

UNITED STATES PATENT OFFICE.

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EXTRACTION OF COPPER FROM RAW UNROASTED ORES AND OTHER PRODUCTS.

937,965.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, GEORG SCHNEIDER, Königlicher Bergrat, resident of Friedeburg, Schlossstrasse 86, Freiberg, in the Kingdom of Saxony, Germany, have invented new and useful Improvements in the Extraction of Copper from Raw Unroasted Ores and other Products, of which the following is a specification.

10 The extraction of copper from poor ores containing copper partly or wholly in the form of sulfids has hitherto given unsatisfactory results which are due chiefly to the large amount of copper residues left in the
15 extracted ore and to the very long time necessary to effect the extraction.

The processes of extraction hitherto generally used (with the exception of experiments with ammonia and ammonium salts) for such ores are generally based upon the setting free of chlorin from ferric chlorid and the action of the former on sulfid of copper to form copper chlorid. It has also been proposed to treat pyrite-residues in
25 such manner for copper that free chlorin is generated by the action of an acid on chlorid of lime or similar salts to act upon the residues. It has been furthermore proposed, when using hydrochloric acid to act on ores
30 and the like, to assist the reaction by the concurrent development of free chlorin.

According to the present process the transformation of copper sulfid to copper chlorid is exclusively effected by means of free
35 chlorin which is obtained from dioxid of manganese by the action of an acid. In carrying out the process the finely divided ores are saturated with hydrochloric acid or a mixture of hydrochloric acid and sulfuric
40 acid after a certain amount of dioxid of manganese has been added to the ores. The

strength of the hydrochloric acid must be such that chlorin can be obtained by the action of the acid on the dioxid of manganese without the necessity of heating and should be about 12.5° Baumé. The amount of the dioxid of manganese varies according to the percentage of copper sulfid and may amount to 0.25% of the whole amount of the ore in the case of poor ores. The copper solution obtained is then further treated in any well known manner.

Now what I claim and desire to secure by Letters Patent is the following:

1. The process of treating copper ores and other products containing copper wholly or partially in the form of sulfids by the action thereon of chlorin which process consists in causing free chlorin to be generated in the mass to be treated by adding thereto a certain amount of dioxid of manganese and treating the mixture with a solution containing hydrochloric acid of suitable strength substantially as described.

2. The process of treating copper ores and other products containing copper wholly or partially in the form of sulfids by the action thereon of chlorin which process consists in causing free chlorin to be generated in the mass to be treated by adding thereto a certain amount of dioxid of manganese and treating the mixture with a mixture of hydrochloric and sulfuric acid.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this eleventh day of July, 1908.

GEORG SCHNEIDER.

Witnesses:

FRIEDRICH KOLBECK,
MARTIN HENGLEIN.