

1/4

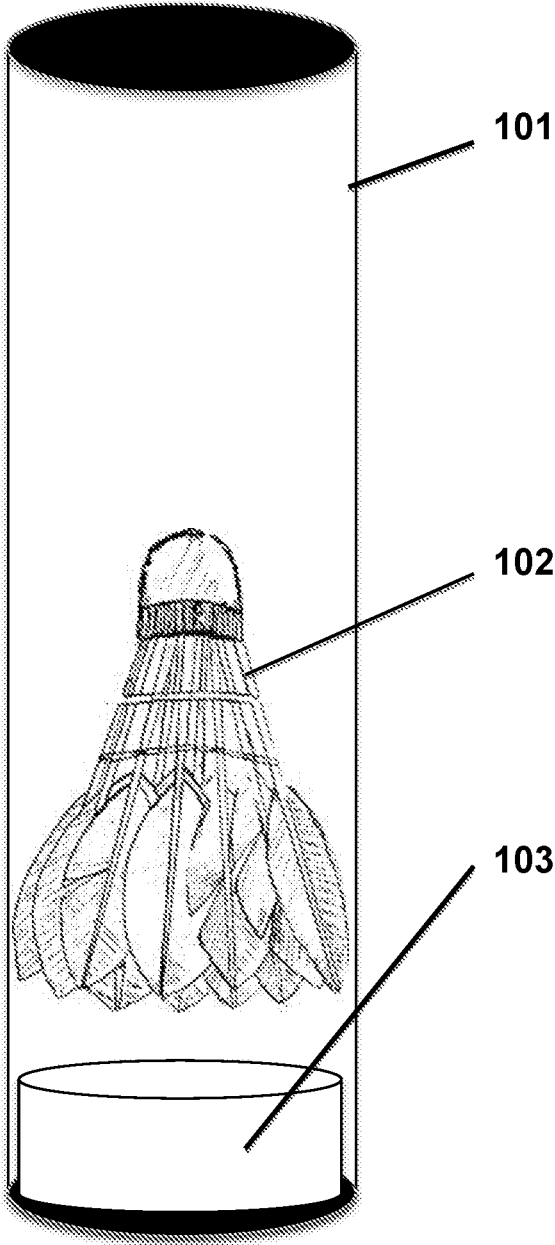
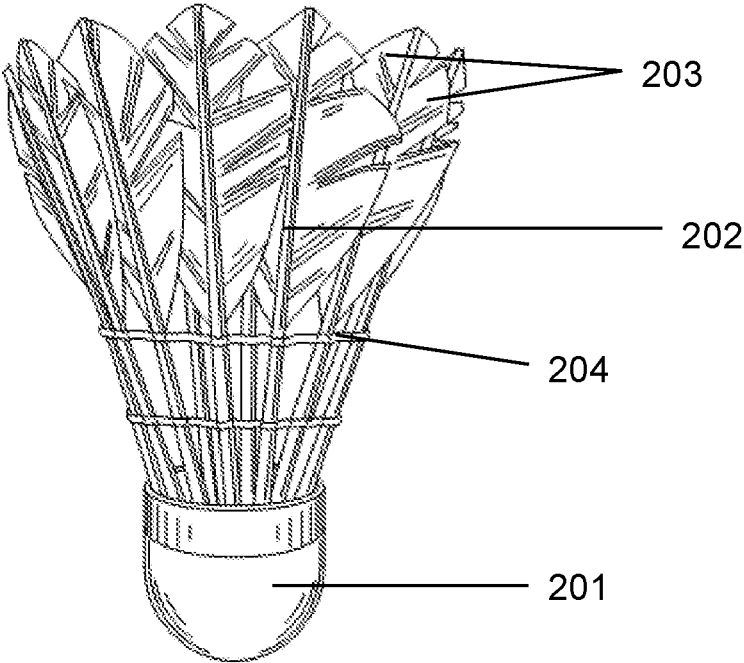
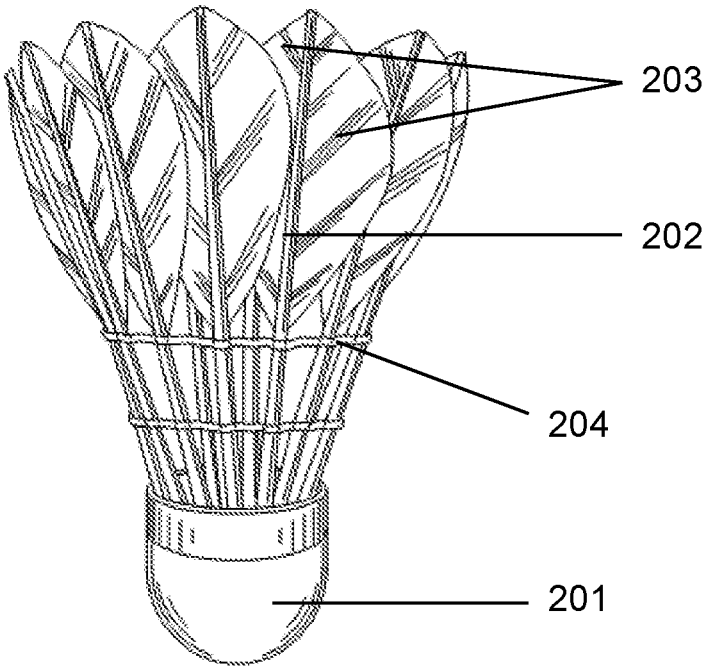


FIG. 1

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A



B

FIG.2

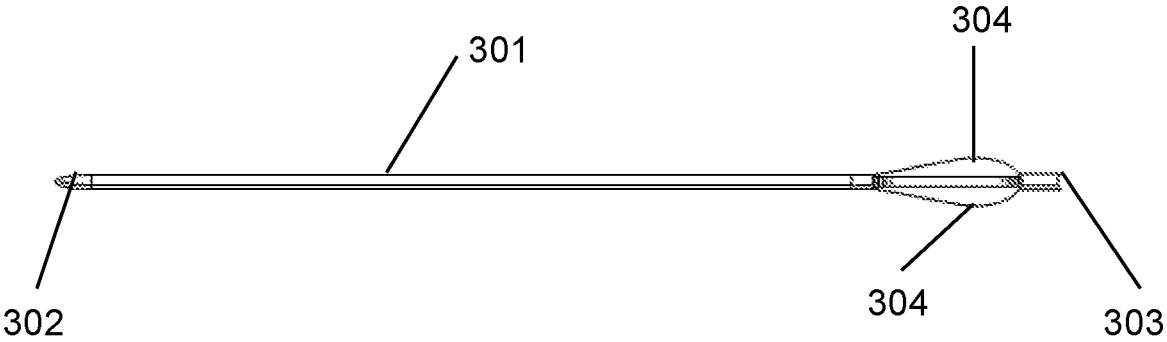


FIG. 3

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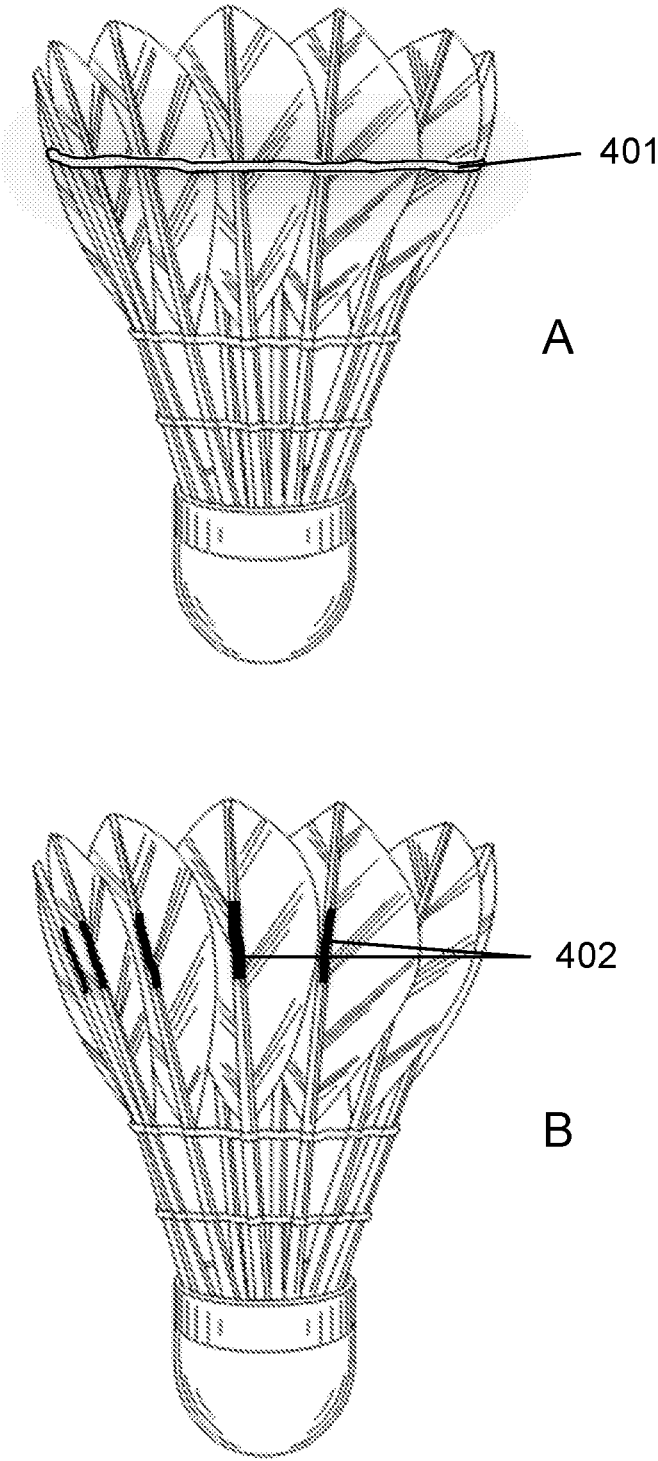


FIG. 4

ABSTRACT

Methods, apparatus and kits for modifying natural feathers that are used in sporting goods that result in long lasting feathers with increased mechanical stability, reliability and durability as well as improved flight consistency is disclosed. Some of the sporting goods that use natural feathers are badminton shuttlecocks, arrow fletchings, and darts. The disclosed methods consist of controlled treatment of feather shuttlecocks with crosslinking agents to crosslink the keratin protein present on the natural feathers of the shuttlecock.

<FIGURE 2>