

W. GRIFFITH.  
METHOD OF PLATING METALS.  
APPLICATION FILED JAN. 21, 1909.

936,713.

Patented Oct. 12, 1909.

FIG. 1

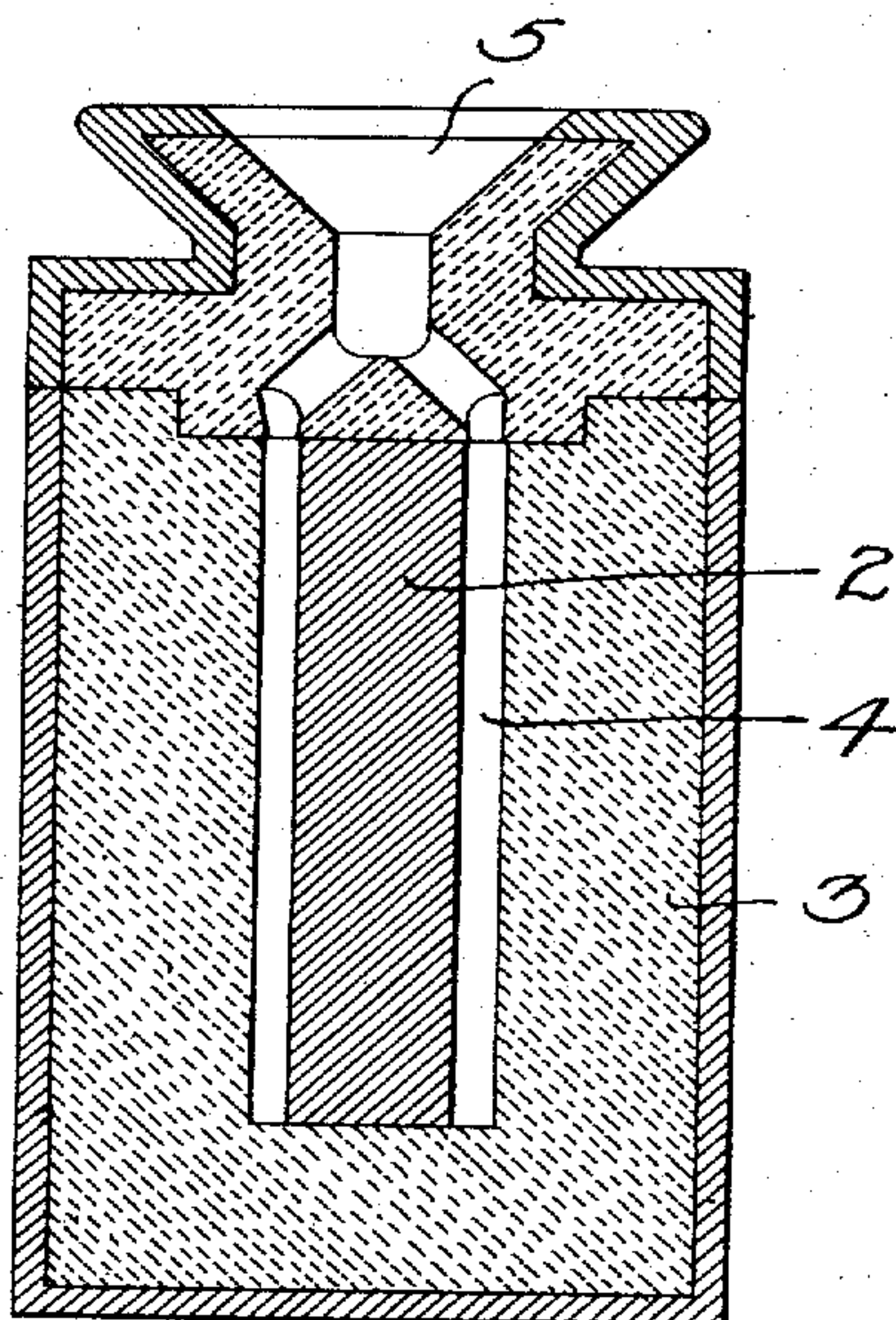
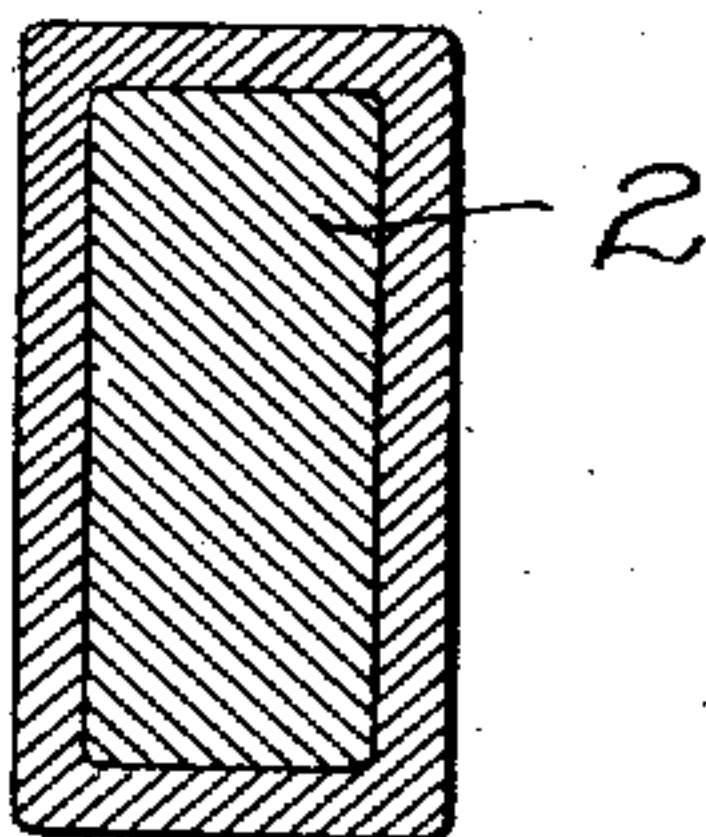


FIG. 2



WITNESSES

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*M. A. Borch.*

INVENTOR

*William Griffith*  
*by James R. Bateswell*  
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# UNITED STATES PATENT OFFICE.

WILLIAM GRIFFITH, OF PITTSBURG, PENNSYLVANIA.

## METHOD OF PLATING METALS.

936,713.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed January 21, 1909. Serial No. 473,597.

*To all whom it may concern:*

Be it known that I, WILLIAM GRIFFITH, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Methods of Plating Metals, of which the following is a full, clear, and exact description.

My invention relates to an improvement in the art of uniting or welding metals, more particularly to coating or plating of metals with other metals, such as iron or steel with copper, brass, bronze, nickel, aluminum, or other metal or alloy; and it consists, generally stated, in first subjecting the metal to be coated to a cleaning and other preparatory treatment and then applying in molten form the metal adapted to form the coating or plating, as will be hereinafter more fully set forth.

I shall now describe my invention so that others skilled in the art to which it appertains may understand and practice the same, referring to the accompanying drawing forming a part of this application, and in which I have shown my invention as applied to the coating of an ingot, billet or bar. It will, of course, be understood that I do not desire to limit myself thereto, as it will be readily apparent that the invention may be carried out in the coating of tubing and other shapes.

Figure 1 is a vertical sectional view showing a steel billet or bar placed in a suitable mold preparatory to receiving the coating metal in molten form; and Fig. 2 is a sectional view of a billet or bar prepared by my improved method.

In carrying out my invention, the iron or steel billet or bar 2 to be coated is first subjected to a cleaning or preparatory bath to remove the scale and oxid from the surface or surfaces to be coated. After the preparatory bath, further oxidation of the metal is prevented by subjecting the surface or surfaces to be coated, to an alkali solution, preferably a chromate potassium or chromate sodium solution. Leaving this bath, the bar or billet 2 is subjected to further treatment which consists in placing the said bar or billet in a solution of one of the salts of copper, or other suitable metallic salt. The particular salt which I prefer to employ is copper sulfate. The bar or billet is allowed to re-

main in this solution until a thin coating of metallic copper has been deposited on the bar or billet, after which the said bar or billet is given a coating of brass, copper, or other desired metal. This coating may be either in the form of a solution or in powdered form and may be applied by a brush, spray, or by dripping. After being given the above preparatory treatment, the bar or billet 2 is placed in a suitable mold preparatory to receiving the coating metal which is applied in molten form to the treated surface or surfaces of the said bar or billet. In Fig. 1 of the drawing, I have shown such a mold indicated by the numeral 3, having the cavity 4 wherein is placed the bar or billet 2 adapted to receive and be enveloped or inclosed by the molten coating metal which is adapted to be introduced at the mouth 5 of the mold; the thickness of the coating metal to be given the bar or billet 2 being dependent upon the ultimate thickness to be given the coating after the bar or billet has been rolled or re-shaped as desired. As stated above, rolled shapes or tubing may also be coated in a like manner, which treatment may, if desired, be applied before the shape is given its pass through the finishing rolls.

The advantage of my invention will be appreciated by those skilled in the art. Protection from oxidation is insured by the application of the chromate potassium or chromate sodium, or other alkali solution, while by the interposition of the brass, copper, or other metal between the coating metal and the copper deposition, a more perfect union of the metals is obtained than when the copper deposition alone is used.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. The hereindescribed process of plating iron, steel and other metal with any desired metal or alloy, which consists in first cleaning the metal to be coated, coating with a covering of suitable alkali solution, coating the same with a metal or alloy of a lower fusing point, and then applying in molten form a metal that will unite with the last named metal.

2. The hereindescribed process of plating iron, steel and other metal with any desired



metal or alloy, which consists in first cleaning the metal to be coated, coating with a suitable solution of alkali, coating the same with a metal or alloy of lower fusing point, applying a second metallic coating, and then applying in molten form, a metal that will unite with the last named metal.

In testimony whereof, I have hereunto set my hand.

WILLIAM GRIFFITH.

Witnesses:

M. A. BARTH,  
M. ARTHUR KELLER.

### DISCLAIMER.

936,713.— *William Griffith*, Pittsburgh, Pa. METHOD OF PLATING METALS. Patent dated October 12, 1909. Disclaimer filed August 26, 1912, by the executor, *William Johns*.

Enters the following disclaimer:

"In the claims, any process or method of plating or coating metals which does not employ a metallic salt for the application of the first coating of metal or alloy of a lower fusing point than the metal to be coated, and which does not apply the molten metal at an ordinary casting temperature as distinguished from a molten coating metal in a supermolten condition of temperature."

[*Official Gazette, September 3, 1912.*]

Disclaimer in Letters Patent No. 936,713.

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