UNITED STATES PATENT OFFICE.

KARL MILLER, OF LONDON, ENGLAND, ASSIGNOR TO THE KARL MILLER ORE REDUCTION SYNDICATE, LIMITED, OF SAME PLACE.

BATH FOR RENDERING ORE FRIABLE.

SPECIFICATION forming part of Letters Patent No. 664,488, dated December 25, 1900.

Application filed November 27, 1899. Serial No. 738,464. (No specimens.)

To all whom it may concern:

Be it known that I, KARL MILLER, a citizen of the German Empire, residing at London, England, have invented an Improved Bath for Rendering Ore Friable, (for which I have made application for Letters Patent in Great Britain under No. 17,183, dated August 24, 1899,) of which the following is a specification.

The process of chilling heated ore by water with the object of endeavoring to render it friable is known of old and has been practiced with a slight degree of success or none at all, according to the ore treated.

The object of my present invention is to effectually aid in the disintegration of all classes of ore by the disruptive effort of gases, such as oxygen and hydrogen, generated in the interstices and fissures of the ore by means of the liquid employed by me for chilling the ore. To attain this end, I use a solution of sodium carbonate and caustic soda in about equal proportions, dissolved to form a solution of about 15° Baumé to render the solution sufficiently dense to slightly delay and prolong the ebullition of the evolved gases at the temperature of the red-hot ore. Before each operation a small proportion of peroxid of hydrogen is added—that is, about one and one-half per cent. of the latter—to the soda solution. Upon the red-hot ore being plunged into this solution, a rapid action will ensue which will be maintained for a considerable time, shown and demonstrated by the ebullition and foaming of the liquid, lasting five or six times as long as the ebullition of water or of any other liquid solution. The gases generated not only penetrate the cracks and fissures in the ore resulting from the chilling process, but tend to widen and enlarge such cracks and fissures to a sufficient extent to prevent them from closing up again and cohering upon the cooling of the ore, as is frequently the case when only plain water is used for the chilling-bath. The action of the solution upon the ore for disintegration is essentially a mechanical one by the disruptive action of the evolved gases, but the action of the caustic soda and soda solution is beneficial on auriferous ore, as is well known, in preparation for amalgamation. The said peroxid of hydrogen can readily and cheaply be produced on the spot in all mining centers, as it is not necessary that it should be absolutely pure, and the quantities required are so small that the expense is only trifling.

The solution of sodium carbonate and caustic soda can be used again and again.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

The composition of a bath for rendering friable red-hot ore dipped therein, consisting of a mixture of a solution of equal quantities of sodium carbonate and caustic soda having a density of 15° Baumé, and about one and one-half per cent. of peroxid of hydrogen, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

KARL MILLER.

Witnesses:

REGINALD WILLIAM JAMES,

RICHARD A. HOFFMANN.