J. H. Bull.

Ore Washer.

No. 6,268. Patented Apr. 3, 1849.

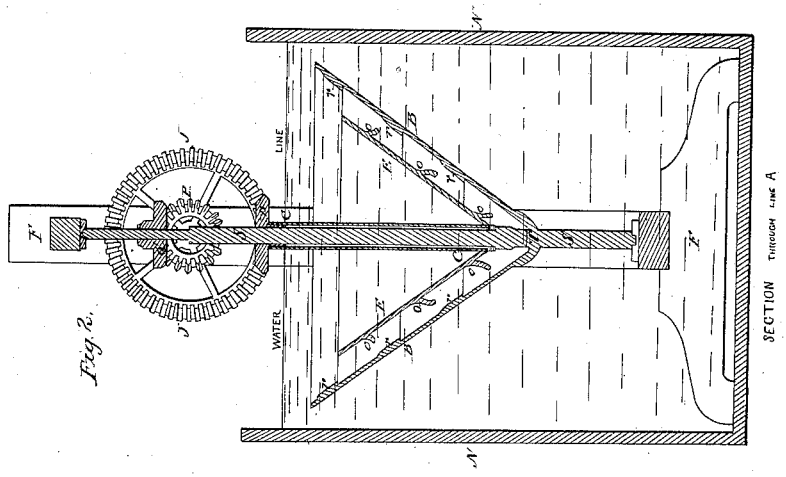

Fig. 2.

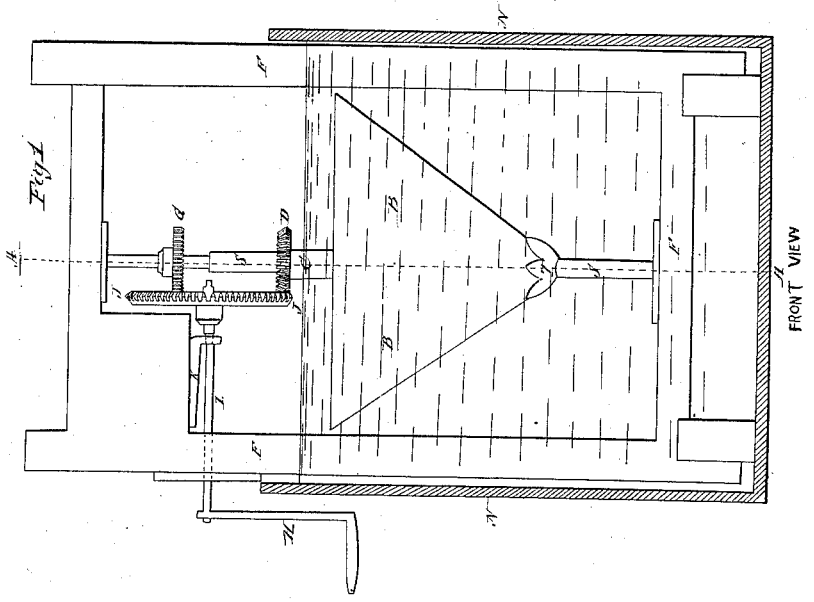

Fig. 1.

UNITED STATES PATENT OFFICE.

JAMES H. BULL, OF NEW YORK, N. Y.

CONCENTRIC CENTRIFUGAL GOLD-WASHER.

Specification of Letters Patent No. 6,268, dated April 3, 1849.

To all whom it may concern:

Be it known that I, JAMES H. BULL, of the city and State of New York, have invented a new and improved machine for and mode of separating gold dust and particles of gold from sand, gravel, and other foreign substances, which machine I call "Bull's concentric gold washer"; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying sheet of drawing, making a part of this specification, and in which like letters refer to like parts.

My said machine consists of two hollow vessels of convenient thickness and size, placed one within the other so as to leave a space between them; and revolving round a common center in different directions or the same direction and with equal or unequal velocity.

There may be various kinds of mechanical fixtures and arrangements and variations in constructing my said invention, but the following I believe to be the best for practical use.

In the drawings above referred to Figure 1 is a front elevation and Fig. 2 a sectional side elevation.

E, E E, is a frame, S, is a shaft to stand upright in the frame, and so fixed as to easily revolve, to this shaft at T, is soldered or otherwise secured the funnel shaped exterior vessel B; C is a hollow shaft inclosing the shaft S, and resting upon and extending from a shoulder on the shaft S, near the bottom of the vessel B, to the cog wheel D, which cog wheel is attached to the hollow shaft C, so that they will revolve on the shaft S, S.

E, is the interior vessel and both it and the exterior vessel may be made of sheet metal or other material of any convenient kind, and these vessels are made of a funnel, or nearly so, as shown in the drawings, as I prefer that form in practice.

G, is a cog wheel permanently fixed on the shaft S.

I, is a driving shaft connecting the crank H, with the double cog wheel (consisting of J and P,) which driving shaft is sustained by and revolves in the piece K, attached to the frame; and the upper edge of the interior vessel is lower than that of the exterior vessel as shown in Fig. 2.

N, N, is a vessel containing water as shown by the bluish color and in which the machine is represented as in part submerged.

O, O, O, are small pieces attached to the exterior surface of the interior vessel, to agitate or stir the matter between the two vessels, and *r*, *r*, *r*, are ribs on the interior surface of the exterior vessel to catch and retain the particles of heavy matter, such as gold, as it, together with the lighter matter and water flows up said surface.

The cog wheels J and P are permanently connected, and are driven by the shaft, I. The several cog wheels may be either mitered or beveled as will be best adapted to their relative positions. The wheel J, works into and carries D, which is attached to the hollow shaft C, and the wheel P, works into and carries G, which is attached to the shaft S. By this mode of gearing, the two vessels B, and E, will, when put into operation, revolve in opposite directions, but it is obvious that by a slight variation in the gearing so that the wheels J, and P shall carry the wheels D and G both in the same direction the vessels B and E will also revolve in the same direction. I prefer to have the pieces *o*, and *r*, attached to the vessels as above stated but they are not essential and may be omitted and the principle of the machine remain substantially the same.

The proportions, arrangement and the shape of the vessels and velocity of the parts will, it is obvious admit of many variations without substantially changing the principle of construction and operation of my said invention. But for a machine for practical use, and of such size as to have the interior vessel about sixteen inches in diameter at the top, I prefer to have the diameter of the exterior vessel about four and a half inches greater at its top than the diameter of the interior vessel, so as to have a space of about two inches between the two vessels and to have it so geared and operated that the interior vessel will perform from two to three revolutions to one revolution of the exterior vessel, and also to have the top edge of the interior vessel about one inch lower than the top edge of the exterior vessel. But as above stated these distances and proportions and relative position of edges of the vessels might be varied without altering the spirit of my invention.

My said machine may be operated, submerged, in part, in water, as shown in the drawings or it may be operated out of

water. When operated in water, the whole machine is to be submerged in the water up to about the line marked "Water line," and this may be in an artificial vessel of water or any other body of water. Where thus submerged, the gold together with the substances with which it is mixed and from which it is to be separated, must be put into the interior vessel E. The machine, then being put in operation by turning the crank with any convenient power, will separate the gold from sand, gravel and other foreign substances with which it is mixed, thus: By the rapid motion of the vessel E, the mass of solid matter in it including the gold will be thrown from the center of motion and upward, mixed with the water and being thus agitated with the water, the particles will be loosened and partially separated and rendered independent of each other; in this prepared state it will then be thrown with a sheet of water over the upper edge of vessel E, and fall thence into the vessel B, which vessel also revolving, but at a slower rate, will produce a current only sufficient to throw substances of less specific gravity than gold over the upper edge of said vessel while the gold will sink to the bottom of the vessel B, from which it may be removed by any convenient means.

Hence it will be observed that my said invention combines the process of preparing the mass of gold and substances from which the gold is to be separated (by first loosening, and in a measure rendering the particles independent of each other) with the process of separating the gold from the other substances after such preparation. When said machine is used out of water, water must be put into the interior vessel E with the material to be washed.

Having now explained how my said invention may be constructed and put into practical operation to produce the effect above specified, What I claim as my invention and desire to secure by Letters Patent, is—

The machine consisting of two hollow vessels of convenient thickness and size, placed one within the other so as to leave a space between them and revolving so as to prepare the gold and mass of other matter with which it is mixed, and also to separate the gold from such other matter substantially as described.

JAMES H. BULL.

Witnesses:
MILES B. ANDRUS,
GEO. GIFFORD.