

(No Model.)

J. ELLISON.
AMALGAMATOR.

No. 497,267.

Patented May 9, 1893.

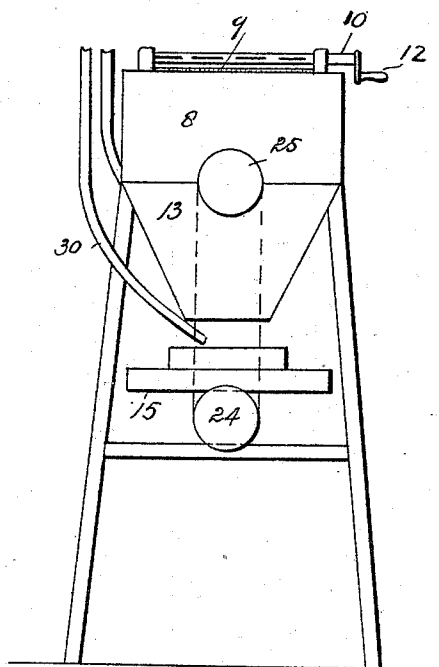


Fig. 2.

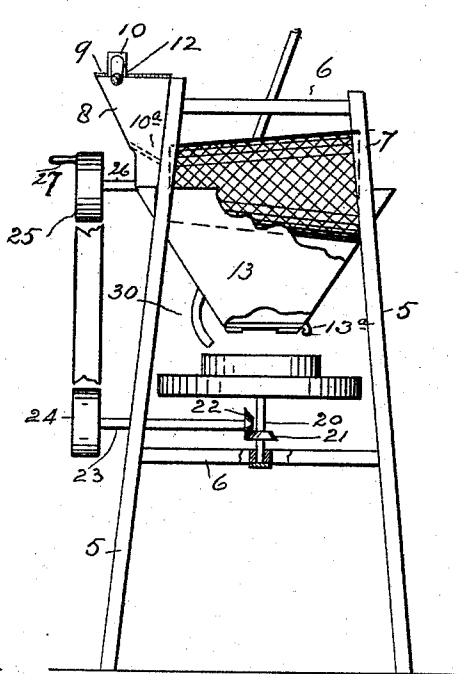


Fig. 1.

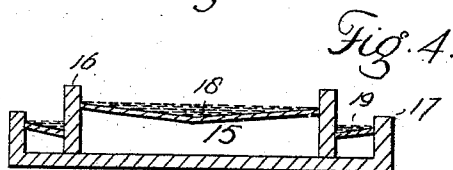
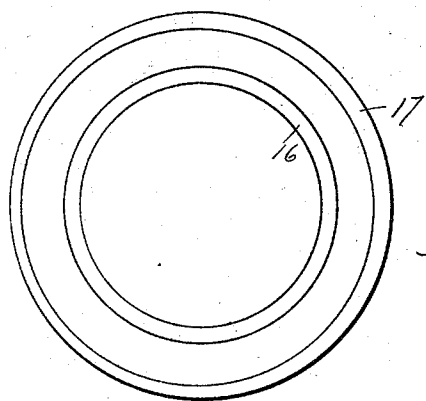


Fig. 4.

Fig. 5.

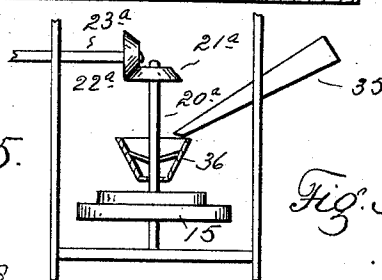
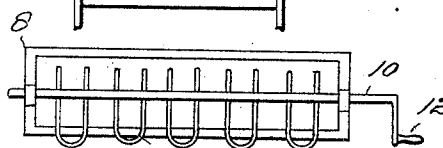


Fig. 3.

Fig. 6.



Witnesses
G. J. Roelant
W. H. McConnell

Joseph Ellison
Inventor
By his Attorney J. W. Brien

UNITED STATES PATENT OFFICE.

JOSEPH ELLISON, OF DENVER, COLORADO.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 497,267, dated May 9, 1893.

Application filed July 15, 1892. Serial No. 440,187. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ELLISON, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Amalgamators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in amalgamators designed for use either in placer mining or for catching the free mineral as the pulverized ore leaves the stamp-mill.

The object of the invention is to provide a device of the class stated which shall be simple in construction, economical in cost, reliable, durable and efficient in use.

To these ends the improvement consists of the features, arrangements and combinations hereinafter described and claimed and will be fully understood by reference to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of the mechanism, parts being broken away. Fig. 2 is an end elevation. These two views show the mechanism in the form of a small sized hand machine for use by prospectors and others in treating placer material on a limited scale. This construction, may however, be made of any suitable size and operated by any suitable motor. Fig. 3 is a side view of my improved amalgamating pan as used in connection with a stamp mill. Fig. 4 is a vertical transverse section of the pan in detail. Fig. 5 is a top or plan view of the same. Fig. 6 is a plan view of the hopper, showing the movable screen in place.

Similar reference characters indicating corresponding parts or elements of the mechanism in the several views let the numeral 5 designate upright bars and 6 transverse connecting bars of a suitable framework. In the upper part of this frame is horizontally journaled a frustum-shaped rotating screen 7 open at both ends. Into the smaller end of this screen is fed the material to be treated from

a hopper 8, across the top of which is located a screen or grate 9 secured to a shaft 10 journaled in the ends of the hopper and provided with a crank 12 whereby the coarse material rejected by the screen may be thrown off at intervals by giving bar 10 a partial rotation outward. Across the lower portion of the hopper is located an inclined chute 10^a which carries the material to the screen 7. From the screen 7 the material passes to another hopper 13 located beneath said screen and having inclined sides which carry the material to the bottom which is of comparatively small area, and provided with an opening controlled by an adjustable slide 13^a. Through this opening the material passes to the horizontally rotating amalgamating pan 15 below, which is of circular shape and provided with circumferential riffles 16, 17, &c., said riffles occupying different planes, the innermost being the highest, the next somewhat lower and so on. In the drawings the pan is shown with two riffles though it may have any desired number which may be found necessary to catch the mineral. This pan 15 has a suitable bottom framework to which the riffles are secured. The bottoms of the spaces or compartments 18, 19, &c., surrounded by the riffles are highest at the outside, and are provided with copper amalgamating plates. The bottom of the innermost compartment 18 slopes toward its center which is its lowest point, while the bottom of the outer compartment 19 slopes from riffle 17 toward riffle 16. The bottoms of the compartments 18 and 19 are covered with mercury as indicated by dotted lines.

To the under surface of pan 15 is rigidly secured a vertical shaft 20 the lower extremity of which enters a suitable socket formed in the framework underneath. To this pivot is secured the beveled pinion 21 meshing with another pinion 22 rigidly secured to the shaft 23 journaled in the frame and carrying a pulley 24 made fast to its outer extremity and connected with another pulley 25 by means of a belt 26. A sprocket chain and corresponding wheels may be employed instead of the belt and pulleys shown. Pulley 25 is located on a shaft 26 connected with the rotating screen 7. The outer extremity of this shaft is provided with a crank 27 for hand use where-

by the screen 7 and the pan 15 may be rotated simultaneously by turning shaft 26.

In the use of the construction shown in Figs. 1 and 2 the material to be treated is fed 5 to the hopper through the movable grate 9 and passes thence to the screen 7 which discharges the greater part of the coarse worthless material or gangue which has escaped grate 9, said coarse part passing out of the 10 larger extremity of the rotating screen which is open for the purpose. The material which passes through screen 7, which may be of any desired mesh, passes to the amalgamating pan 15 as before explained, being fed first to the 15 center of compartment 18, the mercury in which catches the free mineral while the gangue or sand is carried by the centrifugal force induced by the pan's rotation over the surrounding riffle 16, the compartment being 20 filled with water which is supplied from a feed pipe 30. The material which passes over riffle 16 passes to compartment 19 in which any remaining free gold is caught by the mercury, the gangue being then carried over the 25 outer riffle and discharged from the machine. When the amalgamating pan is used in connection with a stamp mill a vertical shaft 20^a pivoted in a suitable socket at its lower extremity beneath the pan, passes up through 30 the pan and is connected with the propelling mechanism composed of gears 21^a, 22^a and shaft 23^a which in this case are located above the pan, the shaft 23^a being connected with any suitable motor. The material passes from

the stamp mill through a chute 35 to a funnel shaped hopper 36 secured to the shaft 20^a. 35 The material passes through this hopper to the center of compartment 18 of the pan when the operation is as heretofore described.

It is believed desirable that the bottoms of 40 compartments 18 and 19 should be lowest on the inside, as shown in Fig. 4, since the natural tendency of the mineral under the influence of the rotary movement of the pan would be to seek the lowest point of the bottom. 45 Hence when this part of the pan is innermost this tendency of the mineral acts in opposition to the centrifugal force induced by the pan's rotation and thus keeps the mineral away from the outside of the pan and prevents the 50 possibility of its being carried over the surrounding riffles and lost.

Having thus described my invention, what I claim is—

In an amalgamator the combination of a 55 horizontally rotating amalgamating pan located in a suitable framework, a rotating screen above, a hopper communicating with the screen, a movable grate at the top of the hopper, and means for simultaneously impart- 60 ing to the screen and pan a rotating movement, substantially as described.

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

JOSEPH ELLISON.

Witnesses:

WM. MCCONNELL,
G. H. STOVER.