Sept. 7, 1965 J. M. SALAMONE 3,204,961

CUE TIP CONSTRUCTION

Filed Jan. 28, 1963

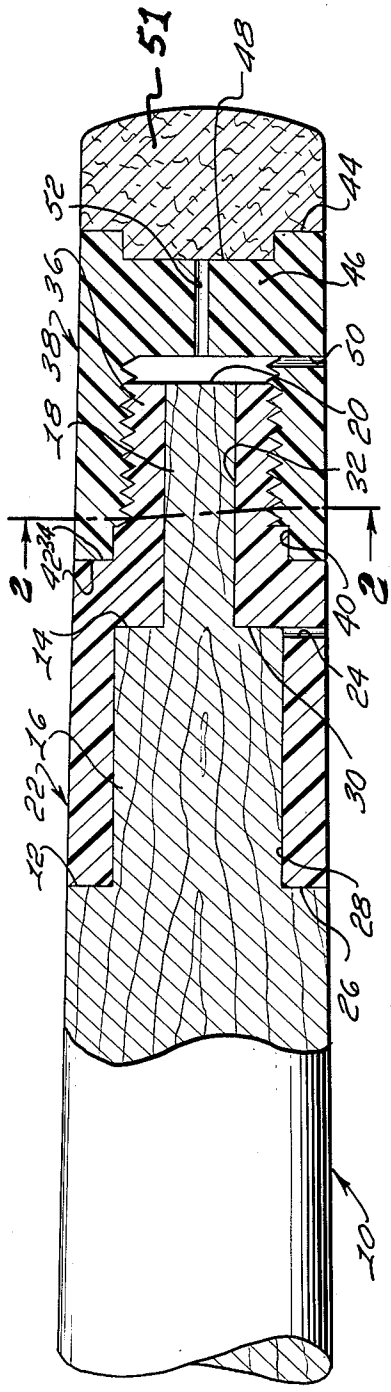
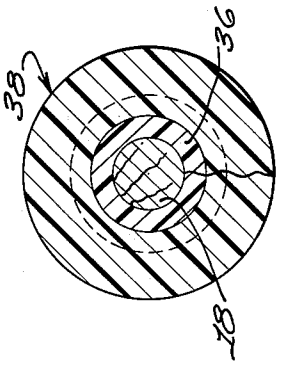


Fig. 1.

Fig. 2.



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United States Patent Office

3,204,961
Patented Sept. 7, 1965

3,204,961

CUE TIP CONSTRUCTION

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Filed Jan. 28, 1963, Ser. No. 254,123
1 Claim. (Cl. 273—70)

This invention relates to the construction of cue sticks for use in playing billiards, pool, etc., and has particular reference to a removable tip structure at the forward end of the cue stick.

As is well known, the conventional cue stick comprises a wooden shaft having at its forward end a leather tip affixed thereto. These leather tips require frequent replacement either because they are knocked off or because of wear. Accordingly, a number of structures have been devised for releasably affixing a cue tip on a stick, in order to solve the replacement problem. It is very desirable that these structures be made of plastic, the reasons being cost, weight and personal preference, the latter being not insignificant since a cue stick is a very personal article to a skilled player.

Any appendage to the forward end of the cue stick must stay within the projected conventional external configuration of the stick. This structural limitation, in combination with the fact that the forward end of the stick is subject to tremendous impact forces, complicates the design of a plastic detachable appendage. Conventional plastic constructions are known to break, or to loosen under the abuse received at normal play.

In accordance with the present invention, an improved cue stick wherein this problem is solved comprises first and second stepped annular shoulders formed on the forward end of the shaft of the cue stick, with a first reduced diameter portion of the shaft extending between the first shoulder and the second shoulder, and with a second and further reduced diameter portion extending between the second shoulder and the forward terminus of the shaft. A plastic base member is rigidly connected on the forward end of the shaft, the base member having a stepped internal configuration mating with the first and second shoulders and reduced diameter portions of the shaft. The base member has a forward shoulder and has a forward portion of reduced diameter extending beyond the shoulder and overlying the second reduced diameter portion of the shaft. The forward portion of the base is externally threaded. A plastic mounting member substantially in the form of a closed cap is detachably secured to the base member, the assembled external configuration of the base and mounting members carrying out a smooth continuance of the regular external configuration of the shaft. The plastic mounting member has an internally threaded rearwardly opening bore surrounded by an annular rear face for mating engagement respectively with the externally threaded forward portion and forward shoulder of the base member. A cue tip is rigidly connected on the forward closed end of the mounting member.

The construction requires, in addition, that the base member be cemented to the mating configuration of a wooden shaft. Also significant is the provision on the front end of the mounting member of a forwardly protruding rim defining a forward depression, and a front load bearing wall forming the bottom of the depression. A leather cue tip is cemented on the forward end of the mounting member, with the rear configuration of the cue tip matching the forward rim and depression.

The cue stick construction of the present invention will be more clearly understood by reference to the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a fragmentary elevation, partially in section, of the forward end of a cue stick constructed in accordance with the invention; and

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1.

Referring to the drawings, the cue stick comprises a wooden shaft having a forward end **10**. The forward end of the shaft has first and second stepped annular shoulders **12**, **14**. A first reduced diameter portion **16** of the shaft extends between the first shoulder **12** and the second shoulder **14**. A second and further reduced diameter portion **18** extends between the second shoulder **14** and the forward terminus **20** of the shaft.

A plastic base member **22** has a stepped internal configuration which mates with the first and second shoulders and reduced diameter portions of the shaft, and has a small air relief hole **24** for facilitating the insertion of the shaft. A rear annular face **26** of the base member mates with the first shoulder **12** of the shaft; a first rearwardly opening bore **28** of the base member mates with the first shoulder **16** of the shaft; an interior shoulder **30** of the base member mates with the second shoulder **14** of the shaft and a coaxial second bore **32** of reduced diameter mates with the second shoulder **18** of the shaft and opens through the front end of the base member.

The plastic base member **22** is permanently connected on the forward end of the shaft by means of conventional cement, rigidly bonding the stepped mating surfaces of the shaft and base member together.

The base member **22** has a forward annular shoulder **34**, and a forward portion **36** of reduced diameter extending beyond the shoulder **34** and overlying the second reduced diameter portion **18** of the shaft. The forward portion **36** of the base member is externally threaded, as shown.

A plastic mounting member **38** in the form of a closed cap is detachably secured on the forward end of the base member **22**. The mounting member **38** has an internally threaded rearwardly opening bore **40** surrounded by an annular rear face **42**, for mating respectively with the externally threaded forward portion **36** and forward shoulder **34** of the base member.

At its front end, the mounting member **36** has a forwardly protruding rim **44** and an interior load bearing wall **46** which cooperates to define a forward depression **48**. A leather cue tip **51** is rigidly connected on the forward end of the mounting member. The cue tip has a rear configuration which matches the forward rim and depression of the mounting member, and is secured by conventional cement between mating surfaces. The mounting member has small air relief holes **50**, **52** to facilitate assembly.

The stepped mating surfaces of the foregoing cue stick construction, joined by cement, account for an extremely rugged structure capable of withstanding the expected impact forces including the lateral components thereof. An extended surface contact between the base member **22** and the forward end of the shaft **10** facilitates a strong permanent bond, while at the same time the second reduced diameter portion **18** of the shaft reinforces the forward threaded portion **36** of the plastic base member at a crucial point, which is between the roots of the exterior threads as illustrated by the section **2—2**, so that the resulting laminated structure is extremely strong and withstands lateral impact forces which might otherwise break the base member at this point. The stepped configuration also provides for large shoulder areas especially between the plastic base member and wooden shaft. The length of the assembled plastic base and mounting member are kept to a minimum, which is consistent with a proper appearance and with the conversion of existing

cue sticks without adding significantly to their length. The assembled external configuration of the base and mounting members carries out a smooth continuance of the regular external configuration of the shaft.

The mating surface configuration and cement bond between the leather cue tip and the front end of the mounting member is exceptionally strong, and resists lateral components of impact forces.

While many different plastic compounds would be suitable for the manufacture of the base and mounting members, successful results have been obtained with a thermoplastic sold under the trade name Cycolac.

I claim:

A two piece cue stick having a base assembly and a removable cue tip assembly,

said base assembly comprising a wooden shaft having a forward end with first and second stepped annular shoulders defining a first reduced diameter portion of the shaft intermediate said shoulders and a second and further reduced diameter portion extending between said second shoulder and the forward end of the shaft.

a resilient plastic base member having a stepped internal configuration mating with the first and second shoulders and reduced diameter portions of the shaft formed on the forward end of said shaft,

said base member having an external shoulder forward of the step of said internal configuration defining a rearward portion having a diameter equal to that of said shaft and a forward reduced diameter portion overlying a substantial part of the second reduced diameter portion of the shaft, the forward portion of the base member being externally threaded for a major part of its length,

said removable cue tip assembly including a plastic mounting member substantially in the form of a

closed cap having a rearwardly opening bore internally threaded for the major part of its length and terminating in a rearmost circular shoulder,

said shoulder engaging said external shoulder on said base member and said interanl threads engaging said external threads on said base member,

said plastic mounting member having an external diameter corresponding to the diameter of the shaft so that the configuration of the base and mounting members carry out a smooth continuance of the regular external configuration of the shaft,

the mounting member having a rim protruding from the forward end thereof which defines a forward depression and having a front wall which forms the bottom of said depression, and

a leather cue tip having a rear configuration which is a mirror image of the forward rim and depression of the mounting member and which is supported by the surfaces of said rim and depression and cemented thereto.

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