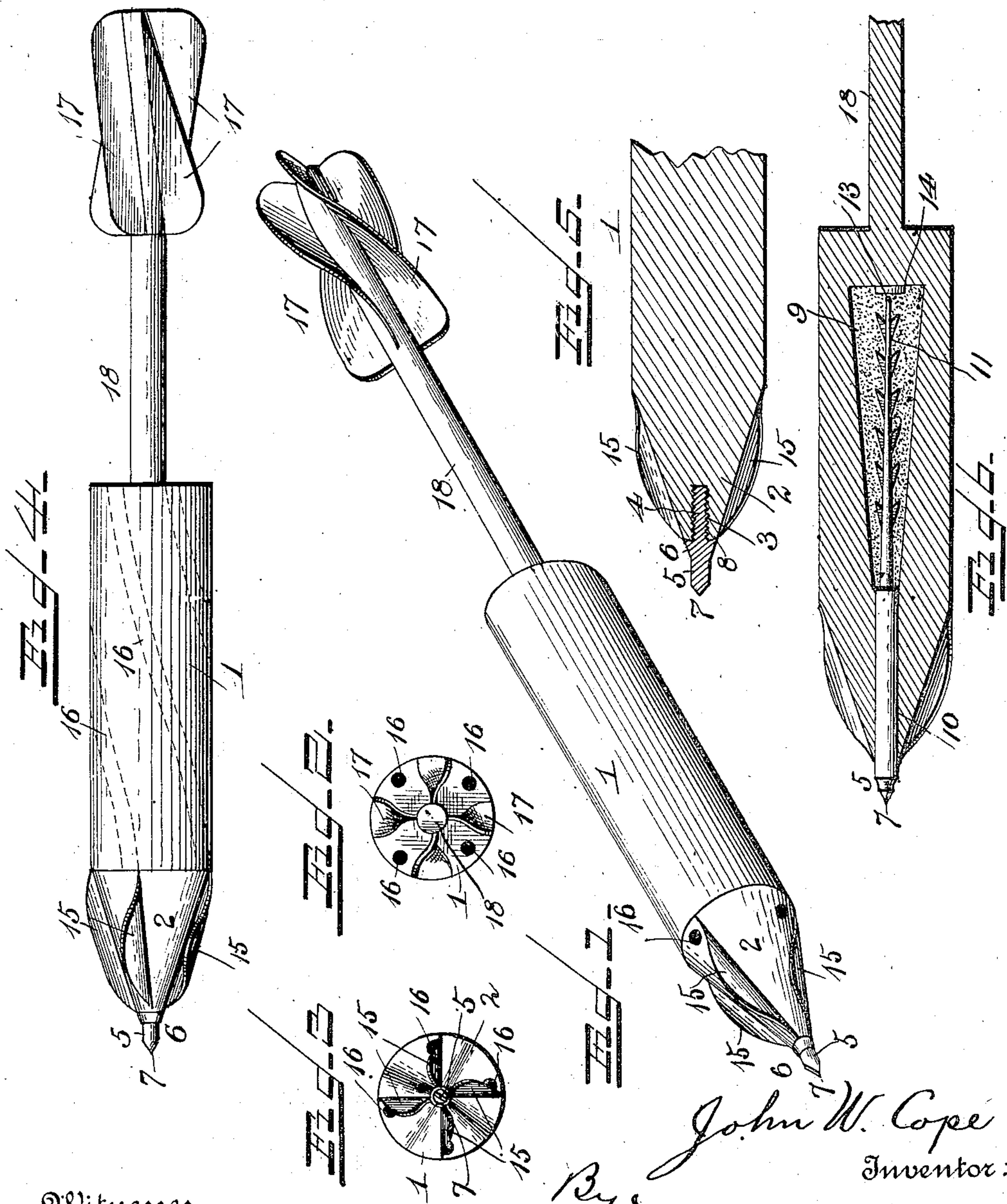


(No Model)

J. W. COPE.
PROJECTILE.

No. 582,982.

Patented May 18, 1897.



Witnesses
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UNITED STATES PATENT OFFICE.

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PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 582,982, dated May 18, 1897.

Application filed July 25, 1896. Serial No. 600,490. (No model.)

To all whom it may concern:

Be it known that I, JOHN WESLEY COPE, a citizen of the United States, residing at Prairie City, in the county of McDonough and State of Illinois, have invented certain new and useful Improvements in Projectiles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to projectiles, and comprehends both that form of projectile embodying the power of great penetrability and also that form denominated a "shell," the latter form having reference to those forms of projectiles carrying a sufficient quantity of explosive material to effect their own destruction.

The object is, first, to provide the projectile with an initial or entering point of great hardness and so shaped as to effect an entrance into the object at which it is aimed, and providing by such means for the effective entrance of the body of the projectile, which latter is formed of a cheaper and less dense material; secondly, to provide a reliable means for igniting and exploding the powder, nitroglycerin, or other destructive material.

A further object in the construction of my invention is to provide laterally reaching or spiral wings and channels for effecting a rapid rotation of the projectile while in transit, thus adding greatly to its penetrating capacity.

All of these features will be clearly set forth in the following description, referring to the various details of construction involved, reference being had to the accompanying drawings, made a part of this application, in which—

Figure 1 is a perspective view of the outward appearance of my improved form of projectile. Fig. 2 is a rear end view thereof, while Fig. 3 is a front view. - Fig. 4 is a side view showing the guiding-channels by dotted lines. Fig. 5 is a longitudinal section showing the manner of seating the hardened entering-point. Fig. 6 is a longitudinal section showing the cone-shaped chamber and means for exploding percussive matter by means of the hardened point or insert.

For convenience of description, reference will be had to the various details involved in

my invention by figures, each figure referring to the same part throughout the several views.

In materializing my invention I provide the body proper, 1, which is mainly cylindrical, except that its forward end terminates in the form of a truncated cone, providing the seat 3, which is screw-threaded upon its inner end and is adapted to receive the threaded end 4 of the cap or point 5. Said cap or point 5 consists of the tapered end 6 and the threaded section 4. The section 6 is practically cone-shaped, having the tapered point 7 and the laterally-reaching base or side wings 8. Said side wings reach outwardly sufficiently to register with the surface line of the tapered end 2 of the body, and when the point is screwed home in the socket provided as above set forth, only a faint line of demarkation will show the point of juncture between the softer metal of the body and the hardened point or insert. The insert or point 5, formed substantially as above described, is made of very highly tempered metal, preferably of what is termed "harveyized" or "nickel" steel, the result being great penetrability for the projectile, as the initial point thus provided will be caused to enter the object at which it is aimed, which point of entrance is followed by the body proper. It is well known in practice that where a projectile formed of a comparatively soft or yielding metal, such as cast or wrought iron and the like, is fired against a metallic surface, such form of projectile, instead of entering the object, is more often collapsed, disintegrated, or flattened against it, spreading over a large surface and doing little damage.

If the initial or entering point of the projectile can be preserved intact, it is claimed that no flattening of the body proper will take place, but that it will follow up the advantage secured by the entering point and cause the hole to be greatly enlarged, providing for the entrance of the entire body into the object, as the particles forming said body are set into vibration by the hardened point. It will of course be understood that the point, formed of hardened metal, may be made in various forms, though it is believed that the shape above described will be found to be the most expedient and effective. I do not wish, however, to be confined to any particular form of construction for said point.

In providing a construction which will make my improved projectile what is termed a "shell" the body proper is formed in any preferred manner with the internal cone-shaped chamber 9, the apex of the cone being toward the initial or forward end of the projectile. In this form of construction for my projectile the hardened point is seated removably in the central bore 10. Said bore reaches from the initial point of the projectile diametrically into the apex of the cone-shaped chamber. The hardened point is of sufficient diameter to snugly and tightly fit into this bore, while the inner end 11 of such point or insert is of smaller diameter, and provided with the radial wings 12, the extreme reach of each exactly coinciding with the bore 10. By this construction it will be seen that said point or insert is adapted to have a longitudinal movement in said bore when great pressure is brought to bear on either end. The extreme inner end of the insert 11 terminates in the point 13, which is adapted to take into the seat 14, provided therefor, as shown. The chamber 9, provided, as above set forth, is filled with nitroglycerin, powder, or other form of explosive material, while the seat 14 carries percussive matter, and it will be seen that when the projectile is forced against the object the insert or hardened point will communicate with the seat 14 and explode the percussive matter therein, followed by the destruction of the shell.

In order to insure accuracy of transit for the projectile, I provide upon the tapered end of the body the radial curved arms or wings 15. Said wings are placed upon the inclined face of the tapered point and reach from the extreme end of the tapered point to the body proper. In addition to said radial wings, if desired, spirally-arranged channels 16 may be provided in the body proper, the front ends of the channels communicating with the wings, while their rear ends terminate in the rear face of the body. By this form of construction the curved wings 15 will as the projectile passes through the air engage therewith, causing the projectile to rotate violently while in transit. It will be understood that the radial channels 16 may be dispensed with and a solid body only provided, in which case it is thought that the spiral wings upon the forward end of the projectile will be sufficient to cause its rapid rotation. It is thought, however, that the channels will add to the power of the wings, as the latter will direct, by means of their curved outer edges, a certain quantity of the atmosphere into the channels, which, being spirally disposed, will add further resisting-surface, and thus increase the violence of the rotation.

In order to provide greater accuracy of transit for the projectile, I provide the rear guiding arms or wings 17, which are formed of suitable material and are preferably af-

fixed spirally to the rear end of the guiding-shaft 18. Said guiding-shaft is properly seated in a diametrical bore in the rear end of the projectile, and it will be seen that by arranging the wings 17 at an angle to said guiding-shaft an increased velocity of rotation will be imparted to the projectile. It will of course be understood that said guiding-wings 17 may be disposed at the same angle occupied by the plane of the shaft in case it is thought unnecessary to reinforce the spirally-disposed wings 15.

In practice it may be found expedient to make certain changes in the details of construction in carrying out my invention, and while I claim the right to make such changes as may be suggested by expediency, yet I desire it to be understood that I include in my claims all of the features herein set forth.

In operation it will be understood that after the projectile is constructed as set forth and the several parts thereof duly assembled as described the projectile is inserted in the usual manner in the gun and caused to be discharged; when the atmosphere will engage with the radial wings 15 17, and the resistance thus encountered will cause the positive and violent rotation of the projectile, causing the hardened point thereof to have the power of great penetrability and enable it to provide an initial point of entrance for the body proper, preventing the softer metal from being flattened by the surface of the contacting object.

Believing that the use, advantages, and construction of my improved projectile will be fully comprehended from the foregoing description, considered in connection with the accompanying drawings, further reference is deemed unnecessary.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As an improvement in projectiles the combination with the body provided with a central cavity of spirally-disposed wings secured to the forward end of the body, and means for communicating the force of the impact on the forward end to the explosive contained in said cavity, substantially as described and for the purpose named.

2. As an improvement in projectiles the body 1, provided with a series of spirally-disposed channels; spirally-disposed wings secured to the tapered end of said body and co-operating with said channels, and additional means for directing and guiding the body, substantially as described and for the purpose named.

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

JOHN WESLEY COPE.

Witnesses:

JAS. H. WILSON,

J. WALDO WILSON.