H. B. MEADE.

CYANID CYLINDER.

APPLICATION FILED SEPT. 14, 1911.

1,038,173. Patented Sept. 10, 1912.

Fig. 1.

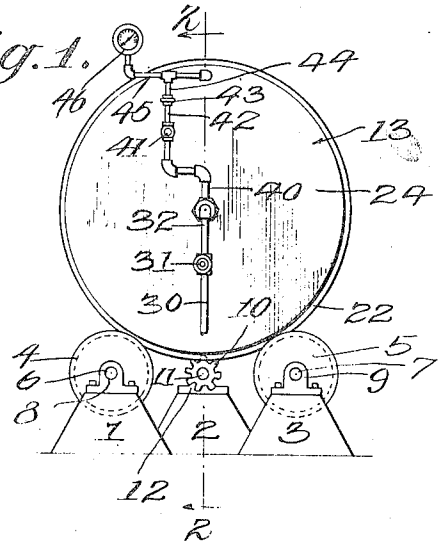


Fig. 3.

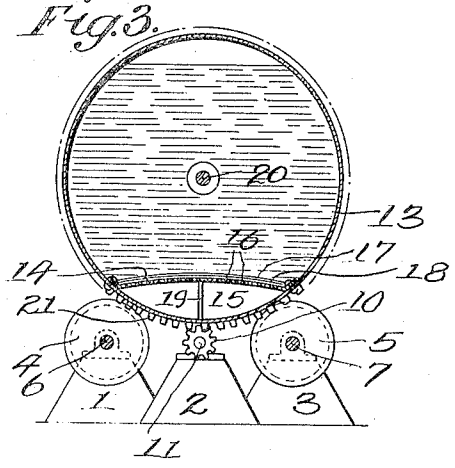


Fig. 2.

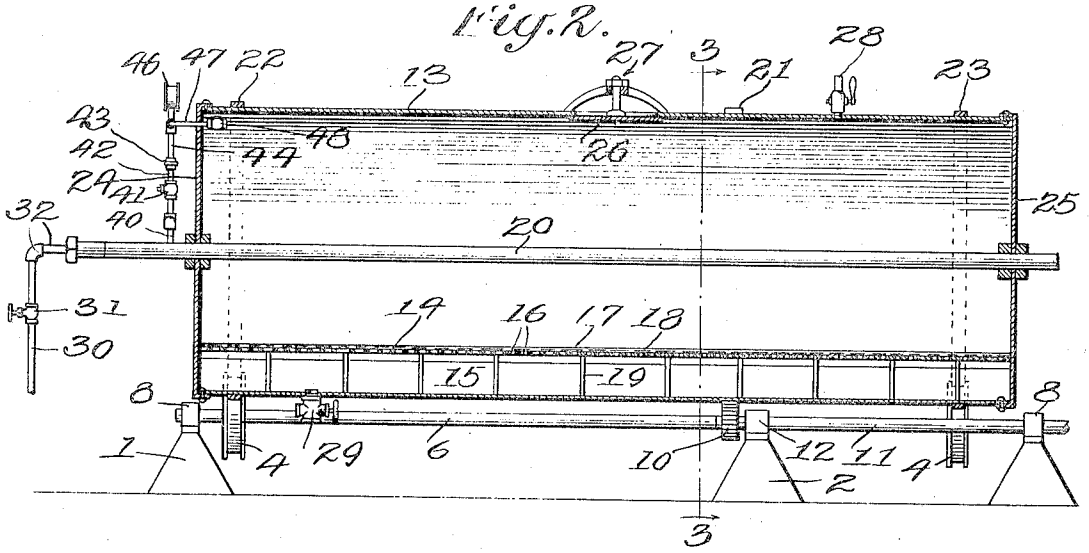
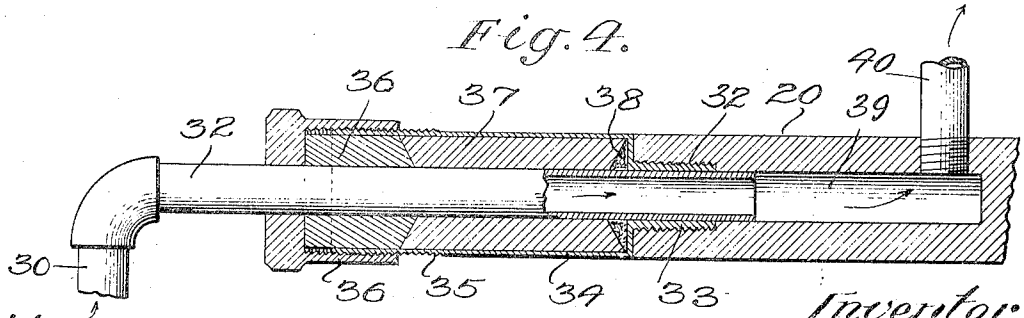


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CYANID-CYLINDER.

1,038,173. Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed September 14, 1911. Serial No. 649,390.

To all whom it may concern:

Be it known that I, HENRY B. MEADE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Cyanid-Cylinder, of which the following is a specification.

This invention relates to apparatus for treating gold, silver, copper, nickel and other ores by chemical processes, whereby the metals are dissolved in a cyanid, chlorid, bromid, ammoniacal or other solutions or gases. Heretofore, an open tank apparatus has been utilized for carrying on this process, which occasioned a heavy loss of the solutions and gases by evaporation and escaping to the atmosphere and imperfect oxidation of the pulp; while in inclosed barrel manipulation it has been difficult to keep up a continuous injection of air, gas or solution while in motion. This has greatly increased the cost of lixiviation and a great amount of time has been consumed, which has been a disadvantage in many ways.

It is the object of my invention to provide an apparatus which overcomes all of the above named difficulties and, in addition, has other advantages, including rapidity of the manipulation and efficiency of lixiviation.

The invention consists of an inclosed and revoluble cylinder in which the ore may be placed. This cylinder is equipped for being tightly closed, after the materials have been introduced, and with means for forcing air, oxygen, other gases or solutions into the cylinder under pressure while in motion or at rest; thus making a continuous aeration nascent process while in agitation, so that the metals are quickly dissolved in the solution or gas. When solution is effected, the cylinder is brought to rest in such a position that an interior perforated diaphragm, or filter floor, is at the bottom of the barrel. The pressure above the diaphragm is increased, which forces the liquid downward through the filter or diaphragm and out of the cylinder at its lowermost portion. Means are provided to quickly discharge the cylinder after the operation is completed.

In the accompanying drawings: Figure 1 is an end elevation of my improved machine. Fig. 2 is a sectional elevation on line 2—2 of Fig. 1 of my improved machine. Fig. 3 is a cross-section of the cylinder taken on line 3—3 of Fig. 2, showing my convex diaphragm. Fig. 4 is a detailed section of my special rotating, non-leaking pressure valve for introducing gas or liquid into the cylinder while in motion or at rest.

In the drawings 1 and 3 designate pillar-blocks, preferably of cement. These pillars (four in number) are supplied with journal bearings 8 and 9 of any approved design bolted to the top of each. Shafts 6 and 7 revolve in bearings 8 and 9 and are provided with grooved rollers 4 and 5, four in number and spaced at a suitable distance from each other. Tracks 22 and 23, bolted to the outside of the cylinder, rest on rollers 4 and 5 to form anti-friction bearings for the cylinder; and the cylinder is revolved on these rollers by gear 21 bolted to the outer shell of the cylinder, meshed in small pinion 10, which is keyed to shaft 11, supported on suitable bearing 2, 12. Shaft 11 may be driven in any desired manner to rotate the cylinder at a suitable speed which is preferably low to facilitate agitation. This construction is one of the structural features of my invention.

In the upper portion of the shell 13 of the cylinder is cut a manhole of suitable size for the insertion and withdrawal of ore. This opening is closed by an ordinary manhole cover 26, secured in position by clamping device and bolt 27. There is also provided a relief cock 28 to relieve pressure when desired to withdraw the manhole cover. Across the bottom of the cylinder is constructed a convex diaphragm 14, which is perforated with holes 16 and supported by central post 19, which leaves the open space 15 between the diaphragm and lower wall of the cylinder for the displacement and free circulation of the filtered solutions. A filter cloth or matting 18 is stretched over the perforated diaphragm to retain the fine particles of sand, over which filter cloth or matting is fastened a suitable wire screen 17 to protect the cloth or matting from wear due to the intense scouring of the broken ore. The object of the convex diaphragm is to maintain the strength and rigidity and increase the area of the filter cloth, in all positions of the cylinder while in revolution; and the convexity also increases the thickness of the ore masses at the walls of the cylinder. This construction is one of the structural features of my invention.

The cylinder is provided with a central shaft 20, which extends centrally through and past the heads 25 a suitable distance to receive my rotating non-leaking valve (see Fig. 4) for the admission of air, gases or liquid while the cylinder is in motion. A pipe 30 leads from any suitable source of fluid under pressure and is controlled by valve 31. From valve 31 a pipe 32 leads to the bored interior 39 of shaft 20. From the shaft bore a pipe 40 leads to a check valve 41 which prevents back passage of pressure and holds the pressure on pressure gage 46 for accurate readings. Connection to the gage is made through members 42, 43, 44 and 45. A pipe 47 leads into the cylinder through the head 24 near its periphery and a check valve 48 prevents back passage of pressure. This construction of introducing air, gas or liquids while rotating is a novel feature of my invention. In the bottom of the cylinder underneath the diaphragm is provided an outlet valve 29 to control the flow of solution, to which a suction hose may be attached connected to a vacuum pump to facilitate lixiviation.

In Fig. 4, 30 designates the pipe leading to receiver, compressor or pump. 32 designates the central stationary pipe, over which gland 36, packing 37 and stuffing box 34 revolve, a nipple 33 on the end of the stuffing box being screwed into threaded bore 32 in the end of shaft 20. 38 is a non-friction gland-ring fitted over pipe 32, which pipe projects into bored portion 39 of shaft 20 and is thus connected with nipple 40.

This is my special invention for the admitting of fluids or gases into a revolving cylinder or tank.

Having now set forth the object and nature of my invention, and a construction embodying the principles thereof, what I claim as new and useful and desire to secure by Letters Patent is:—

1. In a cyanid treating mechanism, a revoluble central hollow shaft, a barrel mounted on the shaft, means for feeding fluid under pressure to the end of the hollow shaft, a pipe leading transversely from the shaft and entering the end of the barrel, a pressure gage connected to the pipe, and a check valve on the pipe on each side of the gage to prevent passage of pressure from barrel back to the shaft.

2. A cyanid treating mechanism, comprising a revoluble hollow shaft, a barrel mounted on the shaft and adapted to hold the materials to be treated, a convex filter bottom for the cylinder comprising an upwardly convex perforate wall and a fabric covering for the wall, and means for continuously injecting fluid under pressure into the barrel while in rotation, comprising means for feeding fluid under pressure to the end of the hollow shaft, a pipe leading transversely from the shaft and entering the outer end portion of the barrel, a pressure gage connected to the pipe, and check valves on the pipe one on each side of the gage to prevent the backing of pressure from the barrel to the shaft.

3. In a cyanid treating mechanism, a revoluble central hollow shaft, a barrel thereon, means for feeding fluid under pressure to the end of the hollow shaft, a pipe leading from the shaft and discharging into the barrel interior near its periphery, a pressure gage connected to the pipe, and a check valve to prevent passage of pressure from the barrel.

4. In a cyanid treating mechanism, a revoluble central hollow shaft, a barrel thereon, means for feeding fluid under pressure to the end of the hollow shaft, a pipe leading from the shaft and discharging into the barrel interior near its periphery, and a check valve to prevent passage of pressure from the barrel.

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