

(No Model.)

G. L. CUDNER.

COMBINED ORE SEPARATOR AND AMALGAMATOR.

No. 473,450.

Patented Apr. 26, 1892.

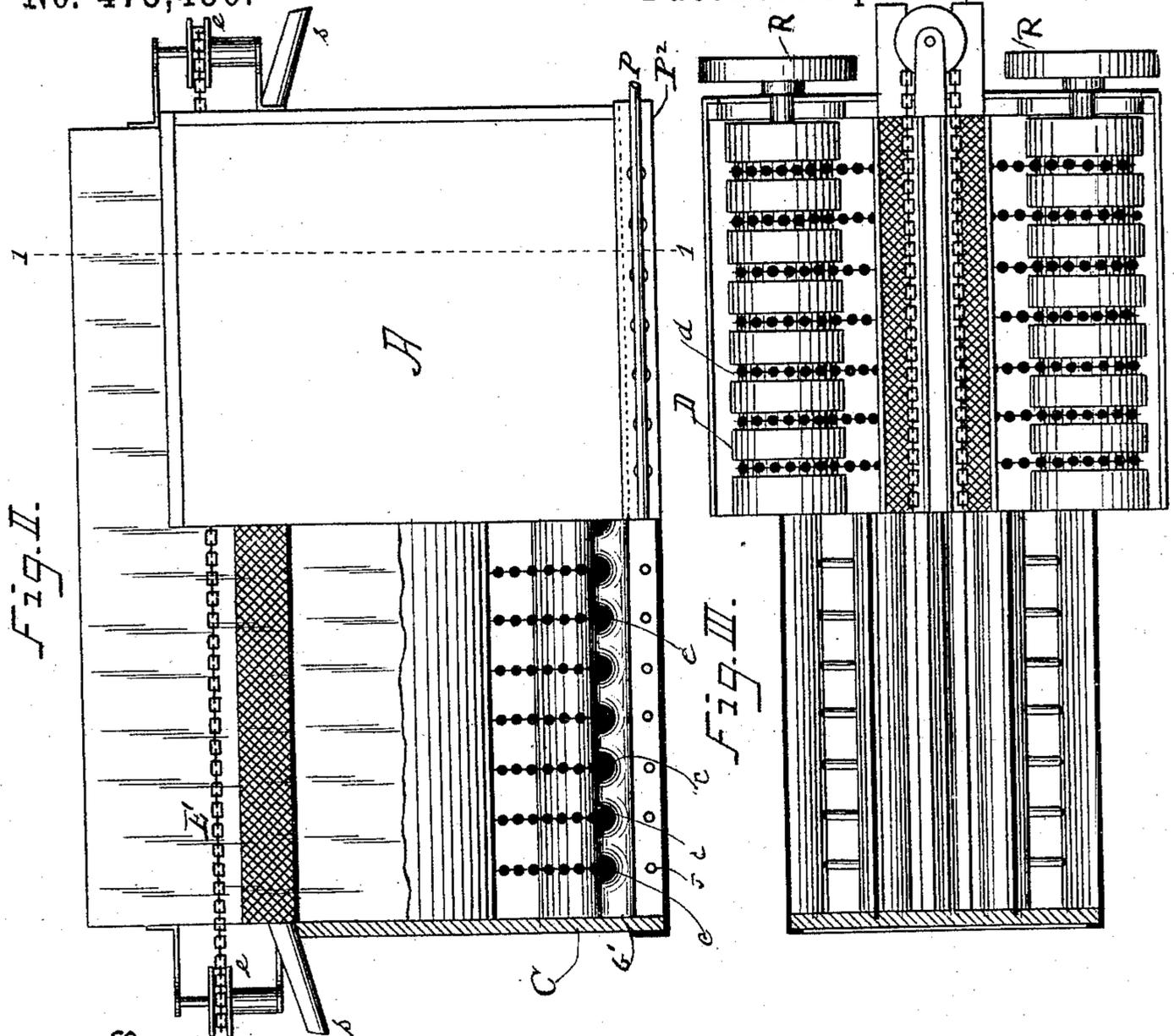


Fig. II.

Fig. III.

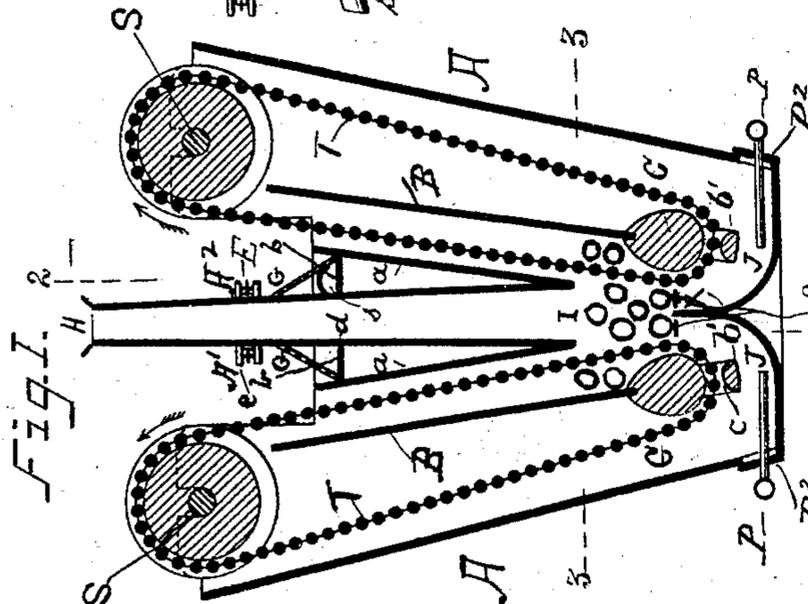
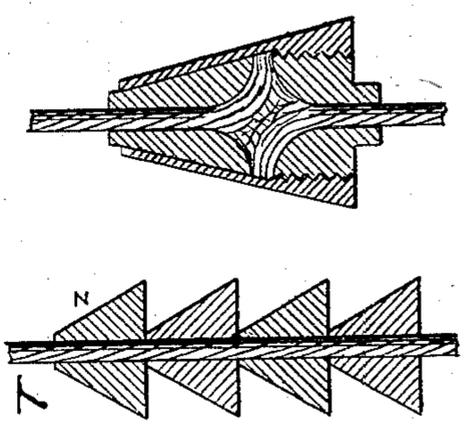


Fig. I.

Fig. IV. & Fig. V.



WITNESSES:
George E. Meitz
Richard Lips

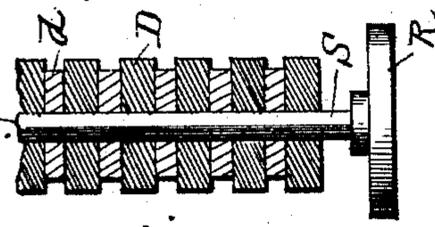


Fig. 6.

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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.

COMBINED ORE SEPARATOR AND AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 473,450, dated April 26, 1892.

Application filed January 6, 1891. Serial No. 376,934. (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 a certain new and useful Improved Combined Ore Separator and Amalgamator, of which the following is a specification.

My invention relates to that class of ore separating and amalgamating machines in which the metal is separated from the gangue and brought into contact with mercury, and is especially intended to be used to save precious metal contained in bodies such as clay, gravel, and sand, &c.

In the drawings, Figure 1 represents a vertical cross-section of a machine embodying my invention, the section being on line 1 1 of Fig. 2. Fig. 2 represents a partial vertical longitudinal section and partial side view thereof, the section being on line 2 2 of Fig. 1. Fig. 3 represents a partial horizontal section and partial top or plan view thereof, the section being on line 3 3 of Fig. 1. Figs. 4 and 5 represent detail views of parts hereinafter described. Fig. 6 is a detail sectional view of the shaft and disks thereon.

Similar letters represent like parts.

A represents a trough having the partitions A' A² running from end to end, the opening between said partitions being greater at the bottom than at the top. These partitions are provided with the side partitions *a a*, which are united at or near their upper ends with the main partitions A' A² by the plates *b b*, which form gutters. The ends of the partitions A' A² and *a a* are fastened to the ends of the trough.

B B are partitions that set in the trough about midway between the sides of the trough and the partitions *a a* and are fixed to the trough at the ends thereof and are set at an angle. To the bottom end of the partitions B B are fixed oval-shaped cast-iron guideways C C, having at their widest and bottom parts a projection *b'*, which is perforated at *c c c*, as shown in Fig. 2, at suitable distances and is intended to guide the triturating or separating cables, which are constructed by stringing a number of metal cones Z on a rubber-

covered metal cable, the base of one cone resting on the apex of another and the ends suitably fastened together, as shown in Fig. 5.

SS are shafts resting in journal-boxes, being fixed to the upper edge of the ends of the trough. These shafts are provided with a number of disks D *d*, some of wood and some of iron, the iron disks being larger in diameter than the wooden disks and placed side by side alternately, the whole being fastened together by any suitable means.

G G are screens set in the gutters formed by the plates *b b*, as shown. *s s* are spouts connected with the said gutters *b b*.

E is an endless chain running horizontally over the screens on pulleys *e e*, provided at each end of the trough, as shown in Figs. 2 and 3. The bottom of the trough is provided with the projecting division-plate *x*, the sides of which curve outwardly in such a manner that no corner is formed. This projecting division runs from end to end of the trough and may be fixed. Along the bottom at the sides of the trough is an opening a few inches wide, into which water-jets J J of water-pipes P P are inserted at regular intervals, the water-pipes P P being fixed to the plate that is fastened to the trough and the opening closed. The endless triturating-cables T are passed through the perforations *c c c* in the bottom of the guideway C C, as shown, and then passed over a wooden disk which is on a line with the perforations through which it has been passed and the ends fastened. The trough along its side at the bottom is cut away, so as to leave an opening into which is inserted the plate or plank P², through which the jets J J of the pipes P P are passed and which can be removed to clean out the trough when desired.

On the top of division-partition X is fixed a grate or plates *f f*, which are provided for the purpose of preventing the amalgamating-balls I, which are placed between the partitions *a a* and the triturating-cables, from falling to the bottom of the trough. These balls are constructed of a composition, the outer surface being metallic and calculated to amalgamate the finer floating metals, and are also provided for the purpose of preventing the ore pulp from being forced out too fast, the

balls being of a specific gravity sufficient to prevent them from being thrown out.

When in operation, the material to be triturated and amalgamated is poured into the space between the partitions $A' A^2$ at the top opening H in any suitable quantity. The shafts $S S$, to which are attached at their ends pulleys to rotate them, are set in motion and run at a desired speed. The cones of the triturating-cables coming in forcible contact with the material fully disintegrate the same, and the metal contained by gravity sinks to the bottom, where it is immediately seized by the mercury placed in the bottom of the trough. During the time that the water is being poured out upward to be acted on by the cone-cables the endless horizontal chain is kept running and carries away any debris from the screen $G G$ that may be thrown up with the water, which passes over the edge of the partitions $a a$ and into the gutters $b b$ and out at the spouts $s s$, the finer particles passing through the screen into the gutters. When it becomes necessary to clean up, the pipes $P P$ and jets $J J$ are removed and the amalgam run through the opening into a receptacle. The cables are moved in the direction of the arrows in Fig. 1, and as the portions thereof adjacent to the partitions $a a$ rise they cause the water to flow over the top of the said partitions and against the screens. In Fig. 1 an opening from one gutter b to a spout s is shown, the opening from the other gutter being at the other end of the machine and consequently not shown. The endless chain E is driven by any suitable means, as by a belt passing around the enlarged part of either of the short vertical shafts shown in Fig. 1. For convenience of illustration and to avoid confusion I have shown the chain E as taut; but it will be readily understood that in practice the said chain will be sufficiently slack to sag and move in proximity to the screens $G G$.

Since for some purposes mercury may be dispensed with, as when using the machine for washing ore, I have not illustrated it in the drawings.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a combined ore separator and amalgamator, the combination of the trough A , having partitions $A' A^2$, the partitions $B B$, provided with the metallic guideway $C C$, having perforations $c c$, the shafts $S S$, the cone-cables $T T$, passing around the said shafts and through the perforations $c c$, the horizontal gutters b , located between the cables near the upper portion of the trough, the screens $G G$ over the gutters, the horizontal chain E over the screens, and the pulleys e for supporting and operating said chain, substantially as described.

2. In a combined ore separator and amalgamator, the combination of the trough A , having the partitions $A' A^2$, the partitions $B B$, provided with the metallic guideway $C C$, having perforations $c c c$ to receive the cone-cables T , the shafts $S S$, provided with the disks $D d$ and their ends provided with the pulleys $R R$, the cone-cables passing over said disks, the division-partition X , having the grate or plate $f f$, the removable pipe-holding sections $P' P^2$, the pipe having the jets J , the screened gutters $b b$, the endless horizontal chain E , located over the gutters $b b$, and the amalgamating-balls I , placed partly on the grates $f f$ and between the cables T , and the partitions $B B$, substantially as and for the purpose set forth.

Signed at New York, in the county of New York and State of New York, this 9th day of December, A. D. 1890.

GUSTAVIS LORRIMER CUDNER.

Witnesses:

RICHARD LIPS,
GEORGE E. METZ.