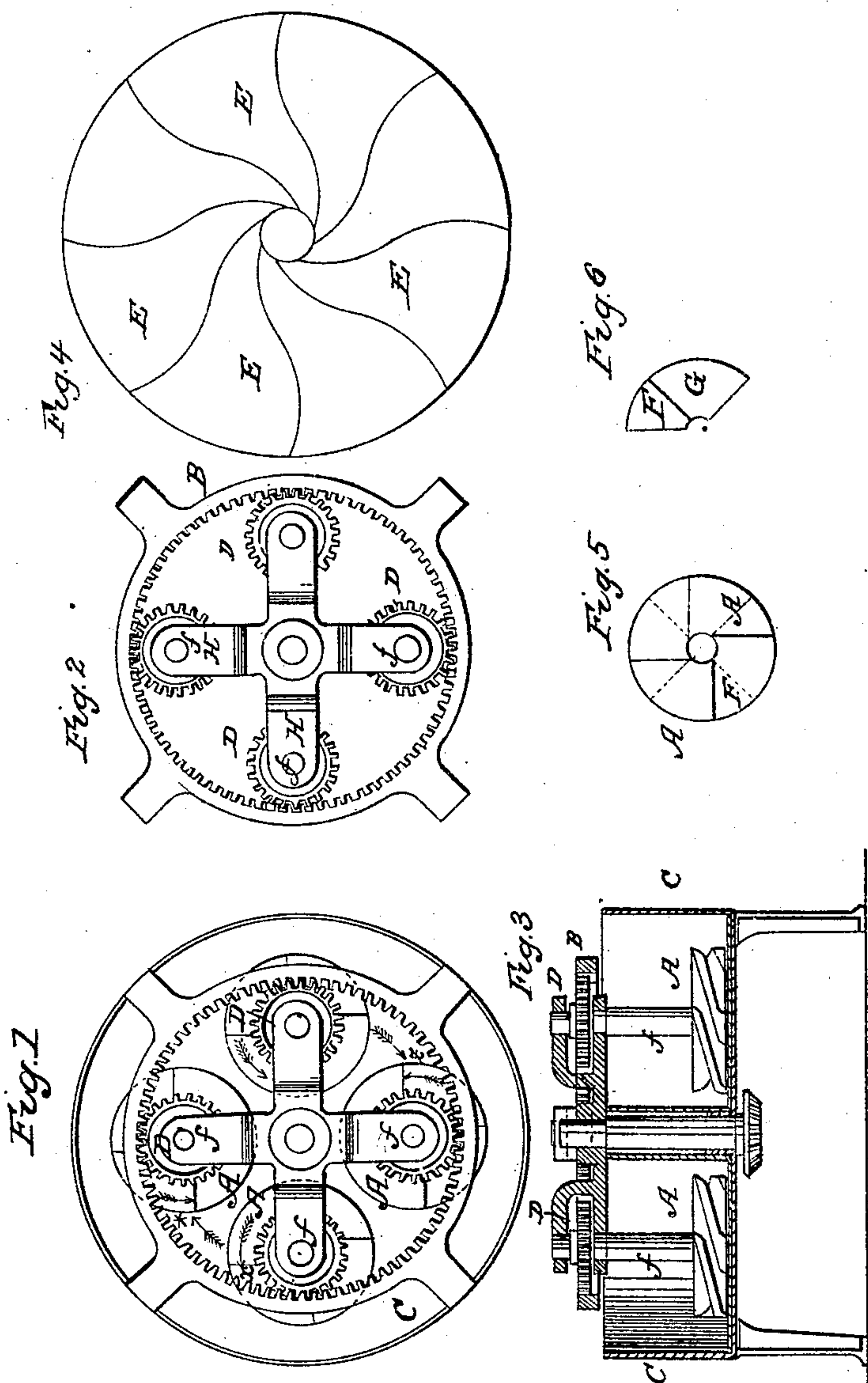


H. A. GASTON.
Amalgamator.

No. 68,359.

Patented Sept. 3, 1867.



WITNESSES
G. W. Reid
J. H. Corbin

INVENTOR
H. A. Gaston
per *Brown, Brown & Co.*
attys.

United States Patent Office.

HENRY A. GASTON, OF NEVADA CITY, CALIFORNIA.

Letters Patent No. 68,359, dated September 3, 1867.

IMPROVED AMALGAMATOR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY A. GASTON, (late of the city of Austin, in the county of Lander, and State of Nevada,) now of Nevada City, in the county of Nevada, and State of California, have invented a new and useful improvement on a Machine for Grinding and Amalgamating Gold and Silver and other Ores, and extracting the precious metals therefrom; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a top or plan view of a pan or tub, containing four screw-mullers, together with gearing for rotating said screw-mullers.

Figure 2 is a top view of the outer and interal gearing for rotating the screw-mullers above named, together with arms for revolving the same.

Figure 3 represents a central vertical section of the tub or pan, together with the screw-mullers and gearing for rotating said mullers, and said arms for revolving the mullers; also a hand-screw and set-nut to regulate the pressure of the mullers upon the pulp between them and the bottom of the pan.

Figure 4 represents the false bottom or dies of the pan or tub.

Figure 5 shows the lower side of one of the mullers, with its shoes attached; and

Figure 6 shows the lower surface of one of the flanges of the screw muller with a shoe attached to its base.

The same letters refer to like parts of the machine in all the figures.

The arrows *x* show the direction of the rotation of the screw-mullers and their immediate driving-wheels, while the arrows *z* show the direction of the revolution of the propelling arms, extending outward from the main driving-shaft, which extends up through the hollow shaft at the centre of the pan or tub, to the shafts connecting the smaller gearing and the mullers. The revolution of the mullers is always in a direction contrary to that of the arms propelling them.

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

I construct my tub or pan in any of the known common and plain forms, and place in the bottom of them novel dies, constituting a false bottom, which are of the form shown at E, fig. 4, each die being one-eighth of the circle of which it forms a part, the radiating sides of which curve at their extremes through one-fourth of the entire circle of which it forms a part. These are bevelled upward from near their bases and serve to direct the pulp toward the centre of the pan, while their upper edges, coming into near contact with the lower bevelled edges of the shoes beneath the mullers, act like scissors, cutting the coarser particles of the pulp. Immediately above, say at a fine hair's breadth from these dies or false bottom, rotate two, three, or more novel screw-mullers, or screws having two, three or more flanges or separate incline planes, each of which flanges rises sufficiently higher than the flange or inclined plane immediately preceding it, when rotated in one direction, or following it when rotated in the opposite direction, to permit and compel the pulp to pass freely between and beneath them and their shoes F, fig. 6, when the screws or mullers are rotated in one direction, and ploughing under and turning the pulp upward when rotated in the opposite direction.

In order to intercept and break up the direct current of the pulp caused by the sliding of the mullers at or near the bottom of the pan, I introduce the novel method of causing the mullers to revolve in a direction contrary to that produced by the revolution of the main shaft, at the centre of the pan. This I do by attaching stationary gearing or cogs, shown at B, to the top of the pan or tub, or to some other points, as convenience may require, into which the small rotating gearing, shown at D, meshes. These communicating their motion, by means of the shafts through their centres, to the mullers, cause the flanges of the screws to intercept and throw back the strong current of the pulp always had near the perimeter of a pan, and to direct said current under the shoes F, attached to the base of each of the flanges of said mullers. This method introduces another novel and valuable feature; for the screw-flanges, while they force the pulp under their shoes and toward the centre of the pan, are also constantly meeting each other in their rotation, and throwing the pulp from their lower surfaces toward and under the flanges and shoes of the contiguous revolving screws, thus grinding with great rapidity, and producing that peculiar agitation of the pulp so long and so much desired in amalgamating

the precious metals. The shoes, shown at H, are one-eighth of the circle of which each forms a part, their front and rear sides radiating directly from a common centre, to wit, the centre of the muller.

I construct the flanges of my screw-muller in the novel form shown at H G, fig. 6, being each about one-third of a circle, where four flanges are used, more or less, to be determined by the number of shoes desired to be used, of which each forms a part, two sides of which radiate from a common centre of all the flanges, which point is the centre of the muller. The flanges and their central hub constitute the muller. The flanges may be fixed in and made a part of the hub, or they may be movable, as desired.

I do not claim herein any particular form of pan or tub. I do not claim the direct motion of the arms propelling rotating-wheels at their extremes, in the same direction with said arms. I do not claim the use of dies in amalgamating-pans or tubs made in any other form than those shown at E, fig. 4. I do not desire to surrender, modify, affect, or in any manner to interfere with the Patent, No. 53,435, granted me on March 27, 1866.

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

1. The dies E, in the bottom of the pan, constructed and operating in combination with the mullers A, essentially as described.

2. The mullers A, when constructed of a spiral form whereby they are made to spread or grind the pulp when rotated in one direction, and to loosen it from the bottom when rotated in the opposite direction, substantially as described.

HENRY A. GASTON.

Witnesses.

JOSIAH HEACOCK,

SAML. M. EVINNGHIN.