(No Model.)

L. GEIGER.

PROJECTILE.

No. 306,739. Patented Oct. 21, 1884.

Fig. 1.

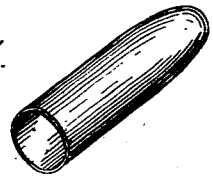


Fig. 2.

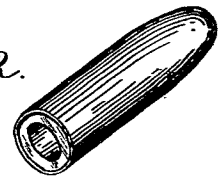


Fig. 3.

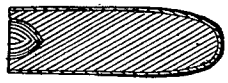


Fig. 4.

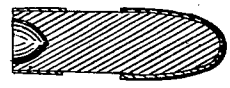
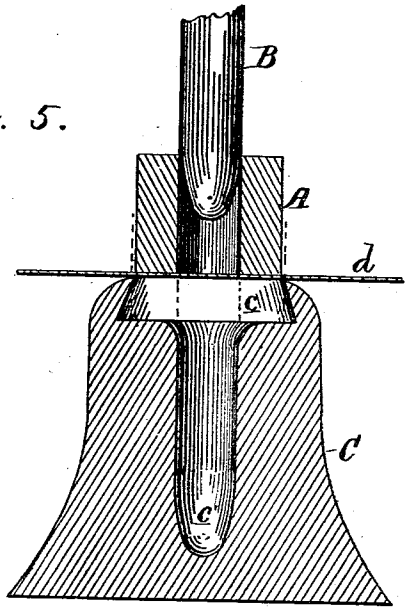


Fig. 5.



WITNESSES:

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LEONARD GEIGER, OF HUDSON, NEW YORK.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 306,739, dated October 21, 1884.

Application filed September 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, LEONARD GEIGER, a citizen of the United States, residing at Hudson, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Projectiles, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to that class of projectiles designed for small-arms, and more particularly those called "Minié bullets," and made of lead or other soft metals; and the invention consists in a projectile incased in the manner hereinafter more particularly described and claimed.

In the accompanying drawings, Figure 1 represents a perspective view of the covering of my bullet; Fig. 2, a similar view of a covered bullet; Fig. 3, a longitudinal section thereof. Fig. 4 is a modification, also in section; and Fig. 5, a section of the tools I prefer to employ in making the covering or casing.

To make my bullet I employ a sheet of thin metal, preferably copper, according to my experience thus far; but other metals or compositions of metals may be used; and in making the same I employ two punches, A B, and a matrix or mold having a larger recess, C, at the top, which is circular and about four times the diameter and one-fourth the depth of the lower or finishing recess, C', the bottom of which recess is conical. Into the larger or top portion a disk of sheet metal, as *d*, is forced by means of the annular punch A, so as to form a cup thereof, as shown in dotted lines, and immediately after and within it follows the other punch, B, which is conical at its lower end, and of such size as to fit the lower recess, C', less the thickness of the sheet metal employed, which form forces this metal down the entire depth of the mold, giving it the conical termination at its apex. This sheet-metal shell is completed by trimming off its ragged upper and open end, forming the shell shown in Fig. 1, and the bullet is then completed by forcing into the shell a lead body a trifle larger than the interior of the shell, whereby the two are made to fit accurately, and the metal of the body is condensed so as to become very hard, which hardness is increased by the power used to force the body into the shell; and it may be further increased by forcing a conical plug into the end of the body, which will condense the metal and make a recess in the base of the body, as shown in Figs. 2, 3, and 4.

By my method of construction the bullet is entirely covered from base to apex with a material that will not appreciably foul the barrel, which will therefore seldom require cleaning, for the tendency of the copper covering, when forced outward by the expansion of the gases due to the explosion, will be to scrape the interior of the barrel and the rifle-grooves clean of the deposits caused by the smoke of previous discharges. Independently of this advantage and of its more perfect shape when it leaves the barrel, causing it to keep its point forward, and thus travel farther, the bullet will have a greater penetrative power, because the copper covering being made very hard by the process of forming it, the bullet, on striking a hard substance—such as a bone, for instance, or some of the metallic parts of a soldier's accouterments—will still retain its shape, and hence pass through the bone or other obstruction and do execution, where a bullet uncovered would be flattened and become comparatively harmless.

I prefer to make the covering or casing thickest at the apex, as it makes it stronger at this point, and it is thus less liable to be driven out of shape by the impact on striking an obstacle, and will hence have more penetrative power, although it will have a good effect if the covering is of the same thickness from apex to base.

Instead of entirely casing the bullet, I may sometimes leave a portion of the center of the bullet bare, as shown in Fig. 4, as the copper at each end will prevent the lead coming in contact with the barrel.

I have described the body of my projectile as being made of lead; but it may be formed of other soft metal or of a composition of which lead forms a part without departing from the spirit of my invention.

I am aware that iron and steel projectiles have been coated with copper by electric deposition.

I am also aware that it has been proposed to partly incase an iron projectile in a copper casing by inserting the butt of the projectile loosely in the top of the casing, and then closing the same loosely around said projectile by means of dies; and I am also aware that lead

projectiles have been coated with a cylinder of copper having a seam or joint at the sides. These projectiles, however, are very different from mine, for the process of making them is essentially different.

No claim is made herein to the process of covering or casing the projectile, as it forms the basis of an application filed by me May 12, 1884, and numbered 131,140.

What I claim as new is—

1. A projectile of soft metal, having its point and base covered with a seamless smooth casing of harder metal, substantially as described.

2. A projectile having its body of soft metal firmly incased from apex to base with a seamless smooth casing of harder metal, substantially as described.

3. A lead bullet having its point incased in a hard-metal shell, substantially as described.

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

LEONARD GEIGER.

Witnesses:
SHERMAN VAN NESS,
F. F. FOLGER.