

UNITED STATES PATENT OFFICE

2,134,617

ALLOYING MOLYBDENUM

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No Drawing. Application February 10, 1933,
Serial No. 189,767

3 Claims. (Cl. 75-3)

The present invention relates to alloying molybdenum with ferrous metals and more particularly to a novel and improved process and composition for introducing molybdenum into iron or steel.

Heretofore, molybdenum containing ferrous alloys has been commercially produced by adding to the molten iron or steel either calcium molybdate, some other molybdic acid salt or ferromolybdenum, each of which requires extensive preparation of the molybdenum compound before it is suitable for alloying use. Various prior patents and articles describe the use of molybdenum trioxide as an addition agent to the blast furnace, and it has also been described as being added to the molten iron or steel in other furnaces as well as in the ladle. However, in all of these processes using molybdenum trioxide, there is a large loss of molybdenum due to the relatively great volatility and light, powdery nature of the molybdenum trioxide, and for this reason the processes have not proved to be commercially practical.

The present invention has for its object the provision of a novel and improved composition of matter for the introduction of molybdenum into ferrous alloys, as well as a novel and improved method of alloying molybdenum with ferrous metals.

I have found that by using molybdenum dioxide in place of molybdenum trioxide, molybdenum alloys can be economically produced simply by adding the molybdenum dioxide to the ferrous metal, either in the blast furnace, electric furnace or even in the ladle.

In accordance with the present invention, molybdenum dioxide is added to the furnace or ladle, and for convenience in handling, the molybdenum dioxide may be formed into briquettes which have the advantage of reducing loss of molybdenum by entrainment as well as reducing oxidation of the dioxide to the trioxide.

Specifically, the molybdenum dioxide for use

in the present invention is produced by heating roasted molybdenite in a reducing atmosphere and this may be accomplished in the roasting furnace. The molybdenum dioxide may be used in this condition or it may be mixed with a small quantity of still pitch and formed into briquettes. For this purpose about nine parts of molybdenum dioxide is mixed with one part of still pitch, only enough still pitch being used to serve as a firm binder, as this small amount of still pitch will serve to reduce the dioxide completely.

Due to the fact that molybdenum dioxide is not volatile at the temperature of molten iron or steel there is very little loss of molybdenum during the alloying process and this small loss is rendered negligible by briquetting the molybdenum dioxide. When formed into briquettes, the possibility of oxidation is reduced and thereby the compound is maintained in its non-volatile form.

The invention in its broader aspects is not limited to the specific compositions described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:—

1. An alloying agent for producing molybdenum containing ferrous alloys comprising a briquette formed of a mixture of molybdenum dioxide and a relatively small amount of a reducing binder.

2. An alloying agent for producing molybdenum containing ferrous alloys comprising a briquette formed of a mixture of approximately nine parts of molybdenum dioxide and one part of pitch.

3. A process of producing molybdenum containing ferrous alloys which comprises adding an intimate mechanical mixture of molybdenum dioxide and a carbonaceous binder to a ferrous metal in the presence of sufficient heat to melt the ferrous metal.

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