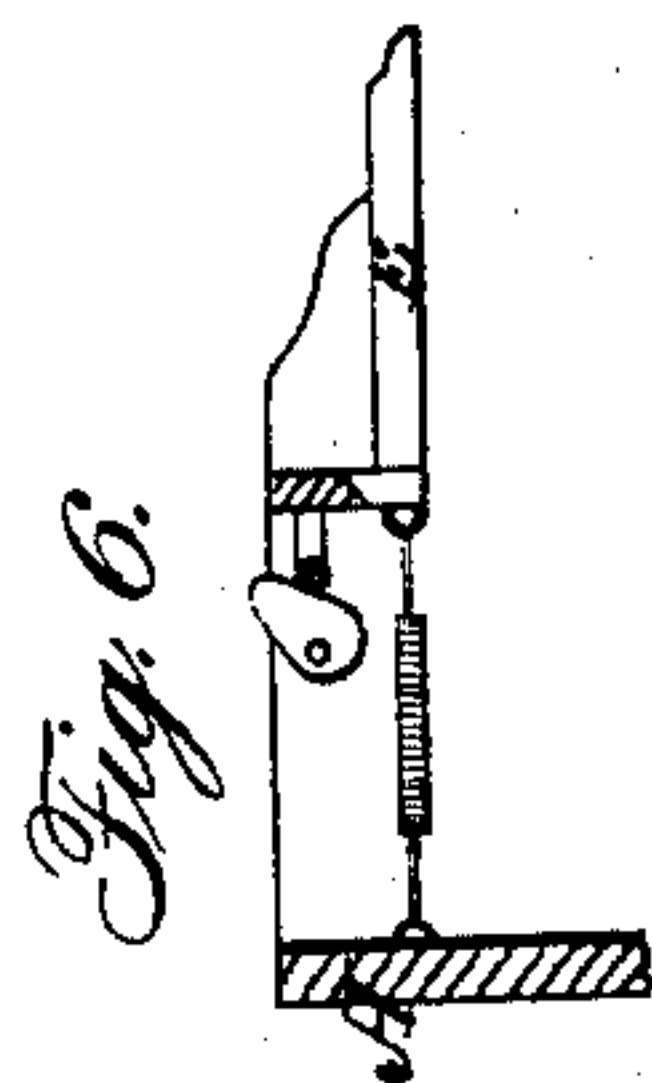
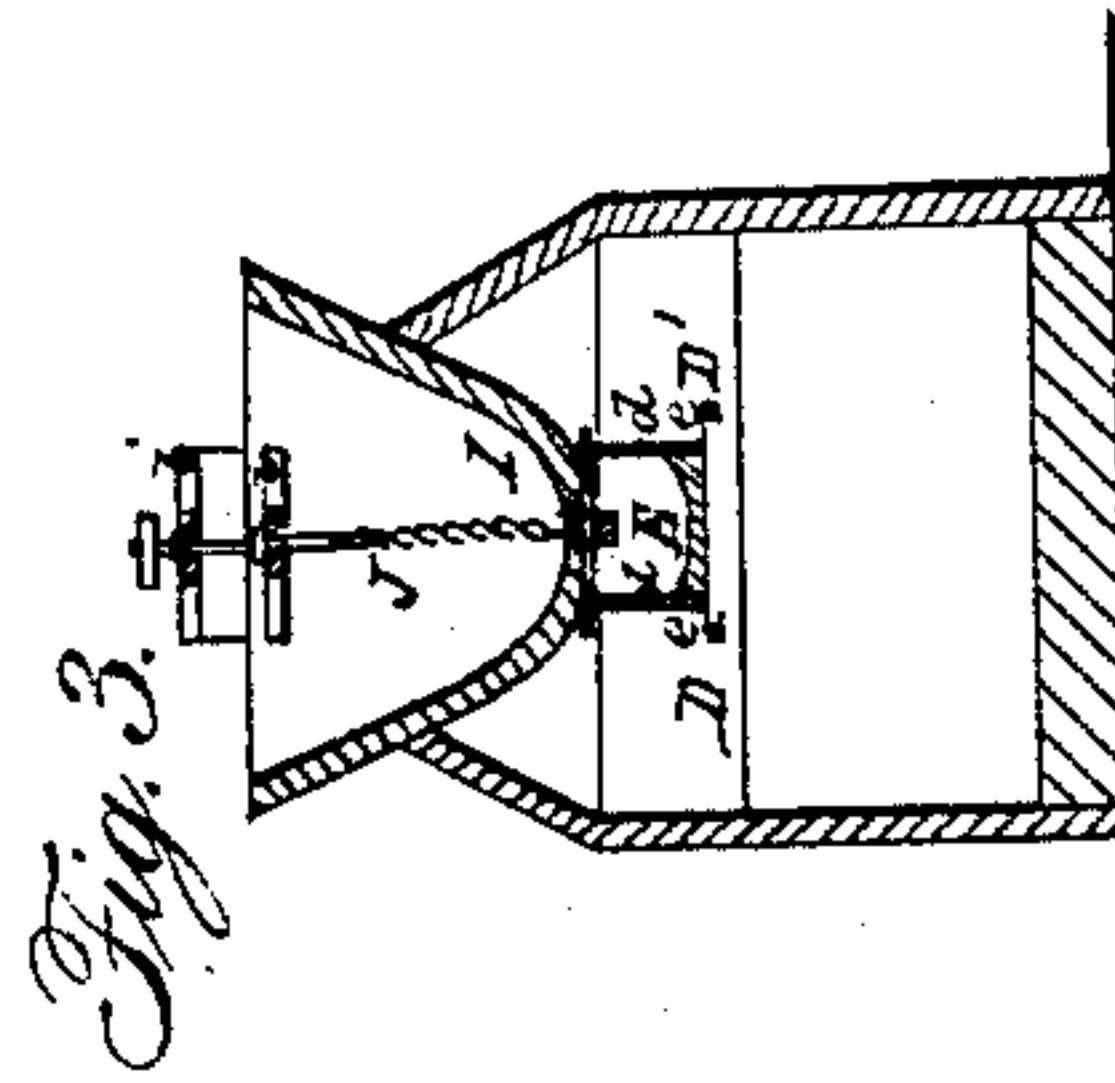
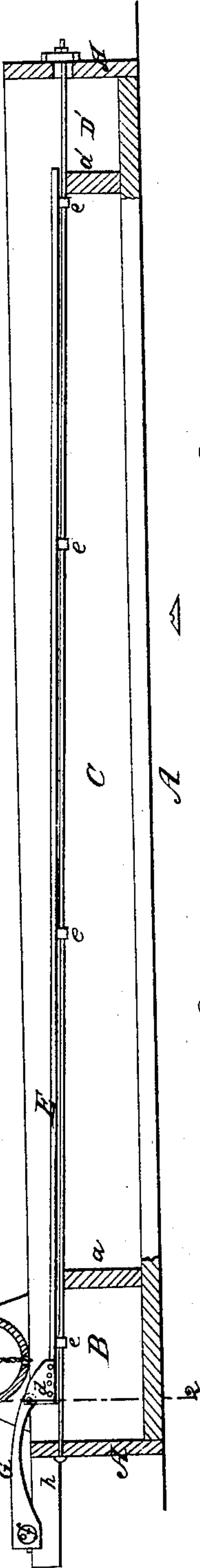
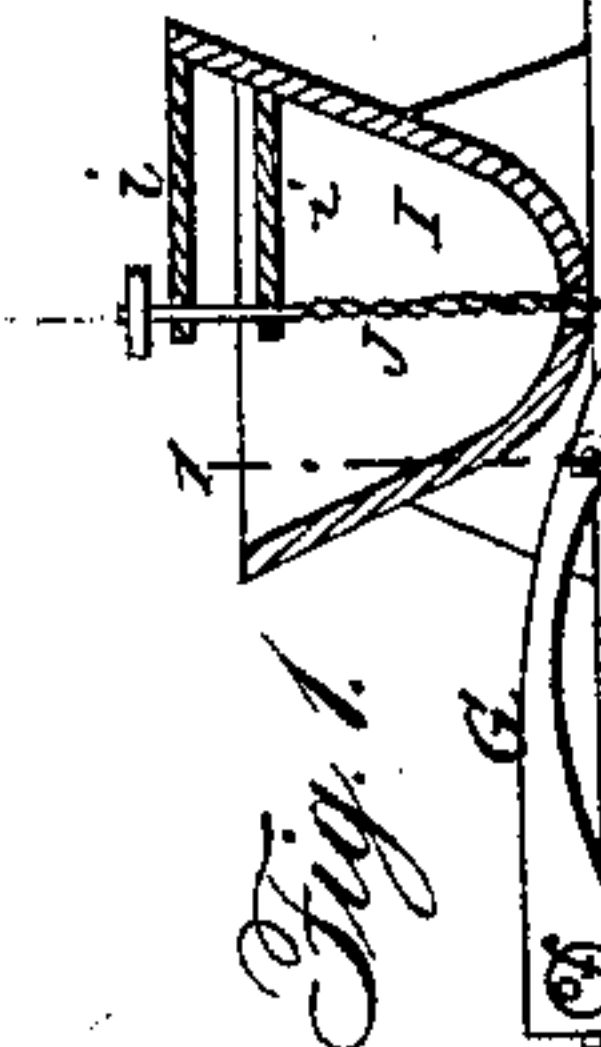
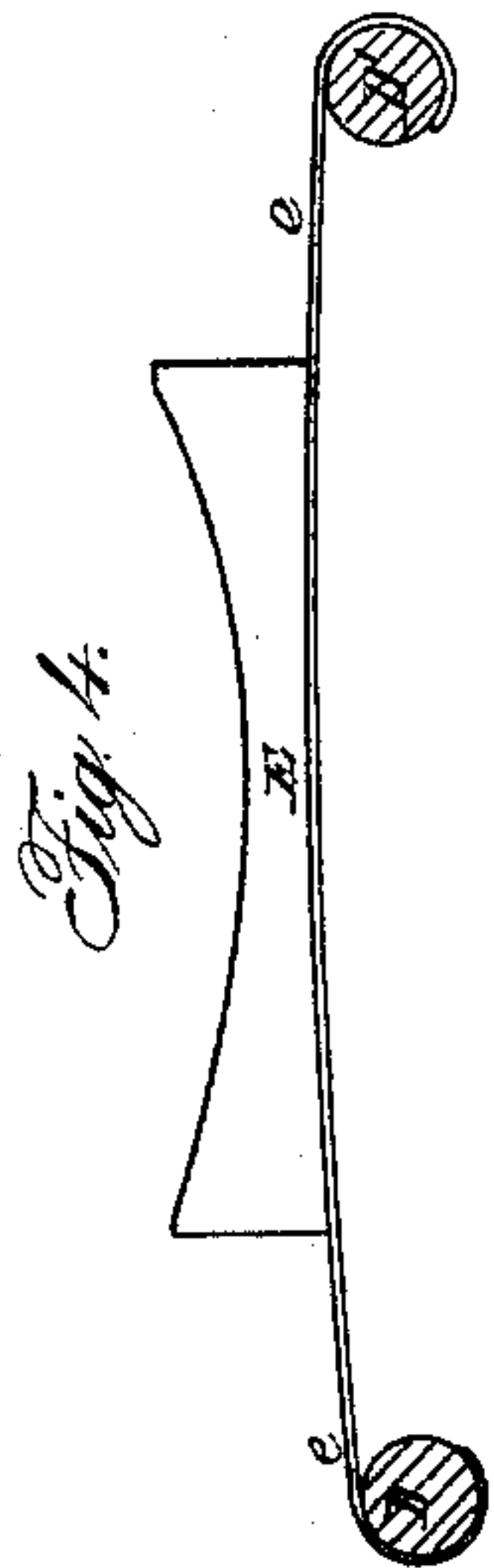
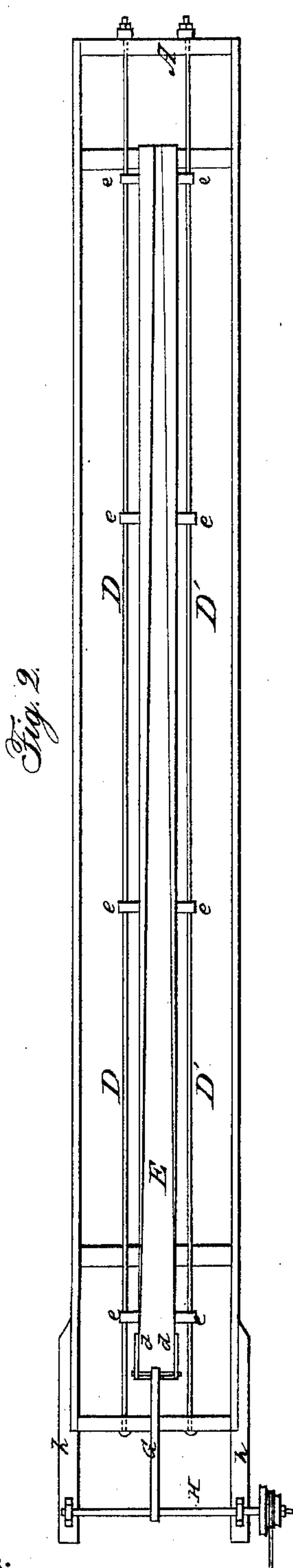


V. BARON.  
Ore Washer.

No. 35,197.

Patented May 6, 1862.



**Witnesses:**  
*Charles E. Stoker*  
*Charles Harrison*

**Inventor:**  
*Henry Harrison*  
*Attorney: Baron.*

# UNITED STATES PATENT OFFICE.

VICTOR BARON, OF FRANCE, ASSIGNOR TO HIMSELF AND WM. W. W. WOOD.

## IMPROVEMENT IN CONCENTRATING AND CLEANING ORES.

Specification forming part of Letters Patent No. 35,197, dated May 6, 1862.

*To all whom it may concern:*

Be it known that I, VICTOR BARON, of the Empire of France, but now residing at the mines of Tabanco, in the Republic of St. Salvador, have invented a new and Improved Mode of Concentrating and Cleansing Ores; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in concentrating and cleansing gold or other ore by causing it to pass in a ground or pulverized state along an agitated channel submerged in water, substantially as described hereinafter, the process being such that the mechanism required for carrying it into effect is of the most simple and economical character, and requires but little power to drive, the supply of water being but trifling, and the concentration and cleansing of the ore being so thorough that the usual tedious and expensive process of amalgamation may be dispensed with.

In order to enable others to practice my invention, I will now proceed to describe the manner in which the process is carried into effect.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a longitudinal vertical section of the apparatus by means of which I carry out my improved mode of concentrating and cleansing ore. Fig. 2 is a ground plan; Fig. 3, a transverse section; Fig. 4, a transverse section of the upper end of the concentrating-trough, and Fig. 5 a transverse section of the lower end of the concentrating-trough; Fig. 6, a modified mode of operating the trough. Figs. 1, 2, and 3 are drawn to a scale of two and a half inches to the foot, the remaining figures being sections of the full-sized trough.

Similar letters refer to similar parts throughout the several views.

A is a water-tight box, of wood or metal, and is separated by partitions *a* and *a'* into the three compartments B, C, and D.

E is what I term the "concentrating-trough," and consists of a long strip of wood or metal with a concave channel in its upper surface, this channel being of the full width of the trough at the front or most elevated end of

the latter, as seen in Fig. 4, and gradually diminishing in width and depth toward the rear or lowest end, where it presents the form seen in Fig. 5, on reference to which it will be seen that the edges of the trough are beveled, for a purpose which will be rendered apparent hereinafter. To the under side of the trough are secured any number of plates, *e e*, each plate projecting on each side of the trough, the projecting ends of the plates being arranged to fit over, to slide freely on, and to be guided by the bars D and D'. These bars extend from one end to the other of the box, and are secured to the same in the inclined position shown in Fig. 1, the trough having consequently a semicircular inclination. To the front end of the trough are secured two plates, *d d*, connected together at the top by a pin, to which is jointed one end of the rod G, the opposite end of the latter embracing an eccentric, *f*, on a shaft, H, which turns on projecting pieces *h h*, secured to the box A, and to which a rotary motion is imparted by any suitable appliances.

Immediately above the compartment B of the box A, and to the opposite sides of the latter, is secured the hopper I, which has at the bottom a small circular opening for admitting freely the screwed end of the spindle J, the upper end of which turns in the brackets *i i*, which project from the inside of the hopper.

When the ore ground to as fine a powder as possible is deposited in the hopper I, a rotary motion is imparted to the shaft H and to the screwed spindle J, the speed of which regulates the quantity of powdered ore which is allowed by the screw to pass through the opening in the bottom of the hopper into the concave channel at the front or elevated end of the concentrating-trough, to which a longitudinal reciprocating motion is imparted by the eccentric *f* and rod G.

It should be understood that the partitions *a* and *a'* extend in height as near to the under side of the trough as possible without being in actual contact with the same, and that the box is nearly filled with water, so that the trough, with the contents of its channel, may be entirely submerged.

As the trough reciprocates, the ground ore falls from the opening in the hopper I into the head or widest and deepest part of the



channel of the trough, the longitudinal reciprocating motion of which, together with its inclined position, causes the ore to gradually descend the channel. Owing to the motion of the trough, the earthy and other light and extraneous particles mixed with the ground ore will be uppermost, while the heavier particles, consisting of pure ore, will have a tendency to move to and remain in the bottom of the channel, and as the latter is gradually contracted in width and depth the lighter portions must be washed by the water down the beveled sides of the trough and into the compartment C of the box. This process continues as the ore passes down the inclined channel, so that the heavy concentrated particles of ore passing down the middle and deepest portion of the channel will escape from the end of the trough into the compartment D. If the ore in this compartment be not thoroughly cleansed, it may be replaced in the hopper I and be again subjected to the concentrating process by passing down the agitated and submerged channel.

The compartment B is for the purpose of receiving such particles of ground ore as may accidentally fall over the edge of the trough in passing from the hopper, these particles being collected and replaced in the hopper at leisure. I have found by practical experiments that in washing and concentrating gold and silver ores by the above-described apparatus the gold is so effectually separated from the earthy and other extraneous matter that the usual tedious and expensive process of amalgamation may be dispensed with.

The water in the box may be used over and over again, a very limited supply only allowed to flow in a small stream into the hopper being necessary to replace that lost by leakage, absorption, &c. The importance of this feature in localities where water is scarce, or where it can only be obtained by the aid of expensive hydraulic machinery, will be apparent.

As regards the construction of the apparatus, it will be at once seen that it is of the most simple and economical character, and that it may be made of materials accessible in almost every locality.

The power required to operate the trough is inconsiderable, as it does not require a reciprocating motion of more than a quarter of an inch, or thereabout.

Although I prefer an inclined trough having a uniform reciprocating motion imparted to it by an eccentric as the most simple in construction and efficient in practice, the trough may be horizontal and the reciprocating motion imparted to it irregular. Thus a cam, Fig. 6, may be arranged to move the trough forward gradually, the backward movement, which is sudden, owing to the form of the cam, being effected by suitable springs. In this case the ground ore will gradually move along the horizontal channel of the trough, owing to the quick backward and comparatively slow forward movement of the same. The same device may be used in connection with an inclined trough, or the ore may be caused to move along the channel of the trough by causing the latter at each termination of its forward movement to be brought into sudden contact with any hard or slightly-yielding object, in which case the trough will, as it were, receive a blow, the natural tendency of which is to move the ore forward.

In some instances I have imparted to the trough a lateral movement combined with a horizontal reciprocating movement, and this with very good effect. An oscillating or rocking motion may also be imparted to the trough to facilitate the concentration and cleansing the ores. As there are several modes of obtaining these motions which will readily suggest themselves to experienced mechanics, it has not been deemed necessary to illustrate them in the drawings.

I do not desire to confine myself to the devices described of feeding the ground ore to the trough or to the mechanism for agitating the same, or to the precise movements imparted to the trough; but

I claim as my invention and desire to secure by Letters Patent—

Concentrating and cleansing ground or pulverized ore by causing it to pass along an agitated channel submerged in water, substantially as herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BARON.

Witnesses:

T. B. BOGLER,  
D. ALONZO.