

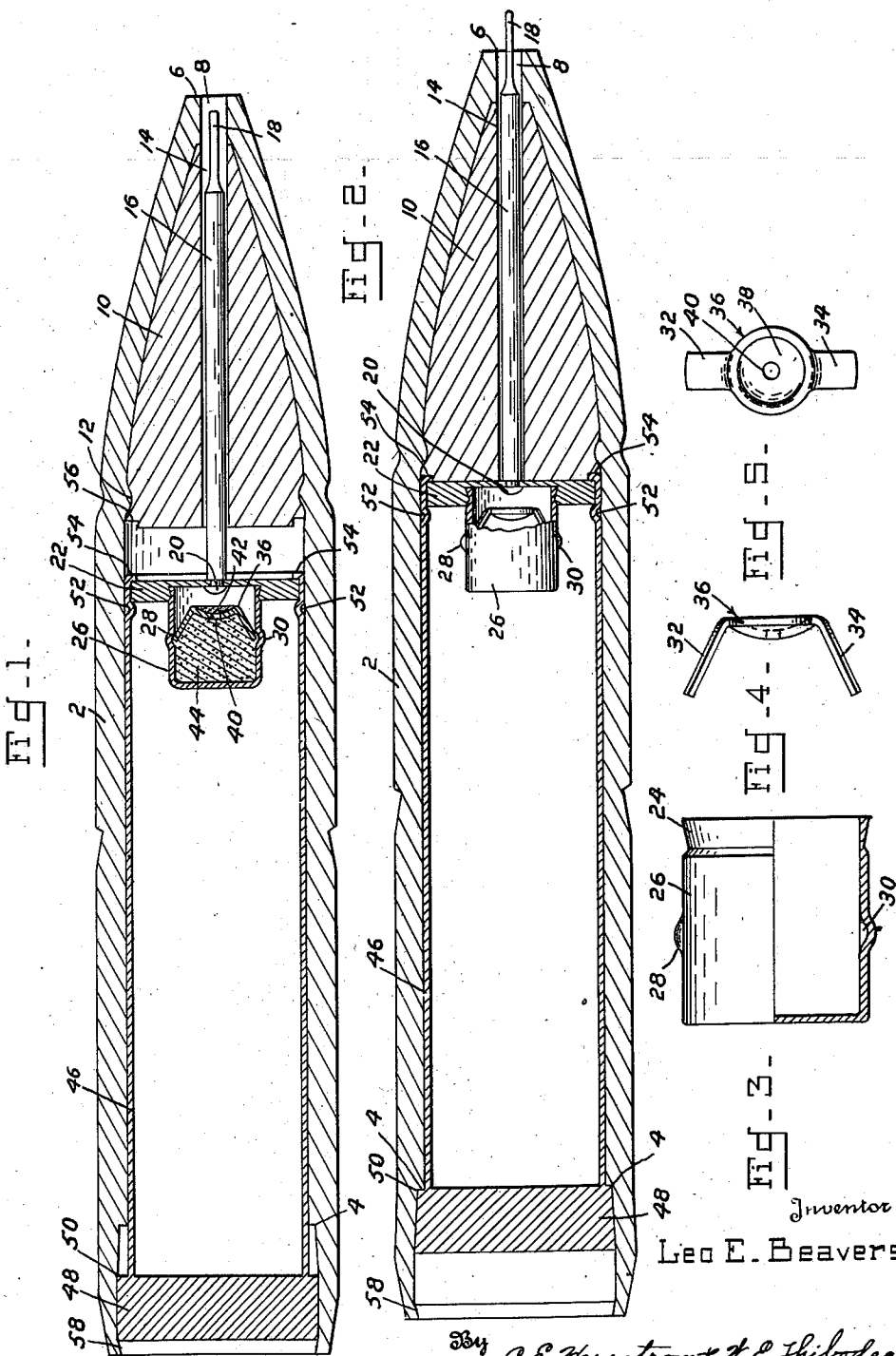
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PROJECTILE

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PROJECTILE

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1 Claim. (Cl. 102—56)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

My invention relates to improvements in projectiles of that character which are exploded by impact with an object or target and its general object is to provide a projectile which may be handled and transported with safety and one which is automatically self-arming upon being fired from a gun.

A further object of my invention is to provide a projectile of this character in which chamber pressure, caused by firing a gun, operates the arming system.

A still further object of my invention is to provide a projectile of this character in which the mechanism will not become displaced after being armed, during the flight of the projectile.

A still further object of my invention is to provide a projectile of this character which is extremely sensitive, when armed, and one which will explode when only very little resistance is encountered, such as the thin sheeting of airplane wings, etc.

A still further object of my invention is to provide a projectile of this character which is simple in construction, which may readily and quickly be assembled and one which will not become armed until the gun containing the projectile has been fired.

With these and other objects in view, as will hereinafter more fully appear and which will more particularly be pointed out in the appended claim, reference is now made to the accompanying drawings forming a part of this application, in which:

Figure 1 is a vertical, longitudinal section view of my improved projectile, illustrating the normal position of the mechanism before arming;

Figure 2 is a view similar to the view of Fig. 1, illustrating the projectile in armed position;

Figure 3 is a side elevational view, partly in section, illustrating the detonator shell;

Figure 4 is a side elevational view illustrating the primer charge holder; and

Figure 5 is a top plan view of the primer charge holder shown in Fig. 4.

Referring now to the drawings in which similar reference characters represent similar parts, the numeral 2 represents a hollow, cylindrical jacket forming the casing of the projectile of metal, alloy, or the like or any other suitable composition or material known in the art, recessed near the base to form an annular shoulder 4. The nose

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of the jacket 2 is flat, as indicated at 6 with a longitudinal, circular opening 8 extending there-through. A conical filler 10 of lead or other suitable metal or material is positioned with the hollow nose portion of the jacket, may be held securely in place by crimping the jacket, as shown at 12 or which may be otherwise suitably secured in such position. Filler 10 is provided with a central, circular longitudinal opening 14 adapted to receive a striker member 16, the front end 18 of which may be smaller in diameter than the body of member 16, and which is adapted to contact the object or target on impact. The opposite end 20, of striker member 16 is riveted through an opening in charge case end cap 22, which end cap is provided with a circular angularly disposed recess adapted to receive and frictionally hold in position the angularly crimped rim 24 of detonator shell 26. Detonator shell 26 is provided with oppositely disposed recesses 28 and 30 adapted to receive and frictionally hold in position the legs 32 and 34 of the primer charge holder 36, which holder is provided with a circular recess 38 having a small circular opening 40 through the central portion of the base of the holder. The recess 38 is adapted to hold a primer charge 42, as shown in Fig. 1, while the detonator shell 26 is adapted to hold a suitable detonating charge 44 also shown in Fig. 1. A circular, hollow charge carrying case 46 is provided with an annular base 48 extending outwardly from the outside surface of case 46 to form an annular rim 50 adapted to contact the annular shoulder 4 of jacket 2 and to limit the forward movement of case 46 and connected parts. Case 46 is crimped to form an annular shoulder 52 which serves to prevent rearward movement of charge case end cap 22, while the front edge of case 46 is turned inwardly or crimped, as shown by numeral 54 over the charge case end cap 22, thus firmly holding end cap 22 in fixed position. The base portion of filler 10 is provided with an annular, peripheral recess 56 adapted to receive the crimped portion 54 of case 46. The charge carrying case 46 is adapted to contain any suitable, desired explosive, not shown. The base edge of jacket 2 is crimped slightly, as shown at 58, after the charge carrying case 46 has been inserted in the jacket 2 to prevent the case from sliding or falling out of the jacket, while the diameter of the recessed portion of the jacket gradually narrows from the base to shoulder 4 of the jacket, to insure a wedging effect of the base 48 against the recessed portion of jacket 2, and a secure frictional engagement therewith.

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In assembling, the filler 10 is inserted in the nose of the jacket 2 and crimped in position, as shown at 12. A suitable explosive is placed within the charge carrying case 46, enough room being left in the case for the detonating shell 26 which is adapted to contain a suitable detonating charge 44. The primer charge holder 36 is inserted in place in the detonator shell and a suitable primer 42 is inserted in the holder. Striker member 16 is riveted to the central recessed portion of the charge case end cap 22 and the detonator shell is forced into this recessed portion. The charge case end cap is then inserted in the front end of the charge carrying case 46 abutting the annular crimped shoulder 52, and the front edge of the charge carrying case is crimped or turned in as shown in 54 thereby holding in fixed assembled form the charge carrying case, the case end cap, detonator shell, primer holder, and striker member. This entire assembly is then inserted in the jacket through the base thereof, the striker member extending through the opening 14 of filler 10, and into but not through opening 8 of nose 6 of the jacket. Due to the gradual decreasing of the diameter of the recess in the base of jacket 2, the base 48 of case 46 will effect a tight fit and prevent further forward movement from the position shown in Fig. 1 until such time as considerable force is applied to the base. When the assembled mechanism reaches the position shown in Fig. 1, the base of the jacket is crimped as shown at 58 to prevent the assembled mechanism from sliding or falling from the projectile.

When the projectile is fired from a gun, the chamber pressure created by such firing forces the entire mechanism forward to the position shown in Fig. 2, further forward movement being prevented by the filler 10, and by contact of rim 50 of base 48 with shoulder 4 of jacket 2. In this forward movement, base 48 will expand the recessed portion of jacket 2 slightly, thus insuring a tight, frictional engagement of these two parts,

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whereby the base 48 will mold itself to the contour of the recess. When the forward movement is completed, the front end 18 of striker member 16 protrudes forwardly of the projectile and is thereby in position to contact an object or target on impact therewith, such impact forcing the striker member rearwardly against the primer, thus starting the chain of explosion.

While I have illustrated and described the invention in some detail, it is to be understood that the invention is not to be limited to such details, but only by the spirit of the invention and the scope of the appended claim.

I claim:

15 An explosive projectile comprising an outer shell portion having an ogive and an open rear end, an opening in the point of said ogive communicating with the interior of said projectile, an explosive container in the shell arranged for longitudinal motion therein and having a bottom closing the opening in the rear of the shell, a closure in the front of said container carrying a detonator, and a firing pin fixed to said front closure adjacent said detonator and aligned with the opening in the ogive, and means to hold the container in its advanced position with the firing pin protruding from the ogive.

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