No. 784,598. PATENTED MAR. 14, 1905.

E. STEVENS.

CYANID AGITATOR.

APPLICATION FILED JAN. 19, 1904.

Fig. 1.

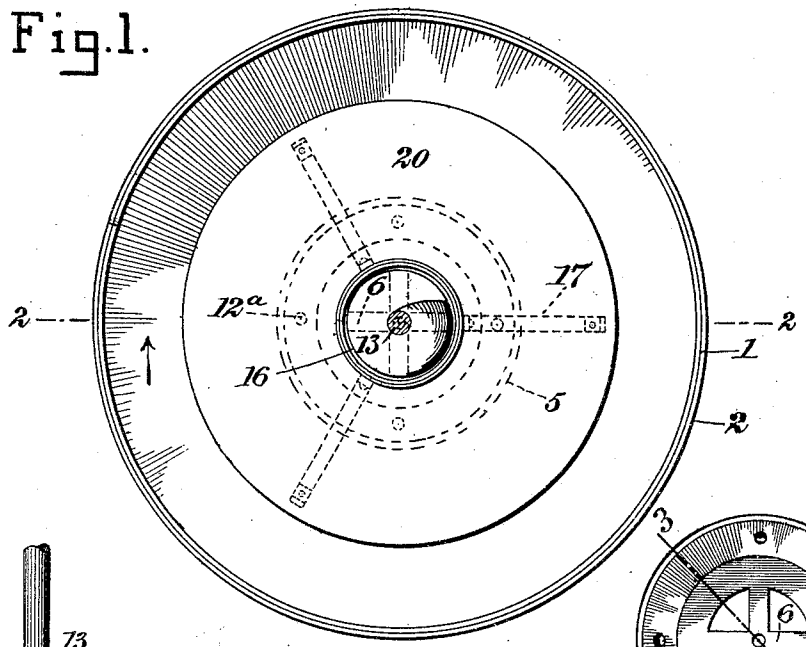


Fig. 3.

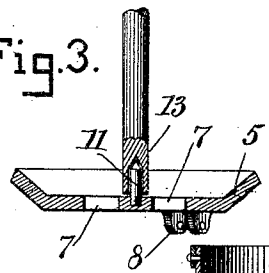


Fig. 4.

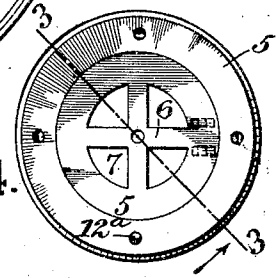
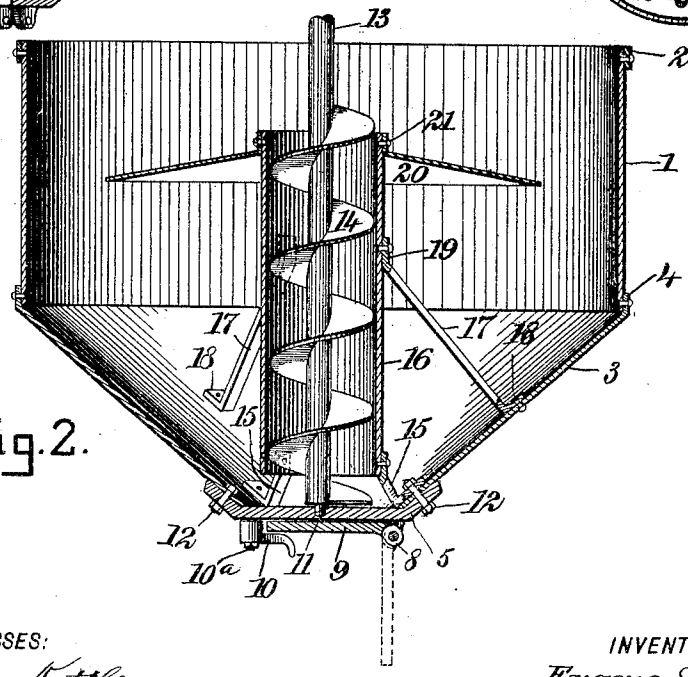


Fig. 2.



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No. 784,598. Patented March 14, 1905.

UNITED STATES PATENT OFFICE.

EUGENE STEVENS, OF LEADVILLE, COLORADO.

CYANID-AGITATOR.

SPECIFICATION forming part of Letters Patent No. 784,598, dated March 14, 1905.

Application filed January 19, 1904. Serial No. 189,727.

To all whom it may concern:

Be it known that I, EUGENE STEVENS, a citizen of the United States, and a resident of Leadville, in the county of Lake and State of Colorado, have invented a new and Improved Cyanid-Agitator, of which the following is a full, clear, and exact description.

My invention relates to ore-working machines and admits of general use, but is peculiarly applicable to working ores containing precious metals in connection with a so-called "cyanid process."

One of the more particular objects of my invention is to bring the pulp after thorough admixture into contact with the air in order to facilitate the chemical combination necessary for separating the gold or silver.

Another object of my invention is to thoroughly agglomerate the materials and to give the same a gentle but thorough working, such as will place them in suitable condition for the cyanid to extract a comparatively large amount of the precious metals.

Another object of my invention is to render the pulp accessible at the time when the cyanid is exposed to the air, as above stated, and to have the most important parts of the working of the ore performed in plain sight of the operator.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view showing my invention ready for use. Fig. 2 is a vertical central section upon the line 2 2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a fragmentary section on the line 3 3 in Fig. 4, showing the lower bearing for the revoluble shaft; and Fig. 4 is a plan view of the basin and its spider.

The cylinder 1 is provided with a rim 2 and is connected with a funnel 3 by means of a flange 4 on the funnel, as indicated more particularly in Fig. 2. A basin 5 is provided with a spider 6, integral therewith, as indicated more particularly in Fig. 4, the spider being formed by means of mutilations 7. The basin is also provided with a hinge 8, to which is pivotally secured a trap-door 9, as indicated by full and dotted lines in Fig. 2. A revoluble clamp 10, mounted upon a pin 10^a, is provided for the purpose of normally holding the trap-door closed, as indicated by full lines in Fig. 2. In order to open the door, all that is necessary is to turn the clamp 10, whereupon the trap-door drops, as indicated by dotted lines in Fig. 2, thus letting all the pulp out of the machine.

A bearing-pivot 11 is rigidly and centrally connected with the basin 5, as indicated more particularly in Fig. 3. Bolts 12 serve to secure the basin upon the lower end of the funnel 3, the arrangement being such that the basin may be detached either from the outside or from the inside of the apparatus. A revoluble shaft 13 is centered upon the bearing-pin 11 and is provided with a carrier-thread 14, rigidly connected with the shaft and revoluble therewith. Mounted upon three short braces 15, two being shown in Fig. 2, is a metallic cylinder 16, this cylinder being steadied by means of guy-braces 17, the feet 18 19 of which are connected with the funnel 3 and the cylinder 16. Mounted upon the top of this cylinder is a substantially conical spreader 20. This member is secured upon the cylinder by means of bolts or screws 21.

The operation of my device is as follows: The materials are placed within the bottom of the funnel 3, which may be considered as a sort of hopper, and solution is added in the usual manner. The stem or shaft 13 is now rotated, so as to raise the materials through the cylinder 16. Arriving at the top of the cylinder, the materials spread out and glide down the inclined upper surface of the substantially conical member 20. The materials fall to the bottom and are again carried up by means of the screw 14, the pulp being thus not only thoroughly admixed, but is exposed directly to the air each time it spreads out upon the conical spreader 20. As the operation is preferably continuous, the pulp is caused to spread in a thin sheet over the conical member 20, and the consequent exposure to the air is practically continuous.

Where potassic cyanid is employed, as is usually done, the cyanogen appears to be set free in its nascent state upon the upper sur-

face of the spreader 20, which is of course always above the level of the solution. The cyanogen thus being set free and having intense chemical activity, owing to its nascent state, unites with the gold, with the result that a much larger proportion of the metal is saved or that with a given ore a weaker cyanid solution may be employed. The principle appears to be somewhat analogous to that shown when a piece of gold-leaf is placed upon the surface of a cyanid solution and readily dissolves, whereas if a piece of gold leaf is submerged in the same solution it will dissolve far less rapidly.

In using this apparatus it is impossible for the pulp to pack together in the form of a cake. In using cyanids it frequently happens that small bubbles adhere to particles of the pulp, thus protecting them from the solution. This is less apt to occur in the machine above described than in many other mechanisms, for the reason that each and every particle of the pulp is brought into contact with the solution directly.

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

1. The combination of a containing vessel provided with a substantially frusto-conical portion, a basin engaging said frusto-conical portion, bolts connecting said basin upon said frusto-conical portion, said basin being provided with a bearing, a tubular member disposed within said containing vessel, and a revoluble shaft provided with a carrier-thread disposed within said tubular member, said revoluble shaft being provided with a journal engaging said bearing within said basin.

2. The combination of a containing vessel provided with a substantially frusto-conical portion, a basin engaging said substantially frusto-conical portion, fastening members securing said basin upon said frusto-conical portion, said basin being provided with a bearing, a revoluble carrier engaging said bearing so as to rest upon said basin, and a stationary member encircling said carrier.

3. The combination of a containing vessel provided with a substantially frusto-conical portion, a basin engaging said frusto-conical portion, fastening members connecting said basin and said frusto-conical portion together, said basin being provided with a bearing, a revoluble carrier journaled within said bearing, a member encircling said revoluble carrier, and a trap-door for discharging the contents from said basin.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE STEVENS.

Witnesses:
GEO. W. WALSH,
W. L. G. SMITH.