

J. B. ATWATER.
Ore Amalgamator.

No. 48,887.

Patented July 25, 1865.

Fig. 1.

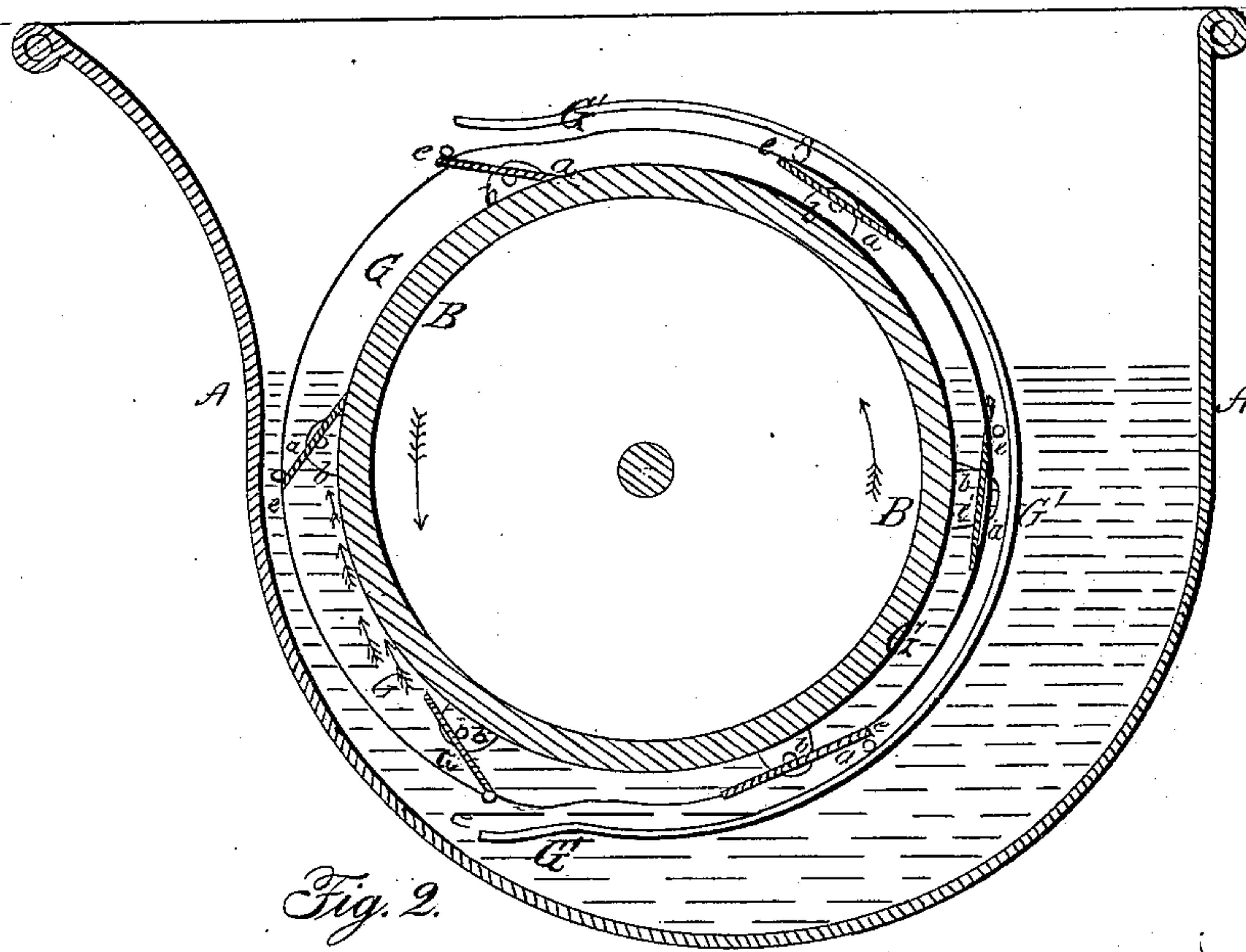
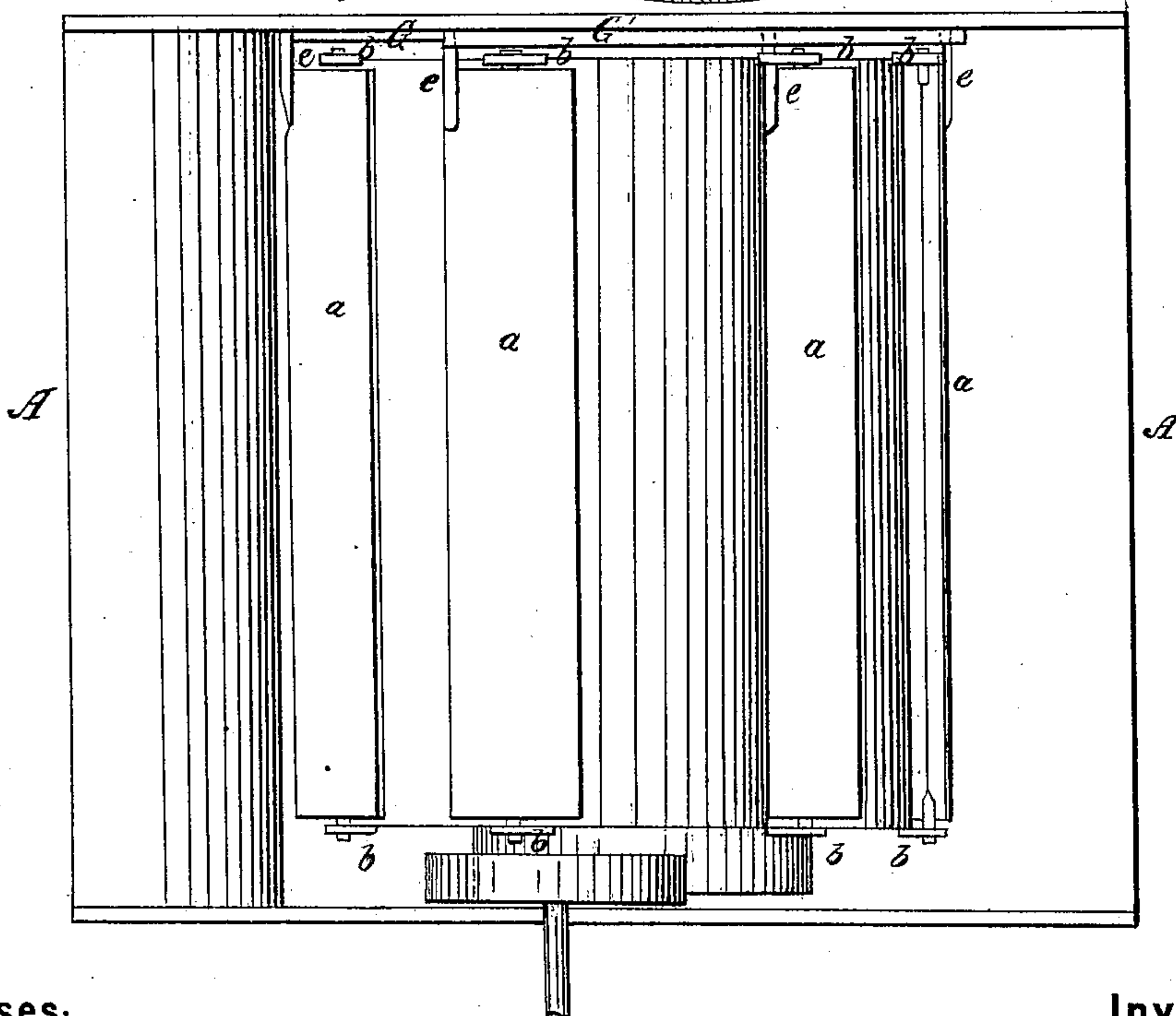


Fig. 2.



Witnesses:

R. F. Campbell.
J. Schaefer

Inventor:

J. B. Atwater
by his Atty
Marion Lewis Sherman.

UNITED STATES PATENT OFFICE.

JOHN B. ATWATER, OF CHICAGO, ILLINOIS.

IMPROVED AMALGAMATOR.

Specification forming part of Letters Patent No. 48,887, dated July 25, 1865.

To all whom it may concern:

Be it known that I, JOHN B. ATWATER, of Chicago, Cook county, State of Illinois, have invented a new and useful Apparatus for Amalgamating Gold and other Precious Metals; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical cross-section through my improved machine. Fig. 2 is a top view of the machine.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates particularly to a process of separating fine particles of gold and other precious metals from their powdered gangue, wherein molten lead is employed to effect the separation instead of mercury. Still the invention is not confined to the use of lead.

The object of my invention is to contrive an apparatus which will take the pulverized gold-bearing sand from the surface of a lead-bath and thoroughly commingle the sand and lead, so that the particles of gold will be separated from the particles of mineral, and the latter allowed to rise to the surface of the bath to be skimmed off, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a vessel, which, in cross-section, may be made of a semi-cylindrical form.

B is a cylinder, which is closed at both ends, and arranged within the vessel A in such manner that it can receive a rapid rotary motion. Frictional or spurred gearing may be employed for giving motion to the cylinder B, and arranged within the vessel A, as shown in Fig. 2.

I arrange around the circumference of cylinder B, at suitable intervals apart, a number of plates, *a a*, which extend from one end to the other of their cylinder, and are pivoted to the end bearings, *b b*, in such manner that said plates can be made to assume the positions shown in Fig. 1, so that at a certain point in their revolution they will constitute buckets, and carry beneath the surface of the molten metal anything which is floating in their path, after which, and at a certain other point in their revolution, said plates *a a* will discharge their contents and rise perpendicularly, or

nearly so, from the surface of the metal bath. To effect this movement of the plates *a a* at the proper times I employ a cam, G, at one end of the vessel A, as shown in Fig. 1, and secure pins *e e* upon one end of each bucket-plate in such position that these pins follow the course of the cam-surface as the cylinder B is rotated.

The curved guard G', which extends partially around the cam G, assists in feathering the plates *a*.

The configuration of the cam is such that the plates *a* rise perpendicularly out of the bath, and just before entering the bath one of their longitudinal edges will be brought down snugly in contact with the periphery of the cylinder A, so as to form buckets for carrying the gold-bearing sand beneath the surface of the liquid. When the buckets have performed their office as such they discharge their contents into the liquid near the bottom of the vessel A by assuming the position shown in Fig. 1.

A simple wheel with fixed buckets would take the powdered quartz beneath the surface of the lead bath, but the quartz might become so packed in the buckets that it will revolve with the wheel instead of being discharged into the body of the lead. By my invention there can be none of the quartz-sand carried above the surface of the lead or beyond the desired point of discharge beneath the surface of the lead. In practice I propose to employ a long cylinder with a great number of oscillating bucket-plates arranged around it, and operating substantially as above described.

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

1. The application of oscillating plates, or their equivalents, to the circumference of a cylinder which is arranged to rotate within a vessel, A, substantially as described.

2. So applying movable plates to a rotating cylinder, or its equivalent, which is arranged within a vessel adapted for containing melted lead or mercury, that said plates will operate automatically for receiving and discharging the quartz, substantially as described.

JOHN B. ATWATER.

Witnesses:

W. H. BUTLER,
IRA TANTHIN.