F. H. HARRISON & A. J. BROWN.

PROJECTILE FOR FIREARMS.

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1,191,178. Patented July 18, 1916.

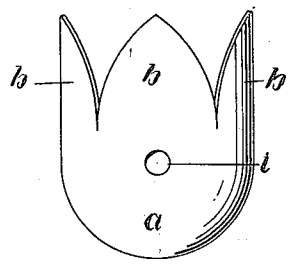


Fig. 1

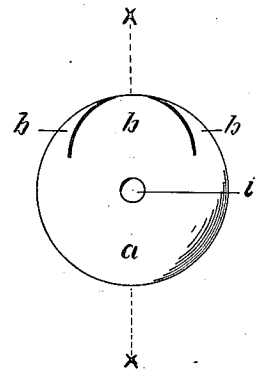


Fig. 2

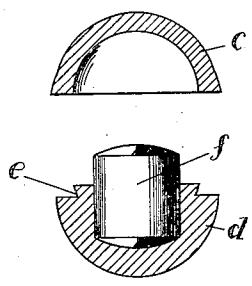


Fig. 3

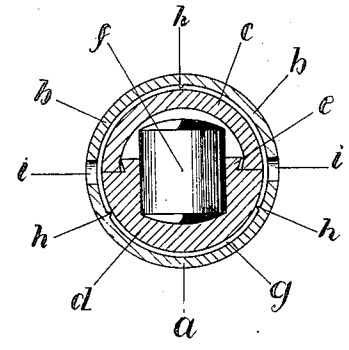


Fig. 4

Inventors:-
Francis Henry Harrison,
Alexander James Brown,
By:- B. Singer,
Attorney.

UNITED STATES PATENT OFFICE.

FRANCIS HENRY HARRISON AND ALEXANDER JAMES BROWN, OF CALCUTTA, BRITISH INDIA, ASSIGNORS OF ONE-FOURTH TO ARTHUR HENRY WALLIS, OF CATERHAM, SURREY, ENGLAND, AND ONE-FOURTH TO FREDERICK LLEWELLYN WALLIS, OF SANDERSTEAD, SURREY, ENGLAND.

PROJECTILE FOR FIREARMS.

1,191,178. Specification of Letters Patent. **Patented July 18, 1916.**

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To all whom it may concern:

Be it known that we, FRANCIS HENRY HARRISON and ALEXANDER JAMES BROWN, both being subjects of the King of Great Britain and Ireland and Emperor of India, and both residing at 1 Mangoe Lane, Calcutta, British India, have invented certain new and useful Improvements in Projectiles for Firearms, of which the following is a specification.

This invention relates to projectiles for use with fire-arms, and in particular to spherical, cylindrical or conical projectiles capable of being used indiscriminately in fire-arms having cylindrical, full-choke, modified-choke, recessed-choke or rifled-choke barrels.

Although hereinafter described and illustrated with reference especially to spherical projectiles, it will be apparent that the invention is also applicable to cylindrically-shaped projectiles for use with the specified classes of fire-arms; and, with obvious modifications such as thickening the material of the outer shell or the use of a metal harder than lead, it may be adapted for use with ordinary rifled arms. It is not intended, therefore, that the following description and drawings should be considered as limiting the scope of the invention to the use of spherically-shaped projectiles or to the use of spherically- or cylindrically-shaped projectiles with smooth-bore arms only.

One object of this invention is to provide a projectile capable of being compressed on discharge, and which when of the spherical kind thereupon assumes a slightly elongated shape on its entry into the barrel from the cartridge chamber. The said compression and consequent elongation of a spherical projectile increases its bearing surface within the bore in excess of that of a true sphere, thus preventing windage or the escape of the explosive gases in advance of the projectile and so utilizing the whole of the propellent force.

A projectile constructed according to this invention is compressible by reason of the provision of a thin outer shell inclosing a bullet, an annular space being left between the two, so that only the said outer shell is compressed and elongated during the passage of the projectile through the barrel.

The provision of an annular space between the bullet and its outer shell enables the attainment of another object of this invention which is the lubrication of the barrel. The said annular space is therefore filled with bees-wax, tallow or other suitable lubricating material and, the outer shell being provided with two or more holes communicating with the said annular space, the lubricant is on compression of the outer shell extruded and spread upon the surface of the barrel. The said filling of lubricant may be relied on to maintain the bullet concentric with the outer shell, or the said outer shell may be provided with five or more slender projections on its inner surface for that purpose.

A further object of this invention is the provision of a projectile having a disruptive effect on animal tissues and bone by reason of its distortion on impact. This effect is obtained by the aforesaid construction of a projectile consisting of a bullet inclosed within an outer shell. In addition to this feature the bullet itself is a shell made in two or more parts and containing a liquid, paste, amalgam or other non-solid or a granular substance which, while enhancing the disruptive effect of the projectile, may preferably be of such a nature as, for instance, an amalgam of mercury and lead, as to compensate, by its weight in excess of the weight of lead alone, for the voids in the projectile, namely, the annular space between the bullet and its outer shell, the lubricating holes in the outer shell, and the space between the capsule and the inside surface of the bullet if and when the aforesaid liquid, paste, amalgam or other non-solid or a granular substance is contained within such a capsule. Alternatively, the bullet may be cast or molded in one piece and be provided with a hole through which the liquid, paste, amalgam or other non-solid or a granular substance may be inserted, the hole being afterward plugged.

In the accompanying sheet of drawings:—Figure 1 is an elevation of the outer shell of the projectile showing its form as cast or molded and before being closed upon its contents. Fig. 2 is an elevation of the complete projectile. Fig. 3 is

a sectional elevation showing the hemispheres comprising the bullet as cast or molded and before being closed, and showing also a capsule contained within it. Fig. 4 is a section of the complete projectile taken on the line X—X of Fig. 2.

The outer shell *a* of the projectile is cast or molded with one hemisphere complete as shown, the corresponding portion being composed of four or more partially separated segments *b* which, on being compressed together, combine to form a second hemisphere and complete the spherical projectile shown in Fig. 2. The segments *b* may be merely pressed together or may be brought together and their adjoining edges soldered or burned one to the other. The shell *a* is of no greater thickness than will permit of partial compression in the gun barrel without exerting any undue strain thereon, and is preferably but not necessarily made of pure lead. The bullet *c d* contained within the outer shell *a* is cast or molded in two separate hemispheres *c* and *d*, one having a slightly under-cut projection or collar *e* by and around which the other hemisphere may be attached by compression so that the two parts combine to form a complete sphere. This bullet *c d* is made of such an external diameter as to leave an annular space *g* between it and the outer shell *a* when placed within it.

The annular space *g* is filled with beeswax, tallow or other suitable lubricant of such a consistency as to maintain the bullet *c d* concentric with the outer shell *a*. This concentricity may be further assured by the provision on the inner surface of *a* of slender projections *h*. On compression of the outer shell *a* during its passage through the gun barrel, the lubricant provided in the annular space *g* is extruded through two or more holes *i* in the shell *a*, thus lubricating the internal surface of the barrel.

Inclosed within the bullet *c d* is a thin metal or other capsule *f* containing a liquid, paste, amalgam or other non-solid or a granular substance. If an amalgam be used, one of mercury and lead in such proportions as to make a stiff pasty mass is preferred. The capsule may be of extremely thin copper or other suitable metal or material, and is used merely to prevent the mercury from amalgamating with the bullet. If the liquid, paste or other substance used contains no mercury or other ingredient having a chemical action on lead it may be contained in the bullet without the use of a capsule.

The object of the inclusion of a liquid, paste, amalgam, or other non-solid or a granular substance within the bullet *c d* being, firstly, to add weight to the projectile and, secondly, to assist its distortion and the disruptive effect, the substance used is of such consistency and the inclosing capsule, if used, is sufficiently fragile as not to appreciably support or strengthen the bullet or in any degree prevent its ready distortion on impact.

An alternative construction of a cylindrical projectile may comprise an outer envelop of cupro-nickel or other suitable metal containing a lead core occupying a portion only of its length from the base, the remaining portion of its length, or that portion comprising its conoidal end, being filled with a liquid, paste, amalgam, or other non-solid or a granular substance, contained in a capsule or not as may be necessary or desirable.

Having now fully described and ascertained our said invention and the manner in which it is to be performed, we declare that what we claim is:

1. A spherically shaped projectile for use with fire arms comprising a compressible outer shell, a hollow bullet in said shell, an annular layer of lubricating material between said outer shell and bullet, holes in said shell through which, on compression of the shell, the lubricant is extruded, readily collapsible projections on the inner surface of said outer shell for maintaining the concentricity of said bullet with said outer shell, substantially as described.

2. In a projectile of the type specified, a compressible outer shell, a hollow bullet in said shell, an annular layer of lubricating material between said outer shell and bullet, holes in said shell through which, on compression of the shell, the lubricant is extruded, readily collapsible projections on the inner surface of said outer shell for maintaining the concentricity of said bullet with said outer shell, and a substance of disruptive qualities contained in said bullet.

3. In a projectile of the type specified, a compressible outer shell shaped so as to comprise a plurality of partially separable segments, bases on said segments integrally attached to the projectile, said segments being partially separable to admit the contents of the projectile being placed within the said outer shell and adapted to be thereafter brought together to form an unbroken hemisphere in a spherical projectile, a substance of disruptive qualities contained in said bullet, and a plurality of slender and readily collapsible projections spaced around the inner surface of said outer shell.

4. A projectile of the character described comprising in combination an outer shell, partially separated segments forming said shell, a bullet in said shell composed of two separate hemispheres, a slightly under-cut projection or collar on one of said hemispheres allowing the attachment of the other hemisphere, an annular space between said bullet and the outer shell, a lubricant in said space, means for maintaining the bullet concentrically within said outer shell, holes

in said shell allowing the lubricant to be extruded upon the compression of the outer shell during its passage through the gun barrel, a thin metal capsule inclosed in said bullet and a substance of disruptive qualities in said capsule for increasing the weight of the projectile.

In testimony whereof we have signed this specification in the presence of two witnesses.

FRANCIS HENRY HARRISON.
ALEXANDER JAMES BROWN.

Witnesses:
A. R. GIBBS,
C. TYSOE SMITH.