W. L. Strong,

Ore Amalgamator,

No. 64,458, Patented May 7, 1867.

Fig. 2.

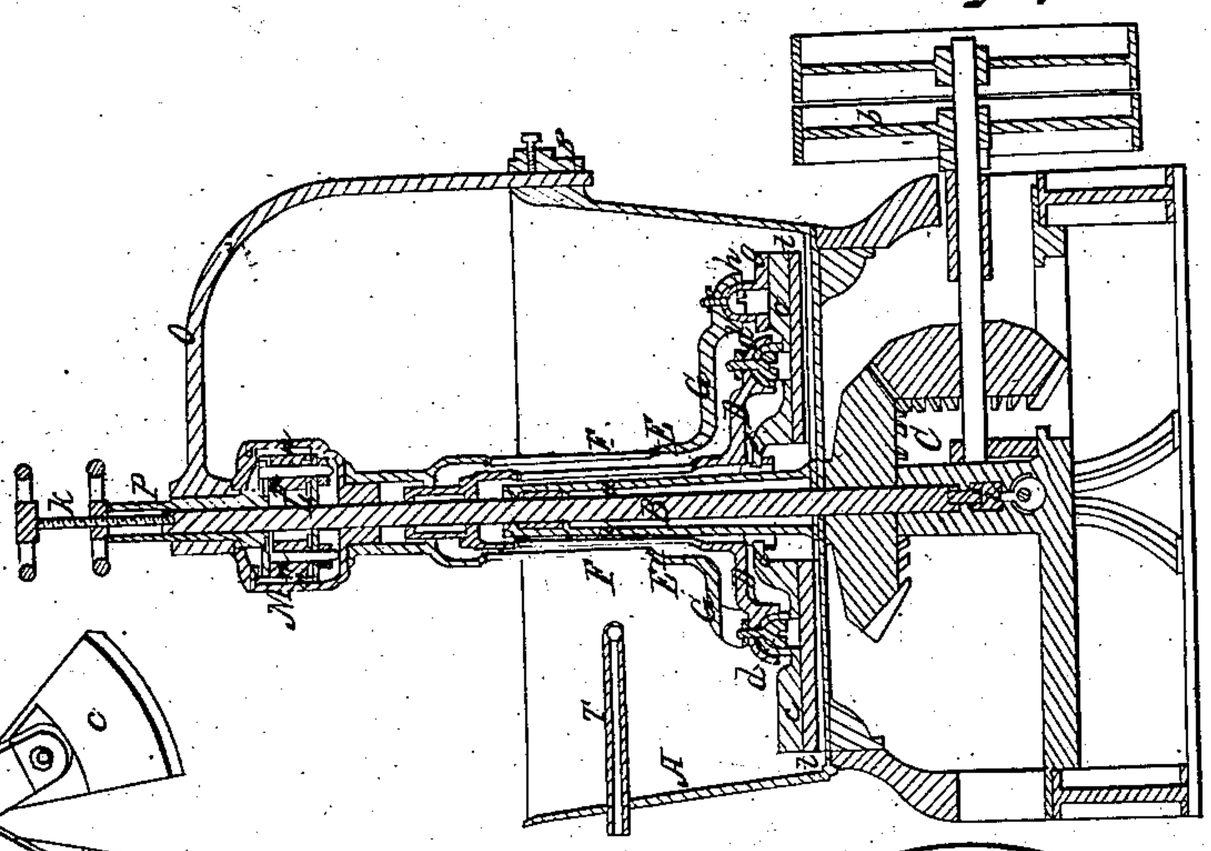


Fig. 3.

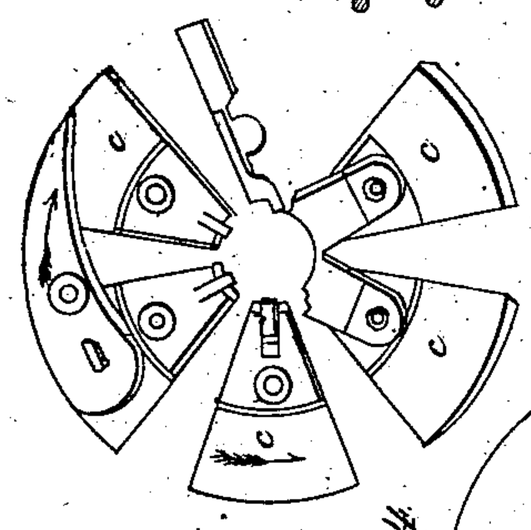


Fig. 4.

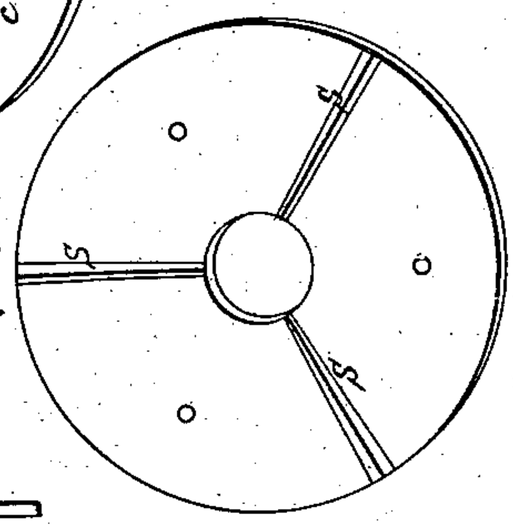


Fig. 5.

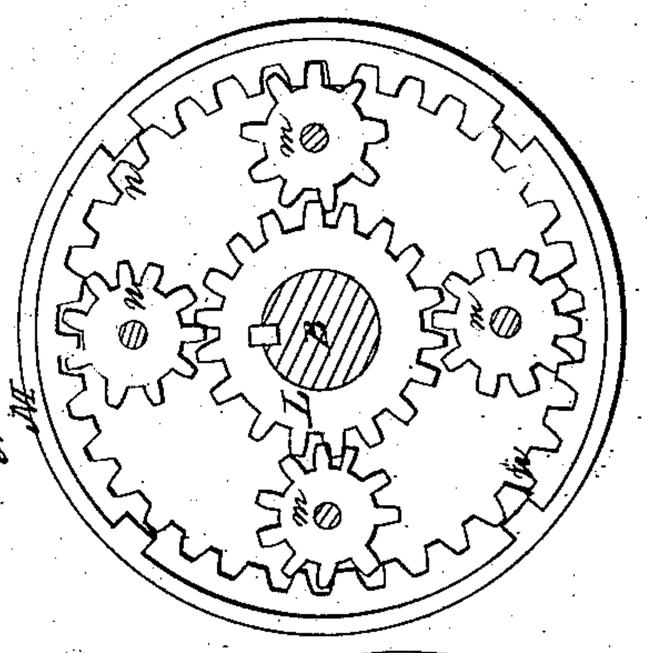


Fig. 6.

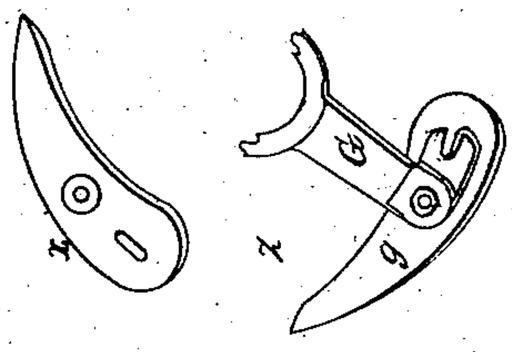
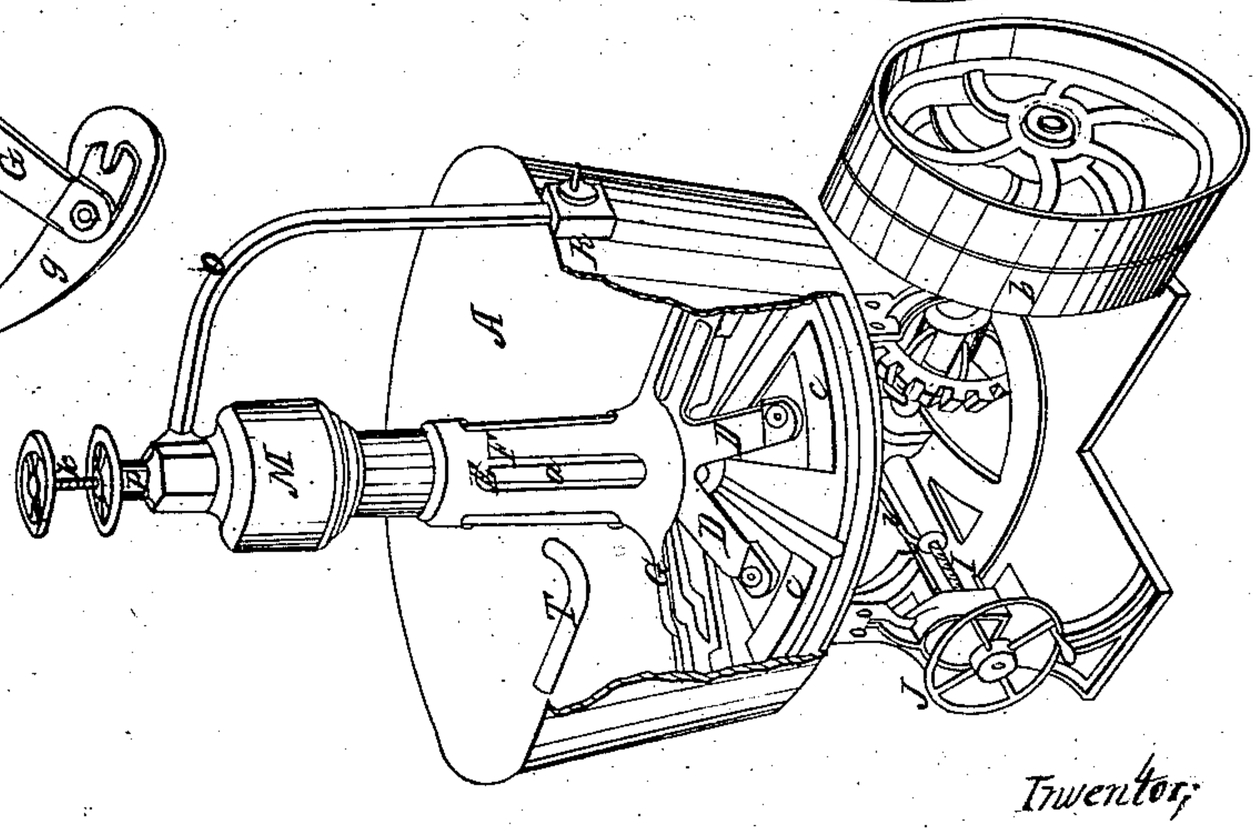


Fig. 1.



Witnesses;
A. Mahon
Rob't J. Chamberlain.

Inventor;
Walter L. Strong
By his Atty J. Dennis.

United States Patent Office.

WALTER L. STRONG, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO HIMSELF, G. W. STRONG, AND J. F. TAYLOR.

Letters Patent No. 64,458, *dated May* 7, 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, WALTER L. STRONG, of San Francisco, San Francisco county, State of California, have invented certain new and useful improvements in amalgamators, called Strong's Union Amalgamator; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The nature of my invention is to provide an amalgamator of such construction as to give the greatest effect to the grinding surfaces. This is attained by providing a pan, of the ordinary construction and material, with a central hub, around which revolve two hollow shafts, carrying two mullers, one above the other, which turn in opposite directions, thus thoroughly grinding the pulp, which is mixed with the mercury contained in the pan, and the precious metals amalgamated. In the drawings—

Figure 1 represents a perspective view of my amalgamator for amalgamating the precious metals contained in ores, with the side of the pan broken away.

Figure 2, a side sectional elevation.

Figure 3 is a part of the mullers, showing their position and direction.

Figure 4 is the die or false bottom.

Figure 5, an enlarged view of the mechanism in the cap M.

Figure 6, *x y z*, are views of the shoes of the upper mullers.

Similar letters indicate like parts in each of the figures.

A is a pan constructed of metal, as may be most convenient, with a central hub, *a*, through which rises a shaft, B, which is revolved by the gear C and pulley *b*. Within the pan is the muller, made with shoes *c c*, constructed with a ball-and-socket joint, as shown at *d*, and fastened to the arms D by nuts. The inner end of each shoe has a lug *e*, which passes into the hollow shaft E and keeps the shoes in place, while they have sufficient motion to adapt themselves to the irregularities of the surface over which they pass, and present at all times the most effective surface for grinding. The arms D are fastened to the hollow shaft E, which rises above the hub *a*, and is secured to the shaft B by a feather. F is another hollow shaft, turning loosely outside of the shaft E, and having at the bottom the arms G G, to which are attached the shoes *g g*, with ball-and-socket joints, shown at *h*. *y*, fig. 6, is a hook or lug on the back part of the shoe, which passes into a slot in the arm G, thus keeping the shoe in position. The lower muller is raised and lowered by the inclined plane or wedge *i*, operated by the screw I and hand-wheel J. The upper muller is regulated by the screw K, resting on the top of the shaft B. The cap M contains the mechanism for turning the upper muller, and is plainly shown in fig. 5. L is a toothed wheel, having a feather in it, which passes into a corresponding slot in the shaft B. Around this wheel L are four or other suitable number of wheels *m m*, the teeth of which engage those of the central wheel. These wheels engage the teeth on the inside of the rim *n*, which is secured to the cap M and shaft F. O is an arm or wrench with a head, fitted to the shaft P, to prevent it, with the wheels *m m*, from turning, and is let into the slot R in the side of the pan, and secured by a set-screw. *s s s* are grooves in the dies to contain the mercury, which is also in the space *t t*. Around the die T is a discharge pipe.

To show the operation of my invention, the shaft B is set in motion by its attached gear and pulley, and turns the lower muller in the same direction by means of the hollow shaft E keyed to B. The motion of the shaft B sets the wheel L in motion, turning the wheels *m m* in an opposite direction, together with the rim *n* and its attached cap M and shaft F, thus turning the upper muller in a contrary direction to the lower one. The toothed wheels are so graduated in size as to give a speed to the two mullers proportionated as may be found most effective. When it is desired to have both mullers turn in the same direction the wrench O is detached from the socket R and raised up to a point where the shaft P is small enough to revolve free from it, when the whole will turn with the lower muller. The discharge pipe being bent can be turned up so that its end will be out of the pulp till needed.

The advantages gained by the use of my amalgamator are, first, a more thorough pulverizing and grinding of the pulp, and a greater facility for bringing every part into contact with the mercury, so as to amalgamate

;he precious metals; second, the shoes are easily detached and replaced in the event of wear or breakage, and, 'rom the manner of attaching them to arms, present the most effective grinding surface.

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

1. The shoes *c c* and *g g*, in combination with the attaching joints *d* and *h*, and the arms D and G, substan-;ially as and for the purpose described.

2. The geared wheels L *m m*, and the rim *n*, in combination with the shaft F and muller G *g*, as described.

3. The wrench O, with the shaft P, operating upon the wheels *m m*, rim *n*, and shaft F, substantially as nd for the purpose described.

In witness whereof I have hereunto set my hand and seal this 17th day of July, 1866.

WALTER L. STRONG. [L. S.]

Witnesses:
C. W. M. SMITH,
GEO. H. STRONG.