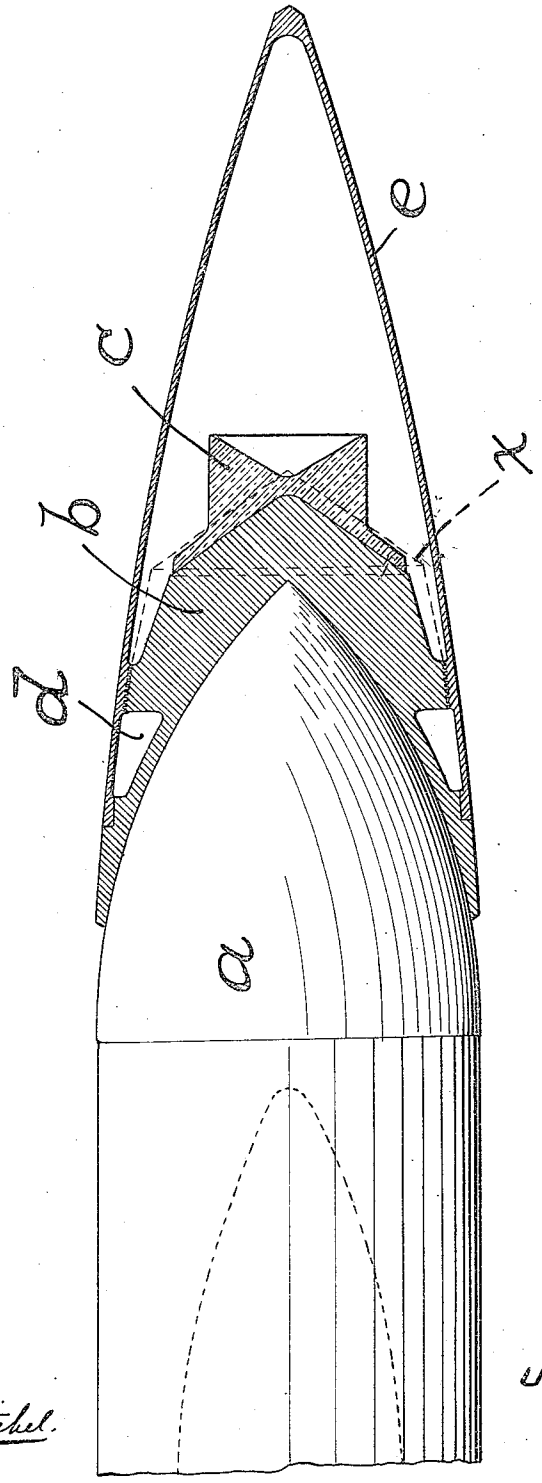
J. L. COX.

ARMOR PIERCING PROJECTILE.

APPLICATION FILED AUG. 9, 1921.

1,419,361. Patented June 13, 1922.



WITNESS:

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ARMOR-PIERCING PROJECTILE.

1,419,361. Specification of Letters Patent. Patented June 13, 1922.

Application filed August 9, 1921. Serial No. 490,880.

To all whom it may concern:

Be it known that I, JOHN L. COX, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Armor-Piercing Projectiles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

It is known in the art of armor-piercing projectiles to provide a projectile with a metal cap fastened to the point for the purpose of increasing its penetrating quality. It is also known to secure a windshield to a projectile to aid its flight. The attachment of both a metal cap and a windshield to a projectile is also well known. In an application filed by me August 5, 1920, Serial No. 401,398, I have set forth a projectile having secured to its pointed body a main protective soft metal cap with a relatively hard anterior essentially pointed face, a secondary soft metal cap secured against and protecting the hardened and pointed face of the main cap, and a windshield secured to the main protective cap.

Whether the protective cap structure secured to the pointed body of a projectile be composed of a single cap or of a main cap and an auxiliary cap, whether the cap be made with a solid point or with a hollow point, whether the cap be made pointed, convex or concave, whether or not it be provided with hardened metal inserts, and indeed whatever its construction may be, it is of distinct advantage to concentrate as much of its weight as possible immediately surrounding the point of the projectile while continuing effective contact with the head of the projectile as far towards the base of the projectile as the increasing diameter of the head permits. The larger this area of contact, the greater the pressure the cap can exert against the face of the plate before the projectile starts to move forward into the cap and deformation of the latter begins. The effect of large contact area can be enhanced by soldering the cap to the projectile.

With a projectile of a given weight and capacity, the proportion of the total weight that can be assigned to the cap is limited by considerations of the strength of the projectile walls, there being a point at which the advantages of a heavier cap are offset by increasing weakness of projectile walls. In the present state of the art this maximum weight of cap is about twelve percent, (12%).

I have found that the effective weight of the cap can be increased without increase of actual weight by cutting away a substantial part of the exterior wall of the cap between its forward and rear ends so as to leave a continuous and uninterrupted contact between the projectile head and cap throughout practically the entire area of the inner wall of the cap but so as to provide one or more holes, depressions, or grooves (preferably an annular groove) opening in the outer side wall of the cap; the opening being closed by the windshield, which engages the cap in advance of, and back of, such opening. It will be understood that by "cutting away" part of the cap as described, I mean to include the manufacture of the cap, in the first instance, with such groove, hole or depression. The weight of metal thus eliminated from the rear and less effective portion of the cap is transferred to, or included within, the front and more effective portion of the cap, thereby the effective weight and thickness of the cap is increased without increasing its actual weight; or if desired the weight thus saved can be utilized to strengthen the walls of the projectile body. In either case the penetrating quality of the projectile is thereby substantially improved.

In specifying a cap, I mean to include a compound cap as well as a single cap.

One preferable embodiment of the invention is shown in the drawing, which is a sectional view of the front portion of a projectile, provided with my improved cap, and with windshield attached.

To the pointed body of the projectile *a* is secured a main protective cap *b* having a smooth inner wall closely fitting and embracing the projectile point throughout the area of the cap and throughout the larger part of the area of the pointed end of the projectile. To the front of the main cap *b* is secured a soft metal auxiliary cap *c*. Formed in the outer wall of the cap back of the extreme point of the projectile is a deep, wide groove *d*. The windshield *e* completely covers this groove. The rear end of the windshield is seated in a shoulder formed in the cap back of the groove. The windshield is threaded to the cap in front of the

groove. The material saved by the provision of the groove *a* may be included within the front portion of the main cap *b*, or within the auxiliary cap *c*, or may be distributed through both.

The dotted line *x* represents approximately the outline of the front of the main cap in case the auxiliary cap be omitted.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

An armor piercing projectile comprising a pointed body, a protective cap whose inner wall throughout its area contacts with the head of the projectile and completely encloses the larger part of the total area of such head, said cap being cut away on its outer face in front of its rear end and back of the extremity of the point of the projectile body, thereby permitting maximum weight and thickness of that part of the cap surrounding said point, and a windshield supported wholly by the cap and abutting against a shoulder thereon and completely covering said cut-away portion of the cap.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, Pa., on this thirtieth day of July, 1921.

JOHN L. COX.