H. STANBRIDGE.

PROJECTILE.

APPLICATION FILED MAR. 11, 1912.

1,043,547.

Patented Nov. 5, 1912.

Fig. 1

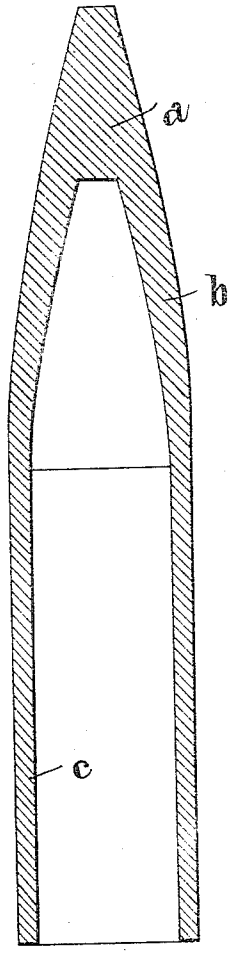


Fig. 2.

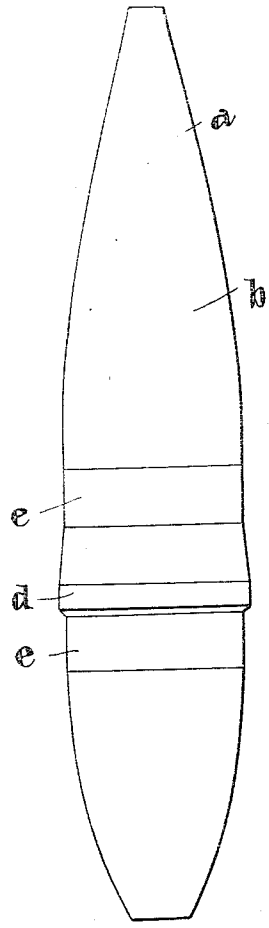
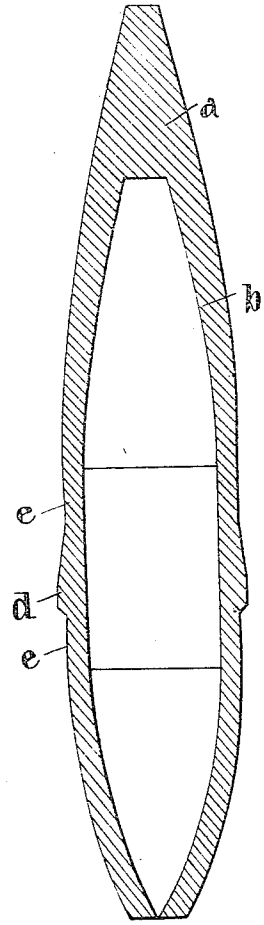


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

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PROJECTILE.

1,043,547. Specification of Letters Patent. Patented Nov. 5, 1912.

Application filed March 11, 1912. Serial No. 683,000.

To all whom it may concern:

Be it known that I, HENRY STANBRIDGE, a subject of the King of Great Britain and Ireland, and residing at 39 Rotherham road, Tinsley, Sheffield, in the county of York, England, have invented certain new and useful Improvements in Projectiles, of which the following is a specification.

This invention relates to projectiles for small arms and has for one of its objects to produce a projectile which shall not be liable to expand or deform in the bore, as is usually the case with projectiles as hitherto known, owing to the shock of discharge.

A further object of the invention is to produce a projectile so shaped that it shall only engage the rifling on a small predetermined band or bands formed with sufficient gripping area to rotate the projectile, such a result being only secured by producing a projectile which, if compound, (that is made of lead or other heavy material and an outer case or cases) is prevented from expanding in the bore of the rifle. In the case of projectiles constructed in accordance with my invention friction in the passage of the projectile along the barrel is almost entirely avoided as the frictional area is very small, existing only where the narrow edge of the driving band or belt contacts with the lands and grooves in the barrel, the small cylindrical part of the projectile making contact only with the lands of the rifling, whereas in the case of projectiles hitherto known and which deform on being fired the entire cylindrical part, to the extent perhaps of two-thirds of the surface area of the projectile, makes frictional contact with the barrel which thus acts as a swaging or drawing die and causes so-called nickel-fouling or depositing of nickel on the lands and grooves if it be present in the casing or envelop of the projectile. An additional advantage of projectiles constructed in accordance with this invention is to be found in the fact that they do not drift to the great extent that is experienced with known projectiles.

A further object of the invention is to produce a projectile which shall not deform or deflect on grazing impact or ricochet as is so often the case with projectiles at present in use and which are often caused to mushroom even upon impact with sand, the lead core readily leaving the envelop.

The invention consists primarily in a projectile for small arms comprising an outer casing having a comparatively thick head and walls of gradually decreasing strength and into which a metal core is inserted, the walls of the casing being subsequently closed in preferably almost to a point thereby thickening the walls and consequently strengthening the base.

The accompanying drawings illustrate one mode of carrying out the invention.

Figure 1 is a sectional elevation showing one convenient form of outer casing for the projectile. Fig. 2 is an elevation of the complete projectile and Fig. 3 is a sectional elevation showing the completed projectile.

In carrying my invention into effect in one convenient manner I form the outer casing or envelop of the projectile with a solid head *a* preferably approximately one caliber thick and with walls *b* of gradually decreasing strength toward the center, the rear portions *c* of the walls being preferably approximately parallel. Into such a casing, which may be conveniently formed from cupro-nickel, German silver or similar non-corrosive metal of high tenacity, a core of lead or other suitable heavy metal is inserted and the walls are closed in or choked down upon the core as shown in Fig. 3 thus making a very strong projectile not liable to expand or deform in the barrel and not easily deformed or deflected upon grazing impact or ricochet. The closing-in of the walls in this manner has the effect of thickening them as will be seen from Fig. 3, thus strengthening the base and at the same time preventing pressure from being exerted on the more or less plastic core. In addition to the closing-in or choking down of the walls the necessary swell for the driving band or belt *d* is formed in the envelop and a comparatively narrow cylindrical portion *e* is preferably formed upon each side of the driving belt or band.

It has been found in practice that a limit to the thickening of the walls of the casing to give it the necessary strength to resist deformation or expansion due to the shock of discharge, consistent with maintaining a high specific gravity, is very easily reached and is also determined by the length that can be given to the projectile.

I have found that for pointed compound projectiles of a length of five and six calibers a thickness of walls in the parallel

portion of one-tenth or one-twelfth of a caliber is sufficient when the rear or the base of the projectile is closed in in the manner above referred to, but it is to be understood that the invention is not to be confined or limited to any particular dimensions as these will be chosen as may be best suited to the practical conditions under which the invention is to be applied. The driving belt or band *d* may be advantageously situated at a distance from the head of the projectile equal to approximately three-fifths of the total length but this position may also be varied as found desirable and, further, I may form a cylindrical part to the outer casing either in front or at the rear of the driving band instead of on both sides thereof as illustrated.

Having now described my invention what I claim as new and desire to secure by Letter Patent is:—

1. A non-deformable projectile for small arms comprising an outer casing having a comparatively thick head of tapered form and walls of gradually decreasing strength and in which a metal core is inserted, the rear portion of the wall of the casing being subsequently closed in almost to a point so as to give the projectile a tapering base.

2. A non-deformable projectile for small arms comprising an outer casing having a comparatively thick head of tapered form and walls of gradually decreasing strength and in which a metal core is inserted, the rear portion of the wall of the casing being subsequently closed in almost to a point so as to give the projectile a tapering base and a driving belt around said casing to engage the rifling.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY STANBRIDGE.

Witnesses:
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