

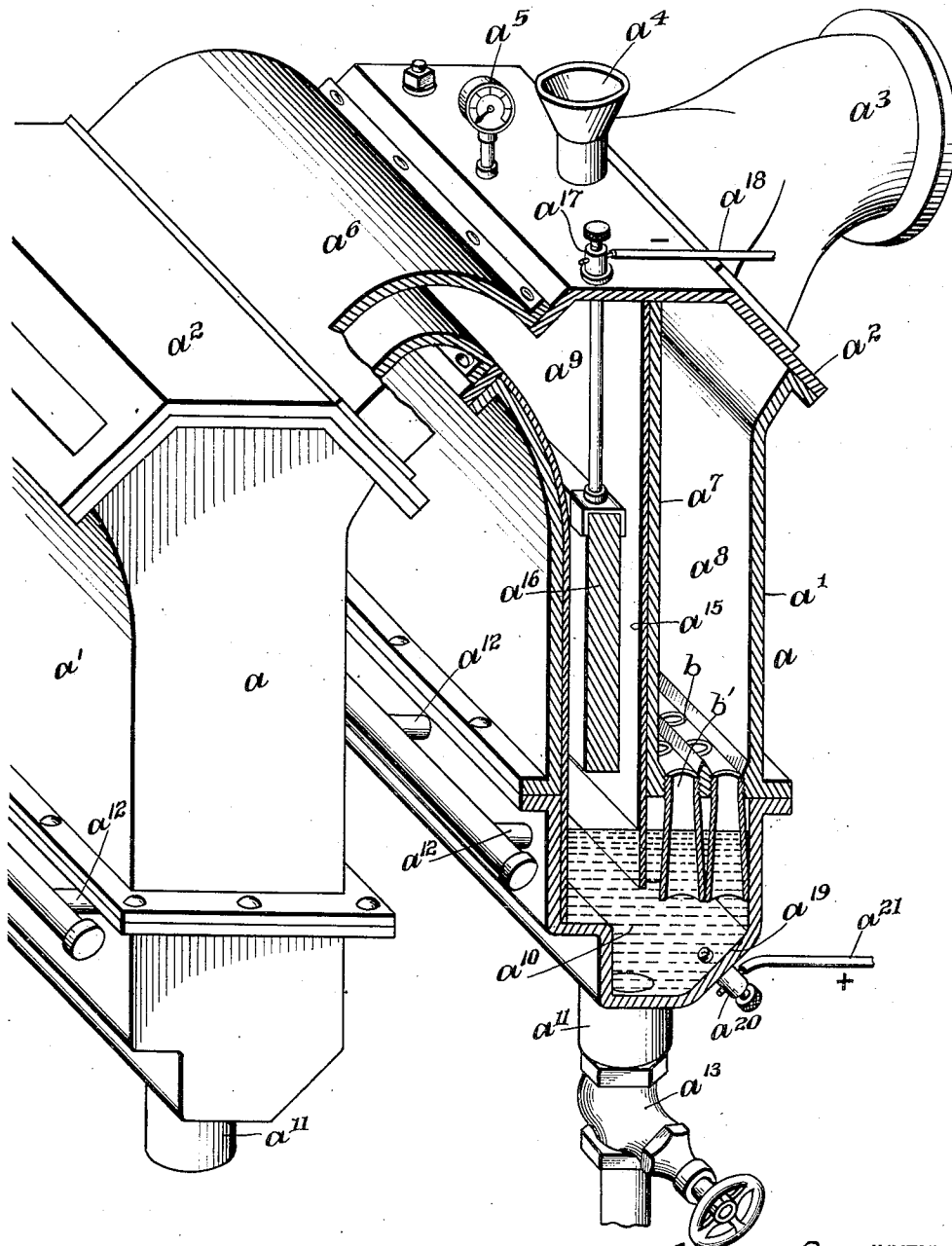
R. LUCKENBACH.
AMALGAMATOR.
APPLICATION FILED MAY 22, 1912.

1,042,701.

Patented Oct. 29, 1912.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

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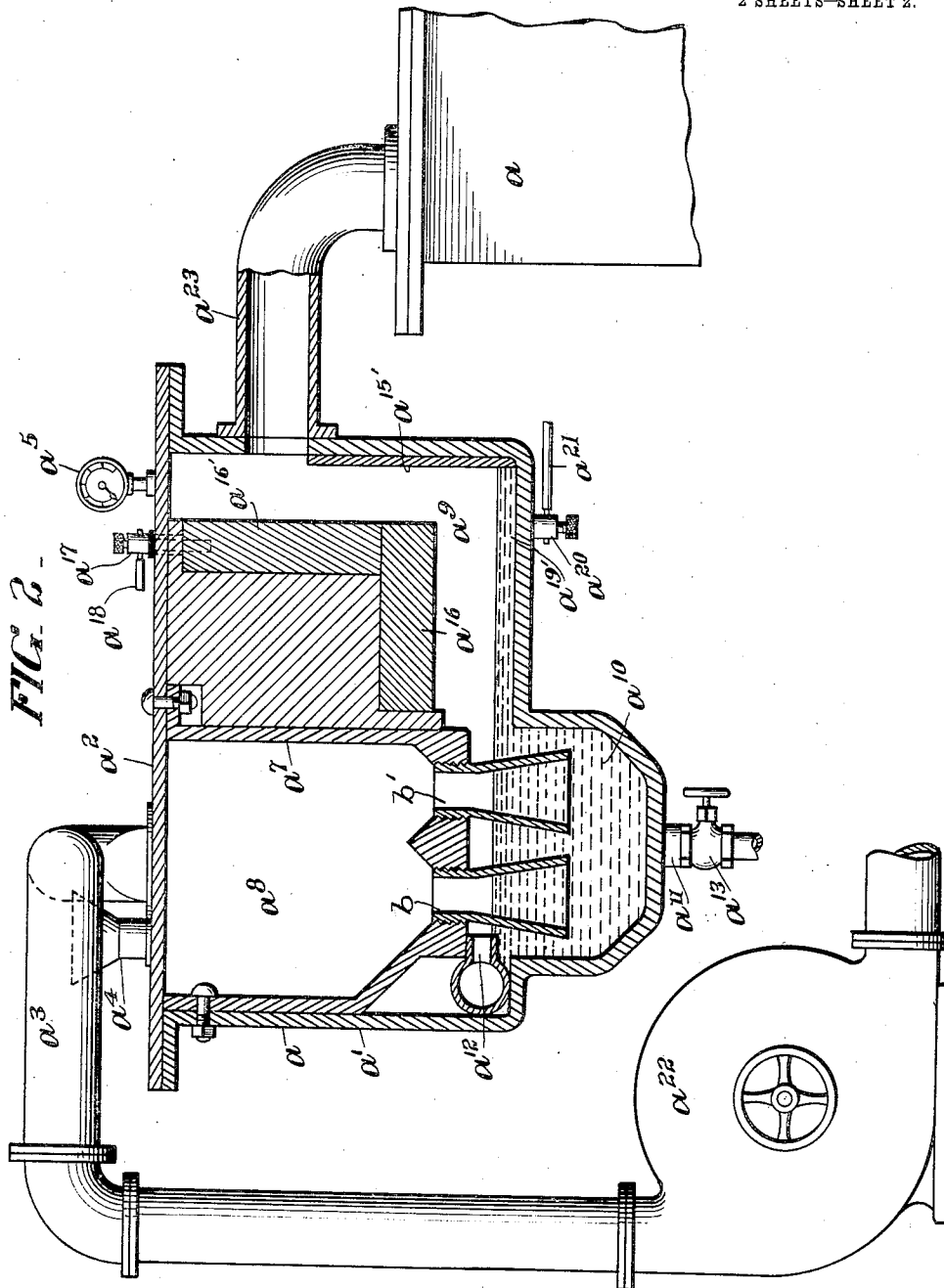
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UNITED STATES PATENT OFFICE.

ROYER LUCKENBACH, OF COLWYN, PENNSYLVANIA, ASSIGNOR TO PENN MINING & REDUCTION COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

AMALGAMATOR.

1,042,701.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed May 22, 1912. Serial No. 698,896.

To all whom it may concern:

Be it known that I, ROYER LUCKENBACH, a citizen of the United States, residing at Colwyn, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Amalgamators, of which the following is a specification.

My invention has relation to the provision of an apparatus to hasten the thorough recovery of precious metals from ores or materials containing them, by amalgamation; and in conjunction with such amalgam or mercury recovery, generating chlorine gas by electrolytic action, in order that this gas may be employed in scouring the coarser particles in the recovery of the precious metals from the ores or other materials containing them, thus placing the same in a better condition under such treatment for more thorough amalgamation and to a greater extent, as well as to more expeditiously dissolve finer particles of the precious metals in their presentation to the amalgam or mercury.

The nature and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, in which—

Figure 1, is a perspective view, showing in elevation and in broken section a connected pair of an apparatus, embodying main features of my invention, for hastening thorough amalgamation of precious metals from ores or materials containing them; and Fig. 2, is a view partly in side elevation and partly in central longitudinal section of another form of an apparatus, in connected pairs, and as so arranged, for the same defined purpose.

Referring to the drawings with reference particularly to Fig. 1, a , is a vertically arranged appliance in connected pairs, constituting one form of the amalgamator of my present invention, and each consisting of a sectional casing a^1 , having in the roof a^2 , an ore matter inlet conduit a^3 , a hopper a^4 , for introducing the amalgamating substance or mixture into the appliance, a pressure gage a^5 , and an arched outlet a^6 , for ore matter therefrom to the next corresponding appliance of the apparatus.

The sectional casing a^1 , is divided into two compartments a^8 and a^9 , by a partition

wall a^7 , and the bottom of the said casing is formed into a trough a^{10} , for containing a body of amalgam or mercury, and with an outlet a^{11} , having a valve a^{13} .

In the compartment a^8 , of the said apparatus, is provided a bottom consisting of two series of depending flaring castings b and b^1 , and which castings extend downward some distance into the body of amalgam or mercury of the trough a^{10} , as clearly shown in Fig. 1, thereby sealing the said compartment a^8 , from the other compartment a^9 .

The ore pulp or matter to be treated in the appliance is forced under pressure into the compartment a^8 , through the conduit a^3 , at the top of the casing a^1 , and is forced downward against the perforated bottom of the said compartment a^8 , and passes there-through in widely diffused or spray-like distribution by the flaring character of the castings b and b^1 , extending into the body of amalgam or mercury of the trough a^{10} , for more than half of their length so that thereby the discharged matter may, in its more or less thoroughly broken-up condition in volume, be thoroughly caught and entrained in the amalgam or mercury in a state of agitation. The above action on the ore pulp will be assisted by the suspended anode in the compartment a^9 , with its reclaiming plate extending down into the body of amalgam or mercury of the said trough, and the cathode, which anode and cathode respectively, are connected by circuit-wires with a source of energy, not shown. Any matter not entrained by the said body of amalgam or mercury in the trough a^{10} , will be deposited on the reclaiming plate.

At stated intervals recovered values are removed into a suitable receptacle through the pipe a^{11} , by manipulating the valve a^{13} , and a new batch of mercury also introduced through the hopper a^4 , and supplied to the trough a^{10} , to again assume the quantitative condition, as illustrated in Fig. 1.

The appliance above described may be arranged in pairs, as shown, or of a greater number of units as conditions and requirements of such an appliance demand.

In Fig. 2, the apparatus is shown in connection with a centrifugal pump a^{22} , by an inlet-conduit a^3 , connected with the top of the first unit and at an opposite end by an

outlet-pipe a^{23} , in which matter not fully reclaimed is conducted to the next unit of the amalgamator. The anode $a^{16'}$, is arranged in this view in two connected parts and the reclaiming plate $a^{15'}$, opposite the anode $a^{16'}$. The amalgam or mercury of the trough a^{10} , constitutes the cathode element $a^{19'}$, and in conjunction with the anode by a circuit from a source of energy, not shown, they set up the required electrolytic action to create gases for effecting the coarse as well as fine particles of the ore pulp, in amalgamation, hastening such and increasing the quantitative recoveries of the precious particles from such ore pulp.

The mode of operation of the apparatus of both Fig. 1 and Fig. 2, is as follows:—The ore pulp or matter, in a more or less pulverized condition to be treated, is pumped into the conduit a^3 , and forced downward in volume into the bottom of the compartment a^8 , and passes more or less broken up through the two series of depending flaring castings b and b^1 , into the body direct of the amalgam or mercury of the trough a^{10} , in a widely diffused sub-divided spray-like diffusion for the entrainment of the values of the pulp by the amalgam or mercury. After repeated presentations of the ore pulp or matter in the manner as hereinbefore explained, such as not fully recovered and deposited on the reclaiming plate a^{15} or $a^{15'}$, will be conducted through the upper part of the compartment a^9 , into a similar connected arrangement as hereinbefore described for like treatment and further recoveries of values from the ore pulp.

At stated intervals the recovered values in the body of amalgam or mercury may be removed by introducing air or water through the inlet conduit a^{12} , when the valve a^{13} , is open to discharge through the piping a^{11} ,

and to cleanse the reclaiming plate a^{15} , or $a^{15'}$, after cutting off the current establishing the circuit from a source of energy.

Having thus described the nature and objects of my said invention, what I claim as new and desire to secure by Letters Patent is:—

1. An amalgamator arranged to contain an amalgam or mercury, a partition depending below the amalgam or mercury level, said amalgamator having feed and outlet elongated compartments, the feed-chamber being provided with a bottom having a plurality of parallel rows of downwardly flaring feed-tubes depending below the amalgam or mercury level, with their lower ends covering substantially the area of the feed section to provide a widely diffused sub-divided distribution of pulp, in said amalgam or mercury.

2. An amalgamator transversely elongated and arranged to contain an amalgam or mercury, a partition depending from the top to below the amalgam or mercury level and sub-dividing the amalgamator into narrow feed and outlet compartments elongated transversely of the amalgamator, the feed chamber being provided with a bottom having a plurality of parallel rows of downwardly flaring feed tubes depending below said mercury level with their lower ends covering substantially the area of the feed section to provide a widely diffused sub-divided distribution of pulp, in said amalgam or mercury.

In witness whereof, I have hereunto set my signature in the presence of the two subscribing witnesses hereto.

ROYER LUCKENBACH.

Witnesses:

THOMAS M. SMITH,
HELEN F. MILLER.