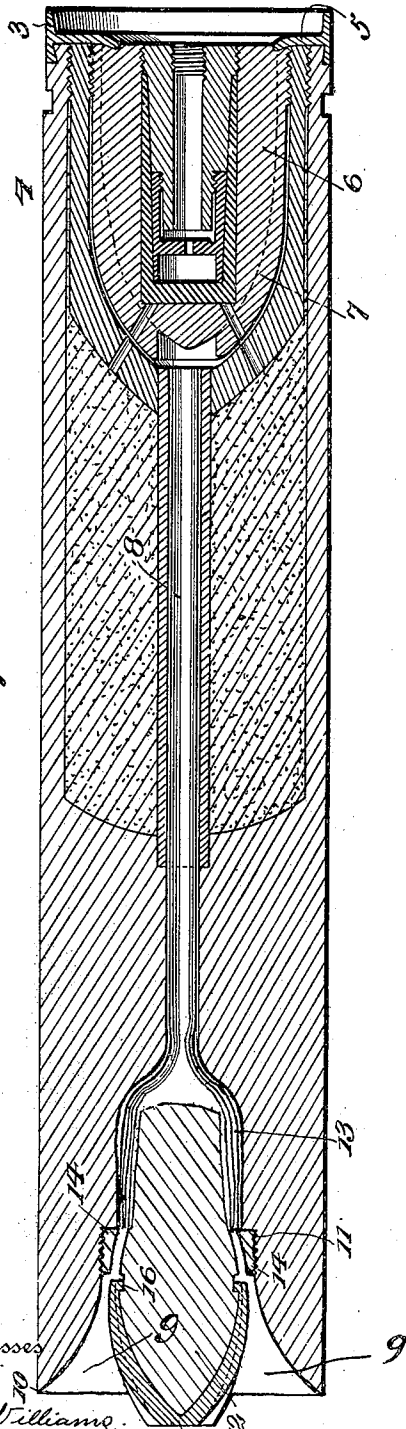


G. E. WELLS.  
PROJECTILE.  
APPLICATION FILED MAY 28, 1910.

982,402.

Patented Jan. 24, 1911.

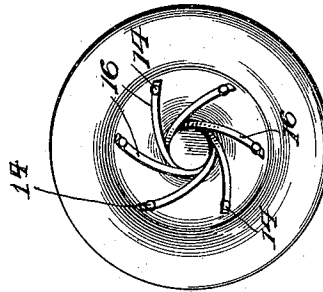
Fig. 1.



Witnesses

W. A. Williams.  
H. E. Klein

Fig. 2.



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# UNITED STATES PATENT OFFICE.

GEORGE E. WELLS, OF DAYTON, OHIO.

PROJECTILE.

982,402.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed May 28, 1910. Serial No. 563,949.

*To all whom it may concern:*

Be it known that I, GEORGE E. WELLS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Projectiles, of which the following is a specification.

This invention relates to projectiles, and particularly to that class of projectiles to which rotation about the longitudinal axis in flight is induced by air traversing curved passages provided therein instead of by the rifling of a gun. Such projectiles are, therefore, adapted for use in smooth bore guns. Some features of the invention, however, are applicable to projectiles which derive their axial rotation solely from the rifling. When used in rifle guns the invention will accelerate and prolong the auxiliary rotation of the projectile, whereby the trajectory will be flattened and the range increased.

The invention, therefore, consists in the structure hereinafter set forth and claimed.

In the accompanying drawings which form a part of this specification, Figure 1 represents in longitudinal axial section a projectile embodying the present invention; and Fig. 2 represents in elevation the forward end of such projectile.

The present invention has to do mainly with the structure of the head of the projectile, and presents features intended to be used with those of the projectile which forms the subject of my earlier application, Serial No. 540,653. The projectile shown is of a shell type, and at its rear end is practically the same in structure as the projectile forming the subject-matter of the prior application above referred to. The band about the rear end, however, is somewhat different in its construction and in its mode of application. This band 3 is applied to the body 4 of the projectile by means of a flange having a dovetail connection with said body, and having its inner flange 5 extended just beyond the air outlets and turned inwardly into an annular groove formed in the end of the plug 6. As in my former application said plug has spiral grooves about its surface as indicated by dotted lines 7, which grooves communicate with the central passage 8 extending axially through the body portion of the projectile. The ring 3 is preferably made of paper or some similar substance which will readily prevent windage and will also be readily removed

from the projectile on its leaving the muzzle of the gun, thereby uncovering the passages about the plug 6.

The forward end of this projectile is provided with a cavity more or less conical as indicated at 9, whereby sharp cutting edges are formed as indicated at 10. At the base of this cavity there is formed a screw-threaded seat 11 to receive a screw-threaded flange formed upon the hard steel centering point 12, which is thereby held firmly in place in the center of the cavity 9. This point 12 is preferably extended beyond the screw-threaded flange into the chamber 13 at the rear of the screw-threaded seat. This projection, however, is smaller than the chamber 13, thereby leaving an air space between it and the body of the projectile to which ducts as 14 formed in the flange of the head 12 lead from the cavity 9. Air entering the cavity 9 may thus pass through ducts 14, chamber 13, axial bore 8 and spiral passages at 7 and out thereof to the rear of the projectile assisting in removing the ring 3 as soon as the projectile leaves the gun, giving axial rotation to the projectile as in my prior application; the inner flange of ring 3 serving, as already suggested, for covering the air outlets and preventing the charge from escaping through them during the expulsion of the projectile from the gun.

Axial rotation of the projectile may be effected by spiral passages formed at or in the head of the projectile, and these may act alone or in conjunction with those at the rear just referred to. The forward spiral passages may be conveniently added by means of a soft metal cap 15 applied to the acorn shaped point 12. In the surface of this cap spiral grooves as 16 are formed which lead from the point of the cap to the corresponding ducts 14. Air as it passes along these spiral grooves and on through the central bore will give the desired axial rotation to the projectile. The cap 15 may be secured to the point 12 in any suitable manner, as by pressing its rearward edge into a groove 16 formed about the point 12, as seen in Fig. 1.

The projectile constructed on the above plan will, upon striking the armor of a battleship or other target, be centered in its cutting effect by the sharp end of the steel point 12 and the soft metal cap will perform its usual function of locating said piercing or centering point.

Obviously, the projectile having a head constructed with the sharp cutting edge and the central point need not depend upon air passages for its axial rotation any more than its effective work of striking an armor plate should depend thereon. The feature of the sharp cutting edge with the centering point being applicable as well to a solid whose axial rotation is derived from a rifling of the gun from which the projectile is discharged.

The invention claimed is:

1. A projectile provided at its head with an annular cutting edge and with a centering point located centrally with respect to said edge and protruding beyond it.

2. A projectile provided at its head with an annular cutting edge and with a centering point located centrally with respect to said edge and protruding beyond it and a soft metal cap applied to said point.

3. A projectile having a concavity in its head surrounded by a cutting edge, and having a hard steel point located in the center of said concavity and protruding beyond the cutting edge.

4. A projectile having a concavity in its head surrounded by a cutting edge and having a hard steel point capped with soft metal and projecting beyond the plane of said cutting edge.

5. In a projectile having an air passage

extending therethrough and provided with a concavity in its forward end, the combination therewith of a point located in the center of said concavity and provided with holes at its rear communicating with the said air passage.

6. In a projectile having an air passage extending therethrough and provided with a concavity in its forward end, the combination therewith of a point having a perforated screw threaded flanged base secured in a seat in the center of said concavity, said perforations connecting said concavity with said air passage.

7. In a projectile having an air passage extending therethrough and provided with a concavity in its forward end, the combination therewith of a point having a perforated screw threaded flanged base secured in a seat in the center of said concavity, said perforations connecting said concavity with said air passage, and a soft metal cap for said point provided on its exterior with spiral grooves terminating at the said perforation for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE E. WELLS.

Witnesses:

MASON CRABLE,  
WELLMORE B. TURNER.