United States Patent

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[54] **REPLACEABLE CUE TIP MOUNTING**
5 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **273/70**
[51] **Int. Cl.** **A63d 15/12**
[50] **Field of Search** 273/70, 68, 69

[56] **References Cited**

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ABSTRACT: A cue tip mounting for glueless attachment of a cue tip to the end of a cue stick, comprising a hollow ferrule adapted to receive the tip end of a cue stick, and provided with outwardly extending barbs constructed to be forced into the material of the cue tip, each barb having an enlarged head portion at its outer end terminating in a substantially knife edge, adapted to be interlocked with the material of such a cue tip, the barbs being symmetrically disposed in spaced relation with respect to the ferrule axis.

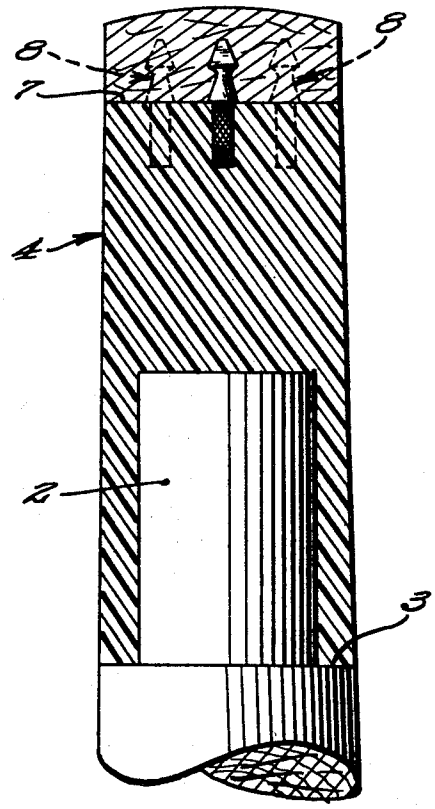


Fig. 1

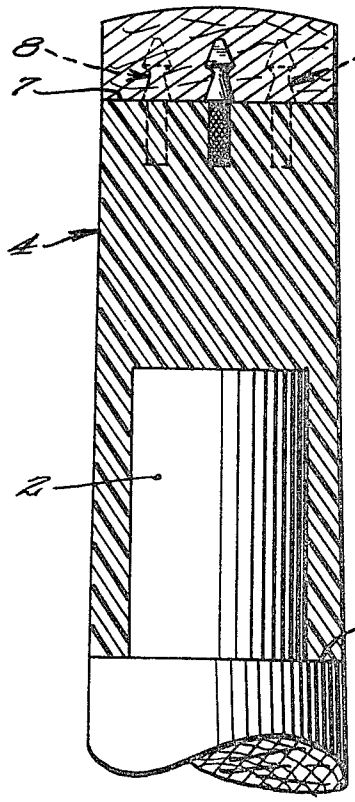


Fig. 2

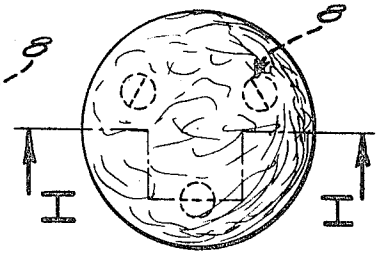


Fig. 5

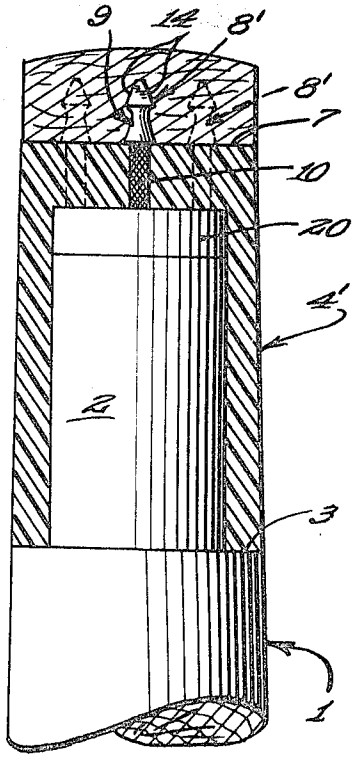
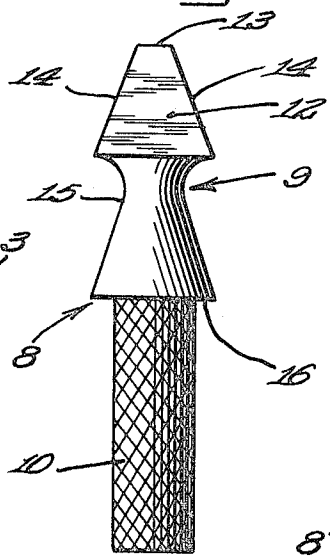


Fig. 4



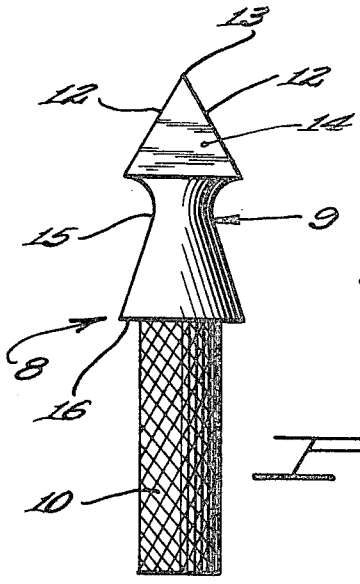


Fig. 6

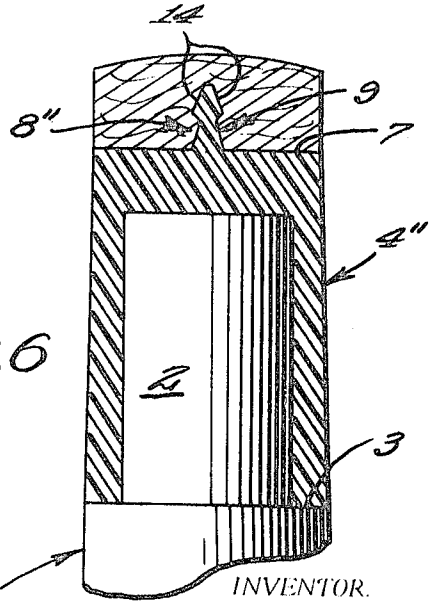


Fig. 3

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REPLACEABLE CUE TIP MOUNTING

BACKGROUND OF THE INVENTION

This invention is directed generally to a mounting structure by means of which a cue tip may be attached to the end of a billiard or pool cue, and more particularly to a mounting structure for such a cue tip which does not require the use of glue or adhesive.

The games of pool and billiards have been in existence for many, many years and the cues by means of which motion is imparted to the balls have undergone relatively little change in basic construction over the years. For many years the usual cue involved a single piece of suitably formed wood which tapers toward the ball-impacting end and was provided with a cue tip in the form of a leather disc having a convex outer end face and a substantially planar inner end face adapted to seat upon and be glued or cemented to the corresponding face of the cue end. Subsequently, instead of attaching the cue tip directly to the end face of the wooden cue, a ferrule of a relatively hard plastic or other material was attached to the impact end of the cue and the cue tips secured to the corresponding end of the ferrule, again by means of suitable glue or cement.

The application of a cue tip to the end of the cue by means of glue or the like not only was a somewhat messy operation but also involved a hardening period for the glue or cement, during which the cue could not be utilized. In addition thereto, clamping means were required hold the cue tip in proper position on the end of the cue, applying compression forces to the tip to ensure a firm and durable joint between the tip and the cue. Obviously, it would be particularly desirable to be able to remove and replace cue tips without going through the undesirable gluing and clamping operation etc., and considerable efforts have been made over the years in an effort to develop a cue tip construction which would enable a simple removal and replacement of the cue tip without the use of glue.

Numerous patents could be cited, among which are U.S. Pats. No. 374,327, dated 1887, No. 529,775, dated 1894, No. 656,973, dated 1900, and No. 719,279, dated 1902. It is interesting to note that with such an extended background in point of time, there does not appear to have been any practical and efficient solution conceived over the intervening period and at the present time the accepted and universally employed method of mounting a leather cue tip is to secure the same by means of an adhesive or glue to the end of the cue, it being customary to employ a plastic ferrule or the like on the end of the cue. Such ferrule in the current cue construction serves two purposes, the first of reinforcing and protecting the end of the wooden cue, and second, provides a hard surface which does not readily retain the cue chalk thereon, such chalk often times inadvertently contacting the outer surface of the ferrule when chalk is applied to the cue tip. Likewise, while advances have been made in connection with the materials employed in the fabrication of the cue, fiberglass and aluminum being two specific materials employed for such purposes, the substitution of such materials involves no changes in the tip mounting as it is customary to employ a comparable ferrule on the cue end to which the cue tip is glued or adhesively mounted.

Sales of pool tables have increased tremendously over the last few years, such tables being sold in department and chain stores for home installation and included therewith or sold separately are repair kits which include one or more replacement ferrules and a number of cue tips. Also included in such kits is a small supply of adhesive and a clamp by means of which pressure may be applied between the cue tip and the end face of the cue while the cement or glue is hardening.

The present invention is directed to a mounting structure which eliminates the necessity of gluing the tip in place and enables a relatively easy removal of an old tip and replacement of a new tip, at the same time ensuring a firm and solid connection between the tip and cue which for all practical purposes is comparable to a cemented tip.

These results are achieved by an arrangement in which the tip is adapted to be forced upon a plurality of retaining barbs which extend outwardly from the end of the mounting ferrule which are symmetrically disposed with respect to the cue axis and are provided with a novel configuration which enables a relatively easy penetration of the barbs into the material of the cue tip but at the same time ensures a firm and solid retention of the cue tip, the construction being such that the continued usage of the cue and resulting impact of the tip upon a ball will tend to more firmly seat and interlock the cue tip in operative position.

BRIEF SUMMARY OF THE INVENTION

The mounting of the present invention employs a hollow ferrule, which may be of any suitable material, as for example, a suitable plastic, which is constructed to receive and be supported upon the generally complementary-shaped end of a cue stick with the outer end having a plurality of barbs extending outwardly therefrom, the barbs being rigidly carried by the ferrule and constructed with an enlarged head portion having one transverse dimension which is greater than the other transverse dimension, the head portion terminating at its outer end in a relatively pointed configuration having a substantially knife edge which may readily penetrate the material of the cue tip. Each barb is also provided with a more or less necklike portion which connects the head to the body of the barb so that following forcing of the barb into the material of the cue tip such material may expand and engage the barb behind such head portion in interlocking relation. Thus, subsequent impacting of the cue tip while in use will tend to further compact the material of the cue tip about the respective barbs, thereby tending to increase the interlocking action between the barbs and the cue tip.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein like reference characters indicate like or corresponding parts:

FIG. 1 is a generally elevational view of a mounting structure constructed in accordance with the invention, with portions thereof broken away to illustrate the details of construction;

FIG. 2 is a sectional view taken approximately on the line II–II of FIG. 1;

FIG. 3 is a side elevation of a barb constructed in accordance with the present invention;

FIG. 4 is a front elevational view of the barb illustrated in FIG. 3;

FIG. 5 is a figure similar to FIG. 1 illustrating another embodiment of the invention; and

FIG. 6 is a figure similar to FIG. 1 illustrating a further embodiment of this invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings, and more particularly to FIGS. 1 through 4, the reference numeral 1 indicates generally the end of a cue which is cylindrical in cross section but has a slight taper toward the free end thereof, the extreme end of which is turned down to form a cylindrical shank 2 and a shoulder 3 at the juncture of the shank 2 with the tapered part of the cue.

Mounted on the shank 2 is a hollow ferrule, indicated generally by the reference numeral 4, formed from plastic or other suitable material and having a bore 5 therein of a size to snugly receive the shank 2, with the adjacent end edge of the ferrule being firmly seated on the shoulder 3.

Preferably, the construction is such that the extreme end 6 seats firmly on the bottom of the bore 5 whereby shock loads on the end of the ferrule are directly transmitted to the end 6 of the cue.

Extending outwardly from the outer end 7 of the ferrule 4 are a plurality of symmetrically disposed barbs 8, three of which are utilized in the embodiment illustrated, which are suitably rigidly carried by the ferrule. As illustrated in FIGS. 3

and 4, each barb is provided with a tip-engaging outer portion 9 and a cylindrically shaped mounting portion 10 extending in axial alignment therewith, which may be provided with an irregular surface, for example, similar to knurling, whereby the shank may be embedded in the solid end portion of the ferrule and firmly and permanently retained therein.

The tip-engaging portion 9 is provided with an enlarged head 11 adjacent its free end, of relatively large cross-sectional area, at which one transverse dimension *a* is greater than the other transverse dimension *b* whereby such cross section is generally rectangular in configuration. Such transverse dimensions diminish toward the free end of the portion 9 whereby the surfaces thereof converge to form a relatively pointed end, with the surfaces defining the larger transverse dimension intersecting in a line edge 13 which extends between the outer ends of the surfaces 14 defining the smaller transverse dimension. Such transverse dimensions also diminish toward the mounting end of the barb to provide a portion of reduced cross-sectional area adjacent the head portion, as indicated by the reference numeral 15, and the remaining portion of the barb extending to the shank 10 may be suitably formed, as for example, having an enlargement adjacent the shank to form a shoulder 16 which may seat upon the end face of the ferrule 4, ensuring identical positioning of all barbs thereon.

The cue tip 17, which may be formed from leather or other suitable material, and which may be of the type commonly employed with an adhesive or glue, is in the form of a small disc, preferably having a size and shape to match the adjacent end of the ferrule 4, with the inner face 18 of the disc preferably being planar to firmly seat on the end of the ferrule, and the exposed face 19 being convex.

The cue tip 17 may be easily mounted on the ferrule 4 by merely positioning the disc in alignment with the ferrule, resting on the free ends of the barbs 8 and with the cue firmly supported, the tip is struck several blows with a hammer or a suitable tool to drive the tip on the barbs until the face 18 of the tip firmly seats upon the end face 7 of the ferrule.

Preferably, the barbs are positioned, not only symmetrically with respect to their spacing about the axis of the ferrule, but also with respect to the edges 13, as for example, with such edges disposed tangentially to a common circle whereby the forces exerted by the barbs on the cue tip, during mounting will be symmetrical with respect to the ferrule axis, ensuring that the tip will retain its initial alignment with the ferrule axis and with the barbs.

Cue tip replacements may be readily made by merely prying off the old tip, for example, applying a knife or the like, and then driving a new tip in place, the cue being immediately ready for further use.

The configuration of the barbs is such that the connection between the barbs and the tip does not rely solely upon frictions as in the case of nails or pins, such as previously used in the past, but rather on a positive interlock between the barbs and the cue tip. This result is accomplished by the configuration of the barb whereby it may readily pierce the material of the cue tip, tending to spread the fibers or material thereof whereby they may readily spread and compress under the wedging action of the barb head, and as the head passes through the material the latter will endeavor to expand to its original position to closely engage the portion of reduced area directly behind the head, forming a very effective interlock therewith. Obviously, with this construction, any attempt for the tip to disengage from the barb is prevented not only by friction of the sidewalls of the barb with the adjacent material of the tip, but also by compression forces of the material which would have to be overcome before the enlarged head could be withdrawn from the tip. Likewise, in view of this construction, the barbs may be disposed radially outward as far as possible consistent with providing adequate engagement with the cue tip whereby the radial position of the barbs is well outside the principle impact area of the cue tip. It will also be noted that in usage, repeated impact on the cue tip will introduce compression forces therein which further tend to force the material of the tip tightly around the reduced portions of the respective barbs, thus tending to further increase the anchoring action.

It will be apparent that with constructions employing nails or pins to retain the tip in place, the constant impacting of the tip will tend to shift the material along the cylindrical surfaces of the nail or pin in a more or less abrading movement, and as the leather or other material of the tip is considerably softer than the material of such pins or nails, the repeated impacts will produce an abrading action on the material of the tip tending to enlarge the holes therein made by the nails whereby the tip may eventually become loose on the mounting nails or pins, resulting in very short tip life.

Instead of employing individual barbs, as illustrated in FIG. 1, the barbs may be considered as an integral assembly, such a construction being illustrated in FIG. 5 wherein the barbs 8' are connected by a common base member 20, illustrated as being in the form of a cylindrical disc with the shank portions 10 of the barbs being integrally connected at their inner ends to the disc 20. The tip-engaging portions 9 of the respective barbs are constructed in the same manner as that illustrated in FIGS. 3 and 4. The disc 20 and barbs carried thereby may be suitably assembled with the ferrule 4', for example, by embedding the barb assembly in the ferrule at the time of manufacture of the latter, or may be assembled therewith subsequent to the fabrication of the ferrule. In this construction, the ferrule and end of the cue are preferably so proportioned that when mounted on the cue, the adjacent face of the disc 20 will firmly seat on the cooperable face 6 of the cue whereby the shock loads on the barb 9 will be directly transmitted to the end of the cue. Mounting of the cue tip on the construction of FIG. 5 is identical to that described with respect to the construction of FIG. 1.

FIG. 6 illustrates a further embodiment of the invention in which the barbs 8'' of a configuration corresponding to that of the barbs 8 and 8' are integrally formed with the ferrule 4''. In this construction both the ferrule and barbs will normally be formed from a metal having adequate strength characteristics to ensure the production of efficient and durable barbs, preferably a metal that readily lends itself to casting operations, especially diecasting. Examples of suitable metals are relatively hard alloys of aluminum, brass or bronze. Obviously, this construction eliminates separate parts which require assembly, and provides an extremely simple, but durable construction.

It will be noted from the above description that we have provided a novel mounting for a cue tip which does not rely solely on friction between the engaging elements but rather on a positive interlocking action which will not deteriorate under repeated impacting on the cue tip during usage. It will also be noted that the mounting and replacement operations involved are extremely simple whereby no special tools or instructions are necessary and with relatively little chance of an improper mounting, it being only necessary to properly align the cue tip with the ferrule and barbs prior to driving the tip onto the barbs.

Having thus described our invention, it will be obvious that various immaterial modifications may be made in the same without departing from the spirit of our invention.

We claim:

1. A cue tip mounting for providing a solely frictional attachment of a cue tip to the end of a cue stick, comprising a hollow ferrule having an axial bore therein opening on one of its ends adapted to receive the generally complementary-shaped end of a cue stick, the opposite end of said ferrule having an end face of a size to receive the cooperable end of a cue tip, a plurality of elongated barbs extending spaced outwardly from the tip-receiving end face of the ferrule in symmetrical relation with respect to the ferrule axis, with the exposed length of the respective barbs being sufficiently less than the corresponding thickness of the cue tip that said barbs cannot pass completely through the cue tip under normal usage, each

of said barbs having its said exposed length comprising a triangular prism head with the top edge being a straight line edge, the base of said head having beneath it a segment having its outer surface composed of two inclinations extending in diverging directions, one of said inclinations being flared upwards to mate with said base and the other of said inclinations flaring outwardly and downwardly to form a shoulder which seats on the outer end of said ferrule, said line edges of said barbs being arranged in symmetrical relation with respect to said ferrule axis, and each of said barbs having an elongated mounting portion embedded in and rigidly supported by said ferrule, said mounting portion being of reduced cross-sectional area compared with said shoulder.

2. A cue tip mounting according to claim 1, wherein three barbs are provided, with their respective free end edges extending tangentially with respect to a common circle.

3. A cue tip according to claim 1, wherein said ferrule is constructed of plastic and said barbs are constructed in the form of separate members having their inner mounted ends individually embedded in the end of the plastic ferrule.

4. A cue tip mounting according to claim 1, wherein said barbs are integrally connected with a common base member to form a unitary structure.

5. A cue tip mounting according to claim 4, wherein said base member is disposed within the bore of the ferrule and adapted to seat on the end of a cue stick inserted in the ferrule.