E. L. NEWELL.

Amalgamator.

No. 206,257. **Patented July 23, 1878.**

Fig: 3.

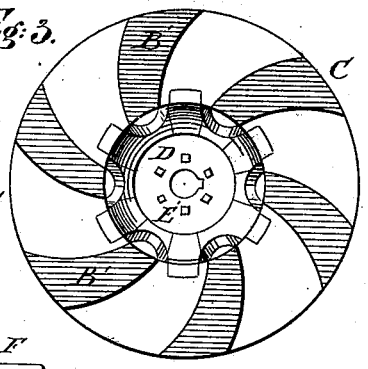


Fig: 1.

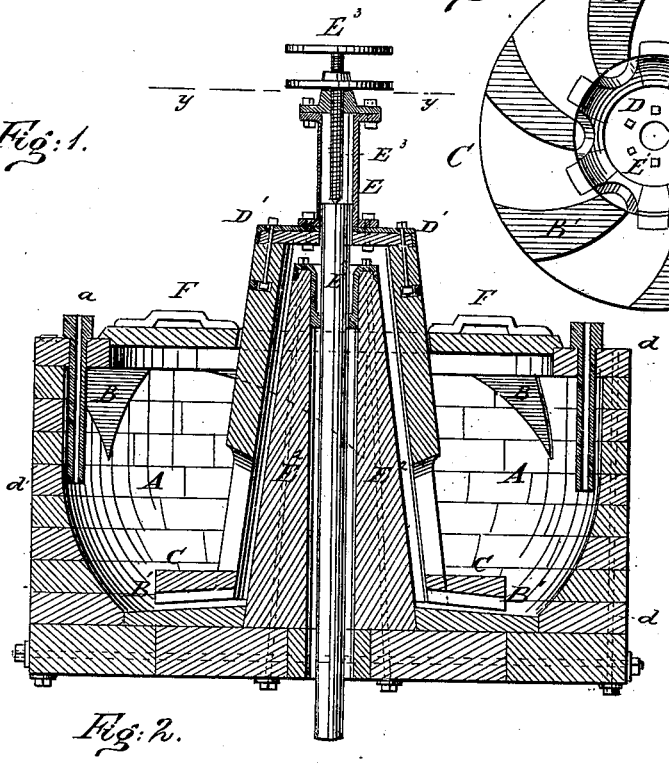
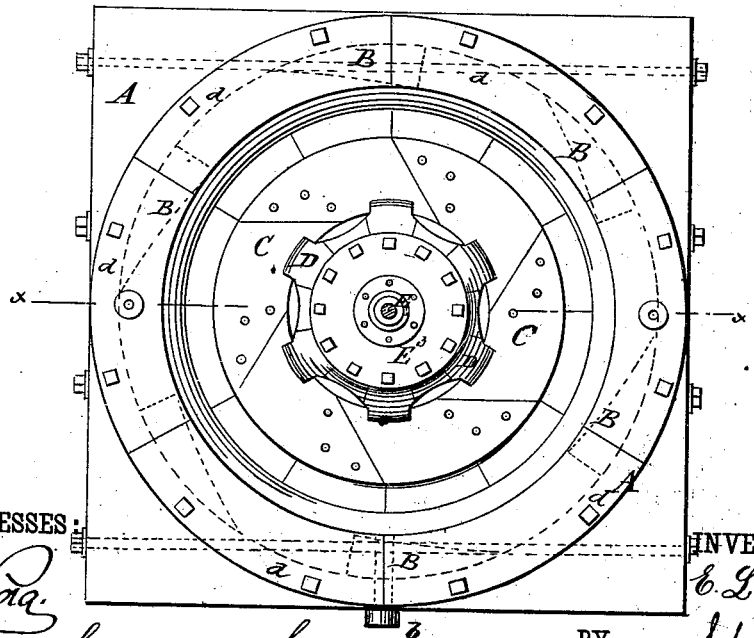


Fig: 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD L. NEWELL, OF BUTTE CITY, MONTANA TERRITORY.

IMPROVEMENT IN AMALGAMATORS.

Specification forming part of Letters Patent No. **206,257**, dated July 23, 1878; application filed November 6, 1877.

To all whom it may concern:

Be it known that I, EDWARD L. NEWELL, of Butte City, in the county of Deer Lodge, Montana Territory, have invented a new and Improved Amalgamating-Pan and Muller, of which the following in a specification:

In the accompanying drawing, Figure 1 represents a vertical central section of my improved amalgamating-pan and muller on line *x x*, Fig. 2. Fig. 2 is a top view of the same; Fig. 3, a bottom view of the muller on smaller scale.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved amalgamating-pan made of wood, to be used in the reduction of silver ore. The pans may also be used in gold-mills as settlers.

The invention will first be described in connection with the drawing, and then pointed out in the claim.

In the drawing, A represents the amalgamating-pan, which is built entirely of wood, as this is the only non-corrosive material that can be employed. The processes used for the reduction of silver ore do not admit of iron or other metal lining in contact with the pulp, with the exception of copper, which is used in a metallic state as a precipitate or as an agent of reduction. Heretofore the pulp has been placed in barrels, with which the metallic copper, in rolled-up state, is revolved.

In the pan A copper plates B are fastened, by wooden pegs, to the side of the pan, near the upper edge, and similar copper plates B′ to the under side of the muller C, the latter forming the shoe of the muller. The muller C is revolved by a spindle that passes through a hollow center standard or cone, E^2, of the pan, the spindle being driven by a gear or belt beneath the pan, in similar manner as a mill-spindle.

The driving-spindle runs up through the hollow cone E^2 of the pan, and revolves in a bearing of the iron cap E^1 of the cone E^2, that is provided with a shell to receive a Babbitt-metal bearing. An adjusting-screw, E^3, rests on top of spindle, and is turned by a hand-wheel to raise or lower muller, as required.

The conical part D of muller is formed of short and long staves, that are jointed together and connected by strong dowels, and held in place by band-rim of top cap D′. Each stave is bolted to cap with strong bolts, the nuts of the bolts being put on by means of recesses or pockets of the staves, and filled at the outside with wooden plugs to prevent the chemicals from destroying the bolts. The long staves are attached to muller-plate by three-way dovetail tenons.

The iron top cap D′ of muller-cone serves for a threefold purpose—namely, as a box for support of spindle, as a washer-plate to take up strain of bolts, and as a band to strengthen the top of cone.

The short and long staves of the muller-cone form recesses or openings between the longer staves, that assist the passage of the pulp down along the center cone of the pan, the pulp passing under the bottom plate or shoe of the muller, and then in a spiral course upward on the curved side of pan, being dropped back toward the center, and thus kept in continuous motion and in contact with the copper plates of pan and muller. The reduction of the pulp by the pan and muller is thus effected at a considerable saving of time as compared with the working of the barrels.

The pan is kept closed by a tightly-fitting sectional cover, F, through a hole in one section of which the quicksilver and chemicals are put in. Wood nozzles or tubes *a* run down along the sides of pan, and serve to inject steam into the pulp to bring it to a boiling heat.

The inclined bottom of the pan forms a kind of gutter or channel outside of the muller, which communicates with an exit-pipe, *b*, for working off the pulp. The pans may also be employed as settlers for working gold-bearing sand, being made in similar manner, with the exception of the face-plates under the muller-plate.

The side walls of the pan and its rim are constructed of layers of nicely-jointed timber, that break joints in alternate layers, the layers being firmly connected by vertical bolts *d*. The center cone E^2 is rigidly bolted to the

bottom of the pan, and the bottom blocks held firmly by lateral bolts.

By the use of the pan or settler the working of the silver and gold pulp is facilitated and accelerated, and thereby a considerable saving in time and labor obtained.

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

A wooden amalgamating-pan constructed with curved side walls formed of horizontal layers, connected by vertical bolts, inclined bottom and base blocks, connected by lateral bolts, and a hollow center cone or standard, bolted rigidly to the bottom, substantially as shown, and for the purpose described.

EDWARD LEANDER NEWELL.

Witnesses:

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JAMES WRIGHT