Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is,—

1. The employment of the persulphates in the process of extracting gold and silver from ores by means of cyanide of potassium, substantially as hereinbefore described.

2. A solvent for gold and silver, consisting of a compound of cyanide of potassium with a persulphate and with hydrate or carbonate of alkali or alkaline earth.

3. The extraction of gold and silver from ores by treating the same with a solution of cyanide of potassium in the presence of a persulphate and of an excess of hydrate or carbonate of alkali or alkaline earth.

4. The extraction of gold and silver from ores by first compounding cyanide of potassium with persulphate and with hydrate or carbonate of alkali or alkaline earth, then dissolving such compound and treating the ore with the solution thus obtained.

Dated this 23rd day of March, 1895. Dr. Albrecht Schmidt.

Witness.—Richard Schmidt, Grossgorschenstrasse, Berlin.

An Improved Process for the Treatment of Auriferous and Certain other Metalliferous Ores.

I, John James Christmas, of Adelaide, in the Province of South Australia, mining agent, do hereby declare the nature of my invention for "An Improved Process for the Treatment of Auriferous and Certain other Metalliferous Ores," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to the extraction of gold and certain other metals from their ores, such as silver, platinum, or other metals of like character, to which this particular class of process is suitable. The term "ores" is intended to briefly indicate crude ore, tailings, slimes, concentrates, or blanketings.

For the purpose of carrying my invention into effect an iron pan is provided filled with melted lead, kept at a high temperature by means of furnace-heat applied underneath the pan. The ore, in a finely-divided and dry state, is introduced below the surface of the lead by means of suitable tubes depending from a hopper, and each provided with an internal revolving screw-feed.

The special feature of my invention consists essentially in sprinkling upon, or otherwise damping or mixing with the ore prior to its introduction into the lead-bath, a mineral hydro-carbon, either in the form of oil, powder, or gas. In practice it is found that about two to four gallons of kerosene, or an equivalent quantity of finely-divided solid hydro-carbon, is sufficient for each ton of ore. The quantity, however, varies according to the class of ore under treatment.

By the addition of the hydro-carbon oxidation of the lead is prevented, and the bath readily takes up the gold or other metal contained in the ore. The operation can be worked continuously, the tailings floating on the surface of the bath and passing off through shoots provided for the purpose in the sides of the pan. As soon as the lead has become saturated with metal it is drawn off through the shoots in the side of the pan provided for the purpose, and the matte treated for the separation of its several metallic contents in any ordinary or well-known manner.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is—

The herein-described process for the extraction of certain metals from their ores, consisting essentially of first moistening or mixing a mineral hyro-carbon with the crushed ore subsequently passing the same into the body and below the surface of the pan or bath of molten lead.

Dated this 26th day of June, 1895.

Henry Hughes, F.Aust.Inst. Patent Agents,
Agent for the Applicant.

PULVERISING MACHINERY.

An Improved Rotary Grinding and Pulverising Machine.

I, Richard Durrant Langley, of Brighton, in the Province of South Australia, engineer and cement manufacturer, do hereby declare the nature of my invention for "An Improved Rotary Grinding and Pulverising Machine," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention has reference to means for crushing and grinding or pulverising ores or other materials in a wet or in a dry state, and the machine hereinafter described has been designed to economize power and secure the perfect reduction of material as aforesaid.

The principle of my invention is the utilisation of the weight of an upper part of the machine for the purpose of securing greater attrition in the action of a lower set of rollers, and I have illustrated and described a machine by which this result may be conveniently and economically attained. This is effected by having an upper and a lower pan and accompanying rollers worked by a vertical shaft, the upper pan receiving the ore or material first, and its rollers partly reducing it, whence the crushed ore is conveyed to the lower pan, where the lower rollers reduce it to the ultimate fineness required. The upper pan, which is supported by legs or brackets resting upon the axles of the lower rollers, encircles the main shaft of the machine, and is free to slide up and down, but is provided with a key or feather, so that it is rotated with the shaft. The rollers of the upper pan are supported upon axles which have no radial motion, but are free to slide up and down guides in the main frame. The lower rollers are moved round in the grooves of the lower pan, which is stationary, by axles attached to the central vertical shaft. The machine is so constructed that the weight of the upper part is utilised as hereinafter described for the ultimate grinding of the material by the lower rollers, thereby reducing the weight required in the lower rollers themselves, and, consequently, the power and weight of metal required to secure the quick and