2 Sheets—Sheet 1.

L. M. BOARDMAN.

Amalgamators for Stamp-Mills.

No. 201,321. **Patented March 19, 1878.**

Fig. 1.

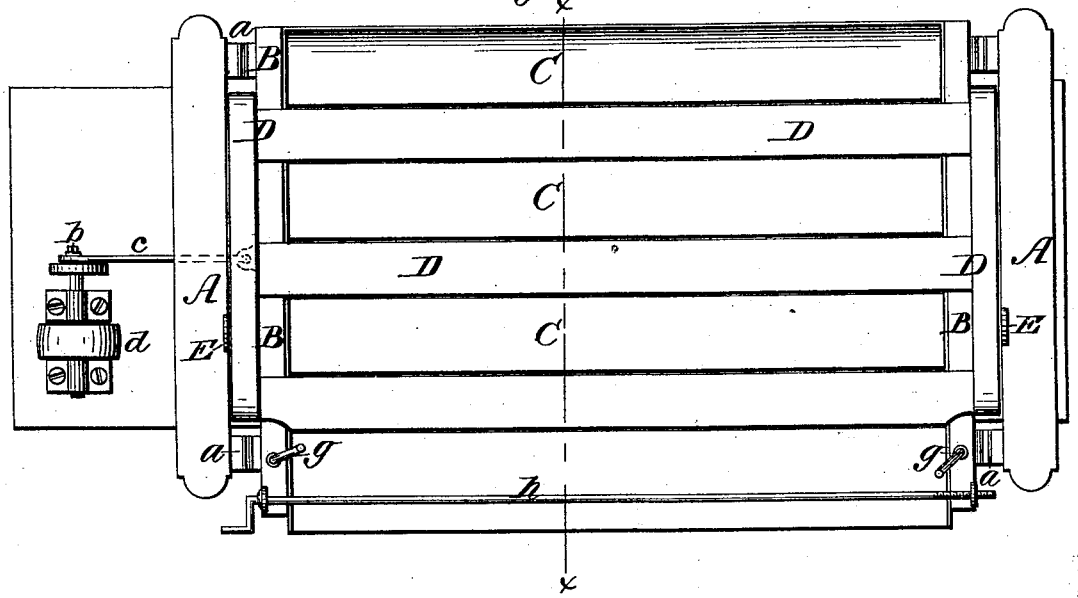


Fig. 2.

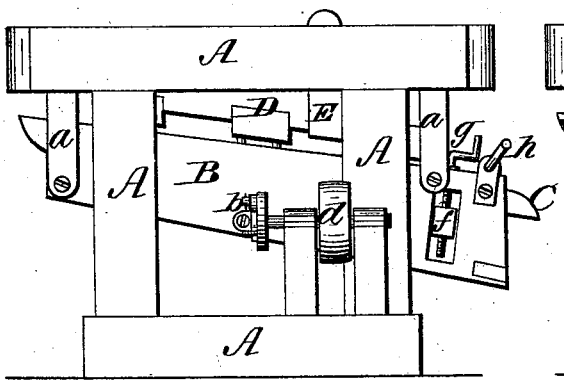
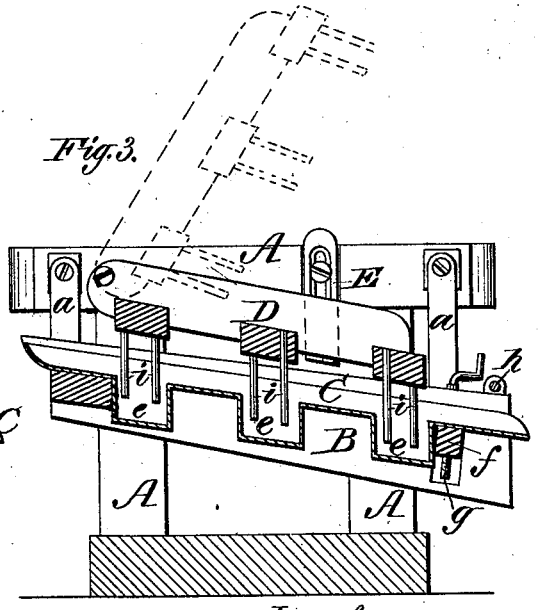


Fig. 3.



Witnesses:

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Conn S. Twitchell.

Inventor:

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Dodgeson

2 Sheets—Sheet 2.

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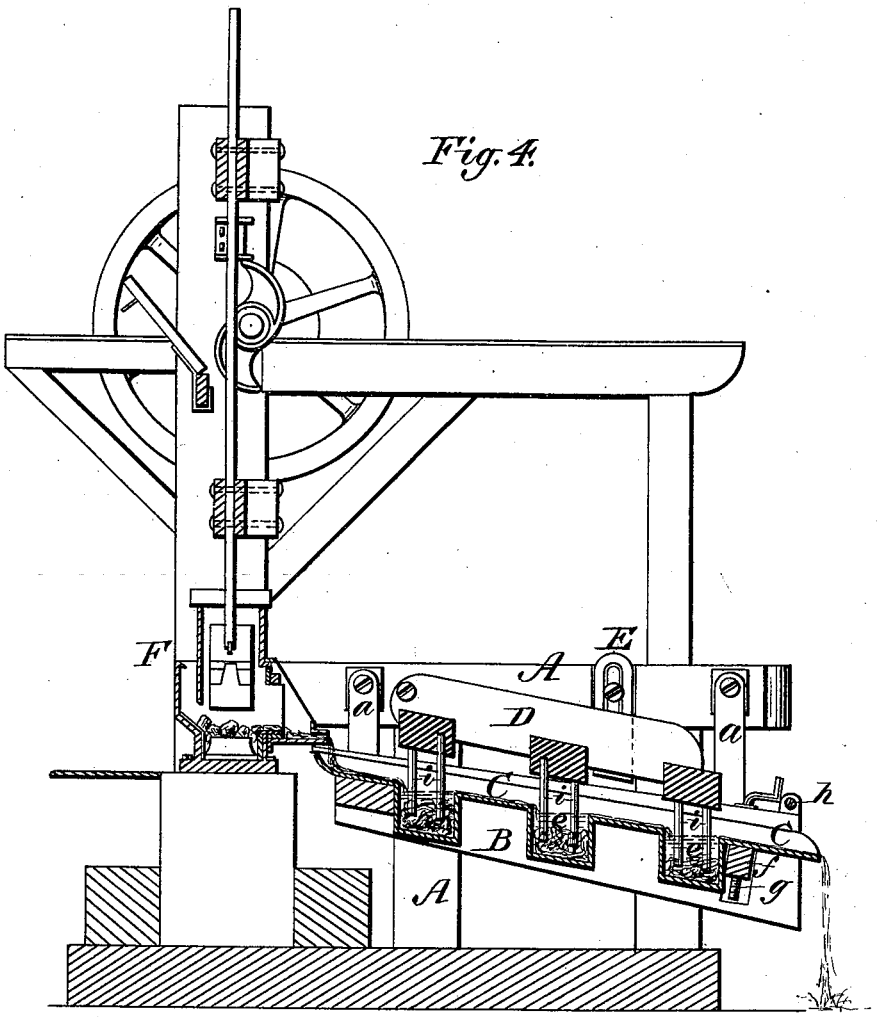
Fig. 4.



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Will N. Dodge
Donn S. Twitchell

Inventor:
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UNITED STATES PATENT OFFICE.

LORENZO M. BOARDMAN, OF ST. PETER, MINNESOTA.

IMPROVEMENT IN AMALGAMATORS FOR STAMP-MILLS.

Specification forming part of Letters Patent No. **201,321**, dated March 19, 1878; application filed December 21, 1877.

To all whom it may concern:

Be it known that I, LORENZO M. BOARDMAN, of St. Peter, in the county of Nicollet and State of Minnesota, have invented certain Improvements in Quartz-Mill Attachments, of which the following is a specification:

My invention relates to an apparatus designed for use in connection with quartz-mills for the purpose of saving the gold which fails to amalgamate in the batteries, and which is forced through the screens by the action of the stamps, and allowed to escape with the pulp, and also to save the fine sprays of amalgam and quicksilver which are driven through the screens.

The invention consists in a reciprocating pan having a corrugated or pocketed bottom, combined with agitators or stirrers, and in the peculiar construction of its details, as hereinafter described.

Figure 1 represents a plan view of my apparatus; Fig. 2, a side elevation of the same; Fig. 3, a longitudinal vertical section of the same on the line *x x*; and Fig. 4, a side elevation of the apparatus in connection with the battery or stamp-mill.

In the drawing, A represents a stationary frame, containing a laterally-reciprocating frame, B, which is suspended therein by links *a*, and driven by means of a crank and pitman, *b c*, actuated through a pulley, *d*, from any suitable source.

The reciprocating frame B has a downward inclination from one edge toward the other, and has mounted within it an inclined pan, C, having pockets or depressions *e* extending across it from end to end in the line of its reciprocation.

The pan is sustained in the frame by cross-bars under its upper and lower ends, the lower bar being mounted at its ends on vertical screws *g*, by which it may be raised and lowered to vary the inclination of the pan.

In order to lock the pan firmly in the frame B when properly adjusted, and to permit its ready removal, a shaft, *h*, having a crank on one end and a screw-thread on the other, is extended lengthwise of the frame, and seated in ears on its ends, as shown, so that by turning the crank the frame may be drawn together against the ends of the pan.

In the main frame, above the pan C, there is hinged a frame, D, provided with fingers or agitators *i*, which extend downward into the pockets, as shown.

The hinging of the frame admits of its being turned up out of the way when the pan is to be emptied, and also admits of its accommodating itself to the different adjustments of the pan.

Slotted adjustable stops E, secured to the ends of the main frame, limit the descent of the hinged frame, and admit of the fingers or agitators being fixed at any desired depth in the pockets.

In using the machine, it is placed, as shown in Fig. 4, directly in front of the battery or stamp-mill F, in such position that the pulp from the latter will pass directly upon the upper edge of the reciprocating pan C. The pulp, flowing downward over the pan, enters and fills the pockets in succession, and escapes at the lower edge. Owing to the agitation of the pan and the action of the numerous stationary fingers or agitators, the gold, amalgam, and quicksilver are retained in the pockets and permitted to settle therein, while the lighter materials continue their downward course, and are discharged. The shaking of the pan causes the rapid precipitation of the heavy matters, and the agitators remaining at rest while the pan and pulp are being shaken produces eddies or riffles, which aid materially in the separation of the light and heavy matters.

The details of the machine may be modified in many respects without departing from my invention or changing its mode of action.

I am aware that riffle-boards, gravity-separators, and ore-washing machines have been made in various forms and used in various connections, and I do not lay claim, broadly, thereto; but I am not aware that any one has hitherto produced a machine substantially such as above described, or that a machine of its character has ever been used directly in connection with a stamp-mill or battery used for battery-amalgamation.

Having thus described my invention, I claim—

1. In combination with a stamp or battery amalgamator, substantially such as shown, an inclined reciprocating pan, C, provided with

transverse depressions or pockets in its bottom, and arranged to receive the pulp from the amalgamator, as shown.

2. In combination with the inclined reciprocating pan having transverse pockets or depressions in its bottom, fixed agitators extending downward within the pockets, as shown.

3. The separator or pulp-treating machine, consisting of the main frame, the reciprocating frame B, carrying the removable and adjustable pan C, and the hinged frame D, provided with the agitating-fingers.

4. In combination with the pan C and hinged frame D, the adjustable stops, applied as shown, to regulate the position of the agitator-fingers in relation to the pan.

LORENZO M. BOARDMAN.

Witnesses:

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