(No Model.)

W. LORENZ.

COMPOUND PROJECTILE.

No. 338,849. Patented Mar. 30, 1886.

Fig: 1.

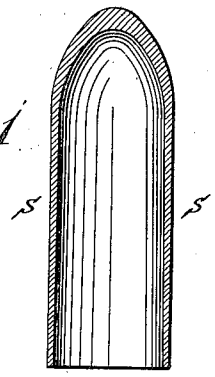


Fig: 2.

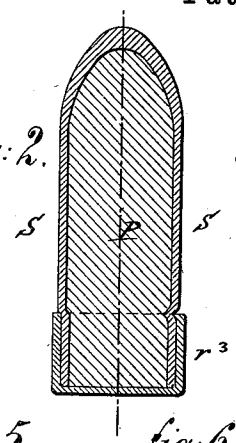


Fig: 3.

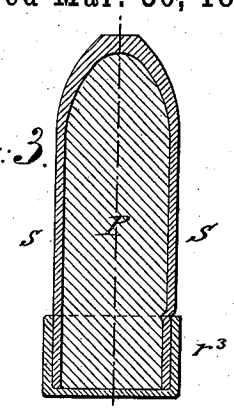


Fig: 4.

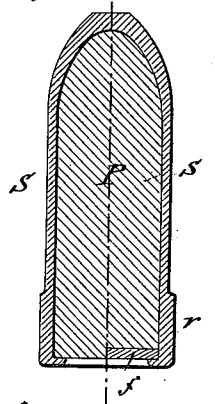


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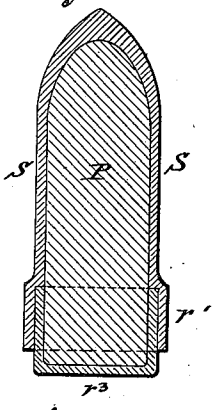


Fig: 6.

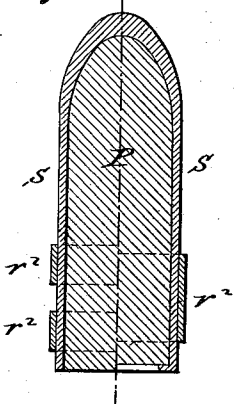


Fig: 7.

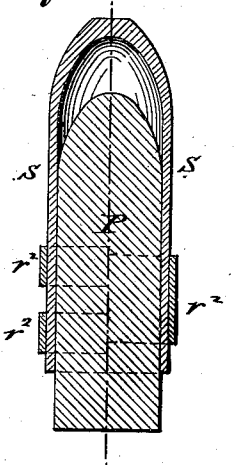


Fig: 8.

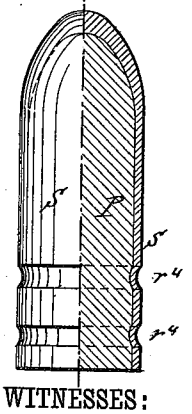


Fig: 9.

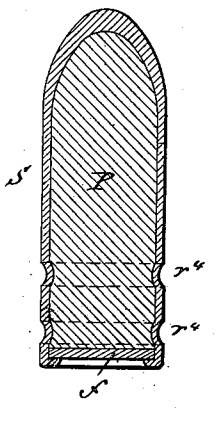


Fig: 10.

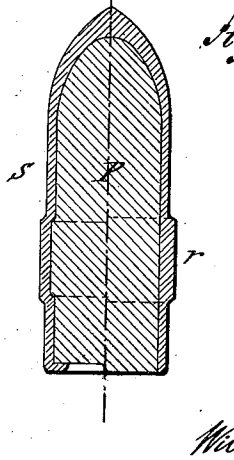
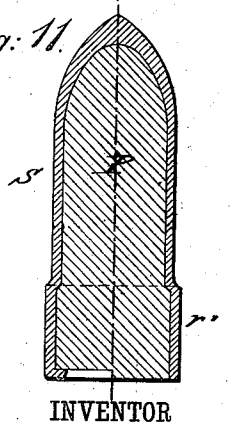


Fig: 11.



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Carl Kary

INVENTOR

Wilhelm Lorenz

BY Goepel & Raegener

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILHELM LORENZ, OF CARLSRUHE, BADEN, GERMANY.

COMPOUND PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 338,849, dated March 30, 1886.

Application filed January 17, 1885. Serial No. 153,137. (No model.) Patented in Belgium June 23, 1884, No. 65,556, and in Italy June 30, 1884, No. 17,059.

To all whom it may concern:

Be it known that I, WILHELM LORENZ, of Carlsruhe, in the Grand Duchy of Baden and Empire of Germany, have invented certain new and useful Improvements in Compound Projectiles, (which have been patented in Belgium June 23, 1884, No. 65,556, and Italy June 30, 1884, No. 17,059,) of which the following is a specification.

This invention relates to the manufacture of compound projectiles; and it consists of a compound projectile the core of which is melted onto the covering shell, which shell is coated with tin or other metal. The core or shell, or both, are provided with guide-rings that are melted on the same.

In the accompanying drawings, Figure 1 represents a vertical transverse section of a shell for my improved projectile. Figs. 2 and 3 are vertical central sections of my improved compound projectiles having guide-rings in the form of caps. Figs. 4, 5, and 6 are vertical central sections of projectiles with modified forms of guide-rings. Fig. 7 is a vertical central section showing the projectile in the act of being introduced into the shell. Fig. 8 is a side view and section of another modified form of a projectile with annular guide-grooves; and Figs. 9, 10, and 11 are sections of modified forms of projectiles in which the guide-rings are made integral with the shell.

Similar letters of reference indicate corresponding parts.

My improved compound projectiles consist, essentially, of a heavy metal core or projectile and a covering-shell of harder metal, which is united with the projectile in such a manner that they form in use one united whole. The shells may be made of one or more parts. They are preferably made of steel, copper, brass, or other metal or alloy of metal possessing a high degree of hardness and sufficient ductility. The shells are made, preferably, from disk-shaped blanks in draw-presses, according to the metal or the form of shell. They may be cast in molds or turned in a lathe, or made in any other suitable manner. The shells S are first cleaned on the outer and inner surfaces, in the usual manner, by means of acid, and covered at the outside and inside, or at the inside only, with a coating of tin, zinc, or other metal, by any approved method; or they are prepared in any other manner, so that the projectile, when introduced into the shell, can form an intimate metallic union with the same.

For the core or projectile is employed a metal of high specific gravity—for instance, lead, alloys of lead, &c. The projectile P is either cast first and introduced into the shell, after which the temperature of both parts is raised at least to the fusing-point of the metal composing the core, so that core and shell are melted together, or the properly-shaped projectiles, P, are inserted in the shells after the same have been raised to a temperature at least equal to the fusing-point of the metal of the projectiles, whereby the latter are united at the moment of insertion with the shells. The metal of which the core is made may also be poured in molten state into the shells, whereby, also, the desired union between the core and shell is obtained. The core may be compressed more or less after it has been united with the shell, which pressing recommends itself when the cores have been cast in the shells and after they have somewhat cooled off.

For guiding the projectiles in the barrels of the fire-arms, the shells S are either increased in thickness, as at r, Figs. 4 and 10, or enlarged by bulging, as at r', Figs. 5 and 11, or provided with one or more guide-rings, r^2, as in Figs. 6 and 7, or with a cap, r^3, that is placed over the base of the projectile, as in Figs. 2, 3, and 5.

To properly inclose the core P, either the caps r^3 or bottom disks, f, may be used, as in Figs. 4 and 9.

Fig. 8 shows a shell with annular guide-grooves r^4. The guide-rings, caps, or bottom disks are also coated with tin or other metal and molded onto the core, either partly or entirely. In the case of the caps, they can be connected either at their inner surface with the core or at the periphery with the shell.

The melting together of the core and shell may be accomplished first, and then the guide-rings or caps specially melted on; or the cores, shells, and guide-rings or caps may be united together at one and the same time and by one operation.

In making the shells the points are hardened in any approved manner, while the remaining parts of the shells remain soft or are made soft.

The construction shown in Figs. 1 to 11 of the drawings show different modifications of the shells and their guide-rings. They may be made for any kind of projectiles of suitable dimensions and weight. The compound projectiles with hard shells and hardened points and cores united thereto by melting are capable of high resistance and possess great force of penetration. As the shells cannot, on striking an object, get detached from the cores, break, or give way, and as the cores cannot crowd up or flatten, the compound projectiles differ advantageously from the projectiles heretofore known, in which the shells or coverings are not united with the cores, and in which the shells, when striking the object, either crowd up or detach themselves from the cores, so that they pass in detached parts through the soft parts of the object and exert an injurious influence on the wounds caused thereby, while they can, owing to their form and size, be removed only with difficulty from the wounds. Another advantage is, that the cores and shells partake of a simultaneous rotation, whereby a better trajectory and a greater accuracy in hitting the object are obtained. Still another advantage is, that by the tinning or other preparation of the shells—as, for instance, in steel shells—the corrosion of the same is prevented and blood-poisoning obviated when they penetrate the fleshy parts, which would surely take place with unprepared and fragile shells of steel, copper, brass, or other metal.

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

1. A compound projectile the core of which is melted to the covering-shell, substantially as set forth.

2. A compound projectile the core of which is melted to the covering-shell, which latter is coated with tin or other metal, substantially as set forth.

3. A compound projectile composed of a core and covering-shell, the former being melted to the shell, and guide-rings melted to the core or shell, or both, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

WILHELM LORENZ.

Witnesses:
FRIEDRICH LORCH,
ADOLF LEHNE.