United States Patent [19]

Rosalsky

[11] **3,927,466**

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[54] **METHOD OF MAKING METAL BALL-BAT**

[75] Inventor: **Ivan Rosalsky**, Montclair, N.J.

[73] Assignee: **Airlite Aluminum Corporation**, Kearny, N.J.

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[52] **U.S. Cl.** ..... **29/511**; 273/72 A

[51] **Int. Cl.**[2] **B21D 39/00**; B23P 11/00

[58] **Field of Search** ..... 29/511; 273/72 A, 72 R

[56] **References Cited**

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Primary Examiner—Charlie T. Moon

Attorney, Agent, or Firm—William R. Liberman

[57] **ABSTRACT**

An elongated hollow cylindrical tube of relatively light and malleable metallic material has one end closed as by swedging to form the ball-striking end of a ball-bat. The other end of the cylinder is attenuated and narrowed to define the handle end of the ball-bat and is then flared outwardly at the open end, the marginal edge thereof being fluted or plain. A cylindrical cup element is then secured onto said open end, the wall of cup being compressed radially inwardly about the flaring and locked thereabout against rotary or longitudinal movement with respect to the ball-bat.

4 Claims, 5 Drawing Figures

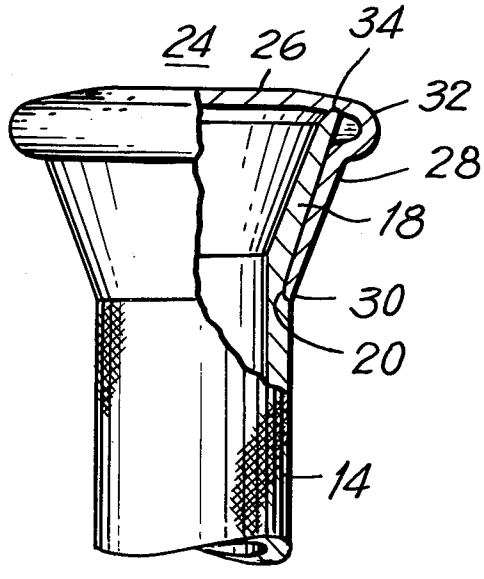


FIG. 1

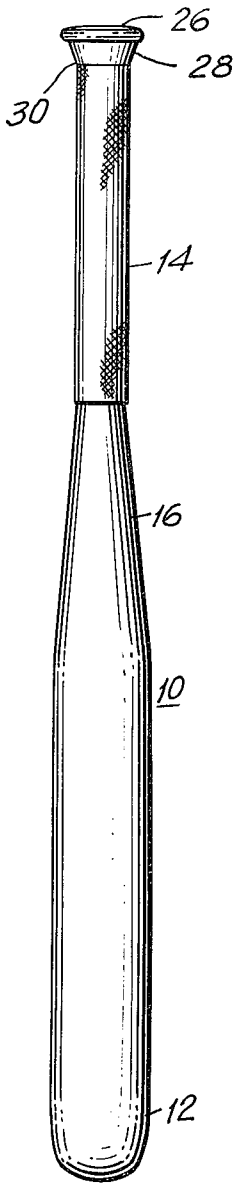
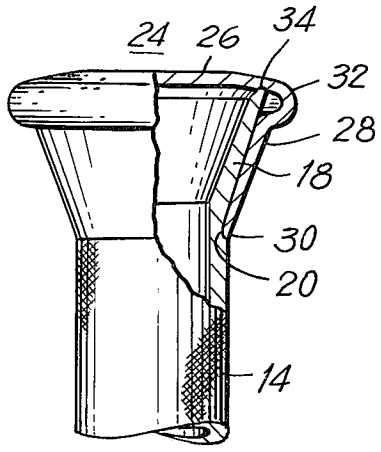


FIG. 2



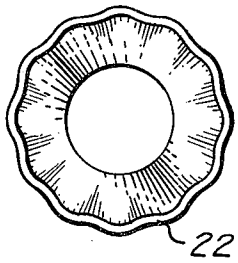


FIG. 4

FIG. 3

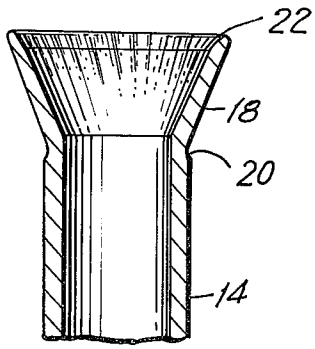
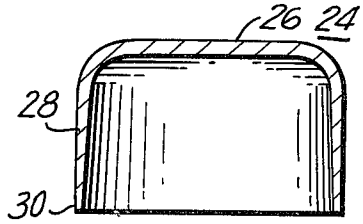


FIG. 5



METHOD OF MAKING METAL BALL-BAT

FIELD OF THE INVENTION

The present invention relates to ball-bats of metal and to a method of forming same solely by mechanical means as contrasted to such methods as brazing, welding, soldering and the like.

DESCRIPTION OF THE PRIOR ART

Metal ball-bats have long been known in the art with few if any thereof achieving any measurable degree of acceptance. Among prior art disclosures on ball-bats of metal are U.S. Pat. Nos. to Moose 377,686 of Feb. 7, 1888; to Middlekauf 1,611,858 of Dec. 21, 1926; Merola 3,479,030 of Jan. 26, 1967; Swenck 3,691,625 of Sept. 19, 1972; and Wilson 3,703,290 of Nov. 21, 1972. These prior art devices have numerous failings, related either to cost, difficulty of production, longevity in use, or are generally unsatisfactory in use with regard to ball striking reaction.

SUMMARY OF THE INVENTION

The method and product of the present invention has eliminated the drawbacks of prior art structures. The method, with the machinery developed to practice it, is relatively simple and uncomplicated. The body of the bat is formed from a hollow cylindrical tube of aluminum or an aluminum alloy, of strength and rigidity suitable for use in ball striking and driving. The upper end, or end adjacent the ball striking portion, is closed by friction forming the metal at said upper end. The cylinder, below the ball striking area, is swaged gradually radially to reduce the outer diameter thereof on a gradual taper to a section of reduced diameter thereby to define the hand-gripping portion. The opening at the handle end is flared outwardly and its border out of round to provide an undulating peripheral edge. Thereafter an open-mouthed cylindrical cap element is inverted over the flared end, the walls of the cap being crimped on a reverse tapering to interfit and interlock with the male section, and with the upper edge of the cap wall fitting into an annular channel or groove about the handle thereby to merge the cap walls into the body of the handle and to prevent movement of the cap circumferentially or longitudinally relative to the handle or hand-gripping end. The material used are of different hardnesses allowing metals to flow into one another.

The product of the present invention is thus a bat of metal which has a smooth, seamless surface from the striking end to the handle end, with the cap closing the handle end merging into the body of the handle to present a practically homogeneous body.

The object, therefore, of the present invention is to provide a ball-bat of a minimal number of components which can be assembled relatively easily and quickly into a permanent assembly, along with the method of forming said bat.

Another object of the present invention is the provision of a two-piece metal ball-bat, the pieces being interlocked against relative movement.

Still another object is to provide a metal ball-bat which will provide all the benefits of a unitary one-piece bat and which is formed simply and easily without brazing, welding, soldering or riveting.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevational view of a ball-bat constructed according to and embodying the present invention;

FIG. **2** is a part elevation, part section, enlarged in relation to FIG. **1**, of the handle and cap end of said ball-bat.

FIG. **3** is a vertical section through the open handle end, during an intermediate stage of the process of formation of the bat of the present invention;

FIG. **4** is a top plan of the flared opening at the handle end of the ball-bat showing the border fluting; and

FIG. **5** is a vertical section through the cap end of the ball-bat prior to its application to and securement on the bat.

DESCRIPTION OF A PREFERRED EMBODIMENT

The ball-bat illustrated in the drawings annexed hereto, and forming a part hereof, is indicated generally by reference numeral **10** and comprises a ball striking portion **12** at one end of bat **10**, a handle portion **14** at the other end, and an intermediate bridging portion **16.** Bat **10** comprises an originally longitudinally extending hollow elongated cylinder of aluminum or of similar light, relatively malleable metal. The starting outside diameter is that of the conventional ball-bat and its diameter is unchanged throughout the length of the ball striking portion **12.** While described in relation to a bat used in playing baseball, it will be obvious from the foregoing and from the following description that other types of ball-bats may similarly be formed in accordance with the present invention.

The cylinder is then subjected to the action of swedging hammers, in the conventional manner, thereby gradually to reduce the diameter of the cylinder to define a bridge portion **16.** Thereafter, the swedging is continued to reduce the remainder of the cylinder to the same thickness as the narrower end of the bridge portion **16** for length sufficient to define the handle portion **14.** Handle **14** may be tape-wrapped or otherwise covered for easier handling. The free open end **18** of the cylinder at the handle end thereof is then flared outwardly on a suitable mandrel, and the border fluted as indicated by reference numeral **22** for reasons to be set forth hereinbelow. At the point where outward flaring **18** begins, an annular groove or channel **20** is provided. A cap portion of similar metallic material is formed, in the shape of an open-ended cup member **24** having an annular straight wall **28** tapering in thickness from bottom **26** to a reduced thickness edge, as at **30.** The flared and fluted end **18** of bat **10** is then inserted into the open end of cap **24** and sides **18** and cup **24** compressed inwardly about the outwardly tapered end **16** to force the bat flutings into the metal of the cap and the metal of the cap into the valleys of the flutings. Similarly, as the free ends of the cap sides are radially compressed and thickened, the material thereof is forced into annular groove or channel **20** so as to merge into the side of handle **14** and present a smooth, uninterrupted surface against the heel of the hand when the bat is being manipulated.

I claim:

1. The method of making a metal ball-bat which comprises deforming the metal at one end of a hollow cylinder to close off said end, reducing the diameter of the cylinder at the other and open end of said cylinder to extend the length thereof thereby to form a handle

portion of uniform diameter, forming an annular peripheral recess in the handle spaced from the open end of the cylinder, applying an inverted side-walled cap of metal over the said other end and crimping the side walls of the cap against the open end of the cylinder and forcing the ends of the side walls into the recess to lock the cap against rotary and longitudinal movement with respect to the bat.

2. The method of claim **1** which includes the step of reducing the diameter of the cylinder on a taper from the original diameter thereof to the handle end.

3. The method of making a metal ball-bat which comprises deforming the metal at one end of a hollow cylinder to close off said end, reducing the diameter of the cylinder at the other and open end of said cylinder to extend the length thereof to form a handle portion of

uniform diameter, forming an annular peripheral recess in the handle spaced from the open end of the cylinder, flaring the said open end outwardly and fluting the marginal border thereof, applying an inverted side-walled cap of metal over the said other and open end and crimping the side walls of the cap against the open end of the cylinder and forcing the ends of the side walls of the cap into the recess to lock the cap against rotary and longitudinal movement with respect to the bat.

4. The method of claim **3,** including the step of deforming the metal of the cap and of the fluted border of the handle end so that there is an interdigitation of cap and border metal preventing relative circumferential movement of the cap and handle.

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