

J. Hepburn

Ore Washer

N^o 40,932.

Patented Dec. 15, 1863.

Fig. 1.

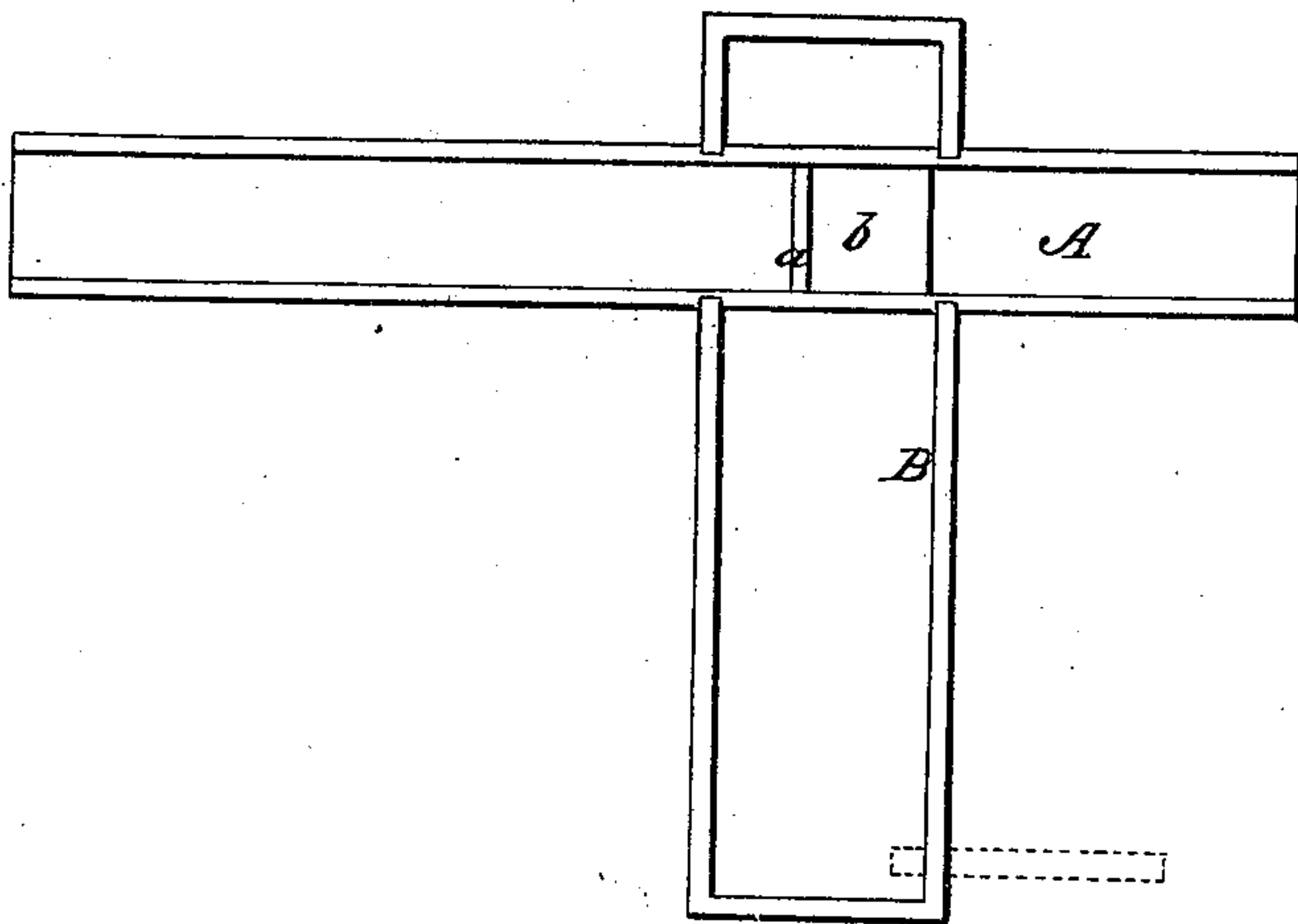
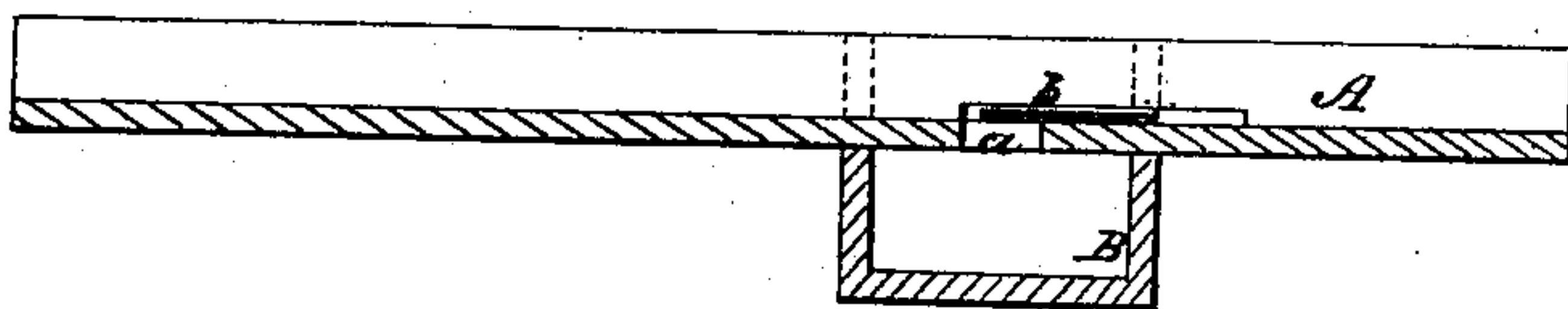


Fig. 2.



Witnesses:
J. W. Coombs
Geo. W. Reed

Inventor:
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UNITED STATES PATENT OFFICE.

JAMES HEPBURN, OF MOKELUMNE HILL, CALIFORNIA.

IMPROVED APPARATUS FOR CONCENTRATING ORES.

Specification forming part of Letters Patent No. 40,932, dated December 15, 1863.

To all whom it may concern:

Be it known that I, JAMES HEPBURN, M. D., of Mokelumne Hill, in the county of Calaveras and State of California, have invented a new and useful Improvement in Concentrating Ores of Metals, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a plan or top view of my invention. Fig. 2 is a longitudinal vertical section of the same.

Similar letters of reference in both views indicate corresponding parts.

This invention relates to an improvement in the manner of sluicing or separating the gangues and rock or earthy matter from the ores of valuable metals after the same have been reduced to powder by stamping or crushing, so as to effect by the automatic action of water a perfect separation of the ore from the rock in which it was disseminated.

The nature of my invention and its advantages will be readily understood from the following description:

A represents a sluice, which is set on a declivity of about one inch to the foot, to receive the discharge from the stamping-mill. This sluice is set into the receiving-box B, which is made of wood or any other suitable material capable of holding water. Its top edge ought to be flush with the top edge of the sluice. An aperture, *a*, in the bottom of the sluice, leads down into the receiving-box, and when this box is filled with water a gentle upward current rises through said aperture into the sluice. The size of the aperture *a* is regulated by a slide, *b*, which moves in grooves in the sides of the sluice, or any other suitable device may be applied for the purpose of regulating said aperture. Before the operation of concentrating the ore commences, clear water is let into the receiving-box through a pipe at its farther end, and so regulated by a stop-cock as to have a given flow up and through the aperture *a* in the bottom of the sluice. The material from the mill when it reaches this opening, meeting a gently-rising water bottom, is divided, the ore by its gravity dipping into the clear water in the box below, and the lighter rock and earthy particles, and all the mud and discolored water passing on, being prevented from following the ore into the receiving-box by the upward

current of clear water from below. If one upward current through the bottom of the sluice is not sufficient to separate the ore, I apply two or more receiving-boxes and a corresponding number of apertures in the bottom of the sluice. In concentrating copper ore, for instance, the first box will collect fifteen parts for the second one part, and so, by extending the sluices and increasing the number of boxes and of apertures in the bottoms of the sluices, there will presently be no more to collect. With light ores from ten to twenty apertures and receiving-boxes are required. The water should enter the receiving-box at least three or four feet from the sluice, so as to prevent any agitation in the same which would disturb the settling of the fine particles of ore. When a sufficient quantity of cleared ore has accumulated in one of the boxes, the corresponding aperture in the sluice is closed by the slide, and the ore is taken out. The box is then again filled with clear water from the supply-pipe, the apertures opened, and the operation continued in the same manner as before, or the material may be removed as it collects by an elevator-screw or any other suitable device. In this manner the heavy particles contained in a certain ore can be readily separated from those of smaller specific gravity without requiring any further attention after the currents have once been properly regulated.

I do not wish to claim, broadly, to separate ore by exposing the same to an upward current of water, as this process is carried out in ordinary shaking-machines, and described in Letters Patent granted to A. W. Schell March 10, 1863; but,

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

1. Exposing the ore as the same passes through the sluice A to an upward current of water from the receiving-box B, substantially as and for the purpose specified.

2. The employment or use of one or more receiving-boxes, B, arranged in relation to the aperture or apertures *a* in the bottom of the sluice A, and operating in the manner and for the purpose substantially as herein set forth.

JAMES HEPBURN.

Witnesses:

EZRA BEALE,

ANSLEY K. BOUCHER.