

# 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 prac-  
ticed 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 chill-  
ing the ore. To attain this end, I use a solu-  
tion 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 con-  
siderable time, shown and demonstrated by  
the ebullition and foaming of the liquid,  
lasting five or six times as long as the ebulli-  
tion 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 dis-  
ruptive 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 re-  
quired 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 Pat-  
ent, 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.