

UNITED STATES PATENT OFFICE.

WLADYSLAW PRUSZKOWSKI, OF SCHODNICA, AUSTRIA-HUNGARY.

ALLOY.

SPECIFICATION forming part of Letters Patent No. 702,996, dated June 24, 1902.

Application filed December 5, 1901. Serial No. 84,817. (No specimens.)

To all whom it may concern:

Be it known that I, WLADYSLAW PRUSZKOWSKI, a subject of the Emperor of Austria-Hungary, residing at Schodnica, in the Province of Galicia, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in the Manufacture of Alloys of Metals Belonging to the Group of Iron with Aluminium; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is well known that it has been endeavored for a long while to improve the technical qualities of the metals belonging to the group of iron Fe, Mn, Ni, Co in order to make these metals appropriate for all those technical employments requiring a very hard material, especially such a material as will retain its high degree of hardness at red heat. Such a material is required, for example, for making the edges of tools for the mechanical working (planing and turning) of iron, soft and middle-hard steel, brass, bronze, &c.

This invention relates to alloys of the above-cited metals with aluminium in a predetermined proportion, these alloys representing a material having the heretofore-mentioned qualities.

By a great number of experiments I have found that by melting together metals belonging to the group of iron with aluminium in the proportion of one atomic weight of the latter to two atomic weights of the former alloys are obtained which are characterized by the following qualities: First, contrary to the general rule, the new alloys have a much higher melting-point than the separate metals which form their constituents; second, they retain their generally considerable degree of hardness when heated to red heat.

The said alloys are constituted according to the general formula $M_{2n}Al_n$, in which M signifies one or more metals belonging to the group of iron. The following specific examples illustrating the composition of alloys of this kind are cited as being the most important ones in practice:

Ni_2Al , Fe_2Al , or $(Ni_{20}Fe_2)Al_{11} = Ni_{20}Al_{10} + Fe_2Al$.

In particular the alloy composed according

to the second formula is most appropriate for the manufacture of edges of tools intended for turning and planing iron. Edges of this kind allow the application of a working speed which could not be attained when employing tool-edges made from any species of steel heretofore known.

In order to increase the degree of hardness and resistance of the said alloys in a considerable degree, a small quantity of a metal—such as chromium, tungsten, molybdenum, uranium, or vanadium, or of silicon—may be added to the composition without altering the nature of the present invention.

I claim—

1. The process of producing alloys containing two or more metals of the iron group, which consists in alloying one atomic weight of aluminium with two atomic weights of any two of said metals, for the purpose set forth.

2. The process of producing alloys containing iron, nickel and aluminium, which consists in alloying two atomic weights of said elements of the iron group with one atomic weight of aluminium, for the purpose set forth.

3. The process of producing alloys of iron, nickel and aluminium, which consists in alloying two atomic weights of the said metals of the iron group with one atomic weight of aluminium to produce an alloy $Ni_{20}Al_{10}.Fe_2Al$.

4. The process of producing alloys containing two or more metals of the iron group, which consists in alloying one atomic weight of aluminium with two atomic weights of any two of said metals and adding thereto another metal capable of hardening the alloy, for the purpose set forth.

5. The process of producing alloys containing iron, nickel and aluminium, which consists in alloying two atomic weights of said elements of the iron group with one atomic weight of aluminium and adding thereto a metal of the chromium group, for the purpose set forth.

6. The process of producing alloys of iron, nickel and aluminium, which consists in alloying two atomic weights of the said metals of the iron group with one atomic weight of aluminium to produce an alloy $Ni_{20}Al_{10}.Fe_2Al$ and adding thereto a metal of the chromium group, for the purpose set forth.

7. An alloy containing one atomic weight

of aluminium, combined with two atomic weights of two metals of the iron group, substantially as and for the purpose set forth.

8. An alloy containing one atomic weight
5 of aluminium, combined with two atomic weights of two metals of the iron group, and another metal capable of hardening the alloy, substantially as and for the purpose set forth.

9. An alloy containing one atomic weight
10 of aluminium, combined with two atomic weights of two metals of the iron group and

a metal of the chromium group, substantially as and for the purpose set forth.

10. An alloy consisting substantially of
 $\text{Fe}_2\text{Al.Ni}_{20}\text{Al}_{10}$.

In testimony that I claim the foregoing as
my invention I have signed my name in pres-
ence of two subscribing witnesses.

WLADYSLAW PRUSZKOWSKI.

Witnesses:

JOSEF RUBASCHE,
ALVESTO S. HOGUE.