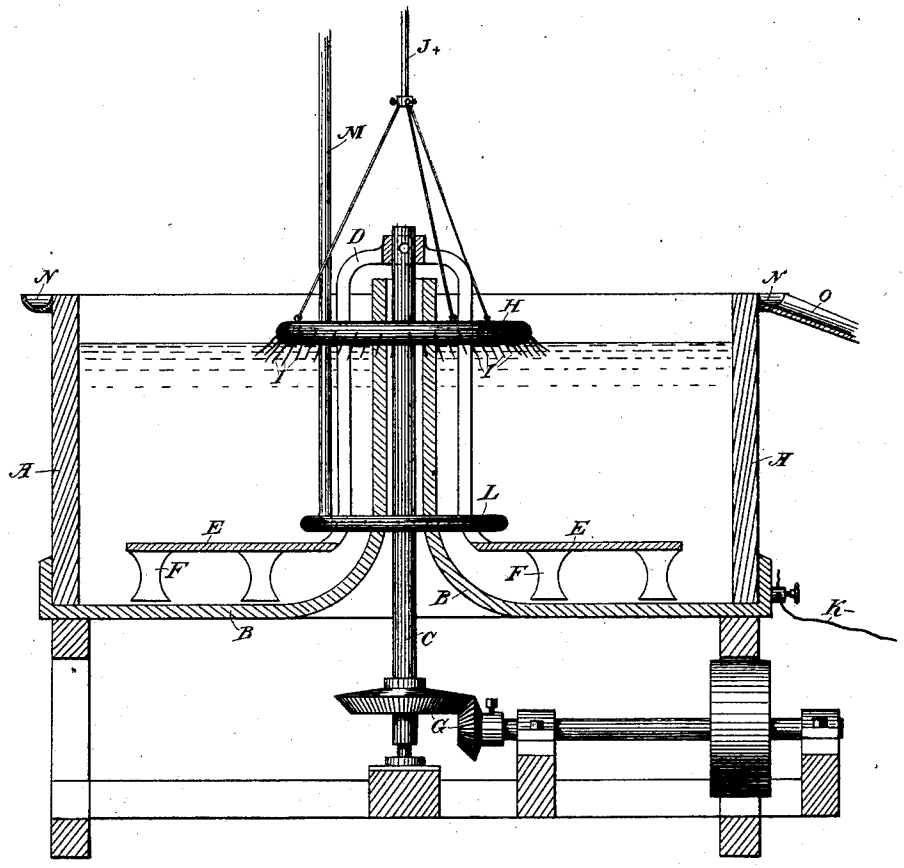
(No Model.)

J. H. RAE.

APPARATUS FOR SAVING FLOURED QUICKSILVER.

No. 364,372. Patented June 7, 1887.



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UNITED STATES PATENT OFFICE.

JULIO H. RAE, OF DAYTON, NEVADA.

APPARATUS FOR SAVING FLOURED QUICKSILVER.

SPECIFICATION forming part of Letters Patent No. 364,372, dated June 7, 1887.

Application filed February 3, 1887. Serial No. 226,448. (No model.)

To all whom it may concern:

Be it known that I, JULIO H. RAE, of Dayton, in the county of Lyon and State of Nevada, have invented an Improvement in Apparatus for Saving Floured Quicksilver; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an apparatus which is especially useful to assist in the amalgamation of precious metals, and to save quicksilver which has been floured by grinding or other processes, so that it is liable to be carried off in a state of minute subdivision.

It consists of a pan or tub within which the usual rotary muller or settler-arms are operated, and in connection with this of a circular electrode having numerous points, and so suspended as to dip into the upper part of the material contained in the tub, while the negative electrode connects with the metallic bottom or lining of the tub.

It further consists of a circular water-pipe suspended within the tub and above the stirrers, said pipe having jet-holes opening upwardly and outwardly, through which fresh water is discharged.

Referring to the accompanying drawing for a more complete explanation of my invention, the figure is a vertical section taken through the center of a settling or concentrating tub showing my invention.

A is the tub or settler, which may be made of wood or metal, having a metal bottom, B, with a central cone extending upwardly, through which the vertical shaft C passes. From the top of this shaft a yoke, D, extends downwardly and supports the ring or muller E, from which the stirring-arms F depend. The shaft C is driven by a beveled gearing, G, in the usual manner, these portions just described being common to this class of apparatus.

My invention consists of a circular ring, H, which may be made of any metal which is a good conductor, or of carbon, and it has a series of downwardly and outwardly projecting points, I, as shown. This ring is suspended by rods or wires from above, and the positive wire J from a battery or dynamo of about even volt and ampère power extends downwardly and connects with the ring H at one or more points. This ring is suspended so that the points will just enter the water or material within the tub, and the ring may be made of any suitable diameter, being large enough to encircle the rotary yoke which drives the muller and out of contact with it.

The negative wire K from the battery or dynamo is connected with the bottom B at any suitable point or points, so that the current passes downwardly from the ring through the material contained in the pan.

In order to overcome a certain amount of resistance to the electrical current which is developed in the water, I introduce a portion of salt solution or sulphuric acid. I also sometimes employ a proportion of caustic lime and concentrated lye or cyanide of potassium, which cuts any oil or grease which may be contained in the material, and prevents its interference with the electrical or aggregating action.

L is a ring formed of a pipe, bent around into a circle large enough to surround the yoke which drives the mullers without touching it, and M is a pipe through which water is led into the ring L. This ring is perforated around the upper and outer portion, so that the water which is introduced through the pipe M will be discharged in fine jets upwardly and outwardly through the material within the tub, and this assists to carry upward the lighter more worthless particles which are contained within it, making it also so much thinner that the heavier and more valuable particles will readily settle toward the bottom. The overflow of the tub is caught in an annular trough, N, which surrounds the upper edge of the tub, and which may be made of or lined with copper, amalgamated so as to catch and retain any fine particles of quicksilver or valuable metal which may be carried over by the overflow.

O is a discharge-pipe opening from the annular trough at one side, through which the waste is discharged.

When the apparatus is in operation, the material containing the quicksilver and valuable metals or slime is introduced into the tub with water and the stirrers are set in motion, water being also introduced through the pipe M to the perforated ring L. A strong current of electricity is passed through the material by means of the ring H and points I, and the result is to aggregate or concentrate and bring together

the fine particles of floured quicksilver which are usually lost and carried away in the water, because it is impossible to unite them by ordinary means into a body large enough to be collected. By my device these particles are brought together, either by attraction or some other reason, and almost all, or quite all, of this fine floured quicksilver may be saved.

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

1. The combination, in an apparatus for saving precious and valuable metals, of a pan provided with a muller and stirring-arms, and an amalgamated copper bottom connected with the negative electrode of a dynamo, an independent stationary ring connected with the positive electrode above the muller, and provided with a series of diverging downwardly-projecting points which dip into the upper part of the contents of the pan, substantially as herein described.

2. An apparatus for saving valuable and precious metals, consisting of a tub or pan with an amalgamated copper bottom connected with the negative electrode of a dynamo, a revolving muller with stirring-arms near the bottom within the pan, a stationary annular water-jet tube suspended within the contents of the pan above the muller, and an overflow-trough around the upper angle of the pan, with a discharge-spout, together with a stationary annular conductor connected with the positive electrode of the dynamo suspended in the upper part of the pan, with diverging downwardly-projecting points extending into the contents of the pan, substantially as herein described.

In witness whereof I have hereunto set my hand.

JULIO H. RAE.

Witnesses:
S. H. NOURSE,
H. C. LEE.