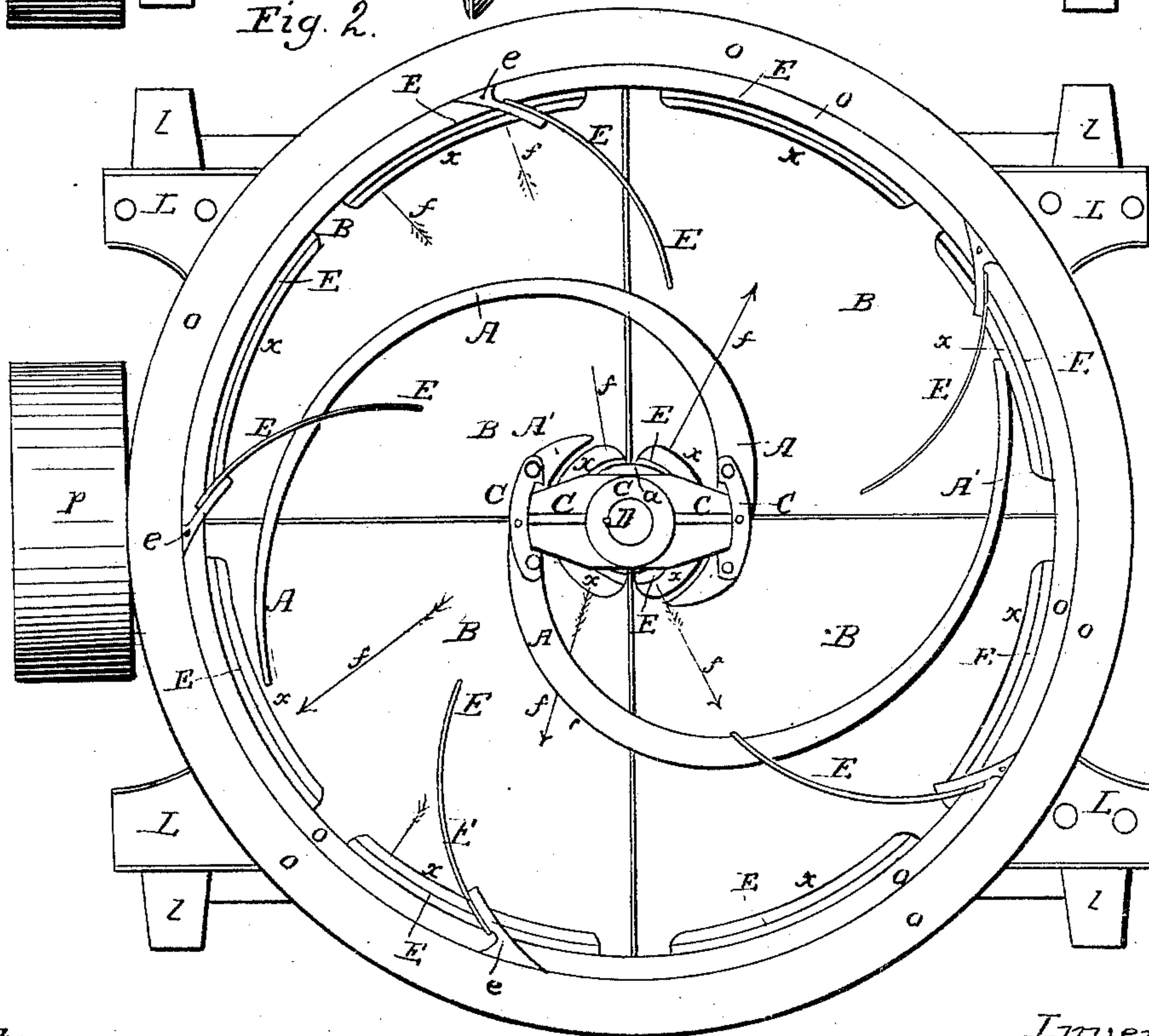


Amalgamator.

Patented Nov. 29, 1864.



Witnesses:
 E. W. Smith
 John Armstrong

Inventor:
James Wheeler.

UNITED STATES PATENT OFFICE.

ZENAS WHEELER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVED AMALGAMATOR.

Specification forming part of Letters Patent No. 45,289, dated November 29, 1864.

To all whom it may concern:

Be it known that I, ZENAS WHEELER, of the city and county of San Francisco, State of California, have invented a new and Improved Amalgamator; and I do hereby declare that the within is a full and exact description of the construction and operation of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a sectional elevation. Fig. 2 is a plan or top view of the machine.

o o o o, Fig. 1, represent the pan. *a a a a* is a hollow cone. *A A* are the stirrers. *B B* represent the diaphragm. *C C C C* are the arms to which the stirrers or agitators are attached. *D D* is the shaft. *e e e e* are the guide-plates, *f f f f* showing the current of the ore, represented by arrows. *L L* are lugs or ears. *m m* are the gear-wheels. *n n* are bolts. *P* is the pulley; *s s s s*, steam-chamber. *x x x x* represent the bottom of the pan, also showing the current of the pulp, (represented by arrows *f f f f*, Fig. 2.)

The nature of my invention consists in an amalgamating-pan with a double bottom, and provided with a stirrer and guides to agitate and guide the mercury in the process of amalgamation.

The enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

I construct my pan or tub of wood, iron, or other material of any convenient size—say three or four feet in diameter and one and a half or two feet deep—supported by a frame of wood, iron, or other material. The center of the pan is a hollow cone, which rises above the top of the pan, in which is an upright shaft running through it. To this shaft is attached two or more arms or mixers, *A*, for agitating the pulp or ore by their rotary motion, which is given to them by means of the upright shaft *D* and gear-wheels *m m* under the pan in the usual manner.

There is a diaphragm, *B B*, about one-fourth of an inch above the pan-bottom, with holes through its outer edge, and also near the center cone, through which the mercury freely passes when the amalgamator is in operation.

There are projections *c* on the sides of the pan, to which are attached guide-plates *e e* to give the ore the proper direction and to pre-

vent it from acquiring sufficient centrifugal force to fly out of the pan. These guide-plates are fastened to the projections on the inside of the pan by means of rivets, with heads which slide into the guide-plates by means of slots.

The manner of working this amalgamator is as follows: The pan is charged with mercury until it is filled about three-eighths of an inch above the diaphragm. The arms are now set in motion. The ore is then introduced and kept in a liquid or thin paste-like consistency, and by the revolution of the arms or mixers it is thoroughly impregnated with the mercury until it is amalgamated. The revolution of the arms causes an outward current in the mercury and pulp contained in the pans which reaches to the sides of the pan. The mercury goes down through the holes under the diaphragm toward the center of the pan and rises up near the center, to again pass outward over the diaphragm, coming in contact with the ore. The ore in passing outward, when it gets near the periphery of the pan, rises up in a rotary current, and is distributed or directed to the center by the guide-plates *e e*, where it again descends to meet the rising current of mercury and passes across the pan, bringing all of the particles of mercury and ore in contact without grinding or pulverizing the quick-silver, as is the case with common amalgamators, thus saving, by the use of this machine, the loss and waste of mercury so common in the usual manner of grinding the mercury into the ore.

There is a steam-chamber, *s*, under the pan for heating the contents. This chamber is fastened to the bottom of the pan by means of bolt-screws *m m*. The steam is let into the chamber through pipes, and does not come in contact with the pulp or mercury. Neither does it volatilize the mercury, but is used for heating purposes.

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

The pan *O O*, with a double bottom or diaphragm, in combination with the stirrers *A A* and guides *E E*, substantially as described.

ZENAS WHEELER.

Witnesses:

C. W. M. SMITH,
JOHN ARMSTRONG.