped brush members, means for rigidly mounting one of said brush members on said shaft, means for mounting the other of said brush members on said shaft for movement relative thereto, said brush members being oppositely disposed on said shaft to receive a golf ball therebetween, and a driving disk journaled for rotation in a plane tangential to the peripheries of said brush members and engaging said peripheries drivingly to connect said brush members, the point of engagement of one of said brush members with said disk being closer to the axis of said disk than the point of engagement of the other brush member, whereby said brush members are driven at different rates of speeds.

9. In a device of the character described, the combination of a shaft, a pair of brushes mount-

ed on said shaft, means for driving said brushes, said brushes being opposed to each other to define therebetween a golf ball receiving space, retractable means normally positioned between 5 said brushes to engage and hold a golf ball therebetween, and a guideway positioned adjacent to said retractable means to receive and convey said ball from said brushes upon movement of said retractable means out of engagement with the 10 ball.

10. In a device of the character described, the combination of a casing, a pair of spaced brushes mounted for movement relative to each other within said casing, the walls of said casing having spaced inlet and outlet apertures therein, a 15 guideway to said outlet aperture from a position intermediate said brushes, retractable means normally extending between said brushes to engage said ball and temporarily prevent move-

ment thereof along said guideway toward said outlet aperture when the brushes are driven in one direction, and means interposed between said brushes in spaced relation to said retractable means for preventing movement at all times of 5 said ball relative to the guideway when the brushes are moved in a direction opposite to said first mentioned direction.

11. In a ball cleaning device, ball scrubbing means adapted to allow a ball to be dropped into 10 the scrubbing position, said scrubbing means being of such a character as to urge the ball backwards or forwards in an approximately horizontal direction, a stop behind said scrubbing position, a readily retractable stop in front of said scrub- 15 bing position, and a ball outlet passageway leading forward from said scrubbing position.

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