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METHOD OF CONSTRUCTION OF DUAL JACKET
PARTITION BULLETS

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This invention relates to bullets and more particularly to a dual jacket partition bullet and method of constructing the same.

One object of this invention is to provide a dual jacket partition bullet of the type adapted to expand upon impact to impart the full energy of the bullet to game or other targets, but which is designed to prevent the bullet from disintegrating completely upon impact or from shedding its core.

Another object of the invention is to provide a bullet of simple and inexpensive construction.

Still another object of the invention is to provide a new method of construction for a partition jacket bullet.

Other objects of the invention will become apparent as the following description proceeds, especially when taken in conjunction with the accompanying drawing wherein:

Figure 1 is an elevational view of a bullet constructed in accordance with the present invention;

Figure 2 is a longitudinal sectional view of the bullet shown in Figure 1;

Figure 3 is a longitudinal section of a cup-shaped member from which the outer jacket is formed;

Figure 4 is a similar view of the inner jacket;

Figure 5 is a sectional view showing the inner jacket disposed in a mold cavity in which the core of the bullet is formed;

Figure 6 is a longitudinal section showing the inner jacket and core assembly arranged within the outer jacket; and

Figure 7 is an elevational view partly in section showing a modified construction.

While the illustrations and descriptions show one type of bullet incorporating my invention, I do not wish to be limited to the exact construction shown, the scope of the invention being indicated by the appended claims.

Referring now more particularly to the drawing and especially to Figures 1 and 2 thereof, the bullet comprises an outer jacket 10 having a cylindrical side wall 12 which extends for a major portion of the bullet length, and a base 14 closing the rear end of the outer jacket. The front end, or nose, of the bullet may taper to a point as shown and is enclosed by the conical side wall portion 16 of the outer jacket.

Secured within the outer jacket is an inner cup or jacket 18. The inner jacket 18 has a cylindrical side wall 20 dimensioned to telescope within the cylindrical side wall 12 of the outer jacket, and also has a base 22 formed with a hole 24 therethrough. The inner jacket 18 is arranged within the outer jacket with its open end 26 abutting the base 14 of the outer jacket and is of a length such that the partition or base 22 of the inner jacket is located near or at the center of gravity of the bullet. The inner jacket is secured to the outer jacket as by means of a suitable low heat bonding material 28, for example. Obviously other means may be employed for securing the inner and outer jackets together, and often times a plating of tin is applied to the outer sur-

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face of the inner jacket side wall prior to its insertion into the outer jacket, and the assembly is then heated to bond the jackets together.

The outer jacket is preferably formed of gilding metal which is an alloy of 90% to 95% copper and 5% to 10% zinc. The inner jacket is preferably formed of either a mild steel or copper. Those familiar with the art will readily understand that the materials from which the jackets are formed may be varied considerably and that the materials suggested herein are for the purpose of illustration only.

The bullet core, generally indicated at 30, is of one-piece construction and should be formed of a composition including a large proportion of lead or similar material. In the present instance, the core material filling the inner jacket and extending upwardly to the level of the dotted line 32, comprises the relatively hard portion of the core. The composition of the relatively hard core portion 34 is approximately one part tin to ten to fifteen parts lead. The portion of the core to the other side of the dotted line 32 comprises the relatively soft core portion 36 and has a composition of approximately one part tin to twenty-five to thirty parts lead. The compositions of the relatively hard and soft core portions may of course be varied without departing from the spirit of the invention. Small amounts of antimony may also be added to the core composition to increase hardness.

Upon impact with game or any other target, the relatively soft core portion 36 and the surrounding portions of the outer jacket will tend to expand to increase the area of impact. However, the double wall thickness provided by the dual jacket construction at the rear portion of the bullet tends to prevent the further expansion or disintegration of the bullet. The integral construction of the core portions 34 and 36, together with the partition formed by the base 22 of the inner jacket and the relatively hard composition of the core portion 34, also tends to preserve the portion of the bullet to the rear of the partition against disintegration upon impact.

The method of constructing the bullet shown in Figures 1 and 2 will now be described. The outer jacket 10 of the bullet is formed from a cup-shaped member 40 shown in Figure 3 of the drawing which has the base 14 and the cylindrical side wall 12. These cups are preferably formed from metal sheets which are run through presses which punch out discs of the material, slightly cupping them. The discs are then run through a series of dies to draw them to the shape shown in Figure 3.

The inner jacket 18 is illustrated in Figure 4 and may be formed in the same manner as the cup-shaped member 40. The hole 24 through the base 22 of the inner jacket is preferably formed prior to the drawing operation.

The inner jacket 18 is placed in a generally vertically extending cavity of a mold 42 with the base 22 of the inner jacket spaced above the bottom of the mold cavity, as shown in Figure 5. The mold cavity is vented as shown and the side wall of the mold cavity is cylindrical in cross section and is of approximately the same diameter, or only slightly larger than, the outer diameter of the inner jacket so as to closely receive the latter. The jaws 42' of a suitable clamp may be employed to hold the inner jacket in position in the mold cavity. Molten core metal of the relatively soft composition described above is then poured into the mold cavity by pouring into the upper open end 26 of jacket 18 and through hole 24 therein, and pouring is continued until the level of the molten core metal rises to the dotted line 32 which is just below the bottom of base 22 of the inner jacket. Immediately thereafter, and while the soft composition core metal is still molten, additional molten core metal of a harder composition, such as that described above, is poured on top of the relatively soft molten core metal to

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a point adjacent the top of the inner jacket. In this manner the inner jacket and core assembly is formed prior to its insertion in the outer cup 40.

After a suitable period of time has elapsed to permit the core metal to set, the inner jacket and core assembly is removed from the mold cavity and the outer surface of the side wall 20 of the inner jacket is coated with a suitable low heat bonding material. To facilitate removal of the inner jacket and core from the mold, the latter may be formed of two half sections as shown. The inner jacket and core assembly is then inserted into the cup member 40, as shown in Figure 6, and the entire assembly is then heated to a suitable temperature to bond the inner jacket to the cup member 40 to form a solid unit.

Instead of applying bonding material to the inner jacket 40, other bonding material may of course be selected, and a plating of tin applied to the outer surface of the cylindrical wall 20 of the inner jacket and heated after the inner jacket and core assembly have been inserted into the cup member 40 has been found to give excellent results.

After the inner jacket and core assembly has been suitably affixed within the outer cup member 40, this assembly, shown in Figure 6, may then be placed in a bullet point forming die to form the conical nose portion of the bullet as shown in Figure 2.

As an alternative to bonding the jackets together, the inner jacket and outer cup member 40 may be dimensioned to have a friction tight fit one within the other and then after the inner jacket and core assembly is friction tight within the outer cup member 40, a plurality of deep crimps or grooves 50 may be rolled in the side wall of cup member 40, forming similar cooperating and engaging grooves or crimps in the side wall of the inner jacket and in the core metal serving to securely affix the inner jacket within the cup member 40. Otherwise, the method of forming the bullet may be exactly the same as that described in Figures 1 to 6. The final bullet construction 52, shown in Figure 7, will then be like that shown in Figures 1 and 2 except that the crimps or grooves replace the bonding material as the means for securing the jackets together.

What I claim as my invention is:

1. The method of making a dual jacket partition bullet which comprises forming an outer cup-shaped jacket having an annular side wall, forming an inner cup-shaped jacket of a length substantially less than that of the outer jacket having an annular side wall dimensioned to telescope within the outer jacket and having a hole through the base, forming a first core portion by pouring molten core metal into a mold cavity, supporting the inner jacket in coaxial relation to said mold cavity with its base adjacent to the free surface of the molten core metal, pouring additional molten core metal into the inner jacket through the open end thereof until the inner jacket is completely filled to provide a second core portion integrally connected to the first core portion through the hole in the base, after the core metal has set inserting the inner jacket and core into the outer jacket with the open end of the inner jacket adjacent the base of the outer jacket, and then forming the open end of the outer jacket and the core metal radially therewithin to final shape.

2. The method of making a dual jacket partition bullet which comprises forming an outer cup-shaped jacket having a cylindrical side wall, forming an inner cup-shaped jacket of a length substantially less than that of the outer jacket having a cylindrical side wall dimensioned to telescope within the outer jacket and having a hole through the base, forming a first core portion by pouring molten core metal into a cylindrical mold cavity, supporting the inner jacket in coaxial relation to the mold cavity with its base adjacent the free surface of the molten core metal, pouring additional molten core metal into the inner jacket through the open end thereof until

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the inner jacket is completely filled to provide a second core portion integrally connected to the first core portion through the hole in the base, after the core metal has set inserting the inner jacket and core into the outer jacket with the open end of the inner jacket abutting the base of the outer jacket, and then forming the open end of the outer jacket and the core metal radially therewithin to final shape.

3. The method of making a dual jacket partition bullet which comprises forming an outer cup-shaped jacket having a cylindrical side wall, forming an inner cup-shaped jacket of a length substantially less than that of the outer jacket having a cylindrical side wall dimensioned to telescope within the outer jacket and having a hole through the base, forming a first core portion by pouring molten core metal into a cylindrical mold cavity, supporting the inner jacket in coaxial relation to the mold cavity with its base adjacent the free surface of the molten core metal, pouring additional core metal of relatively harder composition into the inner jacket through the open end thereof until the inner jacket is completely filled to form a second core portion integrally connected to the first core portion through the hole in the base, after the core metal has set securing the inner jacket and core within the outer jacket with the open end of the inner jacket abutting the base of the outer jacket, and then forming the open end of the outer jacket and the core metal radially therewithin to final shape.

4. The method of making a dual jacket partition bullet which comprises forming an outer cup-shaped jacket having a cylindrical side wall, forming an inner cup-shaped jacket of a length substantially less than that of the outer jacket having a cylindrical side wall dimensioned to telescope within the outer jacket and having a hole through the base, supporting the inner jacket in a cylindrical, vertically arranged mold cavity in coaxial relation thereto with the base adjacent to but spaced above the bottom of the mold cavity, forming a first core portion in the mold cavity by pouring molten core metal into the open end of the inner jacket and through the hole in the base, pouring additional core metal of a relatively harder composition into the open end of the inner jacket until the latter is completely filled to form a second core portion integrally connected to the first core portion through the hole in the base, after the core metal has set, inserting the inner jacket and core into the outer jacket with the open end of the inner jacket abutting the base of the outer jacket, securing the side walls of the jackets together, and then forming the open end of the outer jacket and the core metal radially therewithin to final shape.

5. The method defined in claim 4 in which the additional core metal is poured while the core metal forming the first core portion is in a molten condition.

6. The method defined in claim 4 in which a heat softenable bonding material is applied to the outer surface of the side wall of the inner jacket prior to inserting the latter into the outer jacket, and in which heat is applied to the outer jacket after the inner jacket is inserted therewithin to bond the jackets together.

7. The method of making a dual jacket partition bullet which comprises forming an outer cup-shaped jacket having a cylindrical side wall, forming an inner cup-shaped jacket of a length substantially less than that of the outer jacket having a cylindrical side wall dimensioned to telescope within the outer jacket and having a hole through the base, arranging the inner jacket in a generally vertically disposed, cylindrical mold cavity of a diameter determined to snugly receive the inner jacket with the base of the latter adjacent to but spaced above the bottom of the mold cavity, forming a first core portion in the mold cavity by pouring molten core metal into the open end of the inner jacket and through the hole in the base until the molten core metal rises to a level slightly below the base, pouring additional molten core metal of a relatively harder composition into the open end of the inner

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jacket and through the hole in the base until the inner jacket is completely filled to form a second core portion integrally connected to the first core portion, after the core metal has set removing the inner jacket and core assembly from the mold cavity and inserting the same into the outer jacket with the open end of the inner jacket abutting the base of the outer jacket, securing the side walls of the jacks together, and then forming the open end of the outer jacket and the core metal radially therewithin to final shape.

8. The method defined in claim 7 in which the additional molten core metal is poured while the core metal forming the first core portion is in a molten condition.

9. The method defined in claim 8, in which bonding material is applied to the outer surface of the side wall of the inner jacket prior to inserting the latter into the outer jacket, and in which heat is applied to the outer jacket

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after the inner jacket is inserted therewithin to bond the jackets together.

10. The method defined in claim 7 in which the jackets are secured together by rolling longitudinally spaced circumferential crimps in the side wall of the outer jacket after the inner jacket is inserted therewithin.

References Cited in the file of this patent

UNITED STATES PATENTS

10	338,849	Lorenz	Mar. 30, 1886
	1,059,212	Ross	Apr. 15, 1913
	1,059,213	Ross	Apr. 15, 1913
	1,328,334	Newton	Jan. 20, 1920
15	2,321,345	Whipple	June 8, 1943
	2,327,950	Whipple	Aug. 24, 1943