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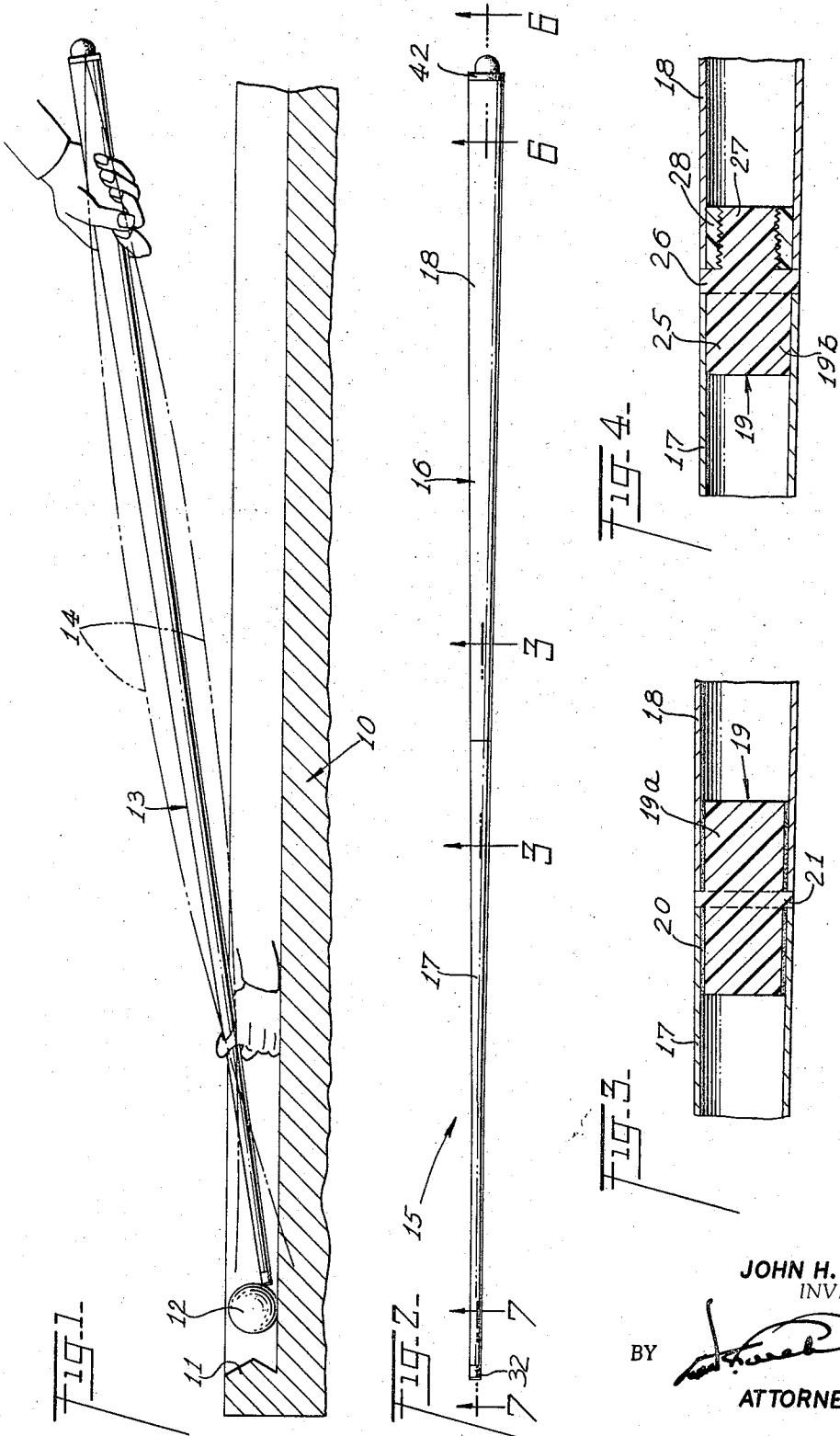
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BILLIARD CUE WITH VIBRATION DAMPENING PLUG

Filed Feb. 16, 1965

2 Sheets-Sheet 1



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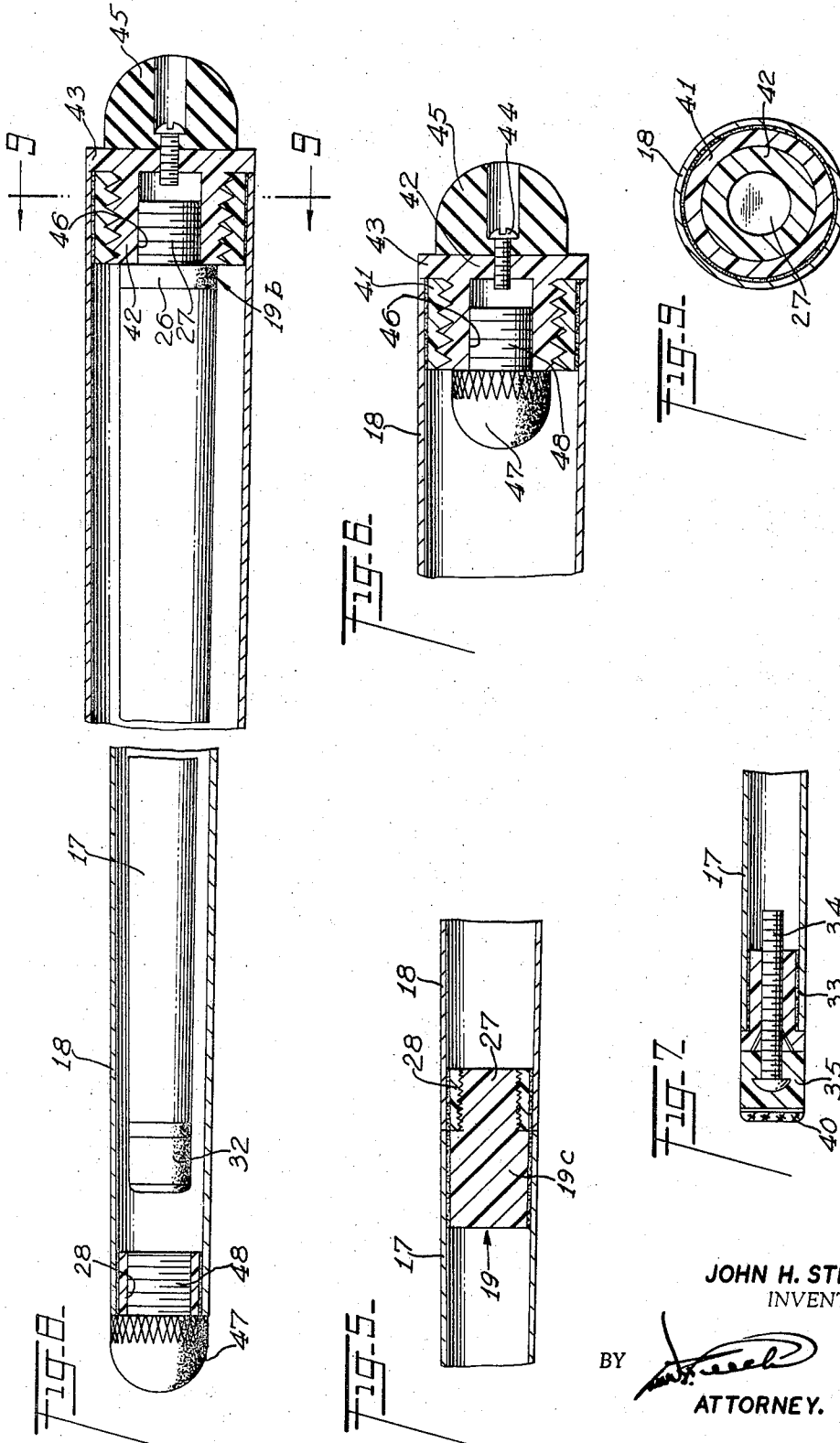
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BILLIARD CUE WITH VIBRATION DAMPENING PLUG

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This invention relates to billiard cues and more particularly to such cues which comprise a tapering tubular body.

Advances in tube tapering practices have permitted the economical production of a billiard cue body which is relatively sturdy and light in weight in the form of a tapering metallic tube. However, cues incorporating such bodies, as well as their wooden predecessors have displayed a tendency, when a player applies "English" to a billiard ball, to vibrate about the point of contact with the ball, causing the ball to roll in an erratic direction.

It is a primary object of the present invention to provide such a tubular cue body which is relatively free of this tendency.

Another object is to provide a cue incorporating such a vibration free tubular body which is divided into sections for compact telescopic storage when not in use.

The manner of accomplishing the foregoing objects as well as further objects and advantages will be made manifest in the following description, taken in connection with the accompanying drawings, in which:

FIG. 1 is a diagrammatic sectional view through a billiard table illustrating the tendency of tapered tubular cues of the prior art to vibrate excessively when applying English to a billiard ball.

FIG. 2 is a plan view of a preferred embodiment of the present invention.

FIG. 3 is a fragmentary longitudinal sectional view taken on the line 3—3 of FIG. 2, and illustrates one form of hard plastic vibration dampening plug employed in the invention to connect contiguous ends of consecutive sections of the tubular body of said cue.

FIG. 4 is a view similar to FIG. 3 illustrating a modified form of said plastic vibration dampening plug which permits the sections of said cue to be disconnected when the cue is not in use.

FIG. 5 is a view similar to FIG. 4 and illustrates a third alternate form of plastic vibration dampening plug which is adapted for use in connecting adjacent sections of the cue.

FIG. 6 is a fragmentary longitudinal sectional view taken on the line 6—6 of FIG. 2 and illustrates the internal construction of the cushion plug preferably employed in closing the large end of the butt section of said cue.

FIG. 7 is a fragmentary longitudinal sectional view taken on the line 7—7 of FIG. 2 and illustrates the cue tip means preferably employed in the invention.

FIG. 8 is a fragmentary longitudinal sectional view of the invention and illustrates the manner in which the two tubular sections of the cue body may be telescopically united with the tip section confined within the butt section and secured to the cushion plug closing the large end of said butt section. This view also shows how a cap plug, normally stored as in FIG. 6 by screwing the same into said cushion plug when the cue is assembled for use, is applied to the small end of said butt section to close the same when the cue is telescoped for storage.

FIG. 9 is a cross-sectional view taken on the line 9—9 of FIG. 8.

Referring specifically to the drawings and particularly to FIG. 1, a billiard table 10 having a cushion wall 11 is here shown supporting a billiard ball 12 while a player

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holds a cue 13 in readiness for applying English to said ball. This cue represents a cue produced in the prior art by tapering the same from tubular metal so that the body of the cue, from end-to-end, is a single continuous, tapered, thin-walled, metallic tube. Such a cue, when employed as illustrated in FIG. 1, has a tendency to react to this particular use of the cue by setting up a relatively detrimental and protracted vibration, as suggested by the broken lines 14 in this view, the nodes of which are located at the points at which the cue is supported by the hands of the player and is shown greatly exaggerated for illustration.

This defect in the prior art is overcome in the present invention by providing a cue 15 having a body 16 which is made up of a plurality of abutting tubular sections including a tip or shaft section 17 and a butt section 18 which are rigidly united at the point where said sections abut, by a vibration dampening plastic plug 19 which is preferably reinforced with fibre-glass.

This plug may take a variety of alternate forms as shown in FIGS. 3, 4 and 5 and which will be distinguished from each other by use of the suffix letters *a*, *b* and *c* following the reference number 19 which applies generically to these plugs.

Plug 19*a* shown in FIG. 3 is a simple tapered plug of nylon or other hard plastic which is made to closely fit within the larger end of tip section 17 and the smaller end of butt section 18 with just enough tolerance to accommodate a thin film of highly adhesive cement 20 so that the plug 19*a* permanently unites these tubular sections of the cue body 16. Use of the plastic plug 19*a* in the cue body 16 is adapted particularly for cues which are permanently assembled when they are made and where a low manufacturing cost is important.

The plug 19*a* is preferably provided with an annular shoulder 21 which extends radially between and abuts against the juxtaposed middle ends of cue sections 17 and 18, thereby forming a cushion between said sections.

The plastic plug 19*b* shown in FIG. 4 includes a tapered plug base 25 which snugly fits within the large end of top section 17 of the cut 15, the outer end of said base being provided with an external annular rib 26 which lies between and is flush with the adjacent ends of body sections 17 and 18. A threaded stud 27 extends axially from said plug base so as to lie within the smaller end of butt section 18 when the two body sections are united by plastic plug 19*b*. The latter plug also includes an internally threaded plastic sleeve 28 which snugly fits within the smaller end of butt section 18 and is permanently cemented in place therein. The sleeve 28 is so mounted in the small end portion of body section 18 as to be flush with said end of said section, and the threaded stud 27 is adapted to be screwed into said sleeve so as to bring said end of said section into forcible abutment against the annular rib 26.

Referring now to FIG. 5, it is noted that alternate form of plastic plug 19*c* resembles the plug 19*b* just described above and differs therefrom only in the omission from plug 19*c* of the external annular rib 26. When the two sections 17 and 18 of the cue body 16 are united by the plastic plug 19*c* the adjacent ends of said body sections are brought into direct abutting relation.

The forms of plastic plug 19 identified as 19*b* and 19*c* are designed particularly to facilitate the manufacture of the cue 15 in such a manner that tip section 17 may be stored within butt section 18 so as to substantially reduce the length of the cue when stored. Additional details of the structure of the cue, including those making this possible will now be described.

The small end of tip section 17 is equipped with a cue tip means 32 which includes a tubular internally threaded mount 33 which is permanently cemented within the

small end of tip section 17 and into which the screw 34 extending axially from a cue head 35 is screwed to mount said head on tip mount 33. The head 35 is surmounted by a facing 40 of leather, or other suitable material which is cemented to said head.

At the opposite end of the cue body 16, the large end of butt section 18 has cemented therein an internally threaded sleeve 41. A hollow externally threaded cushion plug 42 screws into sleeve 41 to apply an annular flange 43 of said plug to the adjacent end of butt section 18 so as to close the same. Secured to the outer end of plug 42 by a screw 44 is a rubber cushion 45. The hollow plug 42 has internal threads 46 which matches the internal threads of plastic sleeve 28 so that the stud 27 will readily screw into threads 46 as well as in the threads of sleeve 28.

A cap plug 47 is also embraced by the structure of cue 15 and includes a threaded stud 48 the diameter and threads of which match those of stud 27 so that said cap plug may optionally be screwed into sleeve 28 or into the internal threads 46 to cushion plug 42.

Thus, when the cue 15 is assembled for use, the cap plug 47 is unscrewed from the sleeve 28 and the cushion plug 42 is unscrewed from the sleeve 41. The threaded stud 27 is then unscrewed from the cushion plug 42 and screwed into plastic sleeve 28 as shown in FIG. 5. The cap plug 47 is then screwed into the cushion plug 42 and the latter replaced in the larger end of butt section 18 by screwing the same into the sleeve 41. This completes the steps required in assembling the cue 15 for use.

When so assembled the cue 15 has been found to be practically free of the objectionable vibration illustrated in FIG. 1 of the drawings. This relative freedom is attributed to the dividing of the tapering metal tubular body of the cue into two consecutive sections and connecting these by a non-metallic plug and particularly a plug made of a suitable plastic. The cue 15 not only enjoys this great advantage over unitary tapering tubular billiard cues of the prior art but it also enjoys the distinction of being readily demountable with the two sections in telescopic relation so as to reduce the cue to practically one-half its normal length.

While it is preferable to equip the cue 15 with a plastic plug 19 of the type 19c shown in FIG. 5, the alternate forms of plugs 19a and 19b are equally operative in supplying the vibration dampening function required in the plastic plug 19.

The plastic used in the present invention may be selected from any of a variety of different resinous polymerized products including polyolefins, polyethylenes, polypropylenes, and polystyrenes, but it is not to be understood as being limited to the particular chemical structures defined by these terms.

The claims are:

1. In a billiard cue, the combination of: a plurality of complementary tapered thin-walled metallic tubes; non-metallic vibration dampening plug means rigidly connecting adjacent ends of said metallic tubes when the latter are axially juxtaposed consecutively, to combine said tubes in a single continuously tapered tubular cue body having a butt end of maximum diameter and a tip end of minimum diameter; means for closing the butt end of said body; and cue tip means on the tip end of said body.

2. A billiard cue as recited in claim 1 wherein said vibration dampening plug means is in two parts united

by male and female threads provided axially respectively thereon, the unscrewing of said threads separating said tubes for storage when said cue is not in use.

3. A billiard cue as recited in claim 1 wherein said vibration dampening plug means is comprised of a hard solid resinuous plastic material selected from the group consisting of a polyolefin, a polyethylene, a polypropylene of a polystyrene.

4. A billiard cue as recited in claim 1 wherein the adjacent ends of said tubes are contiguous and in contact with each other when said sections are assembled to form said cue body.

5. A billiard cue as recited in claim 1 wherein said plug means is provided with an external annular rib which extends between and spaces adjacent ends of said tubes.

6. A billiard cue comprising two complementary, tapered, thin-walled, metallic tubes, one, a tip section, and the other, a butt section, said tubes being arranged end-to-end to form a single continuously tapered billiard cue body; and a plug of a suitable plastic fitting snugly within contiguous end portions of said sections and tightly cemented in place within said end portions to unite said tubes in end-to-end relation; a cushioned plug for closing the larger end of said butt section; and cue tip means closing the smaller end of said tip section.

7. A billiard cue as recited in claim 6 wherein said plastic plug comprises a plug base which closely fits and is permanently cemented into the larger end of said tip section, said base having a threaded stud extending axially outwardly therefrom, said plastic plug also including an internally threaded plastic sleeve into which said stud screws, said sleeve being permanently cemented in the smaller end of said butt section, and wherein said cushioned plug includes a hollow cushion base and a rubber cushion mounted axially thereon and disposed outwardly, said hollow cushion plug base being threaded both internally and externally, and an internally threaded sleeve into which said cushion plug screws, said sleeve being permanently cemented within the larger end of said butt section, the latter being large enough to receive said tip section when the same is inserted inwardly through said last mentioned sleeve, after said cushion plug has been unscrewed therefrom, the internal threads within said cushion plug permitting said plastic plug stud to be screwed therein to support said tip section within said butt section when said cushion plug is screwed back into said last mentioned sleeve; and a cap plug threaded externally so as to screw into said first mentioned sleeve to close the smaller end of said butt section when said tubes are telescoped as aforesaid, said cap plug being screwed into said cushion plug when said billiard cue is assembled for use.

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