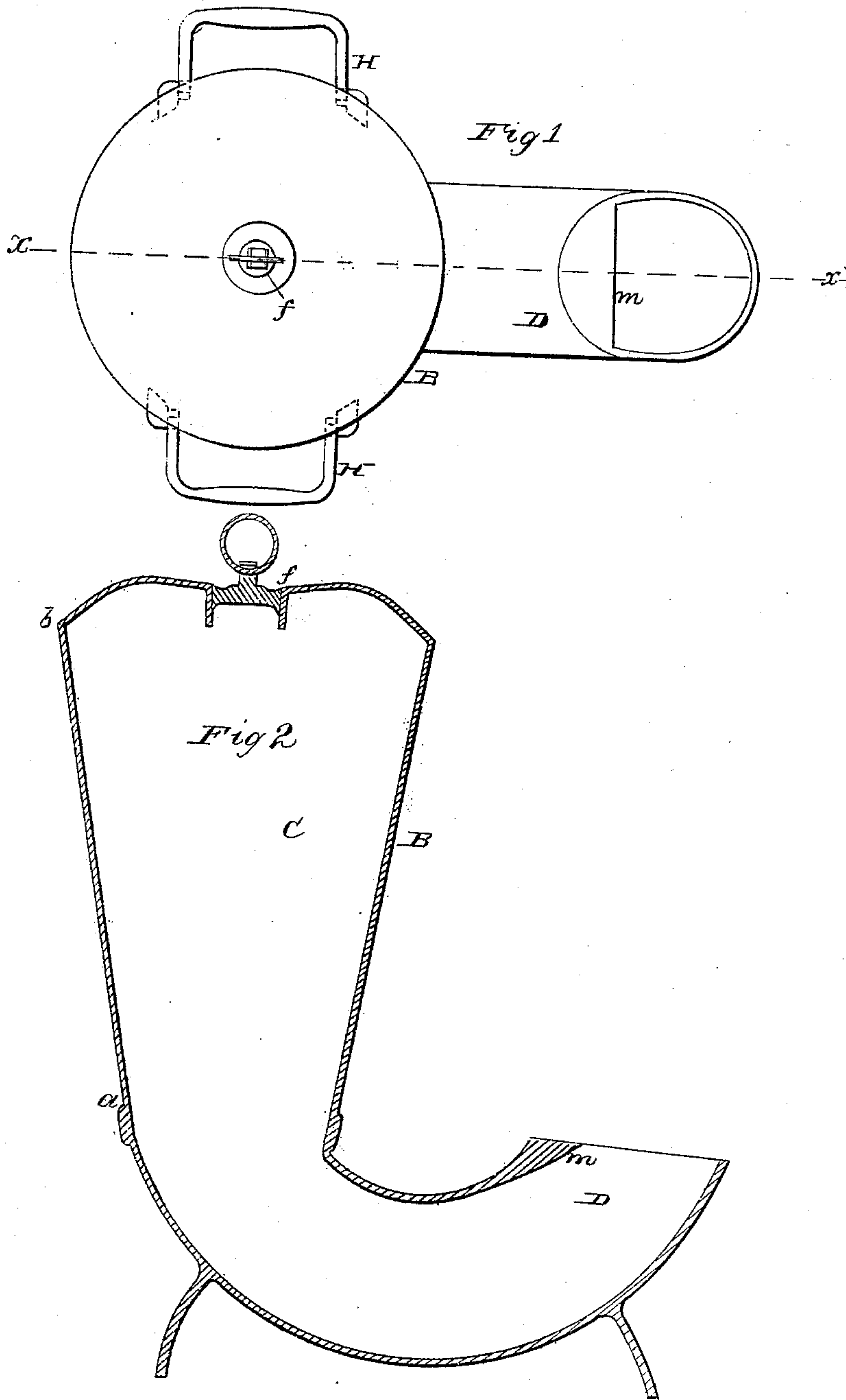


H. M. RITTERBAND.

Ore Washer.

No. 10 190.

Patented Nov. 1, 1853.



UNITED STATES PATENT OFFICE.

HENRY M. RITTERBAND, OF NEW YORK, N. Y.

IMPROVED GOLD-WASHER.

Specification forming part of Letters Patent No. 10,190, dated November 1, 1853.

To all whom it may concern:

Be it known that I, HENRY M. RITTERBAND, of the city, county, and State of New York, have invented a new and useful Apparatus for Separating Gold from Ore and Sand by Washing; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, forming part of this specification, in which—

Figure 1 is a top view of the apparatus. Fig. 2 is a vertical section on line *xx* of Fig. 1.

Similar letters of reference in the two figures denote the same part of the apparatus.

The object of my invention is, by the agency of water, to obtain a force which, being just sufficient to overcome the gravity of the earthy matters mixed with the gold, is utterly ineffectual to overcome the superior gravity of the gold. To produce this force I employ no other mechanical agent than the pressure of the water, which, when falling down from a relatively-measured height in one branch of a vessel of the shape of an inverted siphon, acquires exactly such a degree of velocity as is sufficient to overcome not only all kinds of earth and sand, but even the gravity of the largest stones, so as to carry them upward and out of the shorter branch, the force being at the same time utterly powerless to move and lift up the smallest tangible particle of gold.

To effect the above-described results I employ a vessel, B, somewhat in the form of an inverted siphon, the proportion between the height of the branches being as three to one, the longer branch, C, being at *a*, opposite the mouth of the branch D, one half of the upper diameter at *b*, and sloping gradually between those points. In the top of the branch C is the valve *f*, and in the mouth of the branch D, which is open, in the lip *m*. In practice the diameter of the valve *f* should be three-eighths that of the top, *d*, of the branch C.

This apparatus is intended to facilitate the operations of single individuals, and with certain modifications, which will be hereinafter described, is intended for permanent establishments of companies who carry on mining operations on a large scale. The following description shows the method of using the portable apparatus where water is procured with difficulty and must consequently be sparingly used. I place the ore or auriferous earth

in the short branch D and submerge the whole apparatus in a cask of water with the valve *f* open. When the vessel is filled with water, I close the valve *f* and raise the apparatus from the cask by the handles H, the pressure of the atmosphere on the open surface of the water in the branch D preventing the issue of water from the apparatus. I then raise the valve *f*, when the sudden fall of water in the long arm, rushing out of the branch D, carries with it all the earth and stones and leaves all the particles of gold on the bottom of the vessel. The current in passing out of the branch D strikes the lip *m* and is deflected in an oblique direction, thus causing, by the impinging of the gold particles which might be carried up by the current, the certainty of their falling into the bottom of the vessel.

To adapt the apparatus to operate on a large scale where water can be abundantly procured, I make both branches open and of equal length, one branch being bell-mouthed or funnel-shaped, the water being conducted to a reservoir by such a flow as will maintain it at a constant level, the water being conducted to the washing-vessel by a siphon communicating between the vessel and reservoir, the distance of the surface of the water in the reservoir from the bottom of the vessel being to the height of the branch as three to one, thus maintaining the same ratio between the falling column of water and the issuing branch as in the case before described, and rendering this modification essentially the same apparatus.

The ore or auriferous earth is supplied continuously to the funnel branch of the vessel, while the flow of water from the reservoir with a constant force removes the earth and stones, as before described, and leaves the particles of gold in the bottom of the vessel.

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

The combination of the tube B, valve *f*, and lip *m*, constructed and having the relative proportions, substantially as described, forming an apparatus for removing earth and stones from auriferous earth, as herein specified.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

H. M. RITTERBAND.

Witnesses:

GEO. PATTEN,
F. OBER.