METHOD OF MAKING PLATED SHOT

This invention relates to methods of making shot for shot shells and more particularly to a method of making plated shot.

In the manufacture of shot at the present time globules of molten lead, or an alloy of lead, are dropped into a bath of water. When the globules of molten lead fall into the tank of water the metal is chilled forming the shot. In some instances the shot is plated with various metals, such as copper, and heretofore this plating operation has been performed by the usual electroplating process using electric current supplied to a plating bath in which the unplated shot is placed. Articles made of lead may also be plated with copper by dipping them in a copper sulphate solution containing a quantity of metallic iron, but such process has not been utilized for plating shot as it is more expensive than the ordinary electroplating process.

In the present invention I provide a method of making plated shot wherein the two-step process of forming the shot and then electroplating it is materially simplified, and the same, or better, results obtained by means of a one-step process. Instead of using a water bath for chilling the molten lead, I drop the globules of lead into a solution that will form the shot, and at the same time, provide a plating of the desired metal on the shot. Thus when a copper plating is desired, a solution of copper sulphate containing a quantity of metallic iron may be used. I preferably employ iron in the form of degreased chips or other clean scrap. The globules of molten lead, or lead alloy, are dropped into this solution whence they are chilled and form shot. In contact with lead, the metallic iron replaces the copper of the copper sulphate and the released metallic copper plates the formed shot.

The strength of the copper sulphate solution may vary within wide limits. The quantity of iron added to the solution may also vary as it is merely necessary that some metallic iron be in contact with the shot at all times to replace the copper and the iron may be added periodically to the tank containing the copper sulphate solution into which the lead globules are dropped.

An important commercial consideration in connection with my invention is that in every ammunition manufacturing plant where lead shot is made, a solution of copper sulphate and zinc sulphate is always available as a waste product from various operations in the rolling mill and brass cartridge shops. In these operations brass is pickled by dipping it in a solution of sulphuric acid and the waste product obtained is a solution of a mixture of copper sulphate and zinc sulphate. This used pickling solution heretofore has possessed no value, but I have found that it is a satisfactory copper sulphate solution for use in plating shot in accordance with my invention and I therefore propose to use this spent pickling solution by adding a quantity of metallic iron to it and placing it in the tanks at the base of the shot tower. The lead, or alloy of lead, is formed into molten globules in the same manner as heretofore employed in the manufacture of shot and then dropped into this solution. When the plated shot is removed from the tanks at the base of the tower, it may be tumbled and inspected in the customary manner.

My invention is applicable to shot made either of lead or an alloy of lead and throughout the claims the word “lead” is used to include the various alloys of lead employed in the manufacture of shot.

I claim:

1. The process of making plated lead shot which comprises dropping globules of molten lead into a solution of a metallic salt containing a metal adapted to replace the metal of the salt when lead is dipped in the solution whereby the globules are formed into shot and plated with the metal of the salt.

2. The process of making plated lead shot which comprises dropping globules of molten lead into a solution of a soluble copper salt containing metallic iron whereby the copper of the salt is replaced by the iron, the globules formed into shot and the shot plated with copper.

3. The process of making plated lead shot
which comprises dropping globules of molten lead into a solution of copper sulphate containing metallic iron whereby iron sulphate and metallic copper are formed, the lead globules formed into the shot and the shot plated with copper.

In testimony whereof I affix my signature.

EDWIN PUGSLEY.