

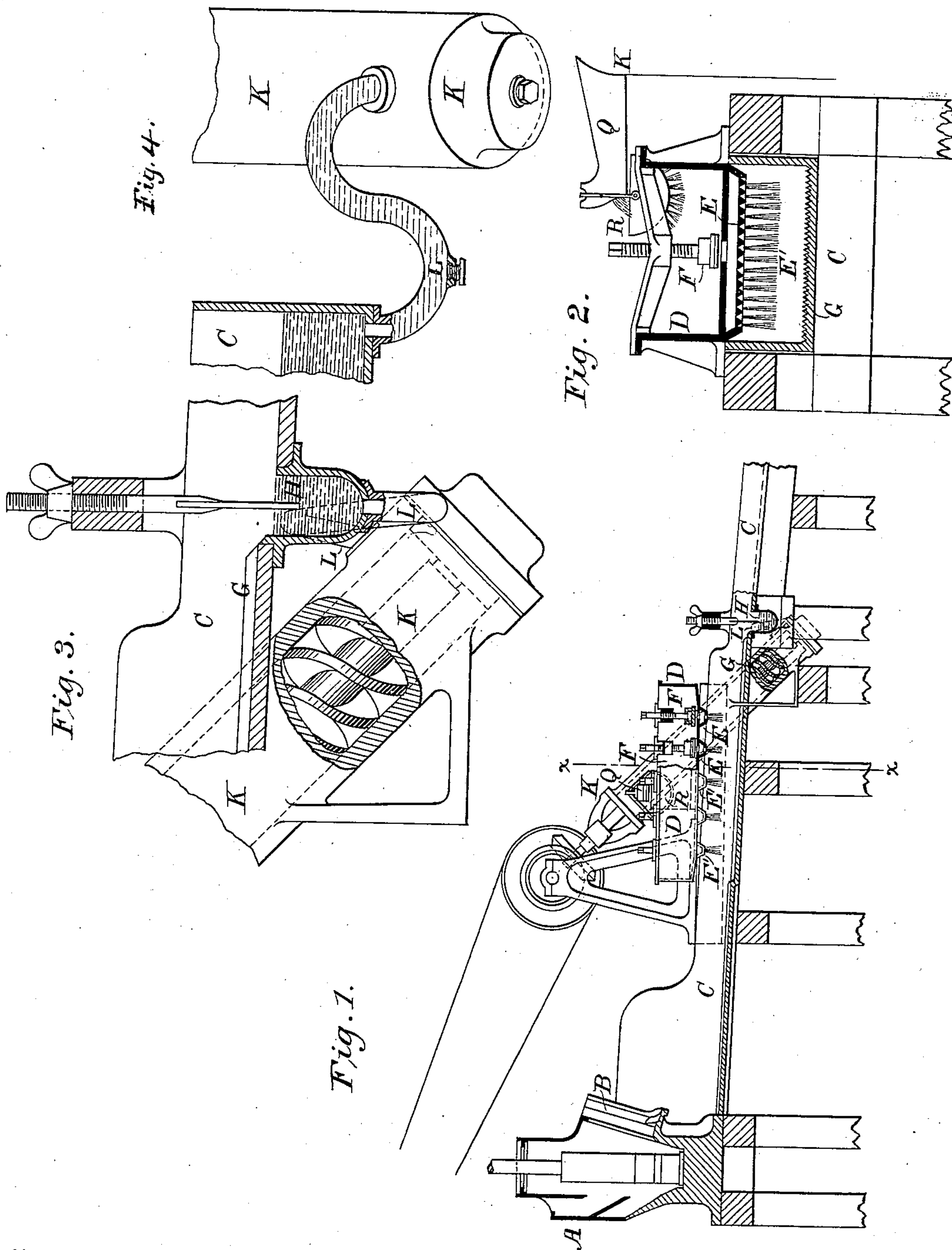
-(No Model.)

R. J. ATCHERLEY.

AMALGAMATOR.

No. 312,240.

Patented Feb. 10, 1885.



Witnesses

Jos. S. Latimer  
W. L. Callamer.

Inventor

R. J. Atcherley.  
By his Attorney  
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# UNITED STATES PATENT OFFICE.

ROWLAND JOHN ATCHERLEY, OF LONDON, ENGLAND.

## AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 312,240, dated February 10, 1885.

Application filed September 15, 1884. (No model.) Patented in England March 14, 1884, No. 4,65

*To all whom it may concern:*

Be it known that I, ROWLAND JOHN ATCHERLEY, doctor of philosophy of the University of Berlin, fellow of the chemical societies of London and Berlin, metallurgical chemist, a subject of the Queen of Great Britain, residing in the city of London, in the county of Middlesex, England, have invented a new and useful Improvement in Amalgamators, (for which I have made application for Letters Patent of Great Britain, No. 4,865, dated March 14, 1884,) of which the following is a specification.

The invention relates to an amalgamating apparatus in which the gold-bearing slime or pulp is subjected to a continuous fine shower of mercury.

The object of the invention is to provide an apparatus of this character simple in its construction and economical in its operation, and in which the shower of mercury may be regulated and brought into intimate contact with the gold-bearing slimes.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of the improved apparatus. Fig. 2 is a vertical transverse section of the same, on an enlarged scale, on the line *x x*, Fig. 1. Fig. 3 is an enlarged detail of the sluice-box and reservoir in longitudinal section, showing its connection with the elevator. Fig. 4 is a detail of the same parts in transverse section.

Similar letters of reference indicate like parts in the several figures of the drawings.

The slime or pulp to be treated may be taken from any source of supply, that shown in the drawings being a stamp-mill, as represented at A. The gold-bearing material is reduced to a slime or pulp in a stamp-mill, A, and then passes by an opening, B, into a sluice-box or launder, C. Over the sluice-box or launder is supported a vessel or trough, D, or a series of such troughs, for containing mercury. The bottom of this trough is provided with a number of fine holes, E. The mercury issues from these holes in the form of a continuous fine shower, E', and falls through the running slime or pulp in the sluice-box below. The openings in the bottom of the trough D are preferably arranged in transverse rows, the passage of mercury to each of which can be regulated by means of the valves

F. One or more of the rows may be entirely cut out of action, if desired. The bottom of the sluice-box or launder C is preferably formed with longitudinal ridges or corrugations G, so that the mercury, after passing through the gold-bearing slime or pulp and amalgamating with the gold contained therein, will collect in the grooves of the ridges or corrugations and form into streams, which run down the sluice-box or launder until they arrive at and enter the well or reservoir H, in which the mercury collects. The slime or pulp then continues its flow along the sluice-box or launder, and is dealt with in any known manner. The mercury which collects in reservoir H is caused to pass to an elevator or pump, K, of any suitable construction, and for the purpose of preventing any of the slime or pulp passing with it into the elevator, and also so as to maintain a constant level of mercury in the reservoir H, the mercury is preferably conveyed from the latter by an inverted siphon, L, leading to the bottom of the elevator K, (or by any suitable means,) as shown in Fig. 3. The elevator for raising the mercury may be of any suitable construction, but is preferably made in the form of an Archimedean screw working in a suitable casing, and is driven by suitable gearing. The mercury is conveyed by the screw to the top of the elevator, where it is discharged through a spout or chute, Q, Fig. 2, and is again delivered into the vessel or trough or troughs D, through the perforated bottom of which it again passes on to the slime or pulp in the sluice-box or launder below, the flow of mercury being regulated by suitable valves or cocks.

For the purpose of arresting the particles of solid or semi-solid amalgam which are brought up by the elevator a strainer or basket, R, of iron-wire gauze or other suitable material, is suspended on the end of the spout or chute Q. This strainer is from time to time removed and emptied and replaced by a fresh one.

By my improved apparatus the mercury is automatically and continuously brought into most intimate contact with the particles of gold contained in the pulp or slime and amalgamates therewith. The edges of the bottom of the vessel or trough D are preferably slightly inclined downward, so as to direct the mercury toward the perforations E, over which a



uniform depth will be maintained, and the amount of mercury required to carry on the operation will be reduced to a minimum.

Instead of siphoning the mercury directly from the bottom of reservoir H to the lower end of the pump or elevator K, it may be first caused to pass from the reservoir to another receptacle, from which it may be delivered in any suitable manner to the bottom end of the pump or elevator.

It will be understood that the whole of the parts of the apparatus with which the mercury and gold are brought in contact must be made of such metal or material as will not be affected thereby. As much of the mercury as is taken away in the amalgam must always be replaced by fresh mercury.

I am aware that it is not new, broadly, to subject ore to the action of atomized mercury; but I have made new combinations of old elements, as hereinafter claimed, whereby the apparatus is made simple in its construction and effective and economical in its operation.

I claim as my invention—

1. The combination, substantially as set forth, of an inclined sluice-box or launder adapted to convey the slime in a slowly-moving current, a mercury-chamber arranged above said sluice-box, and provided with a perforated bottom, through which mercury falls in a continuous fine shower upon the slowly-moving ore-containing current, and a collecting-chamber in said sluice-box or launder beyond said mercury-chamber, substantially as described.

2. The combination, substantially as set forth, of an inclined sluice-box or launder adapted to convey the slime in a slowly-moving current, a mercury-receptacle arranged over said sluice-box, and provided with a perforated bottom, through which the mercury flows in a continuous fine shower upon the

slowly-moving ore-containing current, a collecting-chamber in said sluice-box beyond said mercury-receptacle, and an elevator for conveying mercury from said collecting-chamber to said mercury-receptacle, substantially as described.

3. The combination, substantially as set forth, of an inclined sluice-box or launder adapted to convey the slime in a slowly-moving current, a mercury-chamber arranged above said sluice-box, and provided with a perforated bottom, a collecting-chamber in said sluice-box beyond said mercury-receptacle, an Archimedean screw for carrying mercury from said collecting-chamber to said mercury-receptacle, and an inverted siphon connecting said elevator and reservoir, substantially as described.

4. The combination, substantially as set forth, of an inclined sluice-box or launder adapted to convey the slime in a slowly-moving current provided with longitudinal grooves in its bottom, a mercury-receptacle arranged over said sluice-box, and provided with a perforated bottom, through which the mercury falls in a continuous fine shower upon the slowly-moving ore-containing current, a collecting-reservoir beyond said mercury-chamber, and means for conveying mercury from said collecting-reservoir to said mercury-receptacle, substantially as described.

5. The combination, substantially as set forth, of a sluice-box, a mercury-receptacle provided with transverse perforated channels below its bottom, said chamber being provided with openings into said channels, and valves regulating the flow of mercury into said channels, substantially as described.

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Witnesses:

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