(No Model.)

G. W. PEARSONS.

CENTRIFUGAL AMALGAMATING MACHINE.

No. 307,982. Patented Nov. 11, 1884.

Fig. 1.

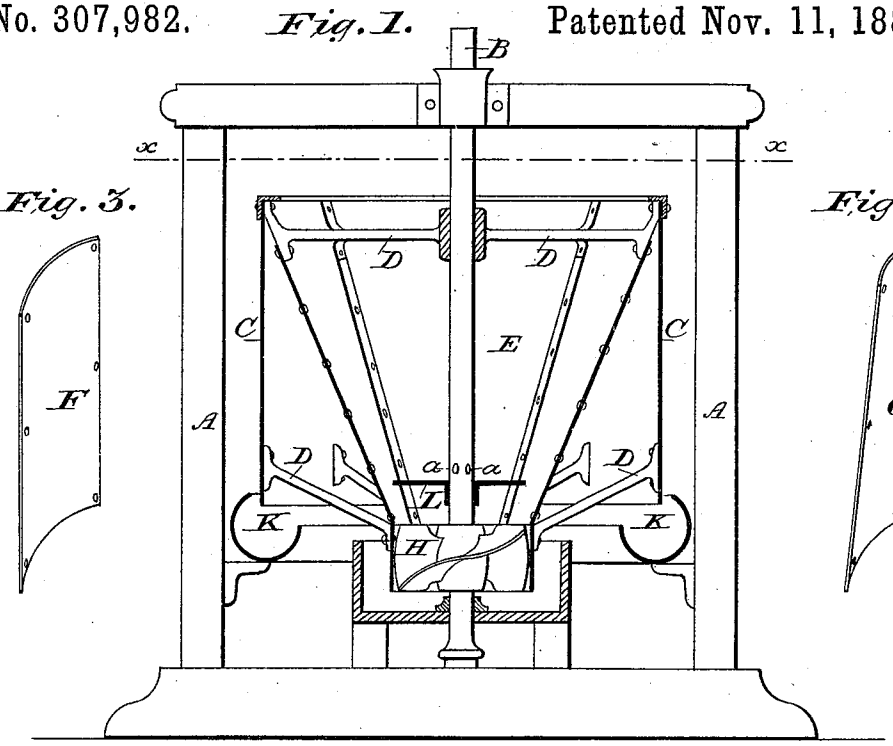
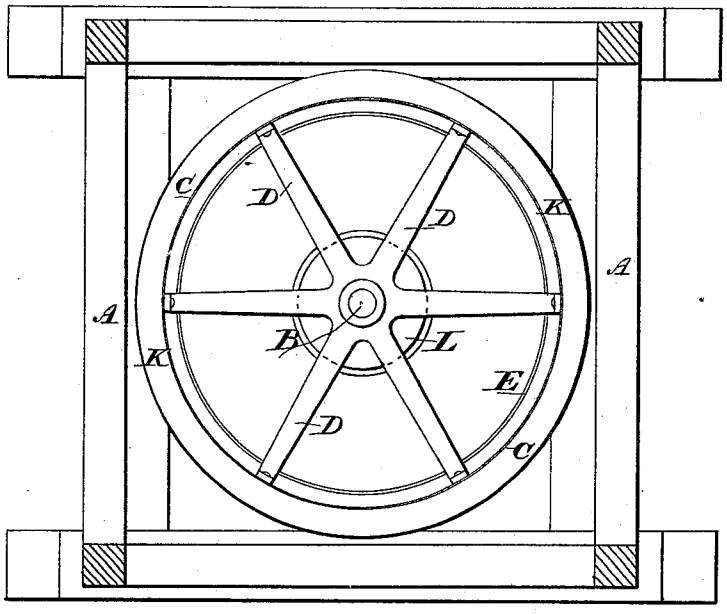


Fig. 3.

Fig. 4.

Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

GALEN W. PEARSONS, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO B. F. JONES, OF SAME PLACE.

CENTRIFUGAL AMALGAMATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,982, dated November 11, 1884.

Application filed July 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, GALEN W. PEARSONS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Centrifugal Amalgamating-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to centrifugal amalgamating-machines for recovering fine or flour gold from the water of the flume after the heavier or larger particles of gold have been recovered.

The object of my invention is to provide a centrifugal machine for recovering the flour or float gold, which is now carried away in the muddy water of the washing-flume.

My invention consists of a cone-shaped cylinder secured within an outer cylinder and adapted to be rotated with it, said cone-shaped cylinder being provided at its apex or lower end with a lifting-wheel or a series of vanes adapted to rotate in a trough containing the water from the flume, by which means the water is raised and brought in contact with amalgamated copper plates secured on the inside of both cylinders, and by the rapid revolution of said cylinders the water is caused to pass over the amalgamated plates in a thin sheet, so that the fine particles or flakes of gold are seized by the mercury of the amalgamated plates.

My invention consists, further, in placing a circular trough a short distance below the lower end of the outer cylinder, which will receive and carry away the water, while at the same time it will catch and retain the gold or other metallic amalgam which may fall or be thrown from the amalgamated plates of the cylinder.

Other novel features of my invention will be more fully hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a vertical sectional view of my device. Fig. 2 is a top or plan view of my device, taken on the line *x x* of Fig. 1. Fig. 3 is a view in perspective of one of the amalgamated copper plates for lining the main or outer cylinder. Fig. 4 is a similar view of one of the plates which constitute the lining of the cone-shaped or inner cylinder.

A is a frame-work of any suitable construction, in which is mounted the main driving-shaft, B, adapted to be driven by any convenient power.

C is a cylinder of any suitable material, preferably of light wrought-iron, secured to the main driving-shaft by means of the arms D.

E is a funnel or cone shaped cylinder secured inside of the cylinder C and to the arms D, the two cylinders being rigidly connected and adapted to be rotated together.

F indicates one of the series of amalgamated copper plates with which the cylinder C is lined.

G indicates one of a series of similar plates for lining the interior or cone-shaped cylinder, E.

H are propeller blades or vanes secured to the shaft B in the lower or contracted end of the inner or cone-shaped cylinder, E, said propeller-blades being adapted to be rotated with the cylinders C E. The lower end of the cone-shaped cylinder E and the propeller blades or vanes are adapted to rotate in a trough, I, through which the waste water from the flume passes, and by the rapid rotation of the propellers or vanes and the cylinders the water is drawn from the trough I, carried up through the cone-shaped cylinder E, and precipitated in a thin sheet or film on the inner sides of the cylinder C. The particles of flour or free gold coming in contact with the amalgamated plates of the cylinders are seized and amalgamated by the plates.

K is a circular trough secured to the frame-work of the machine below the cylinder C, which is designed to receive and carry away the waste water, while at the same time it catches and retains the gold or amalgam which may fall from the plates of the cylinder C.

L is a scattering plate or disk secured to the shaft B directly above the lifting-wheel H. The shaft B is made hollow as far down as the scattering wheel or disk L, for the purpose of holding mercury, which is permitted to pass out through the holes *a* onto the scattering wheel or disk L, and thence it is disseminated through the water, picking up the particles of gold, and finally passing over into the trough

K. The disk or wheel L also serves as guard, to prevent the spray and water from being thrown through the cylinder by the wheel H. The amalgamated plates F and G are secured to the interior of the cylinders by means of screws, or in any suitable manner by which they can be readily attached and detached for convenience of cleaning. The water containing the flour or fine gold is carried up from the trough I by the lifting-wheel H, as before stated, leaving the sand and extraneous matter in the trough. The centrifugal action of the rotating cylinders overcomes the gravity of the particles of gold and causes them to come in contact with and to adhere to the amalgamated plates, or to fall as an amalgam into the trough, from whence it is removed and subjected to the well-known processes used in separating the gold from the mercury.

I do not wish to limit myself to any particular size or scale on which the cylinders are to be built, or to restrict myself to the number of revolutions per minute the machine is to make. I find, however, that a machine having the outer cylinder eight (8) feet in diameter and four (4) feet high, driven at a velocity of two hundred revolutions per minute, produces good results; or a machine having a cylinder four (4) feet in diameter, driven at a velocity of four hundred revolutions per minute, also produces good results.

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

1. A centrifugal machine for recovering flour or fine particles of gold from the washing-flume, consisting of an outer cylinder and a cone-shaped inner cylinder provided with a lifting-wheel secured to a common shaft, and adapted to be rotated in a trough containing the water from the washing-flume, as set forth.

2. In a centrifugal machine for recovering the fine or flour gold from the washing-flume, a cone-shaped cylinder provided with a lifting-wheel at its apex or lower end, adapted to be rotated in the water of the flume, and an outer cylinder connected to the inner cylinder and to a common driving-shaft, in combination with amalgamated plates, arranged as described, and a trough for catching and retaining the gold or amalgam, as set forth.

3. In a machine for recovering the fine or flour gold from the washing-flume, a rotating cylinder lined with amalgamated plates, and an inner cone-shaped cylinder, also lined with amalgamated plates, and provided with a lifting-wheel adapted to be revolved in the water of the flume, whereby the water, with the flour gold therein, is carried over the amalgamated plates of the cone-shaped cylinder and deposited in a thin sheet on amalgamated plates on the interior of the outer cylinder, as set forth.

4. In a centrifugal machine for recovering fine or flour gold from the water of the flume, the hollow shaft B, provided with apertures *a*, distributing-disk L, and lifting-wheel H, in combination with the cylinders E and C and troughs I and K, whereby the mercury is distributed from the shaft through the water from the flume, as and for the purpose set forth.

5. In a machine for recovering fine or flour gold from the water of gold-washing flumes, devices, substantially such as described, for raising or lifting the water through a cone-shaped cylinder, a hollow driving-shaft for containing mercury, said shaft being provided with apertures, as described, and a distributing disk or wheel secured to said shaft, whereby as the water is being raised from the flume the mercury is distributed through the water and deposited in a trough or other receptacle, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GALEN W. PEARSONS.

Witnesses:
JAMES GIBSON,
L. TRABER.