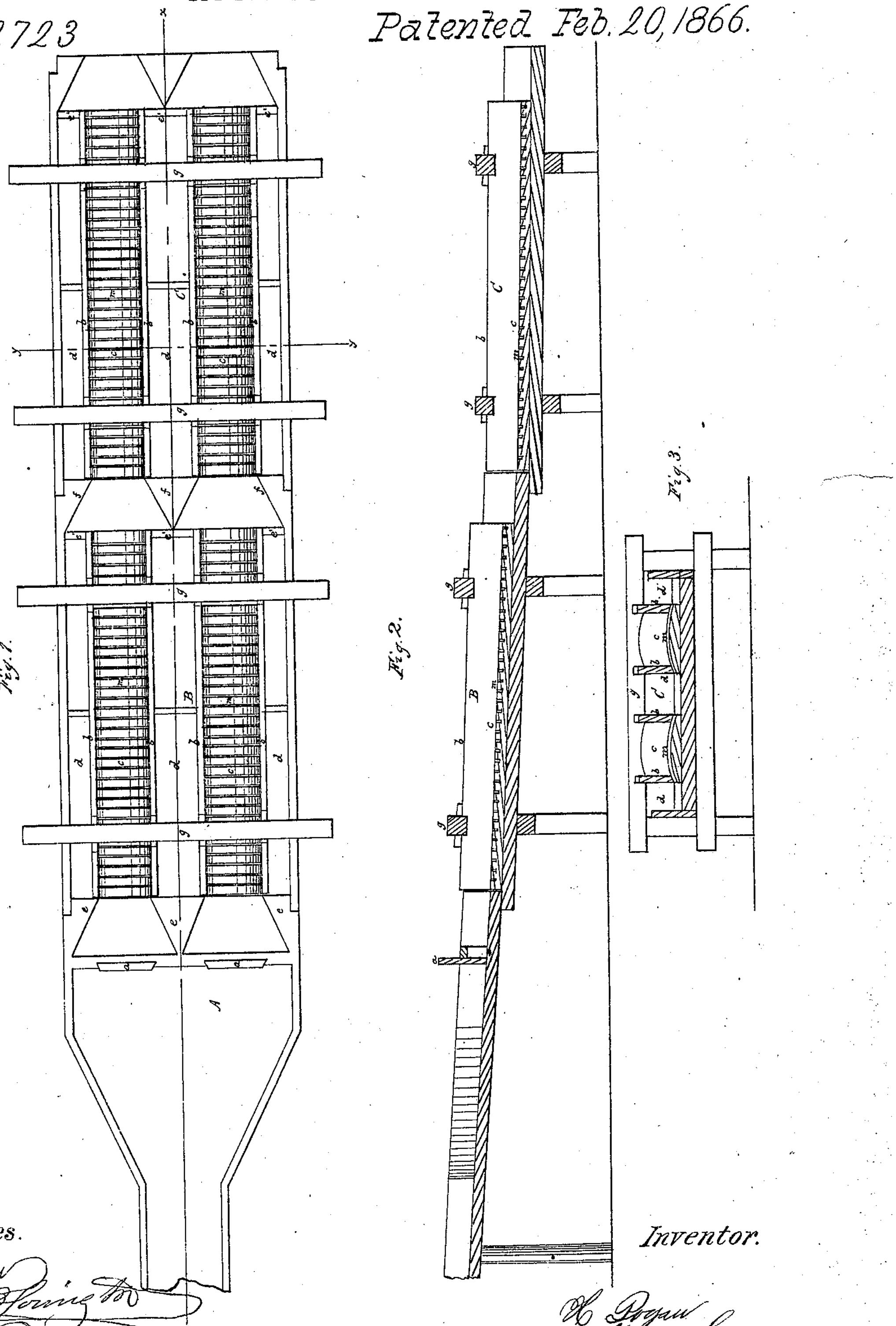
H. Logan.

Gold Washer.

No. 52723 — Patented Feb. 20, 1866.



Witnesses.

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HUGH LOGAN, OF WASHOE CITY, NEVADA.

IMPROVED SLUICE FOR QUARTZ-MILLS.

Specification forming part of Letters Patent No. **52,723**, dated February 20, 1866.

To all whom it may concern:

Be it known that I, HUGH LOGAN, of Washoe City, in the county of Washoe and State of Nevada, have invented a new and Improved Sluice for Quartz-Mills; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of this invention. Fig. 2 is a longitudinal vertical section of the same, taken in the plane indicated by the line *x x*, Fig. 1. Fig. 3 is a transverse vertical section of the same, the plane of section being indicated by the line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

This invention relates to a sluice which is intended for use in such quartz-mills where argentiferous quartz is worked by what is known as the "wet" process, or, in other words, where the pulp is ground and amalgamated in pans.

In working silver-bearing quartz it is necessary to grind the quicksilver with the pulp in order to effect amalgamation, but in doing so the shoes of the muller-plates, coming in contact with the dies or ribs on the bottom, create so much friction that a considerable quantity of quicksilver is formed into globules, in which state it seems to lose all affinity for that remaining in its natural state, and is liable to be carried off with the tailings or débris and dumped in some vacant place or into a river or ravine, as the case may be.

The sluice which is represented in the accompanying drawings is intended to catch the quicksilver which has formed into globules, and which, together with some portion of the sulphurets, is liable to run off and be wasted, for most of the silver worked at present is contained in sulphurets, and in no case is the pulp so thoroughly ground but some sulphurets escape with the tailings.

The operation of my sluice is based on the principle that the sulphurets and globular quicksilver is heavier than sand and water, and therefore has a tendency to move along on the bottom of the sluice.

My sluice is composed of a series of sections, which are connected and placed on a suitable grade, the section A being intended to represent the sluice running from the mill. This section is furnished with two gates, *a*, which serve to regulate the quantity of water required to be run on either side of the second section, B, or if it is desired to run it all on one side this object is obtained by shutting the opposite gate.

The second section, B, and also the following sections are divided by a series of longitudinal partitions, *b*, in several compartments, *c d*, and the water discharging from the gates *a* is prevented by abutments *e* from entering the compartments or pockets *d*.

The compartments *c* are provided with rounded or Λ-shaped grooved false bottoms *m*, which are situated at such a height above the bottoms of the pockets *d* that the sulphurets and the quicksilver which accumulate in the grooves of the false bottoms pass through under the partitions *b* into the pockets *d*, where they are held by the end bars, *e'*. The sand which passes through the grooves is caused to flow out over the end bars by the action of the water, which is continually effervescing, thereby keeping the sand in motion and allowing the sulphurets and the quicksilver to settle down.

The water and sand discharging from the section B of the sluice passes into the succeeding section C, which is constructed precisely like the section B, and triangular abutments *f* at the bottom end of the section B cause the water and sand to pass into those compartments of the section C which are provided with false grooved bottoms, like the compartments *c*. Any sulphurets and quicksilver still existing in the water are retained in the pockets of the section C, or, if desired, still another section may be added.

The partitions *c* are held in position by yokes *g*, which are secured to the several sections of the sluice, and the upper cross-bars of which are provided with grooves to catch over the top edges of said partitions and to take suitable keys or wedges by means of which the partitions are fastened.

By following these directions a sluice can be constructed which prevents all waste of quicksilver and of sulphurets, and which can be easily put up and operated with little trouble or attention.

If desired, a screen of sheet-iron may be placed over the grooved false bottom, being perforated with holes which are directly over the grooves, in order to prevent the accumulation of fibers, wood, and other impurities in the grooves of the false bottom.

I claim as new and desire to secure by Letters Patent—

1. The grooved false bottoms *m* in the compartments *c* of the sections of the sluice, in combination with the longitudinal partitions *b* and pockets *d*, constructed and operating substantially as and for the purpose set forth.

2. The triangular abutments *e f*, in combination with the compartments *c d* of the sluice, substantially as and for the purpose described.

3. The yokes *g*, with suitable wedges or keys, in combination with the longitudinal partitions *b* of the sluice, constructed and operating substantially as and for the purpose specified.

HUGH LOGAN.

Witnesses:
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WILLIAM R. KING.