UNITED STATES PATENT OFFICE.

GEORGE H. CHINNOCK, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF, ALBERT SICHEL, AND JAMES LEMON.

MANUFACTURE OF METAL.

SPECIFICATION forming part of Letters Patent No. 286,904, dated October 16, 1883.

Application filed August 25, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE H. CHINNOCK, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Metals; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to combine three distinct metals into one plate or sheet, as desired, thereby producing a metal with two distinct surfaces—such, for example, as gold on one side and silver on the other, or brass and tin, copper and tin or platinum—so that when a vessel is constructed of the improved metal the outer surface may be of gold, copper, or brass, while the interior surface will be tin, silver, platinum, or vice versa, as desired, and the interior or intermediate strengthening-plate be of iron, steel, or other suitable material, thereby securing strength, durability, and economy in manufacture.

To carry my invention into effect I take a polished table of metal, previously coated with clay, whiting, or other like preparation, designed to prevent the adhesion of plates of fusing metal thereto, and under that a furnace, in which a fire is kindled. I then lay on the polished surface a sheet of brass, copper, gold, or other metal, and upon this I place, first, a plate of iron, steel, or other suitable hard metal, and next, a third metallic plate, which may be of tin, silver, platinum, or any other metal different from that composing the other two plates, the surfaces of the plates having in all instances been first thoroughly cleaned by the use of acids or other cleansing preparation. When the said three plates of metal have been heated to the welding-point, the heat is withdrawn, and pressure, by means of a cam, lever, eccentric, or screw, is brought to bear upon the surface of the top plate, a cold plate being next slid under the polished surface and between that and the furnace, thereby cutting off the heat. Although I generally prefer to employ the introduction of the cold plate to effect the shutting off of the heat, as aforesaid, I do not limit myself specifically to this means, as other convenient and effectual methods of cooling may be employed. This sudden pressure of the three distinct sheets of metal, together with the withdrawal of the heat, causes instant atomic cohesion of the three plates or sheets of metal aforesaid, thereby forming one plate composed of three distinct metals combined. The plate is then passed under pressing or flatting rollers, which remove all indentations and take out any buckling or wrinkles, completely incorporating the three metals.

I sometimes find it best, depending upon the fusible character of the metal employed, not to unite the three sheets of metal together at once, but to employ my process of heating, welding, and incorporating, as above described, in first uniting the sheet of metal placed next above the polished table of the furnace to the central plate of iron or other hard metal, and then, by a repetition of the process, to lay upon and unite to the composite plate so formed the third or uppermost metallic plate. I usually prefer to facilitate the union of the three plates of metals by interposing a flux, solder, or other like preparation ordinarily used in joining metals, between the metallic plate next above the polished table and the central plate of iron or steel, and, again, between said central plate and the third plate of metal.

A striking advantage of my process is that it furnishes a strong, hard, tough, composite metal through the instrumentality of the interior plate of iron or steel, thereby enabling articles for art, domestic, and manufacturing purposes to be made strong, durable, light, and far more economically than could heretofore be attained. Where the metal is required for stamping purposes—such as for the manufacture of buttons, boxes, &c.—the rolling through the flatting-rollers is omitted, and the composite metal submitted to the action of the die and punch, or such other means as may be employed. Plates of any desired size for manufacturing purposes can readily be produced by this process.

I am aware that the process of tinning or gal-

vanizing iron or electroplating upon iron is not new. I am also aware that the process of rolling metal upon iron without welding is not new. I am also aware that the process of coating iron or steel with gold or other metal by a galvanic battery is not new. I am also aware that the process of coating iron with copper and alloys is not new, and I do not claim any of these processes, broadly; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. The process of heating, welding, and incorporating three distinct sheets of different metals, so as to produce a compound-metal plate, the central plate of which shall be of iron or other suitable hard metal, consisting of the following steps or operations: first, placing sheets of metal, superimposed one upon the other, upon a polished metallic plate or table on top of a furnace and heating the same to the fusion-point; second, incorporating or uniting said sheets into one composite sheet, producing atomic cohesion by means of the application of pressure to the said sheets, and, third, cooling the composite plate, substantially as herein set forth.

2. The process of heating, welding, and incorporating three distinct sheets of different metals, so as to produce a compound-metal plate, the central plate of which shall be of iron or other suitable hard metal, consisting of the following steps or operations: first, placing sheets of metal, with intermediate fluxes between said sheets, upon a polished metallic table on top of a furnace and heating the same to the fusion-point; second, incorporating or uniting said sheets into one composite plate, producing atomic cohesion by means of the application of pressure to said sheets, and, third, cooling the composite plate, substantially as herein described.

3. A new article of manufacture, welded compound-metal plates, having a central iron sheet and two sheets of other metals on opposite sides thereof, each differing from the others, substantially as set forth and described.

4. The compound-metal plate consisting of three distinct plates of different metals, the central or intermediate plate being of iron and the two other plates, placed, respectively, on either side of this said central plate, being of aluminium, copper, brass, silver, gold, tin, lead, zinc, or alloy metal, neither of the said two plates being of the same metal as the other, substantially as set forth and described.

GEO. H. CHINNOCK.

Witnesses:
PHILLIPS ABBOTT,
HARRY EDWARDS.