ATHLETES GRIP GAUGING AID
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This invention lies in the field of bowling equipment and is directed particularly to a device which assists the bowler in determining the firmness of his grip on the bowling ball.

Many devices have been developed and used for the purpose of improving the bowler's grip on the ball during the period of delivery. Almost all of these have been based on the theory that there is a substantial gap between the bowling ball and the palm and heel of the bowler's hand. As a result, these devices usually comprise mere fillers for the gap and are normally wedge-shaped bodies, some of which are rigid and some of which are flexible. In most cases they are held in the desired position by being made a part of a bowling glove or by being attached thereto.

While devices to this end perform a useful function, they leave much to be desired. Although they help to make the hand conform more closely to the contour of the bowling ball, they do not attack the basic problem, which is a consistent grip on the ball. In order to deliver a bowling ball time after time with the same force, direction, and spin, the most important requisite is consistence of the grip. If the ball is gripped too loosely, it tends to slip from the fingers with inadequate control. If it is gripped too tightly, it is overcontrolled because the fingers do not disengage at the proper moment and to the proper extent. An intermediate grip gives the best results in most instances.

Unfortunately the problem of maintaining a consistent intermediate grip has not previously been solved, at least by the great majority of bowlers, and is difficult even for the most expert. Apparently the underlying reason for this is that even a light grip requires fairly high pressure of the fingers in the holes spread out over a considerable area. It is extremely difficult to detect variations in total pressure because the unit pressure is low. In the same way, variations in the pressure of the ball against the palm of the hand resulting from finger grip are very difficult to detect. The ball is essentially hanging away from the palm, and the total pressure is therefore very small. In addition, the area of the palm is very large and thus the unit pressure is extremely small, and even changes of 100 percent are hardly noticeable. The various gap fillers make the palm almost completely insensitive to pressure variations.

The present invention overcomes the difficulties mentioned above and means to concentrate substantially the total force exerted by a bowling ball normal to the bowler's palm as a result of gripping the ball for delivery, and applying it to a highly restricted localized area of the palm. Consequently a unit pressure is developed at a single spot which may be more than 100 times the unit pressure resulting from general overall contact of the ball with the palm. It will be apparent that variations in pressure will be similarly magnified, and even a semi-skilled bowler will be able to develop a consistent grip for every delivery. The best grip for good results will vary from one individual to the next but whether it is light, medium, or firm, each bowler will soon discover which is best for him and will be able to repeat because he will be able to gage the magnified palm pressure with ease.

The means for accomplishing this highly desirable result comprises a force transmitter and a mounting means. The latter may be a narrow elongate band formed into a loop to encompass the mid-portion of the hand or it may be a more or less-conventional bowling glove. The force transmitter is a rigid body carried by the mounting means so that it is located generally centrally of the palm of the bowler's hand. Its thickness in a direction normal to the general plane of the palm is considerably greater than that of the mounting means to present a protuberance extending toward the palm.

When a ball is gripped for delivery it presses against the outer portion of the force transmitter and urges it against the palm. The term "rigid" means substantially harder than the flesh of the hand to readily make an impression therein.

Although the ball contacts the palm lightly over the marginal area of the palm, most of its pressure is applied to the force transmitter because of the great thickness of the latter compared to the material of the mounting means. Thus almost the total normal force of the ball is applied to a very restricted localized area of the palm. In fact, the effective area of contact of the force transmitter with the palm in the devices of the invention presently being used is less than one eighth of one square inch, or less than one percent of the area of the palm. Thus, the localized force is magnified to a significant value so that the bowler can readily distinguish it and can detect changes in its intensity. When he delivers a ball in his best form he notes the value of the localized palm pressure and can repeat it at will or at least closely approach it. With very little practice he can then develop almost absolute uniformity of delivery.

Various other advantages and features of novelty will become apparent as the description proceeds in conjunction with the accompanying drawings in which:

FIGURE 1 is a perspective view of the presently preferred form of the invention mounted on a bowler's hand;
FIGURE 2 is a similar view of a modified form of the invention;
FIGURE 3 is a longitudinal cross-sectional view of the device of FIGURE 1;
FIGURE 4 is a fragmentary cross-sectional view of a modification;
FIGURES 5 and 6 are similar views of other modifications;
FIGURE 7 is a view similar to FIGURE 1 of another modified form of the invention; and
FIGURE 8 is a longitudinal cross-sectional view of the device of FIGURE 7.

The preferred form of the invention as it is presently being made and used is illustrated in FIGURES 1 and 3, where it will be seen that the force transmitter is in the form of a spherical body 10 of metal, glass, plastic, or other material which is rigid compared to the flesh. The mounting means 12 for the force transmitter comprises inner and outer narrow elongate bands or straps 14 and 16 of any suitable thin flexible material such as cloth or plastic sheeting. The straps are united 20 along their marginal edges. It will be noted that the straps are widened at about their mid-point to define an annular pocket 18 to receive the spherical force transmitter 10.

The pocket is considerably larger than the force transmitter and the latter is free to move about therein. It is yieldably centered in the pocket by means of a ring 20 of very soft flexible material such as foam rubber. The ring may be of soft felt or the like but foam rubber is preferred because of its great resilience which adapts it to readily accommodate spheres of different sizes. Inner strap 14 is made in two pieces overlapping at 22 to form an access opening for inserting and removing
It has been found that a diameter range of about one-half inch to about one inch will take care of all cases.

The two ends of the straps are provided with cooperating latching means 24 and 26 to define a loop which will fit the bowler's hand. These are commonly known as the multiple hook and felt loop fastener and are marketed under the trademark Velcro by the Hartwell Corporation of Los Angeles, Calif. The construction and operation of these fasteners are illustrated and explained in U.S. Patents No. 2,717,437 and No. 3,009,235. Member 24 is a fabric strip faced with hundreds of small hooks per square inch and member 26 is a fabric strip faced with a felt-like layer of loops of very fine thread. The members grip each other in any relative positions to provide infinitely variable length adjustment. If desired, a short length of elastic band 30 is interposed in the length of the loop to provide a snug, yielding fit.

In use, the mounting means 12 is wrapped around the hand 28 and members 24 and 26 are engaged to form a snug loop. The device is then adjusted to locate the force transmitter generally centrally of the palm. Many bowlers locate it in line with the tendon of the middle finger for added sensitivity. When the ball is gripped in the usual fashion, the result is the development of pressure in the direction of arrow 34 generally normal to the palm of the hand 28. The ball engages the force transmitter through the thickness of strap 16 and force is exerted on the hand.

Because of the thinness of straps 14 and 16 compared to member 10 the ball does not contact the central portion of the palm although it may lightly engage some marginal portions. Consequently, substantially the full force of the ball is exerted on that part of the palm contacted by the force transmitter. The effective area of contact is highly restricted, being generally less than one-eighth of one square inch. Since this is less than one percent of the area of the palm it is evident that the force is highly localized, and the unit pressure is magnified one hundred times or more. Thus a vague general pressure is converted into a very significant localized pressure which the bowler can readily distinguish and, in effect, gauge or measure. Therefore he can detect changes in its intensity resulting from changes in his finger grip pressure. When he delivers a ball with particular good results, he will note the localized pressure and duplicate it as nearly as possible in subsequent deliveries.

Many bowlers prefer to wear gloves and the invention can be incorporated in a glove 36 by sewing in a pocket 38 similar to pocket 18. By first testing with a strap type device like that of FIGURES 1 and 3, the best palm location can be readily determined and the pocket located accordingly to provide a "custom" fit.

A variation of the device is illustrated in FIGURE 4, where a spherical force transmitter 40 is directly attached to a simple single thickness strap 42. The strap is formed with an aperture 44, and member 40 is formed of two semi-spheres 46 and 48. Member 46 is provided with a fastener shank 50 provided at its free end with a slightly enlarged split head 52, and member 48 is provided with a socketed recess 54 to receive head 52 in releasable locking engagement. Members 46 and 48 may be readily removed and replaced by similar members of different diameters.

Members 46 and 48 may also be replaced by a pair of truncated cones 56 and 58, as seen in FIGURE 5, having the same type of shank and socket connection as in FIGURE 4 for ready attachment and removal. The effective contact area of the blunt apices 60 and 62 can be as small as desired in order to increase the unit pressure over that obtained with spherical force transmitters. In the modification of FIGURE 6 it will be seen that cone 56 has been replaced by disk 64, while retaining the same snap fastener connecting means. Disk 64 is the portion of the force transmitter which engages the ball, and its flat surface eliminates any possibility of tilting or cocking which could change the effective palm pressure.

In FIGURES 7 and 8 is shown another device constructed in accordance with the subject invention. The force transmitter comprises a spherical body 66. The mounting means 68 for the force transmitter 66 comprises inner and outer generally T-shaped members 70 and 72 of any suitable thin flexible material such as cloth or plastic sheet. The members are united by sewing along their marginal edges. It will be noted that the members are widened intermediate their end points to define an annular pocket 74 to receive the spherical force transmitter 66.

The members 70 and 72 have transversely extending portions 76 formed adjacent the base thereof. The member 70 and 72 also have transversely extending portions 78 which comprise the cross portion of the T-shaped member. The ends of transversely extending portions 76 are preferably permanently attached to each other such as by sewing to form a ring or loop means which is adapted to be mounted about one of the fingers 80 of the bowler's hand 28. The transversely extending portions 78 are preferably detachable from the wrist 82 of the bowler's hand 28. It will be understood that the pocket 74 will be formed to overlie the central portion of the palm when the device is mounted upon the bowler's hand 28. It will also be understood that either one of the members 70 and 72 may be merely elongate in shape rather than T-shaped while the other member will have transversely extended portions as aforementioned. It will also be understood that mounting means 88 may be formed from a single member of flexible material and used in combination with the force transmitters shown in FIGURES 5 and 6.

It will be understood that although the herein device has been described for use in bowling applications, said device can be used with equal facility and ease in other applications such as in golfing. Understandably, such a device will facilitate a golfer in applying the correct amount of pressure in hitting a golf ball during play. Consequently, although the herein invention is described and claimed as a grip gauging aid for a bowler it will be understood that this includes a grip gauging aid for a golfer as well.

It has also been found that a plastic material having elastic properties may be used in lieu of the elastic band 30 as shown in FIGURE 3 providing that the members used to form the mounting means are properly cut from the roll of material and that a zigzag, nonlocking stitch is used to sew them together. The conventional straight stitching will not work since it prevents the stretching of the material as desired or required.

It has been found that a bowler can materially improve his score by using the device constructed in accordance with the subject invention. Further, it will be readily understood that a device constructed in accordance with the subject invention may be easily and conveniently worn by bowlers even though the size and shape of their hands vary considerably.

It will be apparent to those skilled in the art that various changes may be made in the construction as disclosed without departing from the spirit of the invention, and it is intended that all such changes shall be embraced within the scope of the following claims.

I claim:

1. A grip gauging aid for an athlete comprising: a force transmitter; and a mounting means for said transmitter formed for attachment to the athlete's hand; and the transmitter comprising a rigid body, said mounting means being constructed for mounting said force transmitter between an object and the palm of the athlete's hand when the object is gripped for use, said force transmitter comprising means to transmit to the palm the force exerted by
the object on said force transmitter normal to the palm as a result of the athlete's normal grip; the transmitter including means forming a significant protuberance extending toward the palm; said protuberance presenting a highly restricted localized area of contact with the palm to apply a highly magnified unit pressure to a localized area of the palm.

2. A device as claimed in claim 1; said mounting means comprising a flexible member having a pocket formed therein and adapted to be secured to the athlete's hand with the pocket located generally centrally of the palm; and said force transmitter comprising a spherical body loosely mounted in said pocket.

3. A device as claimed in claim 2; said pocket being formed with an access opening for insertion and removal of spherical bodies of different sizes.

4. A device as claimed in claim 2; said spherical body having a diameter in the range of one half inch to one inch.

5. A device as claimed in claim 2; and a ring of flexible material mounted within said pocket and yieldably maintaining said spherical body centralized in said pocket.

6. A device as claimed in claim 1; said mounting means comprising a narrow elongate strap of flexible material with attachment means for said force transmitter at a median point; multiple hook means at one end of said strap; and felt loop means at the other end of said strap; said last two means being engageable with each other to constitute an infinitely variable connector to provide a strap loop adjustable to the size of an athlete's hand.

7. A device as claimed in claim 1; said force transmitter being in the form of a spherical body.

8. A device as claimed in claim 1; said force transmitter being in the form of a truncated cone having its base adjacent the mounting means and its apex adapted to contact the palm.

9. A device as claimed in claim 1; said force transmitter being in the form of a pair of truncated cones with their bases adjacent the mounting means and their apices adapted to contact the palm and the object.

10. A device as claimed in claim 1; said mounting means having an aperture therethrough; said force transmitter comprising two portions engageable with opposite faces of said mounting means; one of said portions having a fastener shank to extend through said aperture; and the other of said portions having a recess to receive the free end of said fastener shank to lock the force transmitter to the mounting means.

11. A device as claimed in claim 1; the effective palm contact area of said force transmitter being less than one percent of the area of the palm.

12. A device as claimed in claim 1; the effective palm contact area of said force transmitter being less than one eight of one square inch.

13. A device as claimed in claim 1; said mounting means comprising a flexible member having a pocket formed therein and adapted to be secured to the athlete's hand with the pocket located generally centrally of the palm; one end of said flexible member being adapted to be secured to the wrist of an athlete's hand and the other end of said flexible member being adapted to be secured to one of the fingers of an athlete's hand.

14. A device as claimed in claim 1; said mounting means comprising a generally T-shaped flexible member, loop means formed adjacent the base of said flexible member, said loop means being adapted for mounting about a finger of the athlete's hand, and the upper portion of said T-shaped flexible member being adapted for mounting about the wrist of an athlete's hand.

15. A device as claimed in claim 14, said force transmitter being in the form of a spherical body.

16. A device as claimed in claim 14, said force transmitter being in the form of a truncated cone having its base disposed adjacent the mounting means and its apex adapted to contact the palm.

References Cited

UNITED STATES PATENTS

2,738,190 3/1956 Tureaud 273—54
2,845,628 8/1958 Dell 273—54
3,123,832 3/1964 Kubik 273—54
3,203,006 8/1965 Shirey 273—54 X
3,255,462 6/1966 Antonious 273—166 X
3,344,436 10/1967 Stubbs 273—54 X

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