

[54] BULLET

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[58] Field of Search 102/91, 92.1-92.6

[56] References Cited

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[57] ABSTRACT

The invention relates to bullets or projectiles to be fired by rifles, handguns, shotguns and the like, and which are so formed that the bullets will expand rap-

idly and effectively to as much as twice to three times or more than their original size on impact with the target, while assuring greater than normal stability in flight, as well as flatter trajectories, even at sub-standard velocities, when fired, as compared with conventional hollow-point or other mushroom type bullets. My improved bullets, are characterized by having a relatively deep annular trench or channel coaxially extended therein from the blunt nose of the bullet toward its base, with a center-piece of substantial mass formed centrally within the body of the bullet and projecting forwardly toward the nose but preferably terminating well behind the nose or not substantially beyond the same. On impact with a target composed of a fluid-laden substance, such as animal flesh, the fluid which is trapped in the annular trench or channel of the bullet, and which is inherently incompressible, exerts a tremendous hydraulic or hydrostatic pressure within the trench and results in rapid radially outward expansion of the relatively thin-walled ogive of the bullet while leaving the center-piece intact without shattering or otherwise damaging the same, with a consequent greater penetration and impact shock, even at low velocities than is attainable with conventional hollow-nose or other mushroom type bullets.

4 Claims, 4 Drawing Figures

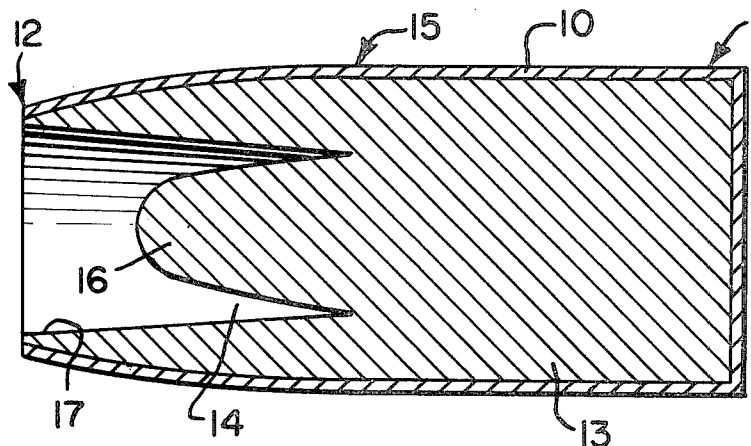


FIG. 1.

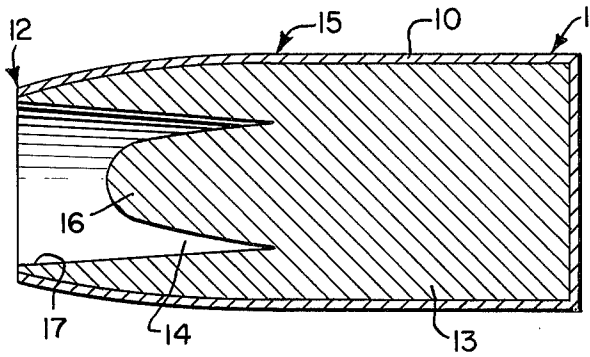


FIG. 2.

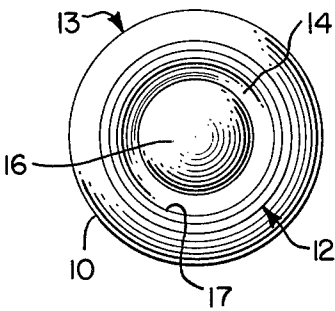


FIG. 3.

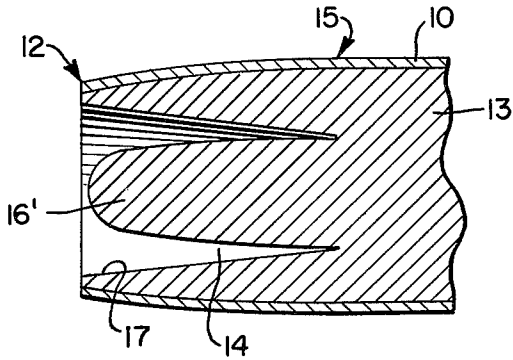
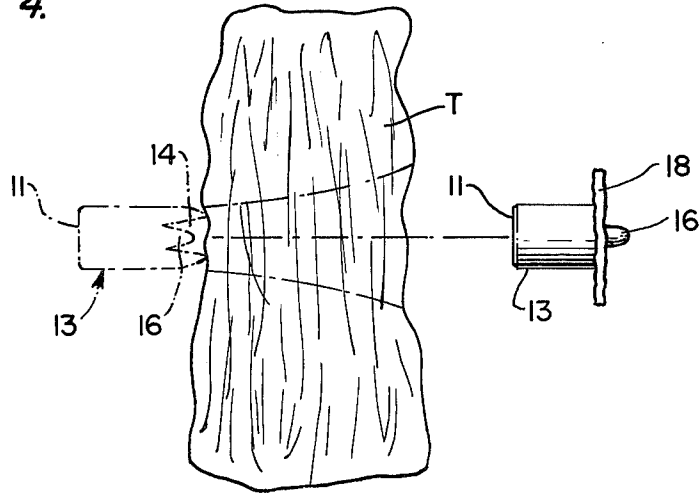


FIG. 4.



The present invention relates to new and improved bullets or projectiles of the expanding type which are capable of being fired by rifles, handguns, shotguns and the like with greater accuracy and greater target penetration and impact shock on the target, even at sub-standard velocities, than has heretofore been attainable with former bullets of the hollow-nose or mushroom type. My new bullets can be fully or semi-jacketed, if desired, or can be formed by casting, and the principle thereof can also be applied to rifled or unrifled shotgun slugs. Rapid and consistent expansion of the bullets embodying my invention is assured at virtually any practical velocity, even as low as 600 feet per second but preferably not lower than a muzzle velocity of 850 feet per second, but which can range upwardly to 1,500 feet per second or higher, if desired, with greater accuracy and penetration, accompanied by a more powerful target impact shock than has ever been attained previously with hollow-nose or hollow-point bullets, or others of the so-called mushroom type.

In conventional bullets of the hollow-nose or hollow-point type, the hollow or cavity in the nose is usually relatively shallow and wide, and consequently it takes very high velocity and/or great impact resistance to expand or upset it. Moreover, the absence of most or all central mass within the nose cavity causes the bullet to yaw or gyrate around its central axis, which tends to cause keyholing or tumbling, with consequent inaccuracy of flight to the target. Unlike such hollow-nose bullets, my improved bullet does not rely on high velocity or great target resistance to cause it to expand, and in addition, the presence of a massive center-piece within the nose gives it the central mass that is needed for stability, and further serves to part or cleave the flesh ahead of the expanding ogive to assure more rapid and greater expansion of the bullet.

My new bullet utilizes the principle of hydraulic or hydrostatic force acting upon the interior of the bullet ogive to cause consistent and rapid expansion of the bullet on impact with the target at the lowest practical velocities, while having an initial shape which achieves perfect chambering and assures a relatively flat and accurate trajectory.

A further object of my invention is to provide a bullet or projectile of the aforementioned type which is simple in form, yet highly effective, and which can be produced at the same or substantially the same cost as any other bullet of comparable components.

Other and further objects and advantages of my invention will be hereinafter described or will be readily apparent from the following description and the accompanying drawing, and the novel features thereof defined in the accompanying claims.

In the drawing:

FIG. 1 is a longitudinal sectional view of a typical fully jacketed bullet embodying my invention;

FIG. 2 is a view of the bullet as seen in end elevation when looking toward the nose end of the bullet;

FIG. 3 is a fragmentary longitudinal sectional view through the nose end portion of a modified form of the bullet of FIG. 1, in which the center-piece is somewhat longer than that of FIG. 1 and extends forwardly to near the extreme end of the blunt nose; and

FIG. 4 is a view diagrammatically illustrating the expansion effect which takes place when the bullet strikes a fleshy or flesh-like target.

Like reference characters designate corresponding parts in the various figures of the drawing. Referring to the embodiment depicted in FIGS. 1 and 2, 10 denotes the jacket of the bullet, which in the case of fully jacketed bullets extends from the base 11 to the extreme forward end of the blunt nose 12. If preferred, the jacket 10, which can be made of metal or any suitable hard material, can be extended from the base only partially to the blunt nose end, as in the case of standard $\frac{3}{4}$ or semi-jacketed bullets, while the remainder of the body 13 of the bullet is preferably made of lead or any other comparable relatively soft material that is suitable for use in bullets.

As seen in FIGS. 1 and 2, a relatively deep channel or trench 14 is formed in the lead body 13 at the nose end of the bullet, said trench extending from the blunt nose 12 of the bullet to a substantial depth, and preferably to a distance one-third or more of the overall length of the bullet from the nose to its base, or to about the transverse plane of the bullet shoulder 15, or slightly beyond the latter, if desired. Within the trench 14, there is also formed a tapered center-piece 16 of substantial mass which coaxially extends forwardly from the bottom of the trench toward the nose of the bullet. For practical purposes, the center-piece 16 need be only about two-thirds as long as the depth of the trench 14, but can be longer. However, for optimum results, the center-piece should not be materially longer than the overall depth of the trench, as indicated at 16' in the modified form illustrated in FIG. 3, and preferably should lie wholly within the trench. Cast bullets can be of the same form as described in the foregoing, but with the jacket 10 omitted.

The manufacture of my bullets can be performed in a single operation with the aid of a swaging die and a nose punch as commonly employed in making standard rifle and pistol bullets. The nose punch serves to form the annular trench 14, the outer wall of which progressively tapers inwardly slightly from the blunt bullet nose towards the base of the trench, as indicated at 17 in the drawing, while at the same time forming the center-piece 16 which projects forwardly from the base of the trench to any suitable length as may be desired for bullets of various calibers and/or weights. In the case of bullets for handguns which produce a lower bullet velocity than that of rifles, it is usually better to leave some soft lead exposed at the nose of the bullet to cause more rapid expansion when the bullet impacts the target. However, even when the center-piece terminates well below the nose, there is still a substantial and sufficient fluid "reservoir" provided by the trench within the ogive to produce sufficient radial outward pressure exerted by the fluid that becomes trapped therein when the bullet penetrates fleshy targets, even at relatively low velocities, to cause rapid expansion of the bullet and producing a consequent wound channel of devastating effect. This is enhanced by the V-shape of the trench in radial cross-section and the attendant proportionately and progressively thinner side walls of the ogive at the nose end of the bullet. By varying the jacketing of my improved bullets, the jacket thickness and core temper can be utilized to govern the degree and rapidity of expansion, so that such bullets can be used in high velocity rifle cartridges, as well as low ve-

locity pistol loadings, especially those of the so-called "police" loading types. Because of the immediate and violent expansion of my bullets on impact, the wound channel is greatly widened, beginning at or near the point of entrance so that tremendous hydrastatic shock is transmitted to the target from that point on, resulting in maximum energy absorbed by the target, as diagrammatically depicted in broken lines in FIG. 4 of the drawing, which also shows the nose end of the bullet in full lines after it has expanded fully to substantially a flat circular disk form, as indicated at 18, before or when emerging from the flesh-target designated T, depending on the thickness and/or size, shape and density of the target. This is aided by the fact that the center-piece 16 remains intact and undamaged, and tends to part the flesh ahead of the expanding ogive.

It should be understood that the center-piece need not be formed by swaging it as an integral component of the bullet, but can be formed of metal or synthetic material of suitable hardness and strength as a separate insert of comparable shapes as those described in the foregoing, and the insert can be swaged or otherwise interlocked in the center of the bullet body at the forward end thereof.

I have test-fired many rifle and handgun bullets made in accordance with my invention, both on the range and in the field, using bullets of various calibers, including loadings for .38 special, .45 automatic and especially .357 magnum and .44 magnum, 30.06 rifle, etc. These tests have consistently established and fully confirm the superior accuracy and effectiveness of my bullets, and I am fully convinced that the principles

thereof are both sound and practical.

While the specific details of my invention have been shown and described herein, the invention is not confined thereto as various changes and alterations can be made without departing from the spirit thereof as defined in the appended claims.

I claim:

1. A bullet comprising a body of relatively soft material terminating at its forward end in a blunt nose of ogival form, the forward end of the body having a cavity formed therein and extending coaxially into the body to a substantial depth, and a center-piece of substantial mass coaxially extended forwardly from the base of the cavity toward but not substantially beyond the blunt nose of the body of the bullet, the outer wall of the center-piece and the opposing wall of the cavity defining therebetween a deep annular channel or trench terminating at its bottom near the transverse plane of the shoulder of the ogive of the bullet.

2. A bullet as defined in claim 1, wherein the annular trench is V-shaped in radial cross-section.

3. A bullet as defined in claim 1, wherein the bottom of the annular trench lies near a transverse plane at about one-third the length of the bullet behind the nose thereof.

4. A bullet as defined in claim 1, wherein the center-piece is progressively tapered outwardly from its forward end to the base thereof at the base of the cavity and the outer wall of the cavity being progressively tapered inwardly toward the central axis of the bullet from its forward end to the base of the cavity.

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