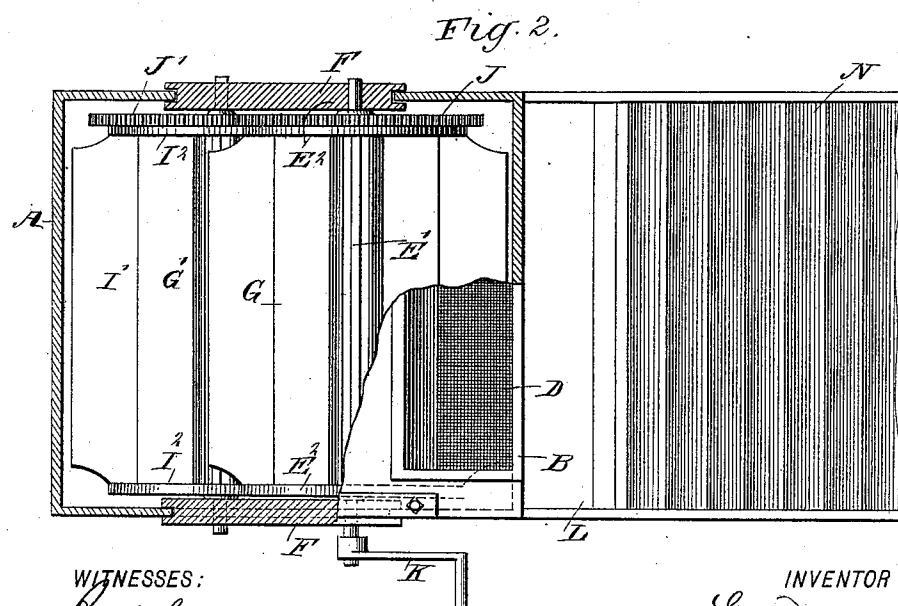
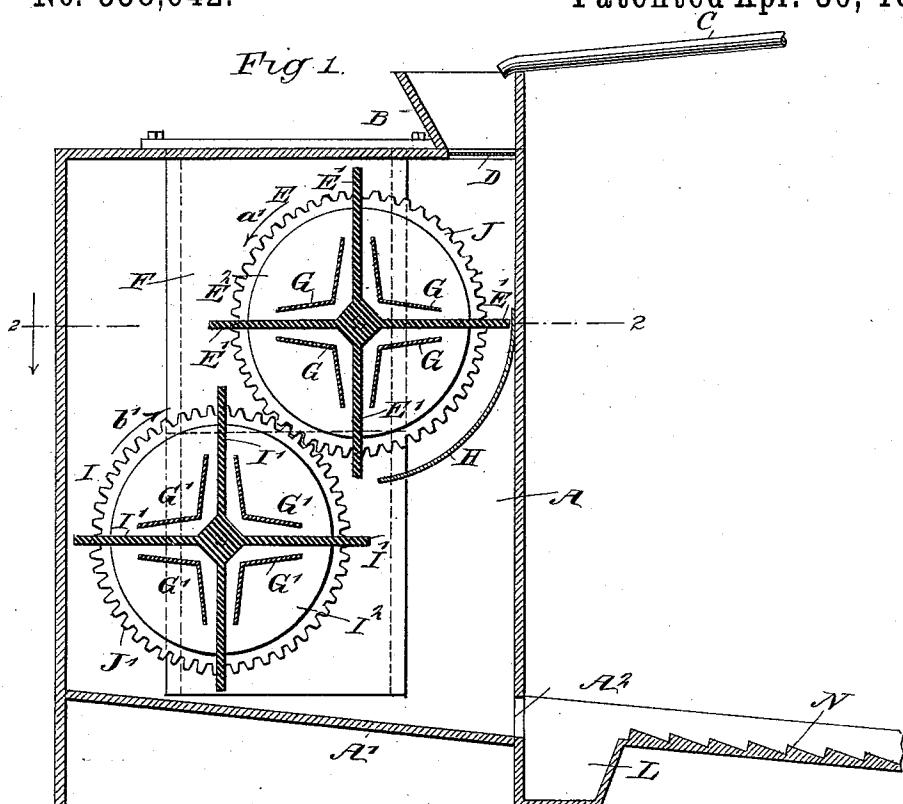


(No Model.)

G. W. DOWNS.  
AMALGAMATOR.

No. 538,642.

Patented Apr. 30, 1895.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

GEORGE W. DOWNS, OF PORT TOWNSEND, WASHINGTON.

## AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 538,642, dated April 30, 1895.

Application filed July 5, 1894. Serial No. 516,600. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. DOWNS, of Port Townsend, in the county of Jefferson and State of Washington, have invented a new and Improved Amalgamator, of which the following is a full, clear, and exact description.

The invention relates to gold saving apparatus having amalgamating plates, and the object of the invention is to provide a new, improved and portable amalgamator, which is simple and durable in construction, very effective in operation and arranged to be conveniently operated by hand power, to readily save the float gold contained in river or beach sand.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional side elevation of the improvement, and Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1.

The improved amalgamator is provided with a suitably-constructed portable casing A, provided in its top with a hopper B, into which the sand containing the float gold is shoveled or otherwise deposited therein. Into this hopper B discharges a water supply pipe C, to wash the sand and gold contained therein down the hopper through a sieve D, arranged in the bottom of the hopper, onto the wings E' of the wheel E, journaled in suitable bearings arranged in side plates F, fitted to slide vertically in the sides of the casing A, as will be readily understood by reference to the drawings. The wings E' are preferably made of aluminum, copper or other metal and coated with quicksilver so as to retain any gold that may pass over the wings, the latter being attached at their ends to heads E<sup>2</sup> made in the shape of disks and secured on the hub of the wheel. See Fig. 2. When the wheel E is rotated in the direction of the arrow a', then the sand and gold discharged onto the wing E' directly under the sieve D causes the sand to roll over the wing as the latter moves forward in the direction of the arrow a', the sand being finally discharged onto the back of

the next wing E' in front, to pass over the same for the purpose of retaining any float gold that may be contained in the same. Thus it will be seen that the sand passed onto the upper face of one of the wings rolls over the same onto the under side of the next following wing, as the wheel rotates, so that the sand is thoroughly agitated and a correspondingly large amount of gold is amalgamated on the coated faces of the wings.

In order to regulate the movement of the sand from one wing to another, I provide V-shaped guides G between each two successive wings, the said guides forming a continuous channel with the two adjacent wings, through which channel the sand has to pass from one wing to another. By this arrangement throwing of the sand from one wing to the other on revolving of the wheel is prevented, and consequently the sand has to pass over the entire surface of each wing before it can be discharged from the said wheel. A second wheel similar in construction to the wheel E and also provided with amalgam-coated wings I', heads I<sup>2</sup> and guides G' similar to the guides G and located between the two adjacent wings I'. A protecting bottom H extends from the rear side of the casing A under about one quarter of the wheel E, so that any sand which passes through the sieve D and is not caught by one of the wings E', slides down the said bottom, which discharges onto one of the wings I' of the wheel I.

The wheels E and I are connected with each other by the gear wheels J and J', and on the shaft of the wheel E at one outer end thereof is secured by a crank arm K, for turning the said wheel in the direction of the arrow a', as before described, the gear wheel J of the said wheel E imparting a like rotary motion in the direction of the arrow b' to the other wheel I. It is understood that the wheels E and I thus rotate in opposite directions, and the sand from the wing E' is discharged onto the top surface of a corresponding wing I' for the other wheel I to pass onto the next following wing I', the sand finally passing over the edge of this wing onto the inclined bottom A' of the casing A, the said bottom being also coated with amalgam to retain any float gold not caught by the wings above referred to.

At the lower end of the bottom A' the sand

passes through an opening A<sup>2</sup> in the rear end of the casing A to flow into a trough L arranged on the outside of the casing, and adapted to save all quicksilver, and float gold not retained by the apparatus within the casing A. From the trough L leads a riffle N of any approved construction, to retain any gold passing from the trough L.

It is understood that the water washes the sand through the sieve D onto the wings E', so that the hopper is not liable to get blocked, and the sand readily flows over the surfaces of the wings, as above described, and also onto and down the bottom A' into the trough L and from the latter over the riffle N, as above mentioned.

When the machine has been in operation for a certain length of time, then the operator removes the sides F from the casing A, the said sides containing the wheels E and I which are then subjected to the usual processes for removing the amalgam, to separate the gold from the quicksilver in the usual manner.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. As an amalgamator, comprising two oppositely revolving wheels, each provided with amalgamating wings, the said wheels being arranged one above the other so that the upper one will discharge upon the lower one, substantially as described.

2. An amalgamator, comprising two wheels, each having amalgamating wings, the said wheels being arranged one above the other,

and geared together to revolve in opposite directions, substantially as described.

3. An amalgamator provided with a revolvable wheel having amalgamating wings arranged in such a manner that the sand passing onto the top of one wing rolls down the same onto the next following wing, and a guide arranged between each two adjacent wings to form a continuous channel therewith for the passage of the sand, substantially as shown and described.

4. An amalgamator comprising a casing having removable sides, wheels journaled in the said sides within the casing, said wheels being geared together and each wheel provided with amalgamating wings, the guides arranged between the adjacent wings of each of the wheels, substantially as shown and described.

5. An amalgamator comprising a casing having removable sides, wheels journaled in the said sides within the casing, the said wheels being geared together and each wheel provided with amalgamating wings, guides arranged between the adjacent wings of each of the wheels, and a hopper arranged at the top of the said casing and provided with a screened bottom discharging onto the upper faces of the wings of the first wheel, the latter discharging onto the wings of the other wheel, substantially as shown and described.

GEORGE W. DOWNS.

Witnesses:

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