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BOWLING BALL ATTACHMENT

2,147,907

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2 Sheets-Sheet 1

Fig. 1

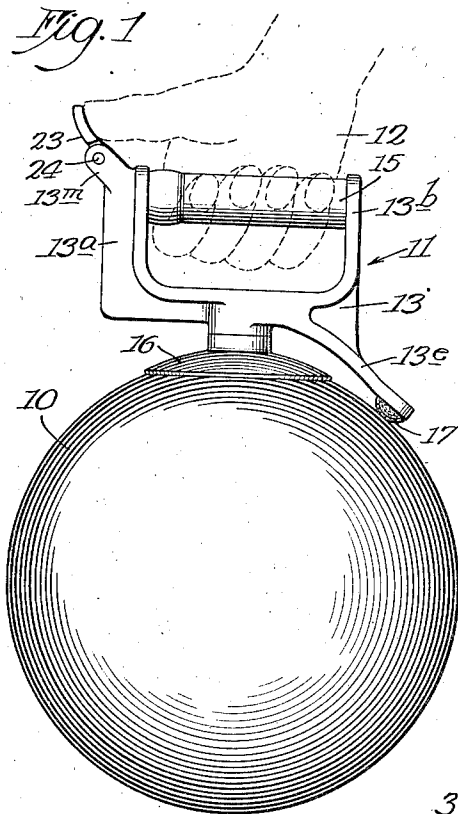


Fig. 5

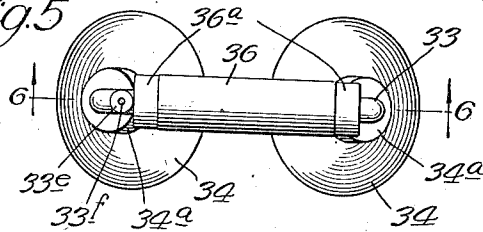


Fig. 4

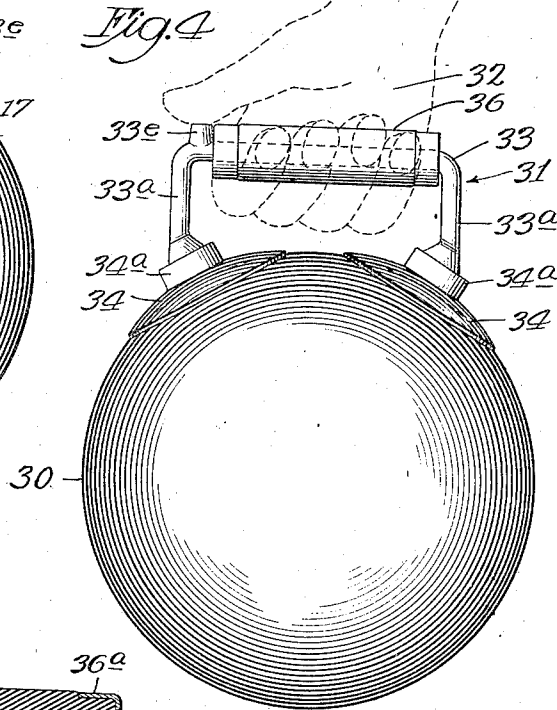
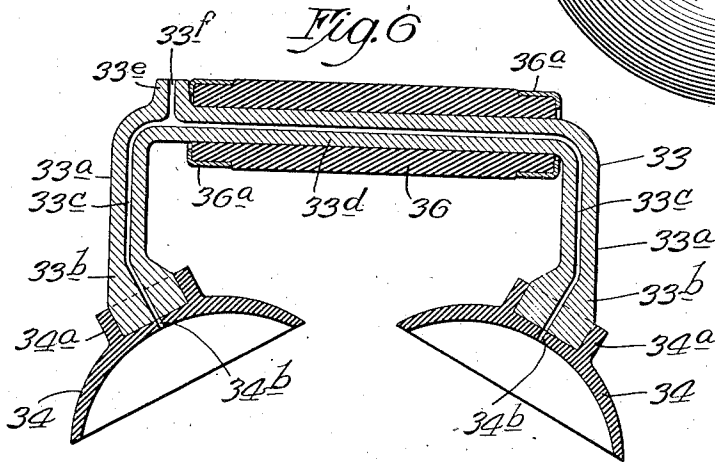


Fig. 6



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BOWLING BALL ATTACHMENT

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10 Claims. (Cl. 273-64)

This invention relates to improvements in bowling ball attachments and its purpose is to provide means for holding a bowling ball during the act of bowling without the necessity of inserting the thumb and fingers in the holes which are usually provided in bowling balls for this purpose. It has for many years been the practice to provide bowling balls with two or three holes extending radially inward to receive the thumb and one or two fingers of one hand of the bowler and the ball has been held in this manner during the operation of swinging the ball and delivering it onto the alley. This mode of holding and delivering a bowling ball is objectionable for the reason that, due to the weight of the ball and the rubbing action of the edges of the holes on the fingers of the bowler, the fingers become sore and make it difficult to hold the ball, while the provision of holes in the ball prevents it from having a true spherical surface so that the margins of the holes injure the surface of the alley and also the surfaces of the pins, making it necessary to refinish the alley and to replace the pins at frequent intervals. The principal object of the present invention is to provide an improved attachment for holding a bowling ball without the necessity of providing holes in the ball, this attachment comprising a handle and pneumatic devices by which the ball is gripped and held until released by the bowler. A further object is to provide an improved bowling ball attachment comprising a handle and one or more suction cups adapted to be pressed against the spherical surface of the ball and to hold the ball by atmospheric pressure until the suction is relieved by the action of the bowler at the desired point in the swing or delivery of the ball. Another object of the invention is to provide a bowling ball attachment comprising a handle and one or more suction cups adapted to grip the surface of the ball in conjunction with a passage extending through the frame of the attachment and having means located adjacent the fingers of the bowler for permitting the partial vacuum within the cup or cups to be relieved when desired. Other objects relate to various features of construction and arrangement which will appear more fully hereinafter.

The nature of the invention will be understood from the following specification taken with the accompanying drawings, in which two embodiments are illustrated.

In the drawings,

Fig. 1 shows a side elevation of a bowling ball having applied thereto the improved attachment

of the present invention and illustrating the manner of holding this attachment in the hand of the bowler;

Fig. 2 shows an enlarged top plan view of the bowling attachment illustrated in Fig. 1;

Fig. 3 shows a vertical section taken on the line 3-3 of Fig. 2;

Fig. 4 shows a side elevation, similar to that of Fig. 1, of a modified form of construction in which two suction cups are provided for engagement with the surface of the ball;

Fig. 5 shows a top plan view of the bowling attachment illustrated in Fig. 4; and

Fig. 6 shows an enlarged section taken on the line 6-6 of Fig. 5.

As illustrated in Figs. 1, 2 and 3, the invention comprises a spherical bowling ball 10, of the usual size and weight, which has a continuous unbroken spherical surface adapted to be engaged by the bowling attachment 11 which is held in the hand 12 of the bowler. This attachment comprises a metal frame 13 having upwardly extending arms 13^a and 13^b engaged by a stud 14 which is threaded into the arm 13^a, as shown in Fig. 3, and which has mounted thereon a rubber grip or handle 15, preferably provided with an enlargement 15^a adjacent to the arm 13^a of the frame. This handle 15 is adapted to be gripped by the fingers of the bowler as shown in Fig. 1. The lower portion 13^c of the frame 13 is provided with a rubber suction cup 16 which is formed preferably of soft, pliable rubber having considerable resiliency and having an internal spherical curvature which is normally less than that of the surface of the ball 10. This cup 16 is provided with a neck 16^a having an annular flange 16^b which interlocks with the depending stem 13^d formed on the frame, preferably by providing an undercut recess in the neck 16^a and a correspondingly shaped projection on the stem 13^d, as shown in Fig. 3. When the attachment 11 is applied to the ball 10 by pressing downwardly against the surface of the ball, the marginal portions of the cup 16 are adapted to stretch and expand as the air is expelled and the cup conforms to the curvature of the ball as illustrated in Fig. 1. The ball is then firmly gripped and will retain its connection with the attachment 11 until the partial vacuum within the cup 16 is released as hereinafter described. For the purpose of giving the attachment 11 a firm support on the ball and permitting the bowler to guide the ball during its delivery, the frame 13 may be provided with a rearwardly extending leg 13^e which conforms generally to

the curvature of the surface of the ball and which is provided with diverging feet 13' having soft rubber blocks 17 attached to their under sides so that they engage the surface of the ball when the attachment 11 is applied thereto as illustrated in Fig. 1.

For the purpose of relieving the partial vacuum within the suction cup 16 at the proper point in the delivery of the bowler, the frame 13 is provided with an air channel having an opening which is under the control of the thumb or finger of the bowler so that this channel may be opened to the atmosphere. The lower portion 13^c of the frame is provided with an upwardly extending passage 13^e which communicates with the interior of the cup 16 through the aligning passage 16^c formed through the upper part of the cup and this passage 13^e communicates at its upper end with a transverse passage 13^h which connects with a vertically extending passage 13ⁱ formed in the arm 13^a of the frame. A needle valve 18 is mounted to slide vertically in the upper enlarged portion 13ⁱ of the passage 13ⁱ and this valve normally engages the seat around the upper end of the passage 13ⁱ to close this passage and its communication with an opening 13^k which leads transversely from the lower end of the needle valve to the atmosphere. The upper part of the arm 13^a of the frame is provided with a chamber 13^j closed at its upper end by a plug 19 which is detachably secured in place by a set screw 20. A collar 21 is secured to the valve stem 18 in the lower part of the chamber 13^j and a coil spring 22 is mounted around the valve stem between the collar 21 and the plug 20 so that this spring tends normally to maintain the needle valve on its seat. The upper end of the arm 13^a of the frame is provided with a pair of outwardly and upwardly extending ears 13^m between which there is mounted a trigger 23 having its intermediate part pivotally supported on a pin 24 which engages the ears. The upper portion 23^a of the trigger is shaped to be engaged by the thumb of the bowler and the lower portion is bifurcated to form flanges extending on opposite sides of the stem of the needle valve 18. These flanges are provided with elongated slots 23^b which are engaged by a pin 25 projecting laterally from the upper end of the valve stem so that when pressure is applied to the trigger 23 in a direction away from the handle 15, the needle valve 18 is elevated against the compression of the spring 22, thereby opening the passage 13ⁱ to communication with the port 13^k so that the partial vacuum within the suction cup 16 is relieved and the cup thereupon releases its grip upon the ball 10. The trigger 23 may be pressed by the thumb of the bowler at the proper point in his delivery of the ball so that the ball will be released on the alley at the right instant and as this release takes place, the blocks 17 carried by the feet 13' may be utilized to guide the ball as it leaves the bowling attachment held in the hand of the bowler. The ball 10 may be readily picked up while resting in the usual rack provided for bowling balls merely by pressing the cup 16 downwardly against the surface of the ball while allowing the needle valve 18 to retain its normal closed position.

The modified form of bowling attachment shown in Figs. 4, 5 and 6 differs chiefly from that previously described in that two suction cups are provided for engagement with the surface of the bowling ball and the control of the release of the partial vacuum within the suction cups is effected directly by the thumb of the bowler

without the use of any intermediate valve mechanism. As shown in these figures, a bowling ball 30 has applied thereto a bowling attachment 31 which is held in the hand 32 of the bowler. This bowling attachment 31 comprises a tubular frame 33 in the form of an inverted U-shaped member having a pair of depending arms 33^a each of which is enlarged at its lower end as shown at 33^b for connection with a suction cup 34. Each cup is constructed in the form of a portion of a sphere with an internal surface which has normally a lesser curvature than the surface of the ball 30. Each cup 34 has an upwardly extending annular flange 34^a which extends around and is secured to the enlarged terminal portion 33^b of one of the arms 33^a of the frame. The frame 33 is hollow and the internal passage 33^c extending therethrough communicates with each of the cups 34 through a passage 34^b formed in the upper part of the cup. The upper transverse portion 33^d of the frame has a handle 36 of rubber or the like mounted thereon and the ends of this handle are preferably protected by metal ferrules 36^a. Adjacent one end of the handle 36, the frame 33 is provided with an upwardly extending boss 33^e and a passage 36^c extending through this boss normally establishes a communication between the interior passage 33^c of the frame and the atmosphere. When the bowler wishes to use the attachment 31 for bowling purposes, he grips the handle 36, as shown in Fig. 4, and places the thumb over the mouth of the passage 33ⁱ and then presses the attachment downwardly against the surface of the ball 30 with the result that the suction cups 34 stretch and flatten out against the ball with the result that the air within the cups is expelled and the surrounding atmospheric pressure then causes them to grip the surface of the ball so that it may be picked up. The bowler may then deliver the ball in the usual manner while it is held by the attachment 31 and at the proper point in the delivery, the ball is released by lifting the thumb off of the passage 33ⁱ and thus allowing the partial vacuum within the cups 34 and the internal passages of the frame 33 to be relieved.

It will be apparent that with either form of the invention any bowling ball may be easily picked up and conveniently held during the subsequent operation of bowling without danger of injury to the fingers and without the necessity of providing the bowling balls with holes or other irregularities which tend to injure the alleys and the bowling pins in addition to causing the ball to be deflected from its intended course. This invention has the further advantage that all bowling balls may be substantially alike without the necessity of modifying any of them to suit the tastes of individual bowlers as has heretofore been necessary on account of differences in the sizes of the fingers of different persons. Any bowling ball may be picked up by applying the bowling attachment thereto at any point on the ball without the necessity of turning the ball over on its support to bring any particular part into position.

Although two forms of the invention have been shown and described by way of illustration, it will be understood that it may be constructed in various other embodiments coming within the scope of the appended claims.

I claim:

1. The combination with a bowling ball, of a handle extending transversely to a radius of the ball passing therethrough, and a suction cup car-

ried by said handle and adapted to be pressed into gripping engagement with said ball.

2. The combination with a bowling ball, of a handle, a suction cup carried by said handle and adapted to be pressed into gripping engagement with said ball, and additional means carried by said handle for engaging said ball.

3. The combination with a bowling ball, of a handle, a suction cup carried by said handle and adapted to be pressed into gripping engagement with said ball, means for releasing said ball from said suction cup, and means carried by said handle for engaging said ball and guiding said ball as it is released from said cup.

4. The combination with a bowling ball, of a frame having an air passage therethrough, a suction cup carried by said frame and communicating with said air passage, said cup being adapted to be pressed into gripping engagement with said ball, a handle carried by said frame and extending transversely to a radius of the ball passing therethrough, and means located adjacent said handle for controlling the admission of air through said passage to said cup.

5. The combination with a bowling ball, of a frame having an air passage therethrough, a suction cup carried by said frame and communicating with said air passage, said cup being adapted to be pressed into gripping engagement with said ball, a handle carried by said frame, a valve for controlling the admission of air through said passage to said cup, and means located adjacent said handle for actuating said valve.

6. The combination with a bowling ball, of an attachment provided with a plurality of pneumatic devices for gripping the ball.

7. The combination with a bowling ball, of an attachment provided with a plurality of pneumatic devices for gripping the ball, and means for causing the ball to be simultaneously released by all of said devices.

8. The combination with a bowling ball, of a frame having a handle and having an air passage therethrough, and a plurality of suction cups communicating with said air passage and adapted to be pressed into gripping engagement with said ball, said frame being provided with means for controlling the admission of air through said passage to said suction cups.

9. An attachment for a bowling ball comprising a frame having an air passage therethrough, a suction cup carried by said frame and communicating with said air passage, a handle carried by said frame and extending parallel to a line tangent to the ball beneath said frame, and means located adjacent said handle for controlling the admission of air through said passage to said cup.

10. The combination with a bowling ball, of a frame having a plurality of air passages therethrough, a handle attached to said frame and extending parallel to a line tangent to the ball beneath said frame and a plurality of suction cups mounted on said frame and adapted to be pressed into gripping engagement with said ball, each of said cups having communication with one of said air passages, said frame being provided with means adjacent said handle for controlling the admission of air to said passages.

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