J. A. STEINMETZ.

ORDNANCE PROJECTILE.

APPLICATION FILED DEC. 8, 1914.

1,211,001. Patented Jan. 2, 1917.

Fig. 1.

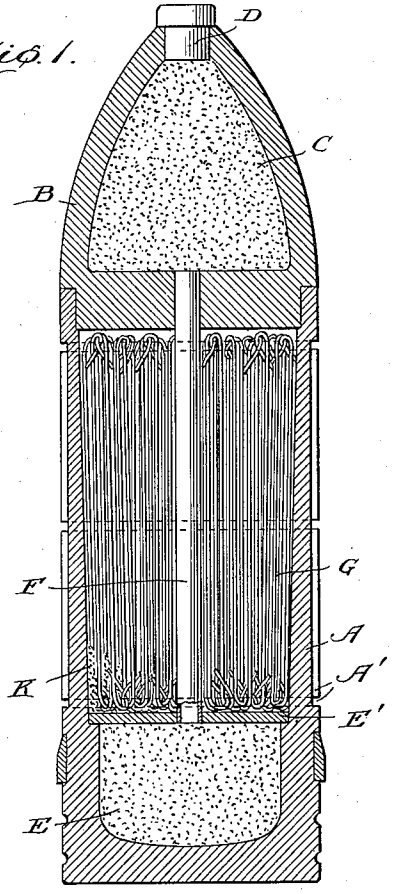


Fig. 2.

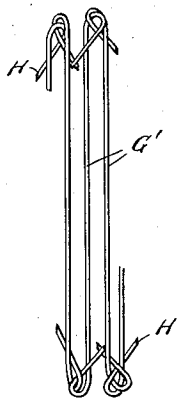


Fig. 6.

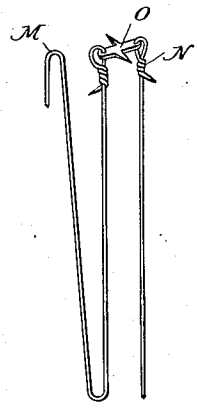


Fig. 4.

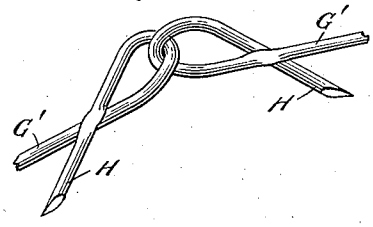


Fig. 3.

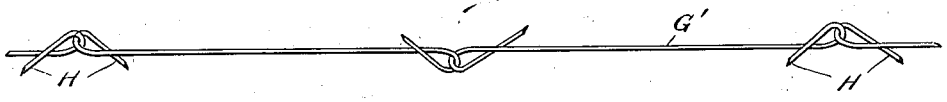
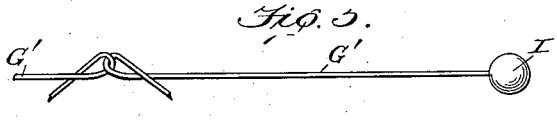


Fig. 5.



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ORDNANCE-PROJECTILE.

1,211,001. Specification of Letters Patent. Patented Jan. 2, 1917.

Application filed December 8, 1914. Serial No. 876,081.

To all whom it may concern:

Be it known that I, JOSEPH A. STEINMETZ, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ordnance-Projectiles, of which the following is a specification, reference being had therein to the accompanying drawing.

The object of this invention is to provide ordnance projectiles adapted for spreading barbed wire entanglement by means of artillery, long stretches of such wire being dropped on unoccupied ground or among men or animals, or thrown upon moving aircraft. To this end, barbed wire is placed in shrapnel or other cases and so arranged that it will be freed and extended on the bursting of the shell by impact or internal explosion.

In the accompanying drawings, Figure 1 shows in axial section a shrapnel case containing a long piece of barbed wire, Fig. 2 a small portion of the wire folded as it is in Fig. 1, Fig. 3 shows on a larger scale a portion of the preferred form of wire extended, Fig. 4 illustrates the form of the interlocked ends of two links, Fig. 5 shows a slight modification in the wire, and Fig. 6 some further modifications in wire construction.

In these figures, A represents the body of a shrapnel case, which is preferably weakened along certain lines by grooving as shown at A′.

B designates the shell head, shown in this instance as explosive, C the head-bursting charge, D a common fuse member, E a base and body bursting charge, E′ a thin diaphragm covering the charge E, and F a tube, usually containing or internally coated with black powder, leading from the head charge to the base charge so that the bursting of the base and body may be an instant later than the bursting of the head.

In the annular space between the body walls and the axial tube and also between the diaphragm and the head, is placed a long segment or stretch of barbed wire arranged in a somewhat compact mass approximately filling, ordinarily, this entire space, and in many cases made up of connected links each having nearly the length of the space in which the mass lies. In the preferred form, each link consists of a wire or rod having each end portion bent back and carried obliquely across the central or body portion to form oppositely projecting pointed barbs. At each crossing, the rod is flattened and welded, the structure at the crossing having a thickness but little greater than the diameter of the wire. When folded, this wire forms a fairly compact mass readily so disposed as to fill the space in the body of the shell. Preferably the links vary in length to correspond with the spaces in larger or smaller shells, but links about five inches long and adapted for use in three inch shells may be used in larger shells, a part of the ordinary shrapnel balls being omitted, in such case, to leave room for the wire. When the shell loaded as shown is used, the head first disappears as a head and an instant later the base and body are scattered in fragments leaving the wire mass free and moving rapidly. The wire being comparatively light, the momentum of its parts does not break it but the free end portions straighten out more or less perfectly extending the wire until its tensile resistance overcomes the extending force. The extended wire quickly falls, and as a three inch shell carries several hundred feet the falling or fallen wire seriously impedes men or animals, especially on uneven ground or where parts of the wire are held up by shrubs or the like.

A battery can quickly spread wire over a large area and in places where it could not otherwise be placed, such for example as a zone protected by the fire of an enemy. It can also be successfully placed at night by shells apparently directed at the enemy but falling short. While the light wire is not adapted for purposes sometimes sought in using heavy projectiles of the chain type, it is highly effective, by night or day, in opposing cavalry attacks or the placing of batteries by the aid of horses, both by its direct effect before it reaches the ground and by its later effect. If the wire falls upon cavalry, for example, the entanglement of one man or animal leads to the entanglement of others by the same wire, especially since the barbs engage hook-like, in whichever direction the wire be drawn, and thus the command is quickly disorganized. If desired, the wire may be held immovable in the shell by filling the interstices with shot, sand, melted resin, or the like, as indicated at K, Fig. 1, and if desired a small ball I may be attached to each end of the wire, as shown in Fig. 5, to aid, by its momentum, in extending the wire, a result obviously attainable by making the terminal portions of

the wire heavier by any suitable means. The wire being light, the links may be of varied lengths and be coiled or bent back and forth as indicated at M, Fig. 6, so as to reduce the number of joints or connections to any desired extent, and the links whatever their number may be twisted instead of welded, as indicated at N, or may be connected by short preferably barbed members O. It is also evident that if all explosives be omitted the wire will be more or less perfectly extended by its own momentum when the container is destroyed as such by violent impact. It may be further noted that the projectile may be used with great advantage in attacking aircraft, especially when it is provided with a suitable time fuse and fired in the proper direction, the wire being effective against light framework or fabric and destructive when caught in rapidly moving propelling mechanism.

What I claim is:

1. In a projectile of the class described, the combination with a shell containing an explosive charge, of continuous barbed wire inclosed within the shell arranged therein to be readily extended by the explosion of said charge and having a length many times the greatest dimension of the latter, and means for exploding the shell.

2. The combination with an explosive shell, of a mass of barbed wire arranged in the shell with many laterally free linearly connected portions lying alongside each other in condition to be extended by the explosion of the shell and having a length when extended many times the greatest dimension of the shell, said wire being relatively very light and lacking the destructive momentum of ordinary projectiles.

3. The combination with an explosive shell having a suitable internal cavity, of a length of barbed wire folded many times upon itself, inclosed in said cavity, and in condition to be extended by the force of explosion when freed from the shell thereby.

4. The combination with an explosive shell having a suitable cavity, of barbed wire having a terminal weight made up of many connected links folded to form a compact mass and contained in said cavity.

5. The combination with a shell containing a shell-destroying explosive and chain-like wire consisting of many connected barbed links folded upon each other, parallel to the axis of the shell, and in condition to be readily extended, and means for detonating the shell.

6. The combination with a projectile having an explosive head, an explosive base, and an intermediate cavity, of a long stretch of barbed wire forming a compact mass, located in said cavity and adapted to be readily extended, and means for exploding both head and base, to leave the wire mass free in the air.

7. The combination with a suitable ordnance shell, of barbed wire chain inclosed in the shell and folded back and forth to form a mass of approximately parallel long links.

8. The combination with an ordnance shell having an elongated chamber between its end portions with its wall weakened along breaking lines, of a mass filling said chamber and made up of barbed wire links suitable for entanglement and lying alongside each other in said chamber approximately parallel to the shell's axis.

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

JOSEPH A. STEINMETZ.

Witnesses:
S. M. Craig,
E. L. Black.