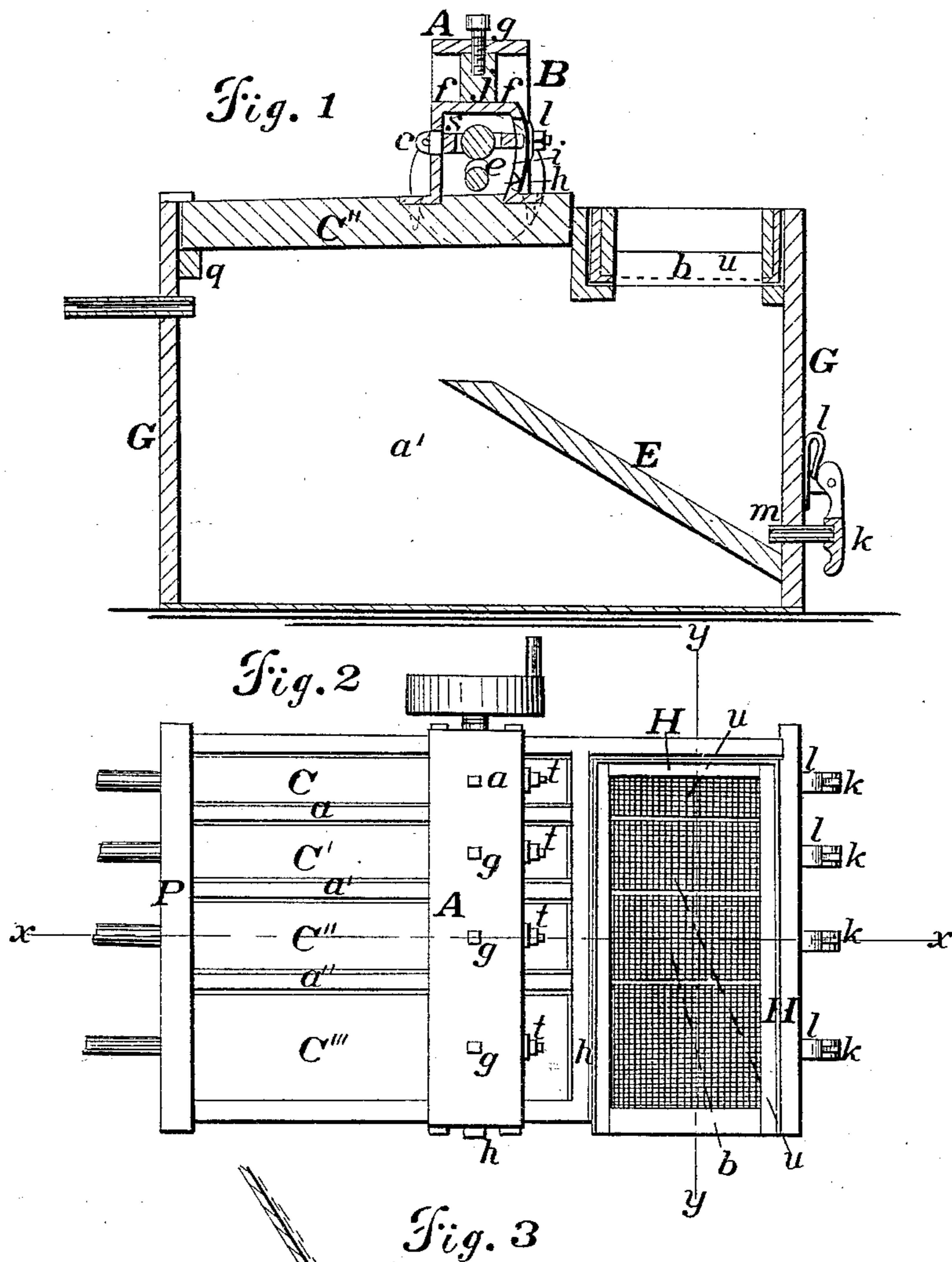


R. C. MORTON.

Ore Jigger.

No. 78,468.

Patented June 2, 1868.



WITNESSES:
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United States Patent Office.

ROBERT G. MORTON, OF WEST LUBECK, MAINE.

Letters Patent No. 78,468, dated June 2, 1868.

IMPROVED ORE-SEPARATOR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ROBERT C. MORTON, of West Lubeck, in the county of Washington, and State of Maine, have invented a new and useful Improvement in Ore-Separators; 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 is a vertical section of my improved machine, through the line *x x* of fig. 2.

Figure 2 is a top view of the separator.

Figure 3 is a cross-section of the same through the line *y y* of fig. 2.

Similar letters of reference indicate like parts.

The nature of this invention relates to the separation of metallic ores by the pulsation or undulation of water, and consists of a series of plunger-levers, vibrating above a series of water-cells, the plunger-levers and cells being arranged to pulsate the water with different degrees of force. Other devices, perfecting the whole, render this separator more perfect in its action and economical in construction than the separators heretofore made and used.

In the accompanying plate of drawings, the box or body of the machine is shown at G. This box is divided into separate cells or compartments, D D' D'' D''', by vertical partitions *a a' a''*, as shown, and the cells thus made decrease in width and volume, as is observed in figs. 2 and 3.

Vibrating between the upper edges of these partitions are the lever-plungers C C' C'' C''', which are hinged to the end of the box by any suitable hinges; or the ends of the said plungers may be confined between the metal strap or bar *p* and the strip *q*, as shown, as the plungers are fitted with finished contact of their sides and ends, with the partitions *a a' a''*, and cross-pieces *r* of the box, and are therefore held in place in the manner of a hinge, as their greatest vibration is not sufficient to lift them clear off the cross-piece *r*.

The plunger-levers are operated by means of a shaft, *h*, bearing cam-projections *e*, which impinge upon the roller *d*, held in slots in the adjustable bars *s*, which latter are pivoted across the plates *f*, affixed to the top of the lever-plungers, as shown.

Each plunger bears a plate, *f*, with its adjustable bar and roller, the said bar being pivoted to the plate at *e*, and provided with a set-nut, *t*, working on the screw formed on the reduced end of the bar, which reduced end projects through a slot, *i*, in the curved upright of the plate, as shown.

The function of the pivoted bar and its set-nut is the adjusting of the roller at different distances from the cam-projection on the shaft, whereby the vibration of each particular plunger is regulated with reference to the fineness of the ore-particles, as will be shown.

The water flows from a chute into the sieve-tray H, as shown, and upon the crushed ore therein, and the pulsation of the plungers forces the water up through the sieve *b*, in the manner common to other separators, but instead of operating upon the ore in one undivided tray, I divide the tray of my machine to correspond with the cells and plungers, by low partitions *u*, which correspond with the partitions *a a' a''* beneath, and, as the vibration of the plunger C' is greater than that of the other plungers, and the cell upon which it acts is less in space than the other cells, the pulsation which it causes will be greater, and the water will be forced through the sieve more effectually thereby, admitting only the heaviest of the ore-particles to pass through the sieve. The next plunger is adjusted to a lesser degree of vibration, and, as its cell is more spacious, its pulsation will be less forcible, whereby ore-particles of less bulk and consequent gravity will be permitted to pass through that portion of the sieve over the next cell D'. The current of water from the chute carries the mineral particles from which the metal particles have been separated into the next sieve-compartment, where, at each one, it encounters an upward current of reduced force, suitable for permitting the passage of the lighter metal particles, which were rejected from preceding cells, by reason of their lacking sufficient gravity to overcome the strength of the preceding currents.

Thus the crushed ore, in being washed over the different cells, deposits the metal particles of different degrees of fineness, until, arriving above the last cell, D''', where the current is weakest, the metal sediment is

deposited, and the mineral residuum passes out at the slot *o*, almost completely deprived of the metallic particles with which it was intermingled when taken from the stamping or crushing-mill.

Thus my invention enables me to save a greater per cent. of metal than the machinery heretofore used.

The water is supplied to each cell by any suitable pipes, as those shown in red.

Another improved adjunct to my separator is shown in the construction of the cocks *k k k* of each cell, which are hinged and actuated to close the exterior or mouth of the discharge-nozzles *m*, by means of a cap and spring, *l*, as shown. In practice, the cavity of the cap will contain an elastic pad, as rubber or other suitable substance, and will thus retain the water without liability to become leaky from the action of grit or metal particles, as is the case with the common cocks now in use.

The plungers are actuated downwards by the rubber springs *j*, the tension of which is adjusted by means of set-screws *g*.

The shaft *h* has bearings in uprights, which are affixed to the box *G*, and which uprights form a continuous part of the plate *A*, above the plungers, as shown.

The slide *E* conducts the separated metal to the discharge-nozzles *m*.

This machine is designed more particularly for lead ore, but is equally applicable as a gold-separator, or for the separation of all ores where the conditions are similar.

The cams are arranged at different angles on the shaft, whereby each plunger will be actuated separately, and less power will be required to drive the machine than when all the plungers are operated simultaneously.

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

1. The series of lever or hinged plungers *C C' C'' C'''*, &c., acting upon the series of cells *D D' D'' D'''*, substantially as shown and described, in combination with the corresponding compartment-tray *H*, all as and for the purpose set forth.
2. The adjustable bars *s*, substantially as shown and described, in combination with the rollers *d* and cams *e* of the shaft *h*, all as and for the purpose set forth.
3. The lever-cocks *k*, substantially as shown and described, in combination with the box *G*, slide *E*, and plungers, all substantially as shown and described, and for the purpose set forth.
4. The bar *A*, rubber springs *j*, plates *f*, and lever-plungers, all constructed and operating substantially as shown and described, and for the purpose set forth.
5. Tray *H*, having partitions *u u u*, substantially as shown and described, in combination with a series of plungers and a series of cells *D D' D'' D'''*, all as and for the purpose set forth.

ROBERT C. MORTON.

Witnesses:

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