

(No Model.)

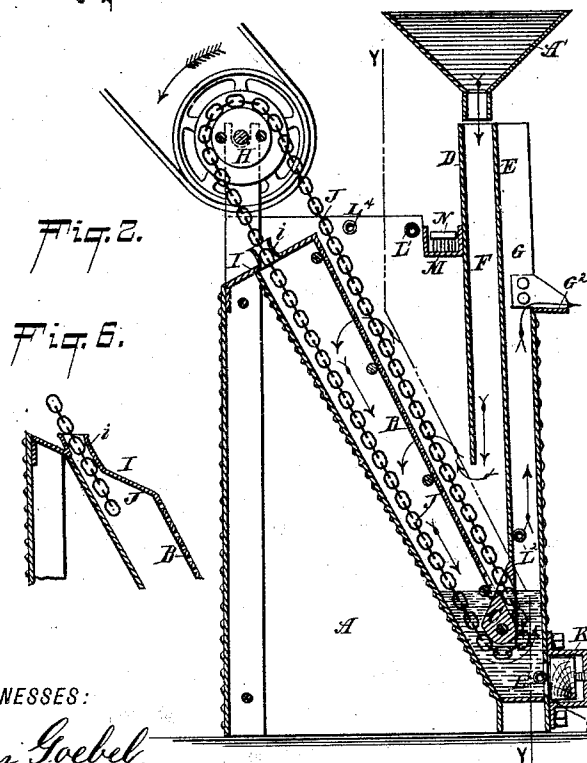
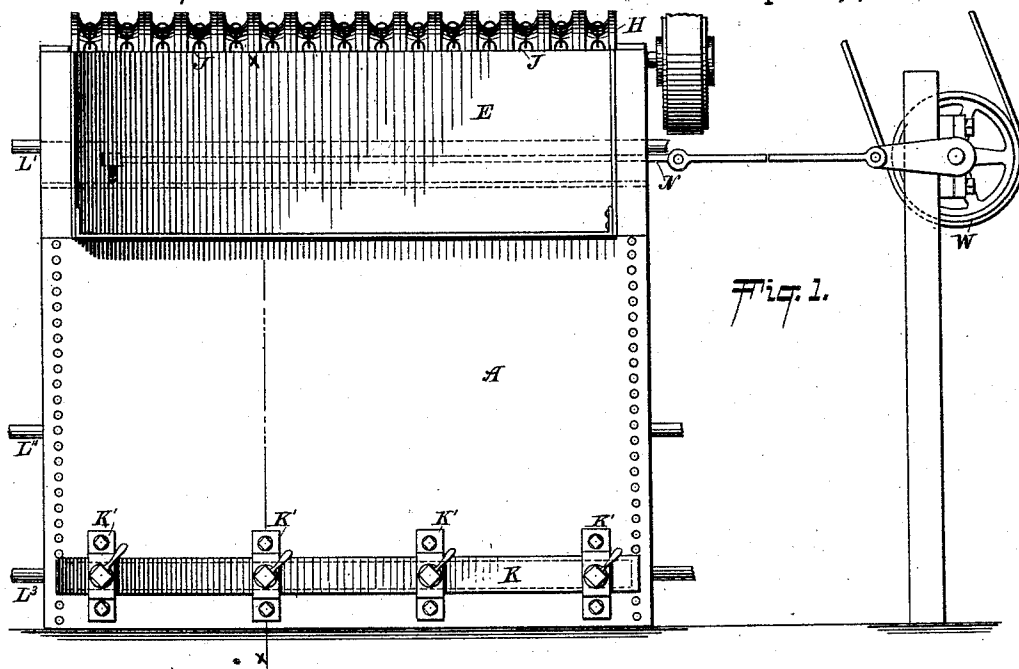
2 Sheets—Sheet 1.

G. L. CUDNER.

PLACER DISINTEGRATOR AND AMALGAMATOR.

No. 473,451.

Patented Apr. 26, 1892.



WITNESSES:

William Goebel.
Geo. E. Metz.

INVENTOR

Gustav L. Cudner
BY Adam E. Schatz
ATTORNEY.

(No Model.)

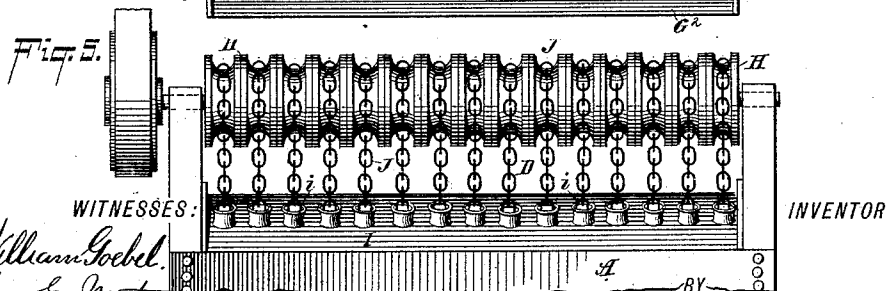
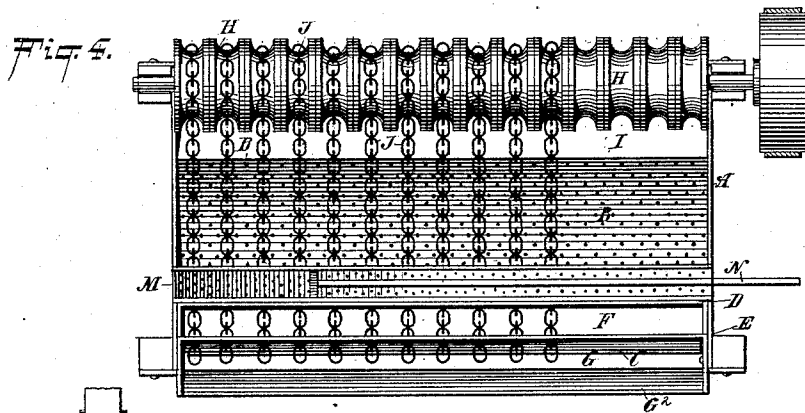
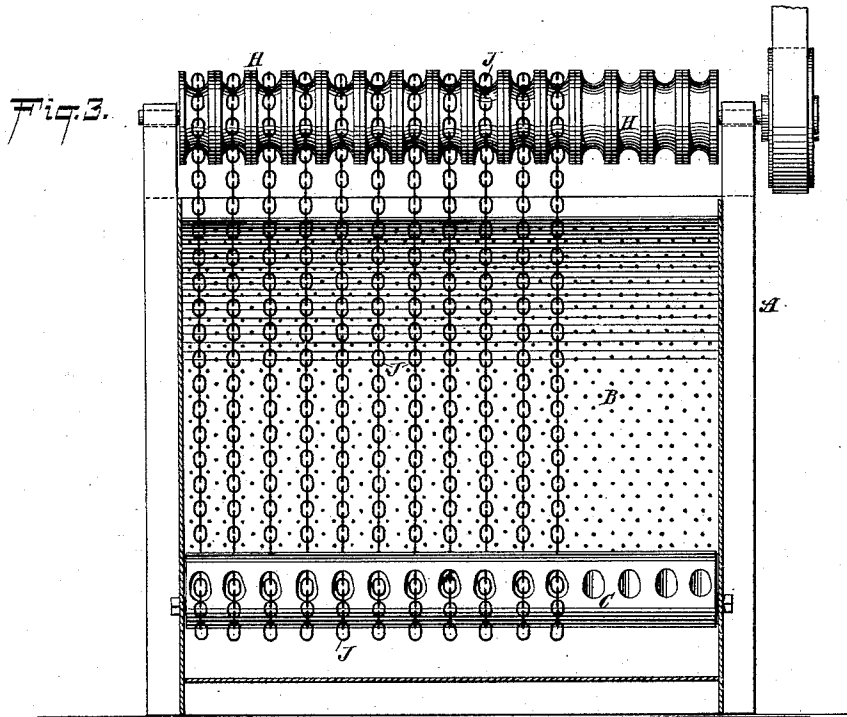
2 Sheets—Sheet 2.

G. L. CUDNER.

PLACER DISINTEGRATOR AND AMALGAMATOR.

No. 473,451.

Patented Apr. 26, 1892.



WITNESSES:
William Goebel.
Geo. E. Metz.

INVENTOR

BY *Gustav Lormer Gudner*
1st Adam E. Schatz ATTORNEY.

UNITED STATES PATENT OFFICE.

GUSTAVIS LORRIMER CUDNER, OF NEW YORK, N. Y., ASSIGNOR OF FOUR-FIFTHS TO JACOB RUPPERT, JR., GEORGE E. METZ, AND ADAM E. SCHATZ, OF SAME PLACE.

PLACER DISINTEGRATOR AND AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 473,451, dated April 26, 1892.

Application filed May 14, 1891. Serial No. 392,671. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVIS LORRIMER CUDNER, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Placer Disintegrators and Amalgamators, of which the following is a specification.

My invention relates to an improvement in machines for treating placer and ores carrying precious metals.

The chief object of my invention is to bring the placer or crushed ore in contact with agitating chain cables, which constantly triturate the ores by carrying them in an inclined upward position, and then letting them fall to the bottom of the machine to be again carried upward by the chain cables, during all of which time the ore and pebbles or substitutes for pebbles are being acted upon by coming in constant contact with each other and thus being separated, and the metallic parts, being released, are carried by gravitation to the bottom of the machine by either being thrown back into the mass of the matter under trituration and coming in contact with the mercury provided for that purpose in the bottom of the machine or falling through the perforated plate or screen and carried downward into the mercury, while the released fine particles of debris held in suspension in the water are carried out of the machine by way of the outlet-chamber G, and from thence onto a concentrator, which is provided for the purpose of catching and holding such parts of the metallic matter that may not have been amalgamated by the mercury in the bottom of the machine.

By means of the machine devised by me I am enabled to successfully and profitably treat ore placers and placer tailings and ores and ore-tailings carrying a very small percentage of precious metal.

In the drawings, Figure 1 is a front elevation. Fig. 2 is a cross-section on the line X X of Fig. 1. Fig. 3 is a longitudinal section on the line Y Y of Fig. 2. Fig. 4 is a top view. Fig. 5 is a rear view showing back of plate and

thimbles. Fig. 6 is a modification of the top of the back plate B.

Like letters represent like parts.

A represents the body of the machine, which is a trough of a triangular shape and is supported on four stanchions or posts. This body can be made of any suitable material; but I prefer to build it of metal plates fastened in position in any suitable manner. The front wall preferably reclines slightly toward the back and is so constructed that it affords a wall against which the water will strike in its upward course toward the spout G², and thus assist in tumbling the water backward upon itself, helping to precipitate the metallic matter that may be held in suspension in the water in discharge-chamber G. The trough is provided with the partition E, which runs from end to end and down to and joins the flat side of a wedge-shaped eyeleted guide-bar C, which runs from end to end of the trough A and is suitably fixed. The space between the nearly perpendicular front wall of trough A and the partition E is a discharge-chamber and is designated G.

D is a second partition running from end to end of the trough A on a line with the outer front wall thereof, extending downwardly to a point where it almost meets the chain J. The space between the partitions E and D is an inlet-chamber and is designated as chamber F, and into which the material is dumped.

To the back of the partition D and running from end to end is fixed a perforated gutter M, which is provided for the purpose of carrying off the pebbles and other large matter which is discharged continuously, the discharge of the pebbles and coarse matter being assisted by the rake N, which is oscillated by means of a cam-wheel and driving-pulley W, as shown in Fig. 1, thus throwing the discharged matter off the gutter at either end.

B is a perforated plate or screen set at an angle of about thirty degrees and slopes backwardly and meets plate I near its top, which plate I is provided with the eyelets or thimbles *z z* at its upper end, and through which

the cable-chains J pass. At the rear top end of the trough and properly boxed in the stanchions is set a shaft, upon which are fixed at regular intervals grooved pulleys H. To one
5 end of the shaft is attached a pulley to rotate the shaft.

J J are cable-chains, which run over the pulleys H and under and around and up through the eyelets of the guide-bar C.

10 L' is a perforated water-pipe running from end to end of the trough A at or near the gutter M.

L² is a perforated water-pipe running from end to end of the trough in the chamber G a little above the guide-bar C. L³ is another
15 perforated water-pipe running from end to end of the trough at or near its extreme bottom and opposite the clean-up discharge-opening Q, with the perforations toward the plate

20 K. The front wall of the trough is provided near the bottom with an opening, through which the machine is cleaned up, to do which it is only necessary to remove the elastic-backed plate K, which is held in place by a
25 number of clamps K', provided with lever screw-bolts.

Running along the front wall, but at a point some inches below the line of the gutter M, is provided a discharge-spout G².

30 A' is a suitable hopper set over the charging-chamber F and facilitates the introduction of the material to be treated; but this hopper may be dispensed with.

When in operation, I proceed as follows:

35 The water being turned on the pipes L', &c., the ore to be treated is introduced into the charging-chamber F and is carried downward in the line indicated by the arrows. The material there meets the chains J, which, running
40 in an upward direction, as shown by the arrow, over the pulley, the pebbles and ores and other matter come into constant friction with each other, and thus the clayed particles and such parts as may adhere to the pebbles are

45 divorced from each other and the whole mass is thoroughly separated and the metallic parts separated from their foreign coatings and adherents. The whole mass is constantly whirled about, being carried up the inclined perforated plate or screen to a certain point near
50 the top and gradually accumulated against the partition E, until by constant addition to the mass being triturated or separated the débris is thrown up into the gutter M and removed by the action of the rake N. During
55 the time that the mass is being agitated or tumbled by the upward action of chains J J a sufficient quantity of quicksilver will be added, which by gravitation mostly settles at

60 the bottom of the trough A. The precious metal separated from the ore is partly carried directly to the bottom by gravity and partly through the action of the water through the perforated plate or screen to the bottom of

the trough A, where it again comes in contact 65 with the quicksilver to a greater extent. By reason of the upward movement of the chains over the inclined plane or screen and the downward movement of the chain between the screen and rear wall of the trough the 70 water is carried in the direction of the lines indicated by the arrows, and, passing finally under the guide-bar C and through the mass of mercury, the earthy parts held in suspension by the rise of the water are carried up 75 through the discharge-chamber G and out over the spout, where it is preferably carried onto a concentrator, which is intended, as far as possible, to catch the metallic particles that have no affinity for quicksilver and the particles of concentrates not caught in the mercury in the trough. For this purpose I have constructed a peculiar concentrating mechanism, which will be the subject of an application for a patent hereinafter. 85

I may now state that in some cases where the precious metal is on hand in a coarse state it is not necessary to use mercury, the metal being carried to the bottom by gravitation. In some cases where the matter to be treated is finely-pulverized, stamped, or crushed ore I throw into the trough a quantity of metal pieces of any shape or a quantity of pebbles, which assist in the separation by reason of friction. This may also be 95 done to advantage in placer ores that carry little gravel. By the use of this machine I have in practice been enabled to capture the finest float-gold and the largest per cent. of value. The chains J J pass through the 100 thimbles *i i* of the plate I, and thus the small pebbles that may ascend some distance over the level of the water by clinging to the chains cannot fall between the chains and the throat and clog the action of the machine. The 105 mass in the main chamber of the trough stands nearly level with the top and considerably higher than at the spout G².

In cleaning up it is only necessary to remove the plank K and draw the charge of amalgam or the metal that may have lodged there. 110

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is— 115

1. In an ore separator or amalgamator, the combination, with a trough, of an inclined perforated partition therein, a shaft above it, a series of endless chains extending both sides of said partition and over the shaft, and means for rotating the shaft, substantially as described. 120

2. In an ore separating and amalgamating machine, a triangular trough A, having the partitions E and D, forming the chambers 125 F and G, the inclined perforated plate or screen B, the wedge-shaped eyeleted guide-way C, the traveling chains J, the shaft H,

provided with grooved pulleys, the gutter M,
the spout G², the perforated pipes L' L² L³ L⁴,
the discharge-opening Q, the clamps K', pro-
vided with levered screw-bolts, and the top
5 plate K, all constructed and operated as shown
and described.

Signed at New York, in the county of New

York and State of New York, this 22d day of
April, A. D. 1891.

GUSTAVIS LORRIMER CUDNER.

Witnesses:

GEO. E. METZ,

REUBEN S. LIND.