

UNITED STATES PATENT OFFICE.

HERMANN MEHNER, OF BERLIN, GERMANY.

PROCESS OF PRODUCING ALKALI-METAL FROM OXYGEN COMPOUNDS OF ALKALI.

1,016,758.

Specification of Letters Patent.

Patented Feb. 6, 1912.

No Drawing.

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To all whom it may concern:

Be it known that I, HERMANN MEHNER, a citizen of the German Empire, residing at Berlin, Prussia, Germany, have invented certain new and useful Improvements in Processes of Producing Alkali Metal from Oxygen Compounds of Alkali, of which the following is a specification.

This invention relates to a process of producing alkali metal from oxygen compounds of alkali and consists in heating oxygen compounds of alkali in presence of cast iron in liquid condition. Suitable oxygen compounds of alkali are carbonate and oxid of alkali.

The invention may be carried through as follows. A reaction vessel is fed with molten cast iron and soda. The two substances react with each other in such a manner that the sodium metal in the form of vapors is set free and that carbon oxid is formed. The required carbon being extracted from the molten cast iron the metal vapors may be carried off and condensed so as to form solid metal or they may be used in the form of vapor for other purposes. The cast iron which has become poorer in carbon may be made again richer in carbon and at the same time reheated to a temperature suitable for further reaction with the alkali, by adding carbonaceous material to the molten iron in any of the well-known ways. (See *Campbell's Metallurgy of Iron and Steel*, 1904, pp. 300, 301). Of course instead of recharging the cast iron with carbon new portions of cast iron may be used and the used up cast iron poor in carbon may be used for other purposes.

In the process described the oxygen containing compounds of alkali metal are brought to reaction with the required carbon in a very simple and effective manner because at every point where a particle of soda or other alkali compound is in contact with molten cast iron it finds the required carbon for reaction and at the same time the high temperature which is necessary in order to enable reaction of the two substances. Furthermore the process is advantageous in so far as every loss in reaction carbon is avoided because the carbon is not used isolated but in the form of an addition to molten metal which by addition of new portions of carbon can be brought to its initial condition each time when a portion of the carbon has been extracted from the metal by the reaction with the alkali.

As the reaction by which the reduction is effected is highly endothermic, the highly heated mass of cast iron is particularly efficacious in furnishing not only the carbon as reducing agent but the necessary quantity of heat to cause the reaction to be effected.

What I claim is:

Process of producing alkali metal consisting in bringing oxygen compounds of alkali into reaction with molten cast iron and collecting the vapors formed by the reaction.

In testimony whereof I affix my signature in presence of two witnesses.

HERMANN MEHNER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.