The present invention generally relates to a novel and improved cue stick for use in playing pool of various types and more particularly to a novel joint employed in a two-piece cue stick.

One of the most important objects of the present invention is to provide a two-piece cue stick having a novel joint structure incorporated therein which will rigidly secure the two pieces of the cue stick in accurate and proper alignment with the joint being so constructed and standardized that the shaft or outer portions of a plurality of cue sticks may be securely fixed to the butt of a cue stick which is the inner or lower part thereby enabling interchangeability of the shafts and butts of a plurality of cue sticks with the two pieces being in perfectly aligned relationship regardless of the manner in which they are interchanged thereby not only facilitating the assembly of a cue stick having the desired properties but also enabling replacement of a component part such as a shaft which can be custom-made to order and installed in the butt of an existing cue stick.

Another object of the present invention is to provide a wood reinforcing metal coupling and connecting joint for the end-to-end sections of the cue stick thereby insuring firm anchorage for the interconnecting screw and eliminating any possibility of misalignment or breakage due to the constant impact exerted on the joint during the use of the cue stick thereby greatly increasing the life expectancy of the cue stick and particularly increasing the life expectancy of the upper or outer shaft.

Another very important feature of the present invention is to provide a positive connecting joint between the sections of the cue stick having a three-way locking action for perfectly aligning the two sections of the cue stick with each other. This three-way locking action also produces a joint that is quite similar to a solid piece of material thereby increasing the useful life of the two-piece cue stick and also increasing the accuracy thereof.

Another important object of the present invention is to provide a cue stick having a balance adjustment in the butt end thereof in the form of a movable weight for enabling precise balancing of the cue stick. The joint structure employed in the two-piece cue stick may be of various materials such as brass, aluminum or plastic depending on the type of wood employed. For example, brass is used when the butt is made from hard maple but when it is made from rose wood, the joint is constructed of aluminum. This variation in the use of wood, metal and plastic is related to different weights of such materials and the needs for having the cue stick a particular weight and still having a cue stick that is precisely balanced at a particular point that may vary from one pool play to another. The use of different materials employed in making the joint increases the possibility of balancing the stick above the normal range provided by the adjustable weight in the butt which, of course, is the main balancing element.

A further important object of the present invention is to provide a two-piece cue stick which is quite simple in construction, easy to assemble and having interchangeable connector assemblies accurately constructed for retaining the sections of the cue stick in alignment and yet which is relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereininafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of the two-piece cue stick of the present invention;

FIGURE 2 is a longitudinal, vertical sectional view taken substantially upon a plane passing along section line 2—2 of FIGURE 1 illustrating the details of construction of the adjustable weight in the butt of the cue stick;

FIGURE 3 is a transverse, sectional view taken substantially upon a plane passing along section line 3—3 of FIGURE 2 illustrating further structural details of the adjustable weight;

FIGURE 4 is a longitudinal, vertical sectional view, on an enlarged scale, taken substantially upon a plane passing along section line 4—4 of FIGURE 1 illustrating the structural details of the connector employed between the sections of the cue stick;

FIGURE 5 is a transverse, sectional view taken substantially upon a plane passing along section line 5—5 of FIGURE 4 illustrating further structural details of the connecting joint; and

FIGURE 6 is an exploded group perspective view of the components of the connecting joint between the sections of the cue stick illustrating the structure and relationship of the components for providing a three-way locking action.

Referring now specifically to the drawings, the cue stick 10 includes an upper shaft 12 and a lower butt 14 detachably connected thereto by a connecting joint 16. The shaft 12 has a conventional tip 18 at the upper end thereof and the butt 14 has a conventional weight assembly 20 at the lower end thereof.

Referring to FIGURES 4—6, the connector assembly 16 includes three components including a cap-type butt ferrule 22, a cap-type shaft ferrule 24 and an elongated externally threaded screw member or stud 26. The annular flange portion of the shaft ferrule 24 is internally threaded as at 28 (FIG. 4) and is screw threaded onto an integral axial extension 30 of the shaft 12 which is of slightly lesser diameter than the remainder of the shaft 12 so that the flange or rim portion of the ferrule 24 will have an external surface flush with the external surface of the shaft 12. The external surface of the extension 30 on the shaft 12 is provided with three longitudinally spaced significantly wide circumferential grooves 32 each of which receives an epoxy resin 34 or an equivalent type of permanent bonding material. Also, the external surface of the extension 30 is threaded for receiving the internally threaded surface of the ferrule 24 and the ferrule 24 is also provided with wide circumferential grooves 36 matching with the grooves 32 for receiving an epoxy resin 34 thereby forming a permanent bond for the overall ferrule 24. The solid disk-like outer end of the ferrule 24 is axially provided with a reduced neck providing a centrally projecting hub 38 having an internally threaded bore 40 extending therethrough in the center thereof and in axial alignment with the longitudinal axis of the shaft 12.

The shaft 12 also has a peripheral groove 42 adjacent the extension 30 which groove receives an annular identification ring 44 of plastic or similar material which may be colored a desired color for decorative or identification purposes and the plastic ring 44 may be bonded into the groove 42 in a suitable manner inasmuch as the ferrule 24 will also retain the ring 44 in place. Thus, when the ferrule 24 is secured to the extension 30 of the shaft 12, it becomes a permanent part thereof.

The externally threaded screw or stud 26 is provided with a reduced extension 46 on one terminal end thereof.
with a wide peripheral groove 48 being formed in the extension 46 which is of reduced diameter as compared to the threads at the base of the extension 46. The extension 46 is a second wide circumferential groove 50 in the threaded portion of the elongated screw 26 and spaced longitudinally from the groove 50 is a transversely extending flat surface area 52 in the form of a segment cut out of one side of the screw 26. The opposite end of the screw 26 from the extension 46 is reduced as at 54 into a substantially round end 56. The shaft 12 is provided with an internally threaded longitudinal bore 58 along the longitudinal axis thereof with the inner end of the bore being of lesser diameter and designated by numeral 60 for receiving the extension 46 of reduced diameter. The area of the reduced diameter bore 60 inwardly of the extension 46 is filled with an epoxy resin 62. The groove 48 is filled with an epoxy resin 64, the groove 50 is also filled with an epoxy resin 66 and the transverse notch 52 is also filled with an epoxy resin 68 thus securely bonding the screw 26 to the shaft 12 and to the ferrule 24 inasmuch as the screw 26 is in screw-threaded engagement with both the ferrule 24 and the shaft 12 and is fixedly bonded to the shaft 12 by the epoxy resin and the engagement thereof with the various grooves and notches. The screw and ferrule 26 and 24 then, in effect, become a permanent part of the shaft 12.

The one-piece cap-type butt ferrule 22 includes a cylindrical body portion 70 with an internally threaded sleeve portion 72 at one end threaded onto a reduced extension 74 of the butt 14 with the extension 74 and the ferrule 70 having longitudinally spaced circumferential grooves therein for receiving epoxy resin 76 thus securing the ferrule 22 to the butt in substantially the same manner as the ferrule 24 is secured to the shaft. The butt 14 is provided with a peripheral groove 78 receiving an annular ring member 80 of plastic or the like of desired color or characteristic for identification and decorative purposes in substantially the same manner as the annular ring 44.

The butt 14 is provided with a longitudinal bore 82 in alignment with an internally threaded bore 84 formed in the body 70 for screw-threadedly receiving the threaded member 26. Also, the end of the ferrule 22 which faces and is engaged with the ferrule 24 is provided with a counterbore 86, thus defining parallel abutting surfaces 88 and 90 and an internal cylindrical surface defined by the counterbore 86 for matching and accurate engagement with corresponding axial surfaces 92 and 94 on the ferrule 24 and the ferrule 22, respectively. The surfaces 92 and 96 on the hub 38, then, there are three abutting and interlocking surfaces which are accurately formed in all instances and which are square in relation to the central axis of the butt.

Thus, with all of the diameters of the ferrules and bolts thereof being true and concentric with the axis and with the surfaces 88, 90, 92 and 94 being true and perpendicular thereto and with the surfaces 86 and 96 being concentric therewith for accurate engagement with each other, there will be actually three-points of locking engagement between the ferrules for retaining the shaft 12 in accurate alignment and rigidly connected with the butt 14 thereby enabling the shafts and butts to be interchanged as desired or enabling replacement of a butt having particular characteristics which may be custom ordered. For example, if a pool player is in a tournament and accidentally damages the shaft of the cue stick, he can contact his supplier and obtain a custom-made shaft which may be delivered to the site of the tournament for his use without requiring any delay in the tournament and without materially affecting the manner of playing of a particular player. The annular plastic rings 44 and 80 may be decorative in purpose and also may be employed for identification of the shafts and butts so that a shaft or butt having a particular colored ring may be associated with a shaft having a particular colored ring.

Referring now to FIGURES 2 and 3, the weight adjustment 20 includes an elongated sleeve 100 which is externally threaded and internally threaded throughout its length for threaded reception in a longitudinal bore along the longitudinal axis of the butt 14. The internally threaded longitudinal bore is designated by numeral 102 and the bore 102 and sleeve 100 have longitudinally spaced matching grooves 104 for receiving the epoxy resin 106 for securely retaining the sleeve 100 in place. The outer end of the sleeve may have a transverse notch 108 in the opposed portions of the ends for receiving a screwdriver type implement or the like. A screw-threaded weight 110 is mounted internally of the sleeve 100 and is provided with a notch 112 for enabling a screwdriver to be inserted into the sleeve and engaged therewith for rotating the weight 110 and moving it longitudinally in the sleeve 100. Once the desired balance characteristics of the weight 110 has been obtained, it may be secured in place by using a suitable adhesive such as an epoxy resin or the like thereby retaining the weight 110 in place regardless of the impacts received during normal use of the cue stick. Also, a suitable plug (not shown) may be inserted into the sleeve to prevent entry of foreign material such as dirt or the like when the butt of the cue stick is resting against a floor surface or the like. Also, the end of the butt 14 is provided with an external threaded area 114 receiving a plurality of annular rings 116, 118 and 120 of plastic or the like for decorative purposes and also for additionally introducing balance into the butt of the cue stick.

Depending upon the material used in the ferrules and the material from which the butt and shaft is constructed, the characteristics of the inserted weights may be varied and also the position of the weights may be varied. Thus, the balance characteristics of the cue sticks may be initially varied to orientate the balance point at the optimum position for the individual player. Then, if the shaft of the cue stick becomes damaged or otherwise needs replacement, an identical shaft as to weight and length characteristics may be supplied by the custom manufacturer so that the characteristics of the cue stick will be maintained at all times.

The internal surface of the joint is accurately constructed in such a manner that the surface thereof is substantially smooth and the mating or interengaging surfaces which abut and telescope in relation to each other and engage each other snugly form a tight interlocking and alignment connection between the sections of the cue sticks.

In some instances, the sleeve 100 may be employed without plug 110 when an adjustable weight is not necessary. The rounded blunt end 56 of the screw 26 cooperates with the chamfered edges or corners of the internal recess 86 and bore 84 in the body 70 to facilitate assembly and alignment.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed is as new as follows:

1. A sectional knockdown cue stick comprising an elongated linearly straight butt and a similarly straight elongated shaft complemental to and optionally usable in conjunction with and as an extension of said butt, and connecting means adapted to detachably connect the rearward end of said shaft to the forward end of said butt so that the butt and shaft are then in axial alignment with each other, the forward end of said shaft having a tip therein for engagement with a pool ball, said connecting means comprising a pair of rigid cap-like ferrules capped over and attached by fixedly to reduced terminal projections provided therefor on the inner adjacent end portions of the butt and shaft, respectively, an end portion of at least one of said ferrules...
having an internally threaded bore extending axially therethrough, the other of said ferrules having an externally threaded member extending longitudinally thereof along the axis of the overall cue stick and adapted to be screwed into said internally threaded bore for securing the shaft to the hub in a detachable manner thereby enabling the shaft to be disconnected and replaced by an interchangeable shaft or otherwise handled at the discretion of the user.  

2. The structure as defined in claim 1 wherein the ferrule having the threaded bore therethrough includes a concentric ferrule with the threaded bore thereby forming three surfaces with two of the surfaces disposed perpendicularly to the axis of the cue stick and the other surface being concentric with the axis thereof, the other of said ferrules having a reduced cylindrical hub projecting longitudinally thereof in concentric relation to the longitudinal axis thereof for telescopic insertion into the concentric ferrule and the end of the ferrule abuttingly engaging the surfaces perpendicular to the longitudinal axis of the shaft thereby forming a three-point interlocking connection therebetween.  

3. The structure as defined in claim 2 wherein said ferrules are screw-threaded engaged with reduced externally threaded projections on the hub and shaft respectively, there being wide peripheral keying grooves between mating surfaces of the ferrules and the externally threaded projections, and epoxy resin disposed in said grooves for securely locking the ferrules in place.  

4. An improved cue stick comprising, in combination, an elongated butt section, a companion elongated shaft section, and supplemental jointing and connecting means through the medium of which the respective inner ends of said sections adjacent each other can be axially aligned and separately connected, the inner end of said butt section having a reduced screw-threaded axial projection and also an axial bore opening at an inward end through a corresponding inward end of said projection, a first cap-like ferrule having a circular body portion axially provided with an open-ended screw-threaded bore in alignment with said first-named bore, provided on one end with an integral internally screw-threaded ferrule attaching and securing collar screwed and securely anchored on said enclosing said projection, the peripheral surfaces of said body portion and collar being perfectly smooth and mated in a compatible manner with each other and also with the coaxing peripheral surface of said butt section, the other end of said body portion being provided with an axial counterclockwise engined by a smooth planar surface, the inner end of said shaft section being likewise provided with a reduced externally screw-threaded projection corresponding with the first-named projection, a second cap-like ferrule provided with an internally screw-threaded collar screwed on said first-named projection and anchored in place thereon and having a disk-like closed end portion opposed to and abutting the surface of the body portion of the first ferrule and being centrally provided with a reduced axial hub, said hub being fitted telescoping and securely into said counterclockwise and being further provided with a screw-threaded bore aligned and oriented with the screw-threaded bore in said body portion, that portion of the projection of said shaft section coincident with the bore in said hub having a screw-threaded socket therein, and a screw-threaded stud having one end portion screwed and anchored in said socket, having a median portion threaded through the bores in the hub and body portion, respectively, and having a terminal end portion projecting telescopically and adjustably into the first-named bore.  

5. A sectional knockdown cue stick comprising an elongated butt section, an elongated supplemental shaft section, and jointing and connecting means through the medium of which ends of said sections which are adjacent to each other can be axially aligned and separably connected, said butt section having a reduced screw-threaded projection provided with an axial bore opening at one end through a corresponding end of said projection, a first cap-like ferrule having a circular body portion provided with an axial open-ended screw-threaded bore in alignment with said first-named bore, being provided on one side with an internally screw-threaded ferrule attaching and securing collar screwed and securely anchored on said projection, the peripheral surfaces of said body portion and collar being perfectly smooth and mated in a compatible manner with the peripheral surface of said butt section, the other side of said body portion being provided with an axial counterclockwise engaged by a smooth planar surface, the adjacent end of said shaft section being likewise provided with a reduced externally screw-threaded projection corresponding with the first-named projection, a second cap-like ferrule provided with an internally screw-threaded collar screwed on said first-named projection and anchored in place thereon and having an outer peripheral surface coincident with the adjacent peripheral surface of the shaft section, and having a disk-like closed end portion opposed to and abutting the surface of the body portion of the first ferrule and being centrally provided with a reduced axial hub, said hub being fitted telescoping and securely into said counterclockwise and being further provided with a screw-threaded bore aligned and oriented with the screw-threaded bore in said body portion, that portion of the projection of said shaft section coincident with the bore in said hub having a screw-threaded socket therein, and a screw-threaded stud having one end portion screwed and anchored in said socket, having a median portion threaded through the bores in the hub and body portion, respectively, and having a terminal end portion projecting telescopically into the first-named bore, said butt section being provided in a peripheral surface with an endless encircling groove adjacent said first-named projection, an annular ring member seated in said groove, said ring member being of a distinct color and constituting an identification member, a corresponding portion of said shaft section being likewise provided with an endless encircling groove, and a second annular ring member, the latter being seated and anchored in said last-named groove and being of a distinguishable color and constituting a second identification member.

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