

UNITED STATES PATENT OFFICE.

WILLIAM WHEELER HUBBELL, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN ALLOYS FOR JEWELRY.

Specification forming part of Letters Patent No. **219,097**, dated September 2, 1879; application filed April 7, 1879.

To all whom it may concern:

Be it known that I, WILLIAM WHEELER HUBBELL, of the city of Washington, District of Columbia, have invented a new and useful Improvement in Alloy Metal for Jewelry and Watch-Cases or Gold-Ware, consisting of gold, silver, and copper, within certain proportions and manufacture, whereby I produce an improved alloy of proportions adapted for jewelry; and the following is a description of my invention or improvement.

I make a binary alloy of silver and copper, in the proportions of one and a half part (1.5) of silver and three and a half (3.5) parts of copper, melted and mixed in a crucible, when covered with pulverized charcoal. This binary alloy may be varied slightly, though the one and a half part of silver to three and a half parts of copper give the richest orange-gold color, and the compressibility is increased, producing the desired density and fineness, and superior polish and sharpness of finish, for jewelry, watch-cases, and gold-ware, when united with the gold, as I will now describe.

To make the alloy metal complete, I take of this binary alloy of silver and copper eight parts, and of gold sixteen parts, melt and mix them together in a crucible, when covered with pulverized charcoal, forming a ternary alloy, which is the invention, and expressed in carats of twenty-four parts. It contains two and four-tenths (2.4) parts of silver, five and six-tenths (5.6) parts of copper, and sixteen (16) parts of gold, and is sixteen carats fine.

I vary these proportions also. I take of this alloy of silver and copper from four parts to ten parts, and unite it by melting and mixing with the gold in proportions to make twenty-four parts in the whole, according to the following table, to make the ternary alloy metal from twenty carats fine down to ten carats fine of gold.

The union of the metals into the alloy metal is also accomplished by me by melting the metals separately and pouring them together, and stirring and mixing them thoroughly, applying fine charcoal on top of them in the crucibles, to absorb the oxygen of the air and prevent oxidation of the copper.

In the annexed table the first column expresses the parts of the alloy of the silver and

copper mixed, which alloy consists of 1.5 parts of silver and 3.5 parts of copper. The second column expresses the parts of pure gold and the number of carats of fineness of gold, and the third column the total number of parts, which is twenty-four, each part representing or expressing a carat, so that any desired number of carats of fineness of metal can be readily made from this table of the orange-gold color.

First column.	Second column.	Third column.
Four parts, (4.)	Twenty parts, (20.)	Twenty-four, (24.)
Five parts, (5.)	Nineteen parts, (19.)	Twenty-four, (24.)
Six parts, (6.)	Eighteen parts, (18.)	Twenty-four, (24.)
Seven parts, (7.)	Seventeen parts, (17.)	Twenty-four, (24.)
Eight parts, (8.)	Sixteen parts, (16.)	Twenty-four, (24.)
Nine parts, (9.)	Fifteen parts, (15.)	Twenty-four, (24.)
Ten parts, (10.)	Fourteen parts, (14.)	Twenty-four, (24.)
Eleven parts, (11.)	Thirteen parts, (13.)	Twenty-four, (24.)
Twelve parts, (12.)	Twelve parts, (12.)	Twenty-four, (24.)
Thirteen parts, (13.)	Eleven parts, (11.)	Twenty-four, (24.)
Fourteen parts, (14.)	Ten parts, (10.)	Twenty-four, (24.)

According to this table, thus briefly expressed, I make the ternary alloy metal from twenty carats fine of any desired number of carats of fineness down to ten carats fine, and maintain the peculiar orange-gold color with very little change, as it is the proportions of the binary alloy of silver and copper chiefly which give the color to the alloy metal; but the ternary alloy of gold, silver, and copper, in its highest perfection of color, of polish, and of durability combined, I make of eight parts (8) of the binary alloy, of 1.5 parts of silver, and 3.5 parts of copper, melted and mixed, of which take eight lesser parts and mix with sixteen parts of gold, making the whole of twenty-four parts, and sixteen carats or parts fine of gold, and the color will be more of an orange-gold than either the fourteen-carat or eighteen-carat gold alloy now made for jewelry, and which is a binary alloy of gold and copper, called "red gold," or of silver and gold chiefly, called "pale gold," or of copper and silver with gold in other proportions than herein described as my invention or discovery.

The ternary alloy for metric gold coin patented by me February 4, A. D. 1879, is about 20.571 carats fine, and, though of an orange-gold color, is too rich in gold and too soft for the wear desired in jewelry.

The object of this improvement for jewelry and gold-ware is to make the alloy more compressible, of an orange-gold color, and tough and resistant, to adapt it to the manufacture,

polish, and uses of jewelry, watch-cases, or gold-ware, and in which, also, less intrinsic value of metal exists, and to maintain an orange-gold color, which is very desirable and useful in these manufactures, of all the various carats of fineness.

When the alloy is melted and mixed in the crucible covered with pulverized charcoal, I cast it into molds or ingots, and hammer, roll, or work it out, or press or stamp it in any desired manner or shape, or engrave it and polish it, all as usual in the manufacture of alloys for jewelry.

I do not claim, broadly, an alloy of gold, silver, and copper for jewelry or gold-ware, as it appears that some efforts, though imperfect, have been made in this direction. They have either been too pale or too red, or too hard or too soft, and are objectionable in color, toughness, and in polish and finish.

What I claim as my invention or discovery is—

The alloy metal of gold, silver, and copper for jewelry, watch-cases, or gold-ware, manufactured in or about the proportions described—that is, consisting of twenty-four parts, of which sixteen parts, or thereabout, are gold, and the remainder, or eight parts, consist of an alloy, of which two and four-tenths parts, or thereabout, are silver, and five and six-tenths parts, or thereabout, are copper, and forming a solid ternary alloy, substantially as described.

WM. WHEELER HUBBELL.

Witnesses:

JAS. A. TAIT,
E. HAWKINS.