P. SCHEUREMAN.

APPARATUS FOR WASHING ORES.

No. 40,950. Patented Dec. 15, 1863.

Fig 2.

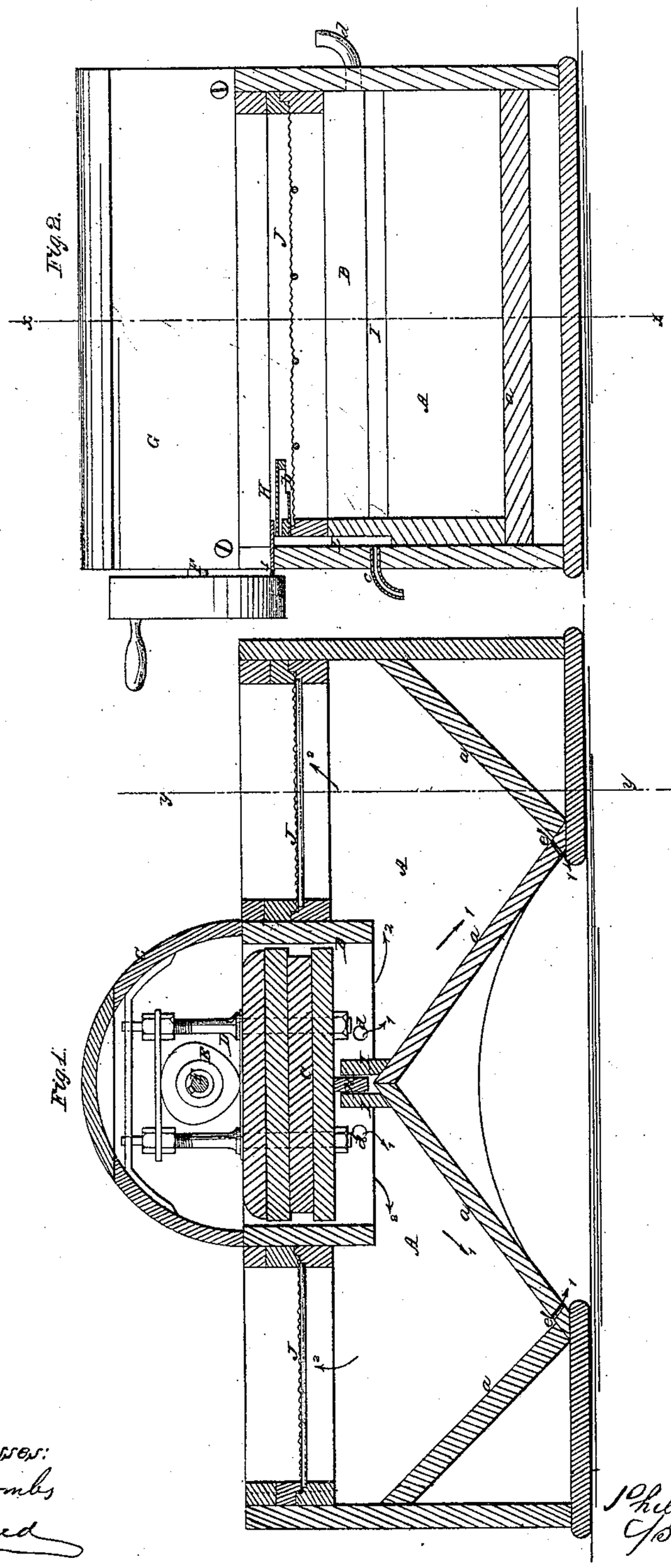

Fig 1.

Witnesses:

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UNITED STATES PATENT OFFICE.

PHILIP SCHEUERMAN, OF HANCOCK, MICHIGAN.

IMPROVED APPARATUS FOR WASHING ORES.

Specification forming part of Letters Patent No. **40,950**, dated December 15, 1863.

To all whom it may concern:

Be it known that I, PHILIP SCHEUERMAN, of Hancock, in the county of Houghton and State of Michigan, have invented a new and Improved Apparatus or Device for Washing Metallic Substances from Ores; 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, making a part of this specification, in which—

Figure 1 is a longitudinal vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a transverse vertical section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to certain improvements in that class of ore-washers in which water is forced up through screens on which the ore or pulp is discharged from the stamp-mill.

The object of the invention is to obtain an ore-washer of the class specified which will be more compact than those previously devised, more simple in its construction, as well as more efficient in its operation.

To this end the invention consists, first, in an improved device for imparting motion to the plunger of an ore-washer of the construction specified.

The invention consists, second, in the employment or use of two water compartments or reservoirs, provided each with a screen, and using, in connection with the two reservoirs and screens, a single plunger, the latter being arranged with the former in such a manner as to be capable of forcing the water of both reservoirs simultaneously through both screens and washing the ore thereon, thereby rendering the device very compact and efficient in its operation.

The invention consists, third, in a novel way of discharging the metallic substances from the screens—to wit., by means of horizontal tubes, placed one over each screen, and provided with openings in their under sides in quite close proximity to the screens to receive the metallic substances, the tubes communicating with chambers, into which the metallic substances are conveyed by the tubes and drawn off from time to time through faucets.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A A represent two separate water chambers or reservoirs, which are placed side by side, and have each a double inclined bottom, *a a;* and B is a rectangular box, which is placed directly over the junction of the two reservoirs and projects an equal distance over each, as shown clearly in Fig. 1. Within this box B there is placed a plunger, C, which has two yokes, D, on its upper surface, in which yokes eccentrics E work, said eccentrics being on a shaft, F, which when rotated communicates through the medium of the eccentrics and yokes an up-and-down movement to the plunger. One eccentric and yoke are shown in Fig. 1, and they are all, as well as the shaft F, covered by a cap, G, one end of the shaft projecting through one side of the cap, and having a crank or pulley upon it by which the shaft is turned. The bottom of the plunger has a vertical strip, H, attached to it, and extending its whole length. This strip H is fitted and works between upright plates I I, attached to the adjoining ends of the two bottoms of the reservoirs, and said upright plates, in connection with the plunger-strip H, form a cut-off or partition between the two reservoirs, and one which admits of the free working of the plunger. The plunger C, it will be seen, projects an equal distance over each reservoir, and in the upper part of each reservoir there is fitted a horizontal screen, J. Directly over these screens at one end there are fitted short tubes K, one over each, and in the under sides of these tubes near their back ends there are made openings *b*, one in each, said openings being in quite close proximity to the screens, as shown in Fig. 2. The tubes K communicate at their front ends with chambers L made in the sides of the reservoirs, each chamber having a faucet, *c*, at its lower end. Each reservoir A is supplied with water through a separate pipe, *d*, and in the bottom of each reservoir at the angle of the two inclined surfaces there are made openings *e*. (Shown in Fig. 1.)

The operation is as as follows: The pulp or ore from the stamp-mill is admitted upon the screens at the ends opposite to those where the tubes K are placed, the pulp or ore therefore passing over the entire length of the screens. The shaft F being rotated, the plunger C is actuated, and the water in the reservoirs A intermittingly forced up

through the screens J, as indicated by the arrows 2, the water washing the light, earthy, and mineral impurities of the ore off from the end of the screen at *f*, while the metallic particles, on account of their superior gravity, will settle to the bottom of the stream of pulp and be washed into the tubes K through the openings *b* in the lower surfaces thereof, and will be conveyed into the chambers L, from which it is drawn from time to time through the faucets *c*. The fine "slimes" contained in the pulp or ore pass through the screens J, into the reservoirs A, and pass with the flow of water through the reservoirs out through the openings *e* in the bottoms of the reservoirs, (indicated by the arrows 1.) Thus it will be seen that two reservoirs and two screens are used with a single plunger, and the latter arranged in close proximity to the screens, the whole forming a very compact and efficient machine, while the reservoirs being kept free from sediment, the water is always pure and the screens prevented from choking up or clogging, and the separation of the metallic substances from the ore rendered far more thorough than it otherwise would be.

I am aware that the principle of washing ores by means of plungers forcing water up through screens upon which the ore is placed is not new, and I do not therefore claim novelty therein except in the connection or combination herein specified.

I am also aware that it is not new to separate the heavier from the lighter layer of grains and constantly draw off the heavier by means of a tube placed at a limited height above the top of the screen, as described in Letters Patent granted on the 18th of March, 1863, to W. Schell.

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

1. The combination of the shaft F, cam E, and yoke D with the plunger C of an ore-washer, substantially as described.

2. The two separate reservoirs A A, provided with screens J J, in connection with a single plunger, C, arranged substantially as shown, to admit of the plunger forcing the water simultaneously through both screens, for the purpose specified.

3. The combination of the strip H and plates I I with the plunger C, and reservoirs A A, operating as a guide to the said plunger, and a partition between the reservoirs, all as herein shown and described.

4. The tubes K, provided with openings *b* in their under sides, in close proximity to the screens, and communicating with chambers L at the end of the screens opposite to the ends on which the ore or pulp is admitted, substantially as and for the purpose set forth.

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Witnesses:

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