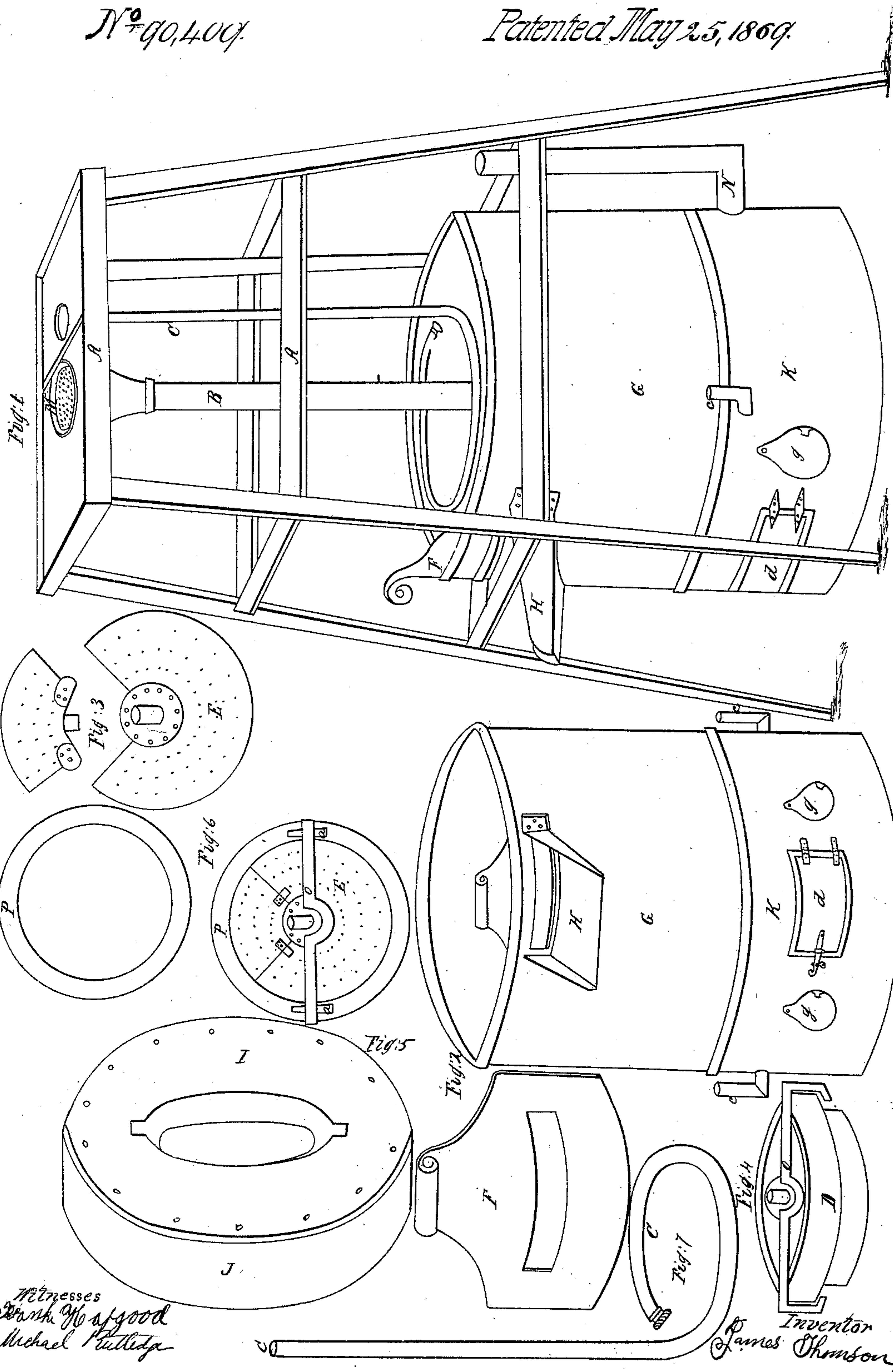


*Dry Amalgamator.*

Nº 90,400.

*Patented May 25, 1869.*





# United States Patent Office.

JAMES THOMSON. OF GIBSONVILLE, CALIFORNIA.

Letters Patent No. 90,409, dated May 25, 1869.

## IMPROVED AMALGAMATOR.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, JAMES THOMSON, of Gibsonville, county of Sierra, State of California, have invented an Improved Amalgamator; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use my said invention or improvements without further invention or experiment.

The object of my invention is to provide an improved amalgamator, for separating and saving the precious metals, after the rock has been crushed in the battery, or by other means; and

It consists in first passing the pulp from the battery through a long vertical tube, which extends down into a shallow cylinder, with a perforated cover.

This cylinder is filled with mercury, so that it stands at some depth on the cover, and all the pulp is thus forced, by the pressure in the tube, to pass through the mercury, and is intimately mingled and brought in contact with it, by means of the perforated cover.

After leaving this smaller cylinder, the pulp spreads over an amalgamated copper plate around it and within an outer large cylinder, and rises till it is discharged through an adjustable gate.

A bent perforated pipe discharges cold water into the pulp, and, by its action, tends to unite the particles of mercury, and also to carry the pulp to the centre.

The whole mass within the cylinder is heated, by means of steam within a chamber placed beneath.

This chamber is so constructed that fuel may be used to heat it, in place of steam, if desired.

To more fully explain my invention, reference is had to the accompanying drawings, and the letters marked thereon, of which—

Figure 1, sheet 1, is a perspective view of my amalgamator.

Figure 2, sheet 2, is a view of the outer cylinder and gate.

Figures 3, 4, 5, 6, and 7, sheet 2, are detailed views of parts of the machine.

Similar letters of reference, in each of the figures, indicate like parts.

A is a supporting-frame of timber, having a pipe, B, passing vertically through it, and extending down into a shallow cylinder, D.

This cylinder has a cover, E, which is perforated with small holes, and is filled with mercury, so as to stand at a depth over the cover, which may be varied according to the pressure.

The cover is composed of two parts, and may be easily removed at any time, by loosening the wedges *a a*, and the clamp O, which holds the ring P.

To avoid clogging, by the passage of large pieces of rock, a conical perforated screen, M, is placed in the mouth of the pipe B, so that all the pulp must first pass through the screen.

The cylinder D is set loosely into a large wooden bottom, J, which is placed within an outer cylinder, G.

The bottom J has its upper surface covered with copper, I, and made concave, thus forming an amalgamating-surface, and, by its shape, assisting the flow or movement of the sand towards the centre.

Below the cylinder G is the heater K, which is also made cylindrical, as being a more convenient shape.

This heater is so constructed that steam may be used, in which case the pipes *c c* serve for egress.

If it is necessary or expedient to heat it by fuel, the chimney N is used.

*d* is the door for introducing fuel, and

*g g* are openings for draught.

Near the top of the cylinder G is an opening, which has a vertically-sliding gate, F.

This gate has a long, narrow opening, and serves to discharge the pulp and water upon the apron H, from which it is conducted into the sluices.

The cold-water pipe C is bent near the top of the cylinder G, and forms a circle around the outside.

Small perforations are made in the lower part of the pipe, for the discharge of cold water into the pulp.

The operation of my amalgamator is as follows:

The pulp from the battery is discharged into the mouth of the pipe B, and passes through the screen M, and down into the cylinder D.

The height of the pipe B gives a pressure sufficient to force the pulp beneath the surface of the mercury, after which it rises, and is finely divided, by passing through the perforated cover E, thus bringing every part of the pulp in contact with mercury, and thoroughly amalgamating the gold or silver which may be present.

As the heated pulp escapes from the cylinder D, it flows outward within the cylinder G, and fills it to the aperture in the gate F, when it escapes over the apron H.

The jets of cold water, from the pipe C, falling into the pulp, tend to settle the sand and amalgam, which flows down the inclined copper surface I, towards the centre, the mercury being thus prevented from dividing into fine particles and flowing away.

The discharge is regulated by raising and lowering the gate F.

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

1. The inside cylinder D, with its perforated cover E, confining-ring P, and clamp O, in combination with the feed-pipe B, constructed and operating substantially as described.

2. The wooden bottom J, provided with a concave surface-cover, I, in combination with the perforated water pipe C, substantially as and for the purpose herein set forth.

3. The heater K, adapted for steam or fuel, in combination with the amalgamator, substantially as herein described.

In witness whereof, I have hereunto set my hand and seal.

JAMES THOMSON. [L. s.]

Witnesses:

S. B. DAVIDSON,  
G. G. CLOUGH.