

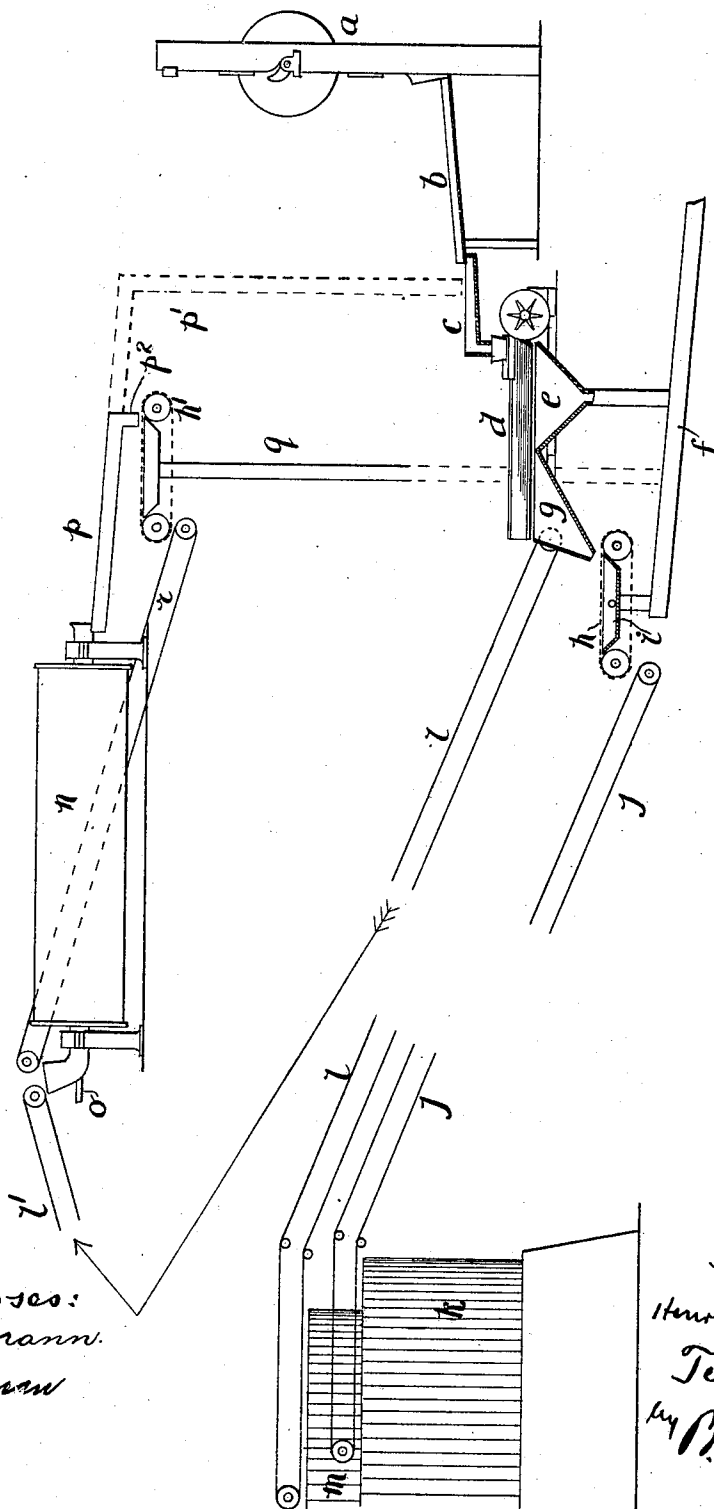
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PATENTED MAY 5, 1908.

H. L. TEMPLER.

MEANS FOR TREATING CRUSHED ORE PREVIOUS TO CYANIDING OR THE LIKE.

APPLICATION FILED JAN. 12, 1907.



Witnesses:
C. Hermann.
L. Waldman

Inventor
Henry Lethbridge
Templer
by B. Singer
att'y

UNITED STATES PATENT OFFICE.

HENRY LETHBRIDGE TEMPLER, OF CLEVELAND, TRANSVAAL.

MEANS FOR TREATING CRUSHED ORE PREVIOUS TO CYANIDING OR THE LIKE.

No. 886,892.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed January 12, 1907. Serial No. 352,014.

To all whom it may concern:

Be it known that I, HENRY LETHBRIDGE TEMPLER, a British subject, residing at the Jumpers Deep Gold Mining Company, Limited, Cleveland, Colony of the Transvaal, have invented a certain new and useful means for Treating Crushed Ore Previous to Cyaniding or the Like, of which the following is a specification, reference being had therein to the accompanying drawings.

The present invention relates to an improvement in the usual treatment of gold ores or other ores which are operated upon in a similar manner, and relates specifically to the handling and disposition of the ore from the time it leaves the stamps or amalgamation plates until it is deposited in vats or otherwise prepared for treatment by cyaniding or the like for the solution of its metallic contents.

As is well known, according to the usual treatment of gold ores, more particularly where the surface is comparatively level as upon the Witwatersrand, the pulp from the mill is elevated by means of a tailings wheel, air lift or pump and run to hydraulic classifiers for separation into sands and slimes, or concentrates sands and slimes; said products being thereafter, with or without intermediate treatment such as regrinding, water-borne to vats wherein they are precipitated and leached or agitated with cyanide.

The present invention provides for a novel arrangement of the handling and treatment plant, which is shown in the accompanying drawing in which is figured a diagrammatic view of a plant embodying the present invention. According to the invention, the pulp coming from the battery *a* or from the amalgamated plates *b* if used, is passed by a launder *c* to a mechanical classifier *d*, in this case a Wilfley table set to separate the battery pulp into three parts, the first consisting of substantially dry concentrates, the second a pulp of sands and water, and the third slimes mixed with the bulk of the crushing water. The slimes and water are passed off into chute *e* and are carried away by launder *f* for disposal in any desired manner.

The sands pulp is delivered from the classifier into chute *g*, from which it falls onto a traveling web screen *h*. The water associated with the sands and also any slimes therewith pass through the screen into the discharge launder *i* thereunder and may conveniently be led thence into the slimes laun-

der *f*. The sands pass over the screen in a substantially dry state and drop onto a belt *j* or other convenient mechanical conveyer by which they are carried to the sands lixiviation vats *k*. The concentrates being in this example delivered dry by the separator are taken directly by for instance, a belt *l*, to separate lixiviation vats *m*; but in cases where it is not feasible to deliver the concentrates dry, the water is first separated from them by a moving screen as in the case of the sands.

In many instances the concentrates, instead of being treated immediately with solvent, are required to be reground in tube mills, grinding pans or other similar apparatus. According to this invention in such instances the concentrate lixiviation vats *m* are dispensed with and the belt *l* is arranged, as at *l'*, to carry the concentrates—dry as before—to the tube mill *n*; it being found to be advantageous to feed the mill with substantially dry material and to feed by separate means such as the pipe *o* the exact quantity of water necessary for grinding, since the amount of water necessary to carry the material as pulp is largely in excess of that requisite for grinding.

The tube mill effluent, consisting of water and ore of all sizes between unbroken concentrates and slimes is in one form of the invention returned to the classifier *d* by means of launders *p* and *p'* and the above described process of separation with drying is then repeated. In another arrangement, the tube mill effluent is passed by launders *p* and *p'* over a moving screen *h'* similar to the screen *h* already mentioned, whereby the water and slimes, that is to say, the material which has become sufficiently comminuted for the purpose in view, are separated from the insufficiently ground material. The former product is carried by launder *q* to the main slimes launder *f*, while the insufficiently ground product is returned in a dry state by belt *r* to be ground in the mill *n*.

A further modification of the invention is provided to meet the case where the whole mill product is to be reduced to slimes, in which case no lixiviation is practiced and separation of concentrates from sands becomes unnecessary. In this instance the classifier *d* is dispensed with, and the battery pulp is fed directly to the screen *h*. The whole of the oversize material from the screen is carried dry by a mechanical con-

voyer to the tube mill n , while the under-screen product is carried away by launder f . After treatment in the mill, the material is screened either upon the original screen h or
 5 upon a second screen such as h^1 , the under-screen product being passed to launder f and the overscreen product being returned by mechanical means to the tube mill.

It will be understood that by following the
 10 above described method of treatment, the whole plant is simplified, the usual tailings wheel or its equivalent is dispensed with and the cost of elevating a large volume of water obviated. No settling tanks are required,
 15 the material to be leached being conveyed directly to the lixiviation vats and therein deposited in a readily permeable state, after having been advantageously aerated during conveyance to the vats. Existing settling
 20 tanks may thus be utilized as additional treatment vats.

I claim as my invention:—

In an invention of the character described, the combination of a wet ore reducer, a me-
 25 chanical classifier adapted to separate the reducer product into concentrates, sands and slimes, means for carrying the wet ore re-

ducer product by gravity to the classifier, means associated with said classifier for carrying off the slimes, means associated with 30 the classifier for receiving the sands and separating water therefrom, extraction apparatus, a conveyer for carrying the dried sands from the classifier to the extraction apparatus, regrinding apparatus disposed above 35 the level of the classifier, means associated with the classifier to receive the concentrates therefrom and convey them to the regrinder, means to receive the regrinder effluent and separate the slimes therefrom, means associ- 40 ated with said separating means for conveying the slimes by gravity from said regrinder product to the said classifier and means associated with said last named separating means to return the balance of the regrinder 45 product to the regrinder, substantially as described.

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

HENRY LETHBRIDGE TEMPLER.

Witnesses:

HAROLD ERNEST KUCH,
 JABEZ WARREN VENNING.