

(No Model.)

2 Sheets—Sheet 1.

A. TANNER.
AMALGAMATOR.

No. 532,114.

Patented Jan. 8, 1895.

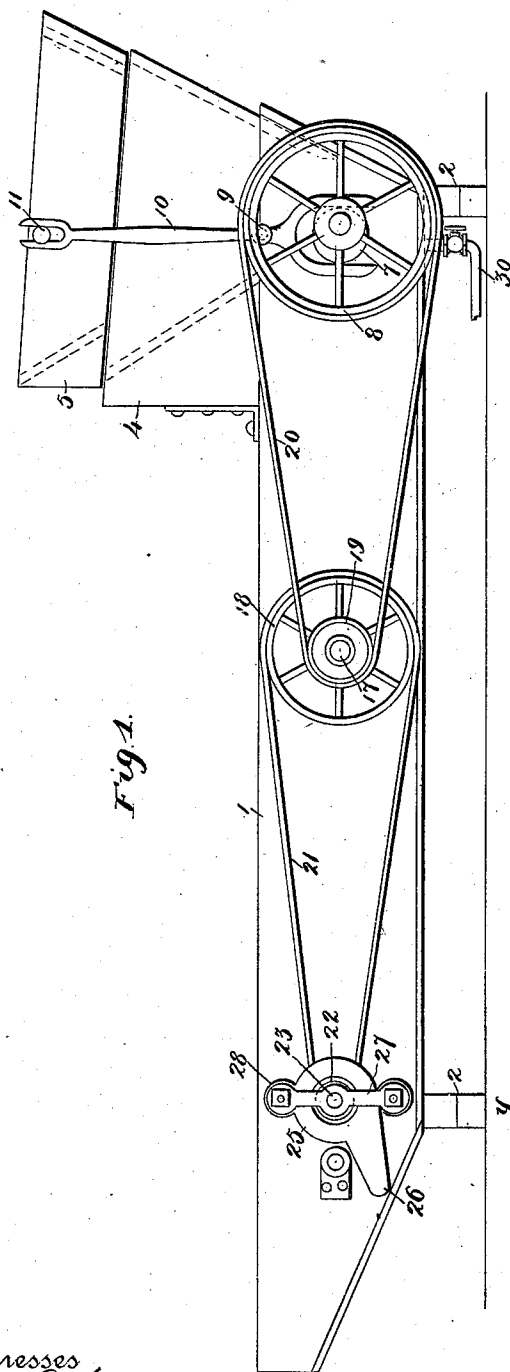


Fig. 1.

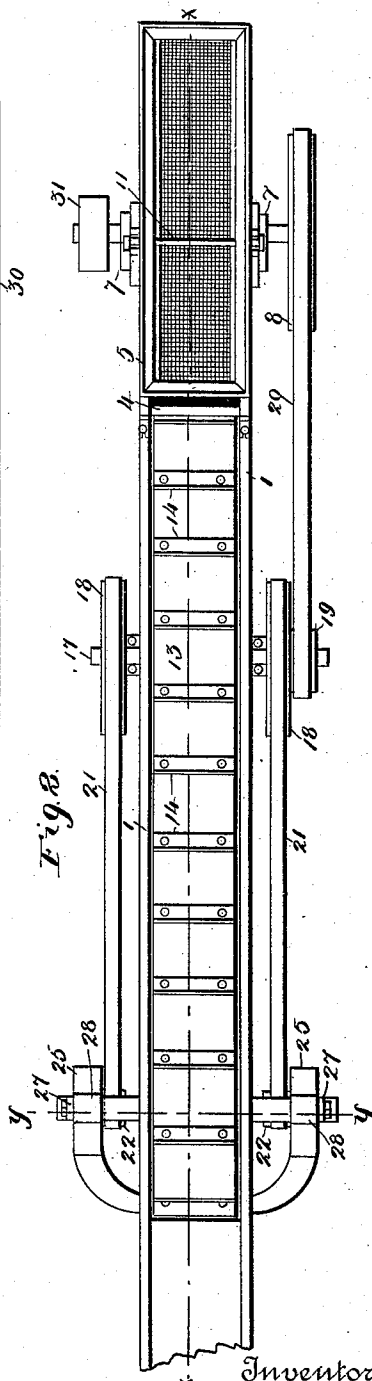


Fig. 2.

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Inventor
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By his Attorneys,
Keller & Starek

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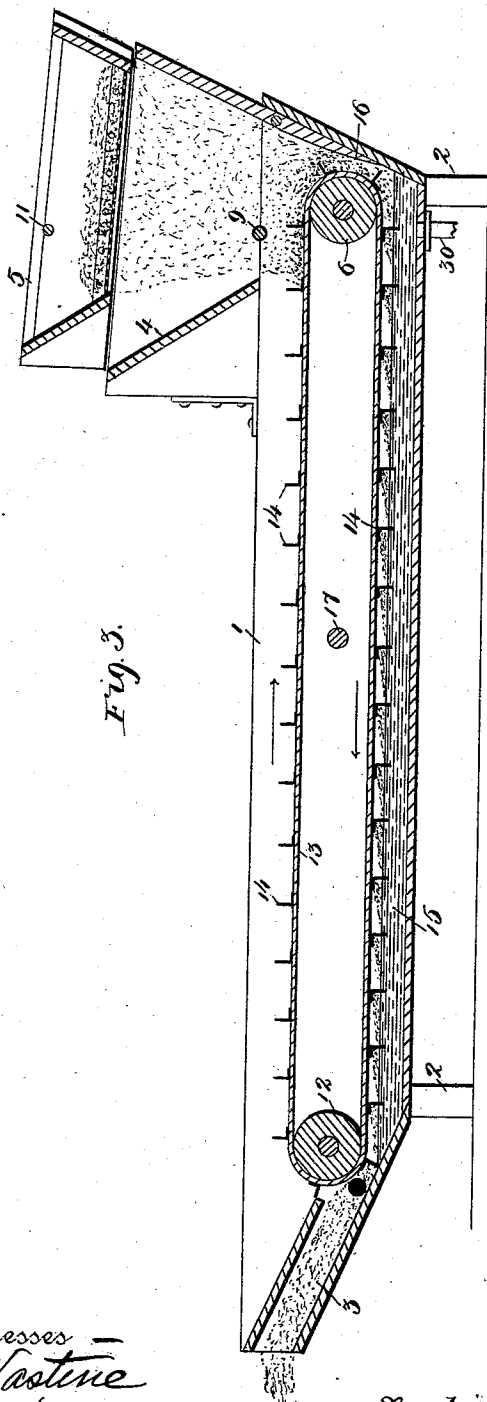


Fig. 3.

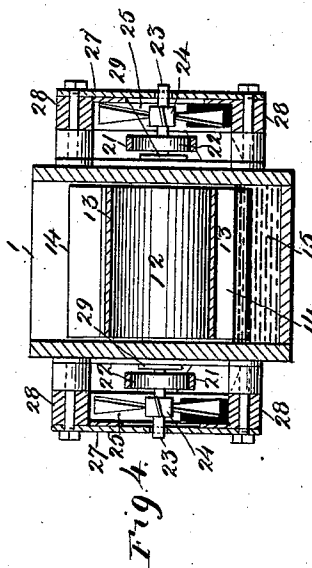


Fig. 4.

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UNITED STATES PATENT OFFICE.

AUGUST TANNER, OF BROOKFIELD, MISSOURI, ASSIGNOR OF ONE-HALF TO
WILLIAM C. HANNUM, OF SAME PLACE.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 532,114, dated January 8, 1895.

Application filed September 12, 1894. Serial No. 522,790. (No model.)

To all whom it may concern:

Be it known that I, AUGUST TANNER, of Brookfield, Missouri, have invented certain new and useful Improvements in Amalgamators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in amalgamators and consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my improved apparatus. Fig. 2 is a plan view. Fig. 3 is a middle longitudinal section taken on the line $x-x$ of Fig. 2; and Fig. 4 is an enlarged transverse section on the line $y-y$ of Fig. 2.

The object of my invention is to construct a new apparatus designed for the amalgamation of precious metals in ores containing only small or minute quantities of the former.

In the amalgamation of gold in the wet way, much of the mercury is carried off by the running water, and a large proportion too of the precious metal is lost, especially the light float metal.

By my present apparatus and the method which it carries out, the ore after being first thoroughly dried, in a finely divided state is passed in thin layers over the surface of a mercury bath, being advanced over the surface in a manner that all particles of the ore and the metal it contains are brought in contact with the mercury, the resulting amalgam falling to the bottom of the bath, and the gangue being blown off or otherwise removed when it reaches the terminal of the trough within which the mercury is contained.

The apparatus in detail may be described as follows:

Referring to the drawings, 1 represents a trough of suitable length mounted on supporting legs 2, the said trough having a discharge passage 3 at one end thereof. At the opposite end is superposed a hopper 4 over the upper end of which is superposed and along which there reciprocates a sieve 5, the upper edge of the hopper being inclined toward the outer end of the hopper, so as to

give a corresponding inclination to the bottom of the sieve and allow for the accumulation of coarse particles during the reciprocation of the sieve.

Mounted transversely through the trough under the hopper 4 is a roller 6 having secured to each outer projecting end thereof an eccentric 7 exterior to which is mounted a driving wheel 8. At the juncture of the trough and hopper is mounted a transverse bar 9 to each outer end of which is pivoted the lever 10, the lower end or fork of which embraces the eccentric, and its upper end or fork embracing the projecting end of a rod 11 passing transversely through the side walls of the sieve 5, near the upper edge thereof.

At the opposite end of the trough and on a level with the roller 6 is a similar roller 12, a belt 13 passing around the two rollers and carrying along its outer surface metal angle shoes 14 the projecting plates of the shoes being of such a length as to just pass beneath the surface of the mercury bath 15 at the bottom of the trough, and of a length as to just touch, during the revolution of the belt, the lower edge 16 of the end wall of the hopper.

Mounted at the medial portion of the trough and between the laps of the belt is a shaft 17 the outer ends of which carry each a driving wheel 18 and one end carrying a pulley 19, the latter taking its power through the belt 20 from the wheel 8, and conveying it by the belt 21 passing around the wheels 18 and pulleys 22 on a shaft 23 mounted in suitable bearings on either side at one end of the trough. The shaft 23 carries a fan 24 confined within a casing 25, the delivery end 26 of which casing terminates as best shown in Fig. 3 at the inner end of the passage 3, and adjacent to the lower edge of the belt passing over the roller 12.

The fan casing or blower is secured to the outer wall of the trough by the bracket 27 which has its upper and lower ends bolted to the sides of the trough, the bolts passing through the ends of the bracket and through projecting lugs 28 forming part of the casing. The medial portion of the bracket 27 serves to support the shaft 23 at one end, the inner end of the shaft being supported on a bearing 29 secured to the outer wall of the

trough. A delivery pipe 30 having a suitable valve extends from the bottom of the trough for permitting the contents of the latter to run out.

5 Power is applied for example to the pulley 31 at the outer end of the shaft carrying the wheel 8. This power is then transmitted through the belt 20 to wheel 18, thence through belt 21 to the fans. The eccentric reciprocates the lever 10 and this in turn reciprocates
10 the sieve 5. The ore in a dry state and finely pulverized is fed into the sieve, falling through the same into the hopper below. The ore falls against the lower edge 16 of the hopper, a certain quantity is carried forward by the
15 shoes on the traveling belt, and each shoe as it passes over the surface of the mercury bath drives before it the ore giving the same a rolling motion and bringing every particle of
20 ore and metal contained therein in contact with the mercury. As the ore is shoved along it finally reaches the end of the trough and is picked up by the current of air coming from the delivery end of the blower, and is forced
25 out through the passage 3 into the atmosphere or any suitable receptacle not shown.

The best results are attained by my present process when the ore is fine and dry, the dryer the better. It has been found in practice
30 that after ore has been subjected to the treatment here set forth, not a particle of metal remains behind to be treated as tailings.

Having described my invention, what I claim is—

35 1. In an amalgamator, a suitable trough, a discharge passage at one end thereof, a travel-

ing belt in said trough, a roller for said belt, suitable blowers on either side of the trough, having their delivery ends entering the inner end of the discharge passage and adjacent to
40 the edge of the roller, substantially as set forth.

2. An amalgamator comprising a suitable mercury trough, a traveling belt mounted in the same, a suitable hopper at one end of
45 the trough, a reciprocating sieve having an inclined bottom superposed over the hopper, rollers for said belt, a driving shaft and pulley forming part of one roller, an eccentric on said shaft located outside of the trough, a
50 pivoted forked lever engaging the eccentric at one end, and the reciprocating sieve at the other end, a series of shoes mounted transversely on the outer face of the belt and adapted to come in contact with the mercury
55 bath, suitable fans located at the opposite end of the trough exterior to the same, suitable intermediated driving mechanism between said fans and the driving shaft of the belt, a delivery passage at the same end of the
60 trough, the delivery ends of the fan casing entering the inner end of the delivery passage of the trough adjacent to the lower edge of the roller carrying the belt, substantially as set forth.

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

AUGUST TANNER.

Witnesses:

J. M. JOHNSON,
S. T. LANDER.