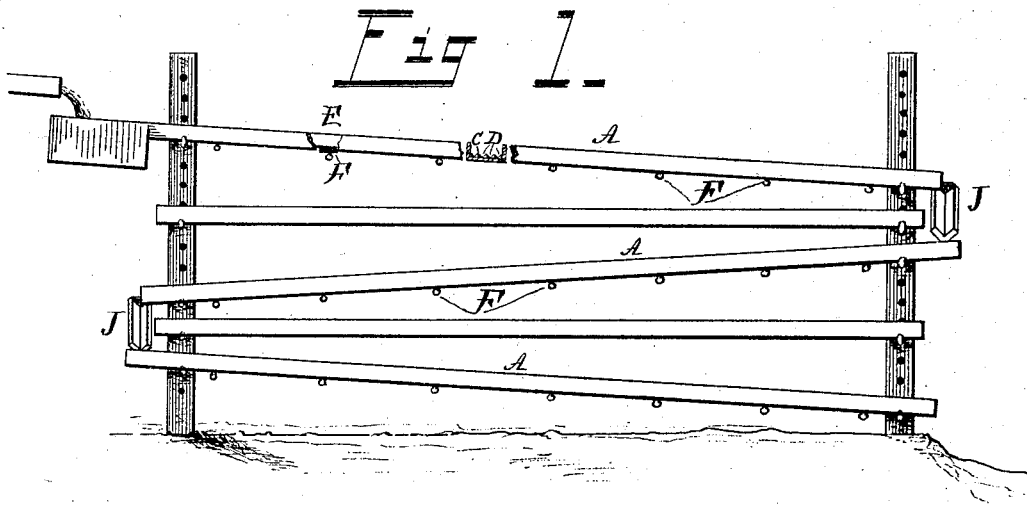


(No Model.)

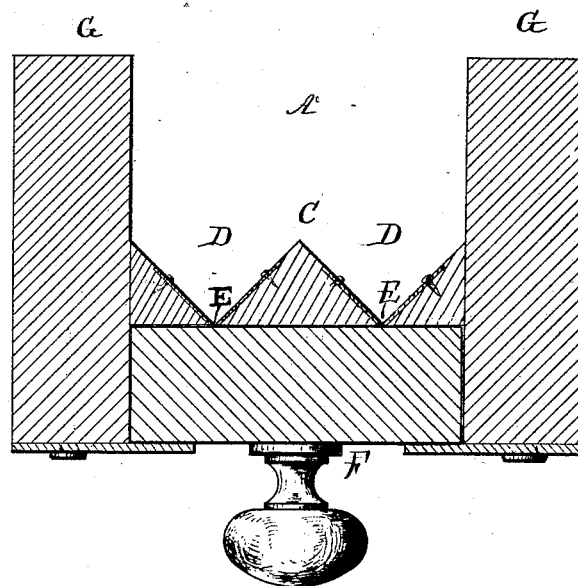
W. A. FRANK.  
ORE CONCENTRATOR.

No. 342,435.

Patented May 25, 1886.



*Fig 2.*



WITNESSES

*G. E. Tucker*  
*Van Buren Hillyard*

INVENTOR

*William A. Frank.*  
*Per W. R. Stevens.*  
Attorney

# UNITED STATES PATENT OFFICE.

WILLIAM ALBERT FRANK, OF PINAL, ARIZONA TERRITORY, ASSIGNOR OF  
ONE-HALF TO THOMAS WICKS, OF SAME PLACE.

## ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 342,435, dated May 25, 1886.

Application filed February 3, 1886. Serial No. 190,710. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ALBERT FRANK, a citizen of the United States, residing at Pinal, in the county of Pinal, Arizona Territory, have invented certain new and useful Improvements in Ore - Concentrators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of ore-concentrators which are used to separate precious metals from finely-pulverized ore mixed with water; and it is designed as an improvement on a former invention on which I obtained Patent No. 335,219, dated February 2, 1886.

It is a well-known fact that the water of a river runs fastest near the center at the surface—that is, farthest from the retarding effect of the banks and the bottom. It is also a fact well-known that water running rapidly will hold in suspension and carry along bodies of material which are heavier than the water, and which would settle to the bottom thereof when at rest. Acting upon this principle, the V-shaped trough, having fine outlets through its bottom, which is the subject of my patented invention above referred to, operates very satisfactorily when set at a gentle incline, so that the wash runs very slowly through it; but I wish to accomplish equally good results more rapidly on the same general principle; to which end my invention consists in the construction and combination of parts forming an ore-concentrator hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention, and Fig. 2 is an enlarged transverse vertical section of one of the troughs.

A represents either one of the three troughs here shown. They are connected by short troughs or spouts J, and are provided with traps E, having fine holes, and gates F, to regulate the outlet of precious metal, which is to be caught in any suitable receptacle placed below the holes, as in my former patent. The bottom of each trough is divided into two or

more longitudinal grooves, D, by low partitions C, forming a series of minor troughs, each of which is V-shaped, and provided with traps E and gates F. The outer walls or sides, G, of the main trough A rise above the level of the partitions C.

The following are suitable proportions for a two-grooved trough: the inside width two and one-half inches; depth, two inches; height of partition C and side slants of the grooves, five-eighths of an inch. More grooves would require a wider trough of the same depth.

In practice I find that in pulp or wash consisting of finely-pulverized ore and water the precious metals quickly settle from the upper two-thirds of the wash into the lower third, and are there carried along, suspended in this more dense stratum. By forming the partitions C in this lower stratum I so retard the passage thereof that the precious metals may readily settle to the bottom, while the upper two-thirds of the wash, containing only the lighter refuse matter, are allowed to flow almost unimpeded. By this means I am able to secure the precious metals from the wash with the trough set at a steeper incline than by the old arrangement, thus saving expense by expediting the work of concentration.

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

1. In an ore-concentrator, the combination, with a trough having sides and a bottom having V-shaped grooves parallel with the sides, of traps or outlets provided with fine holes at intervals along the bottoms of the grooves, and the regulating-gates, substantially as shown and described.

2. The combination, with the trough having sides and one or more V-shaped partitions rising within the trough lower than the sides, and forming a grooved bottom therefor, of a series of traps or outlets provided with fine holes, and located along the bottoms of the grooves, and the regulating-gates, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ALBERT FRANK.

Witnesses:

THOMAS WICKS,

JAMES DUBORN REYMERT.