No. 660,499. Patented Oct. 23, 1900.

J. A. FLEMING.

APPARATUS FOR LEACHING ORES.

(Application filed July 18, 1899.)

(No Model.)

Fig. 1.

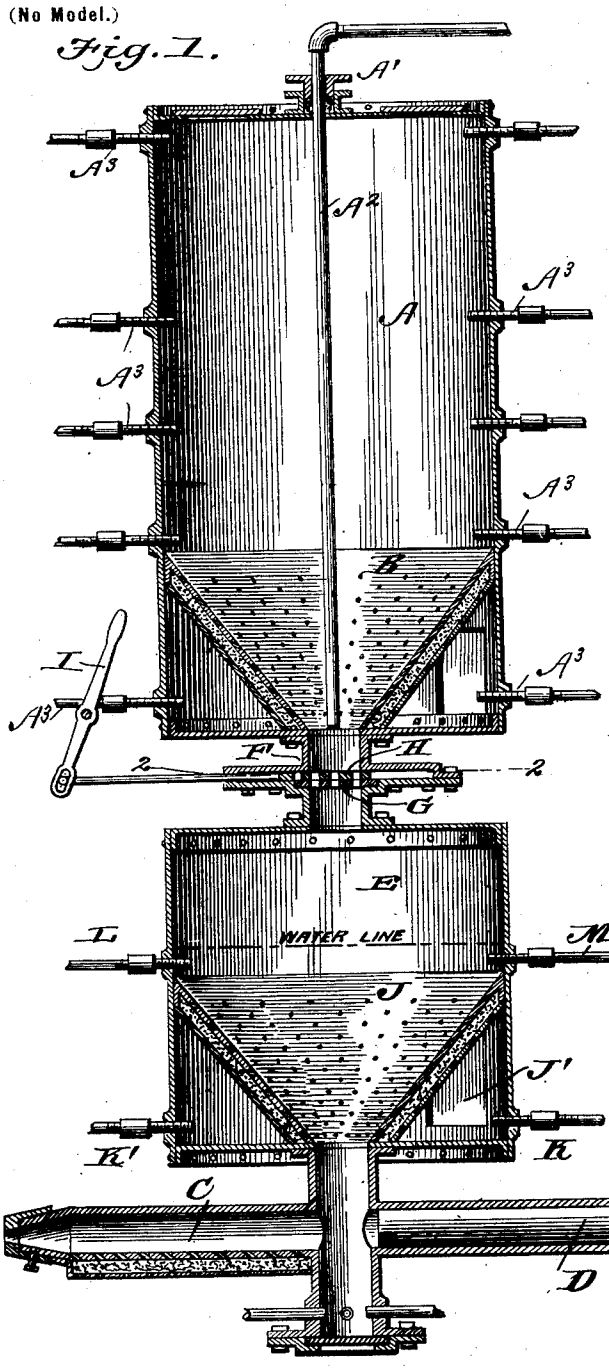


Fig. 2.

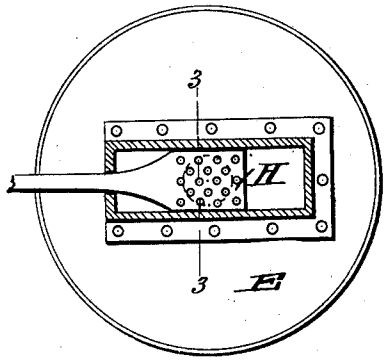
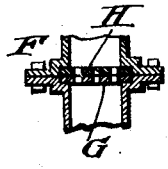


Fig. 3.



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APPARATUS FOR LEACHING ORES.

SPECIFICATION forming part of Letters Patent No. 660,499, dated October 23, 1900.

Application filed July 18, 1899. Serial No. 724,251. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. FLEMING, a citizen of the United States, residing at Globe, in the county of Gila and Territory of Arizona, have invented a new and useful Improvement in Apparatus for Leaching Ores, of which the following is a specification.

This invention is an improvement in apparatus for leaching ores and embodies certain constructions shown in my former application for patent, Serial No. 710,934, filed March 29, 1899.

The present invention seeks to provide means for washing the finished pulp after it passes from the leaching-tank; and the invention consists, broadly, in a washing-tank through which the finished pulp discharged from the leaching-tank is passed preliminary to the final discharge of such pulp.

The invention consists, further, in certain novel constructions and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a vertical section of an apparatus embodying my invention. Fig. 2 is a transverse section on about line 2 2 of Fig. 1, and Fig. 3 is a vertical section on about line 3 3 of Fig. 2.

The leaching-tank A, with its perforated hopper B and steam and air pipes, and the discharge-barrel C and its plunger D may be like similar constructions described in my former application. Such tank A has an air-tight top provided with a stuffing-box A', through which is passed a pipe A^2, employed for inserting and withdrawing chemicals and which may be moved up or down to introduce or withdraw the solution at any desired point in the mass of pulverized ore. Alongside the tank at different heights I provide nipples A^3 for the introduction and withdrawal of air, chemicals, water, &c., such nipples being arranged above the perforated diaphragm or hopper B, which has a central discharge for the pulp and overlies an air-chamber which may be supplied with compressed air by a suitable pipe. The leached pulp passes by gravity from the hopper through the pipe connection F under the control of the devices shown and presently described, such pipe and devices constituting a discharge from the tank A into the washing-tank E.

By my present invention I provide the washing-tank E, which is arranged below the leaching-tank and is connected therewith by the pipe connection F, through which the finished pulp is discharged from the leaching-tank A to the washing-tank E. A perforated diaphragm G is arranged in the pipe connection F, and a perforated sliding feed-plate H is arranged to slide across the plate G, so its perforations can be moved into and out of register with those of the plate G in order to control the discharge of the finished pulp and to insure the discharge of such pulp to the washing-tank in a finely-divided state. The slide H may be reciprocated by hand by means of a lever I, as shown, or it may be operated by power in any suitable manner desired. The washing-tank E is in operation supplied with water usually to a level, (indicated by the dotted lines E′ in Fig. 1,) and by preference I supply the washing-tank with a perforated hopper J, which may be similar to the hopper B of the leaching-tank, and below this hopper J, I provide an inlet at J′ and pipes K K′ for the admission of air, steam, or other pressure, as may be desired. Pipes L and M open into the washing-tank above the hopper J and permit the introduction of steam, hot air, or other medium by which to heat the water in the washing-tank to aid in dissolving any particles of mineral that have not been previously dissolved. These pipes also permit the application of such dissolving material to the pulp in the washing-tank as would be injurious to the fresh pulp or ore above. If in operation the treatment of the ore in the leaching-tank fails to remove all the mineral at a given temperature, I find it desirable to treat the ore and solution at a different temperature in the washing-tank in order to effect the removal of all the remaining mineral, as is desired. By the described construction the pulp finished in the leaching-tank will be sifted into the washing-tank and will be thoroughly washed before it settles into the plunger-barrel, from which it may be finally discharged.

In operation the water in the washing-tank will become a mineralized solution, some of

which will come from above with the sifted pulp, and all of which will be compressed from the pulp by the plunger D, and thereby saved, as more fully described in my former application.

The devices located beneath the washing-tank constitute means for controlling the discharge of the pulp.

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

1. An apparatus for leaching ores comprising the leaching-tank, the washing-tank arranged below the leaching-tank, a pipe connection whereby the pulp is discharged from the leaching-tank into the washing-tank, a perforated diaphragm in such connection, a perforated feed-slide operating across such diaphragm, a hopper in the washing-tank, and a pipe or pipes opening into such tank above said hopper whereby to permit the introduction of heating mediums or suitable solutions, substantially as set forth.

2. In an ore-leaching apparatus, the combination of the leaching-tank, the washing-tank below the leaching-tank, the pipe connection between such tanks, the perforated diaphragm in such pipe connection, and the perforated slide movable over the said diaphragm and coöperating therewith in controlling the passage of the pulp from the leaching-tank to the washing-tank, substantially as set forth.

3. In an ore-leaching apparatus, the combination of the leaching-tank, having a pulp-discharge and means for withdrawing the solution separately from the pulp, the washing-tank arranged to receive the pulp discharged from the leaching-tank, means for controlling the passage of the pulp from the leaching-tank to the washing-tank, and means whereby the water in the washing-tank may be heated, substantially as set forth.

4. An ore-leaching apparatus comprising the leaching-tank having a filtering-hopper, and a pulp-discharge, the solution-discharge below the hopper and independent of the pulp-discharge, the washing-tank, a pipe connecting the pulp-discharge of the leaching-tank with the washing-tank, and devices by which to control the passage of the pulp through said pipe from the leaching-tank to the washing-tank, substantially as set forth.

5. An ore-leaching apparatus consisting of the leaching-tank having a filtering-hopper, a solution-discharge below said hopper, and a pulp-discharge also below said hopper and independent of the solution-discharge, a washing-tank below the leaching-tank and in position to receive the pulp from the discharge thereof, and means for controlling the passage of the pulp from the leaching to the washing tank.

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