

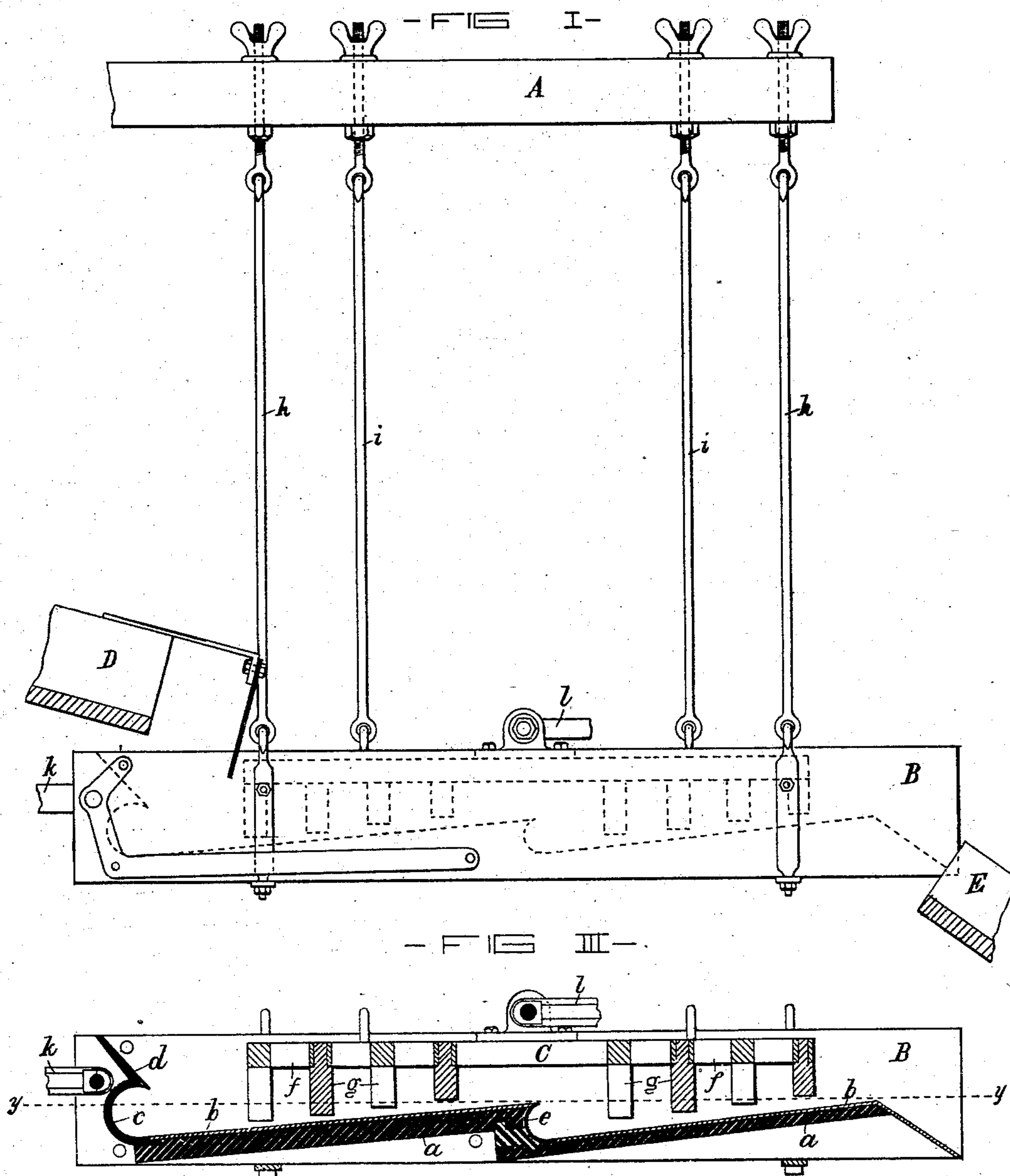
(No Model.)

2 Sheets—Sheet 1.

H. MOON.
AMALGAMATOR.

No. 282,352.

Patented July 31, 1883.



WITNESSES

Paul Fisher
 Edward J. Biggs

INVENTOR

Henry Moon,
by G. H. N. Howard.
Atty -

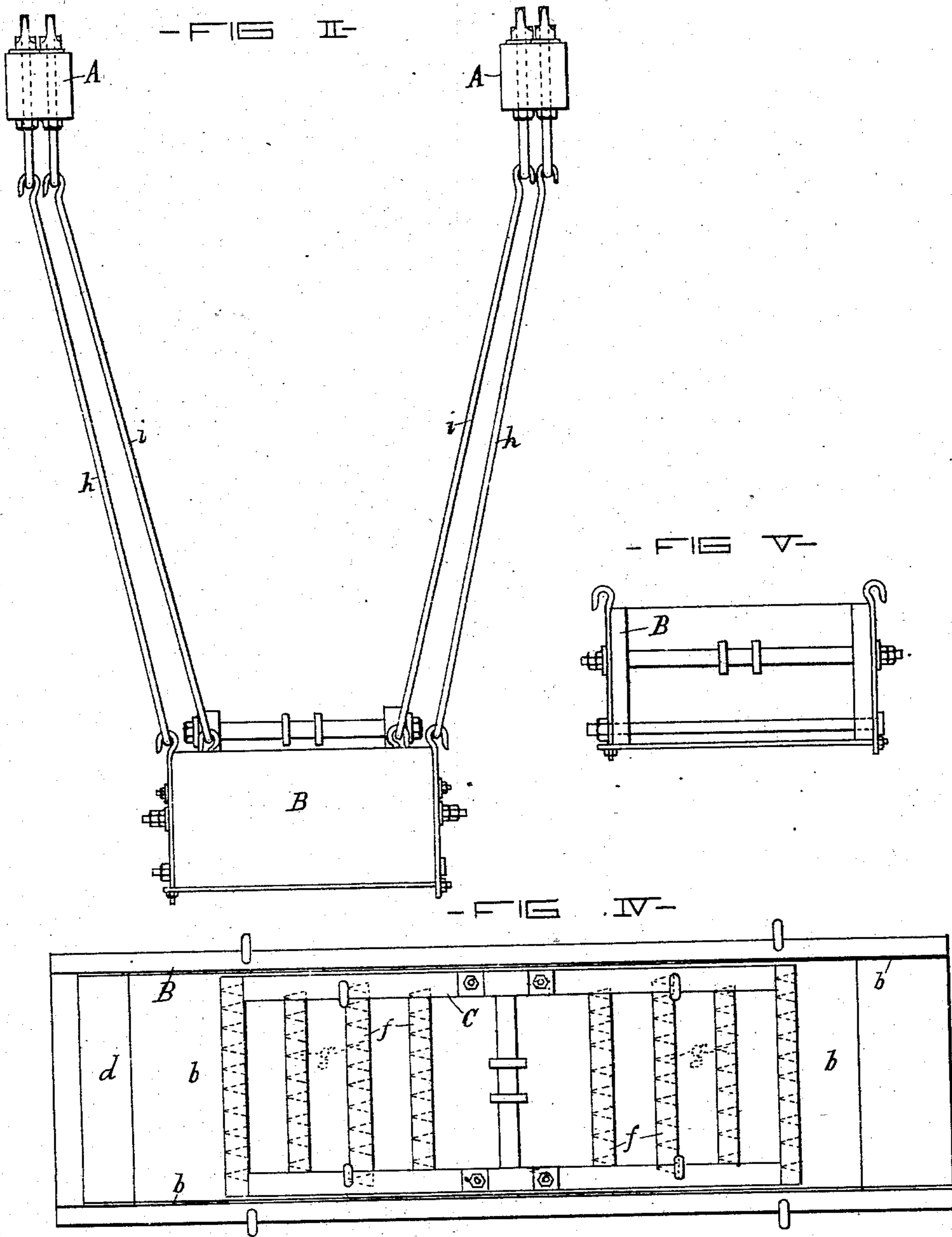
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UNITED STATES PATENT OFFICE.

HENRY MOON, OF THOMASVILLE, NORTH CAROLINA.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 282,352, dated July 31, 1883.

Application filed May 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY MOON, of Thomasville, in the county of Davidson and State of North Carolina, have invented certain new and useful Improvements in Amalgamators, of which the following is a specification.

The said invention consists in providing a vibratory amalgamating-pan with an inwardly-curved end of a peculiar construction, whereby in the longitudinal reciprocating movement of the said pan the mercury or amalgam contained therein is, at each stroke of the pan, caused to curl or lap over after the manner of a wave, and to thereby inclose and amalgamate particles of gold floating on the surface of the water and ore.

It further consists in providing the said vibratory pan with a reciprocating mixer, which moves in practically the same plane as the amalgamating-pan, but at an increased speed, to keep the reduced ore and water in a state of agitation, and thereby prevent the ore becoming packed into a solid body.

It further consists in certain details of construction of the apparatus, looking to its efficient operation, as hereinafter fully described.

In the accompanying drawings, forming a part hereof, Figure I is an exterior side view of my improved amalgamator, and Fig. II an end view of the same. Figs. III, IV, and V are respectively a longitudinal section, a plan view, and a transverse section of the amalgamating-pan and mixer, the whole being represented on an enlarged scale.

Similar letters of reference indicate similar parts in all the views.

A represents a portion of the frame from which the amalgamating-pan B and mixer C depend. The amalgamating-pan is here shown as consisting of a wooden trough, *a*, with its bottom and sides covered with iron plates *b*, and one end provided with the wave-plate *c*.

By reference to Fig. III of the drawings it will be seen that the upper edge of the wave-plate *c* extends beyond a central vertical line, and approaches the surface of the mercury or amalgam. Consequently in a rapid longitudinal reciprocating movement of the pan the mercury or amalgam is not only carried up the hollow surface of the wave-plate, but introverted and brought back in a solid sheet, which

envelops the float gold on the surface of the water.

The amalgamating-pan may be made entirely of iron, if desired. As the wave-plate *c* does not necessarily extend to the upper edge of the pan B, I provide it with an extension, *d*, which may be either inclined, as shown in the drawings, or vertical. The inner curved surface of the wave-plate *c* is accurately bored or faced, and its lower end rabbeted in order that a tight joint may be formed with the bottom plate, *b*. The said plate *b* is inclined downward toward the wave-plate *c*, so that a body of mercury is maintained in the pan. In order to obtain the desired inclination of the bottom of the pan B without increasing the depth of mercury contained therein, I form the said bottom in two sections, with an offset where they are connected. This offset, which is represented by *e*, is curved in a manner similar to the wave-plate; but it is not absolutely necessary to the proper operation of the invention that the offset should occur, or that it should be curved as shown.

C is the mixer, consisting of a frame, *f*, preferably of wood, having projections *g* on its under side. These projections have a V cross-section, and they are arranged so that one transverse row is opposite the spaces in the row immediately behind it. By this means, in the reciprocal movement of the mixer, the portion of the contents of the pan upon which it acts is driven in small streams through the apertures between the projections *g* toward the back end of the pan, and it flows back to the front end by the force of gravity.

The pan B is suspended by means of rods *h* from the frame A, and it will be seen that these rods, which are spread at their upper end to give rigidity to the apparatus, are adjustable in length for obvious purposes. The mixer is also suspended from the frame A by means of rods *i*, corresponding, practically, with the ones *h*.

By reference to the drawings it will be seen that when the pan is at rest its contents (amalgam, ore, and water) will occupy the space below the dotted line *yy*, and that the projections *g* of the mixer extend below the surface of the contents of the pan, but do not touch the plates *b*. The pan and mixer receive their reciprocating movements from eccentrics, cranks, or

other similar devices, which are connected to them by means of the rods *k* and *l*.

It is designed to give the amalgamating-pan about eighty double strokes per minute, and the mixer about one hundred and sixty; but the speed of either device may be increased or diminished, as desired.

The pulverized ore from the stamps and water are introduced to the pan B through the trough or chute D, and the overflow from the pan is through a similar chute, E.

In the operation of the invention the mercury or amalgam at each stroke of the pan impinges against the wave-plate *c*, and, following its curved surface, is introverted in the form of a wave, as hereinbefore described, and in this movement incloses a portion of the ore and water, which to escape from its inclosure has to pass through a body of mercury, and the free gold therein is thus amalgamated. In the continued operation of the apparatus which includes the mixer, the whole of the ore and water is thus made to pass through a solid body of mercury, as described. The value of this wave action of the mercury will be apparent when it is understood that in all ground ore a large proportion of the gold contained therein is in such a minute state of comminution that it will float on the surface of water, and this extreme levity of the particles of gold renders the ordinary amalgamating process exceedingly waste-

ful. In my amalgamator the floating gold is forced within an inclosure of mercury and cannot escape therefrom without amalgamation.

I am aware that amalgamating-pans have been made with a curved inwardly-projecting end; but in all such pans the curved surface has either been less than a semicircle, or, if projecting beyond a vertical line extending through the center from the curve, as described, has had an ascending inclination. In both these constructions there is nothing to guide the mercury in a curved wave toward the surface of the water and amalgam, and the mercury consequently falls, in separated particles, which cannot be considered as an imperforate envelope, as is found when my construction is employed.

I do not claim, broadly, an amalgamating-pan with an inwardly-curved end; but

I claim as my invention—

In an amalgamator, a longitudinally-reciprocating amalgamating-pan having at one end thereof an inwardly-curved wave-plate, the free end of which extends downward or toward the surface of the amalgam in the said pan, substantially as specified.

HENRY MOON.

Witnesses:

JAS. A. LEACH,
WM. B. HARTS.