

UNITED STATES PATENT OFFICE

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ALLOY FOR PEN POINTS

No Drawing.

Application filed May 22, 1931. Serial No. 539,413.

My invention relates to metallic alloys of a particularly hard, tough, non-corrodible nature, adapted specifically for use on the points of writing pens.

It is one of the features of the invention to provide an alloy that may be substituted for osmium-iridium, as commonly used for gold pen points, and which possesses superior characteristics, such for instance, as greater uniformity of texture, more tenacity, and an alloy which will retain the hardness and wearing properties of the native alloy osmium-iridium.

The native alloy osmium-iridium is admirably adapted for pen points and is recognized as the hardest and will stand the greatest wear of any known substance, but it is a very expensive alloy and there is considerable waste when cracked or broken into commercial tips.

The main object of this invention is to substitute for the expensive osmium-iridium alloy a very inexpensive alloy composed of ruthenium predominately, because ruthenium costs less than other rare metals, its specific gravity is lower than the natural osmium-iridium, and consequently, considerably more tips can be produced at less cost than when other metals such as osmium or tungsten are used, the specific gravity of which is higher than that of ruthenium.

Experience has demonstrated that I can use as high as 80% of ruthenium and produce an alloy of the required hardness which can be more easily and readily soldered to pen points than the alloys now used.

By adding lesser amounts of other metals selectively of the platinum group consisting of platinum, iridium, palladium, rhodium and osmium, an alloy is produced which can be economically worked, has splendid wearing quality, is not brittle, is acid resisting, will retain its hardness, and when cracked or broken into commercial tips a minimum amount of waste is had.

This object is accomplished by the novel combination and blending of certain rare and noble metals as hereinafter described and later claimed.

The preferred form of the alloy is com-

posed of ruthenium predominately, together with lesser amounts of other metals selectively of the platinum group, said group consisting of platinum, iridium, palladium, rhodium, osmium, in the approximate proportions set forth:

Ruthenium—55 parts.

Osmium—40 parts.

Platinum—5 parts.

I have found that the proportions of ruthenium may be increased and lesser portions of other metals selectively of the platinum group added.

The properties of this last example may be given as follows:

Ruthenium—50 to 80 parts.

Osmium—10 to 40 parts.

Iridium—2 to 5 parts.

Platinum, rhodium or palladium—2 to 10 parts.

It is to be understood that the invention is not confined to the production of gold pen points, but is applicable to similar purposes where a suitable and inexpensive alloy is required which is absolutely resistant to all chemical influence.

While the foregoing is generally descriptive of the elements used and the proportions given, it is to be understood that the same may be modified in minor respects, in proportion, and that the substitution of equivalents for the mentioned metals may be made without departing from the spirit and scope of the invention as recited in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. As a substitute for osmium-iridium, a hard alloy having a durable wearing surface and containing 50 to 80 parts of ruthenium, 10 to 40 parts of osmium, and the rest 2 to 10 parts of other metals selectively of the platinum group.

2. An alloy for gold pen tips, said alloy containing 55 parts of ruthenium, 40 parts of osmium and 5 parts of platinum.

This specification signed this twentieth day of May, 1931.

KURT K. LEDIG.