J. ABSTERDAM.

Covering Projectiles.

No. 50,783.

Patented Nov. 7, 1865.

Fig. 1

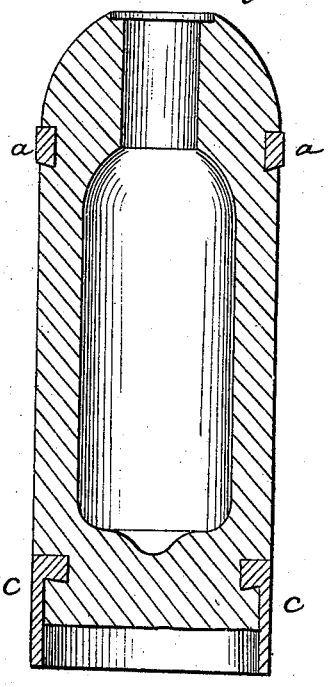
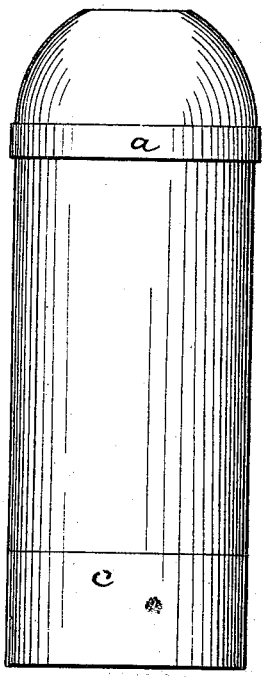


Fig. 2



Witnesses
Theo. Tusch
M. A. Lynton

Inventor
John. Absterdam

UNITED STATES PATENT OFFICE.

JOHN ABSTERDAM, OF NEW YORK, N. Y.

IMPROVEMENT IN BANDING AND COVERING PROJECTILES.

Specification forming part of Letters Patent No. **50,783**, dated November 7, 1865.

To all whom it may concern:

Be it known that I, JOHN ABSTERDAM, of No. 175 Pearl street, in the city, county, and State of New York, have invented a new and Improved Composition for Covering Projectiles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal central section of a projectile covered with my composition. Fig. 2 is a side elevation of the same.

Similar letters of reference indicate like parts.

The nature of this invention consists in covering or binding projectiles of cannons with a composition of copper and zinc, mixed together in such a proportion that the same remains malleable when it is heated, and consequently is not liable to crack and strip while being fired. This composition has also the property that the same, after having been cast on the iron body of the projectile, becomes soft when suddenly cooled in cold water; and, furthermore, by the act of being cooled, it shrinks and takes a firm hold of the body of the projectile.

The proportion in which I mix the ingredients of my composition together is as follows: copper, 60.16; zinc, 39.71; or, instead of this, copper, 61.44; zinc, 38.15; or, in other words, thirty-three parts, by weight, of copper and twenty-five parts, by weight, of zinc; or, more correct, by three parts of copper and two parts of zinc, the small surplus of zinc in the former formulas being put in to allow for evaporation during the process of mixing or melting. The alloy obtained by mixing copper and zinc in this exact proportion is much tougher than ordinary brass; and, furthermore, it has the great advantage that it is malleable when hot, whereas common brass or gun-metal becomes very brittle when heated to a red heat. On account of this property of common brass or gun-metal, projectiles having their bands or sabots or packing made of either of them are very dangerous the heat caused by the explosion of the charge being sufficiently intense to heat said bands or other parts to such a degree that the metal from which they are made becomes brittle and causes the projectile to strip in firing. In being stripped of its brass the projectile loses its range and accuracy of flight, and the fragments of brass are dangerous to life when the projectile is fired over the heads of troops; and, furthermore, the brass packing or sabot, when it breaks in the bore of the cannon, is liable to slug or wedge the projectile in the barrel, thereby causing the piece to burst in firing. These difficulties have been sought to be overcome by the use of lead or other soft metals for covering projectiles; but such metals do not possess sufficient tenacity to resist the torsion of the projectile while passing through the bore of the cannon, and the bands, sabots, or packings made of such soft metals are liable to strip. For these reasons it is of the greatest importance to make the band *a* and packing *c* of an alloy such as I propose, which is very hard and tough when cold, and which retains its toughness when heated. This alloy has also the property that the same, by being plunged into water while hot, becomes soft and pliable, and at the same time, by this operation, the bands or other parts shrink and are made to grasp firmly the body of the projectile without being liable to crack on account of the superior toughness of the material from which they are made, whereas common brass or gun-metal, on being cast on the iron body of a projectile, shrinks faster than the iron, even if the latter should be made red-hot previous to the operation, and the bands or other parts made from such brass or gun-metal are liable to crack in cooling and to become useless.

I do not claim the use for banding and covering projectiles of alloys made of copper and zinc made in different proportions from that above set forth, since all such alloys lack the properties necessary for the purpose for which I use my alloy; but

I claim as new and desire to secure by Letters Patent—

1. The employment or use of an alloy such as herein described for making bands, sabots, or packings of projectiles, substantially as specified.

2. Cooling the alloy suddenly after casting on the projectiles, substantially as and for the purpose set forth.

JOHN ABSTERDAM.

Witnesses:
M. M. LIVINGSTON,
C. L. TOPLIFF.