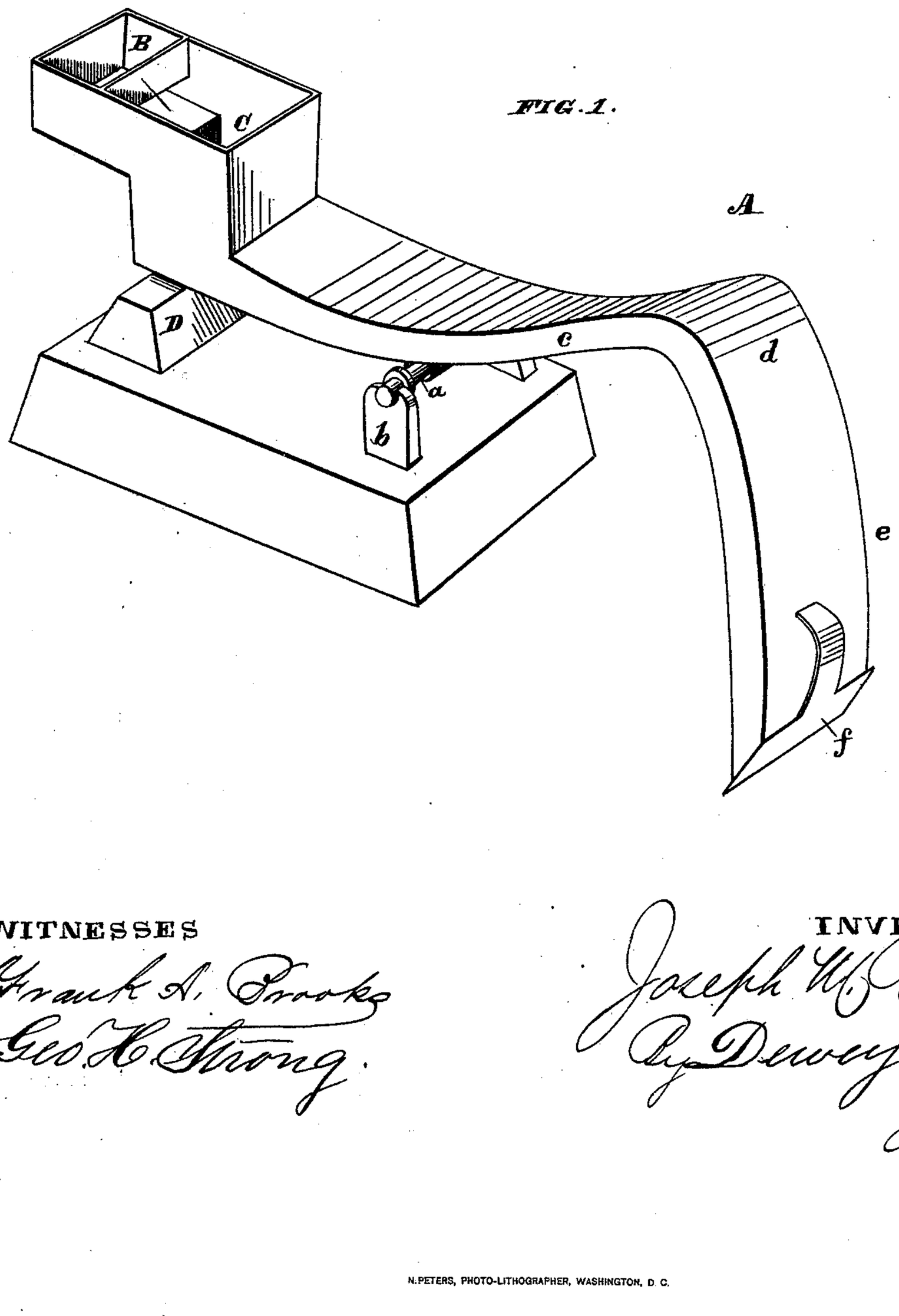
J. M. ROBINSON.

Mining-Sluice.

No. 221,742. Patented Nov. 18, 1879.

FIG. 1.



WITNESSES

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JOSEPH M. ROBINSON, OF EUREKA MILL, CALIFORNIA.

IMPROVEMENT IN MINING-SLUICES.

Specification forming part of Letters Patent No. **221,742**, dated November 18, 1879; application filed August 11, 1879.

To all whom it may concern:

Be it known that I, JOSEPH M. ROBINSON, of Eureka Mill, county of Plumas, and State of California, have invented an Improved Mining-Sluice; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention consists in combining with a sluice-trough a siphon discharge-pipe.

It also consists in mounting the sluice-trough section and siphon-discharge on trunnions, whereby the relative heights of the trough-section and discharging end of the siphon may be changed at will.

In the drawing the figure shows a perspective view of my invention.

In the stamp-mills in common use in the mining sections the mills are divided up into batteries containing five stamps each. Any desired number of these batteries may be placed in line, and in front of each one is a series of amalgamating-plates, over which the material flows into a sluice, the sluices from all these batteries leading to a common sluice, into which all discharge. The main sluice conveys the tailings away to the place of deposit. Notwithstanding the precautions which are taken, a certain proportion of the precious metals escape with the tailings into the sluice, and is lost. The object of my invention is to reduce this loss by placing at the end of the main sluice a peculiarly-constructed sluice-section, through which the material must all flow, and in which the escaping particles of gold, quicksilver, &c., are caught and saved. In case there are pans in use in the mill, their tailings are also conducted into the main sluice to be conveyed away from the mill, so that all the material passing away has to pass through my sluice-section before it can escape.

At the end of the main sluice I place my curved sluice-section A, mounting it on an axle or shaft, *a*, which fits in the bearings or boxes *b*, as shown. At the upper end of this sluice-section is a hopper, B, into which the tailings flow from the main sluice, and below the hopper is a trough, *c*, a foot or more deep. From this trough the sluice-section inclines upward, as shown at *c*, to the neck *d* of the section, and thence it inclines downward sharply, as shown at *e*, the whole being somewhat of a siphon shape. At the outer or lower end, which is considerably lower than the hopper and trough, is a gate, *f*, controlling the flow from the sluice. If the water from any one of the batteries is shut off at any time, this gate *f* in the discharge-pipe *e* can be closed a little, so as to keep the section full of water and sealed from the air. If, for instance, the trough of the section is a foot deeper than the hopper, and the distance from the bottom of the trough *c* to the bottom of the neck *d*, or highest point to which the water must rise to escape down the discharge portion *e*, is also a foot, and the lower end of the discharge-pipe *e* were on a level with the hopper, said hopper being the height of the neck, the water would flow through the section of its own volition; but when sand, tailings, &c., are brought into the sluice with the water, this will settle at the bottom and remain there, because there is no force to throw it out, and the section would become choked. To prevent this I lengthen my discharge-pipe *e* considerably, and bring its lower end lower than the hopper, the siphon principle being then brought into action to relieve the sluice and draw the material with the water up the incline *c* to the neck, whence it passes down and out. Any desired length may be given to the discharge-pipe, enough only being required to throw out the sand and light sulphurets, leaving the gold and particles of mercury, heavy sulphurets, &c., in the sluice.

The platform on which the section stands is so placed that the hopper will come under the end of the main sluice from the mill, and low enough, so that the end with the hopper may be raised or depressed at will. When one end is raised the other end is correspondingly depressed, which motion will regulate the working of the machine to a certain extent. This is rendered possible by the section being mounted on the axle, as shown, so it may be oscillated at will. The block D under the hopper is removable, so that blocks of different sizes may be substituted to regulate the inclination of the section.

As the material passes into the sluice-section, on dropping from the hopper into the trough, it is compelled to move up the incline with the current. The lighter particles do

this easily; but the quicksilver-globules and heavier particles of gold and other precious metals by their gravity will remain below and not rise upward, being thus caught in the sluice. If the water is not allowed to run over the hopper, the floured quicksilver will remain on top of the water in the hopper until an aggregation of particles takes place, when it will gravitate to the bottom of the sluice and be saved the same as gold or other heavy material.

In starting the sluice the hopper is raised a little above the neck, and by having a gate in the end of the main sluice this gate will, when closed a moment, give a head of water sufficient to crowd it through the section and force the air out of the discharge-pipe. The siphon being thus started, the long column of water will continue to draw the material up the incline of the section as long as the supply is continued. Power is thus gained sufficient to draw the tailings through the inclined sluice without drawing out the precious metals. The water has an even and easy flow through all parts of the sluice alike, and I can, of course, apply any amount of power equal to atmospheric pressure, or as little as I desire, the inclination being regulated as well as the flow through the section.

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

1. The sluice-trough section C, in combination with the siphon discharge-pipe *c d*, as described, and for the purpose set forth.

2. The sluice-trough section C and siphon discharge-pipe *c d*, mounted upon and in combination with the trunnions *a* and support *b*, as described.

In witness whereof I have hereunto set my hand and seal, July 23, 1879.

J. M. ROBINSON. [L. S.]

Witnesses:
I. P. HILLS,
WILLIAM FORD.