2 Sheets—Sheet 1.

J. H. WILHELM.

Ore-Washer and Amalgamator.

No. 211,824. Patented Jan. 28, 1879.

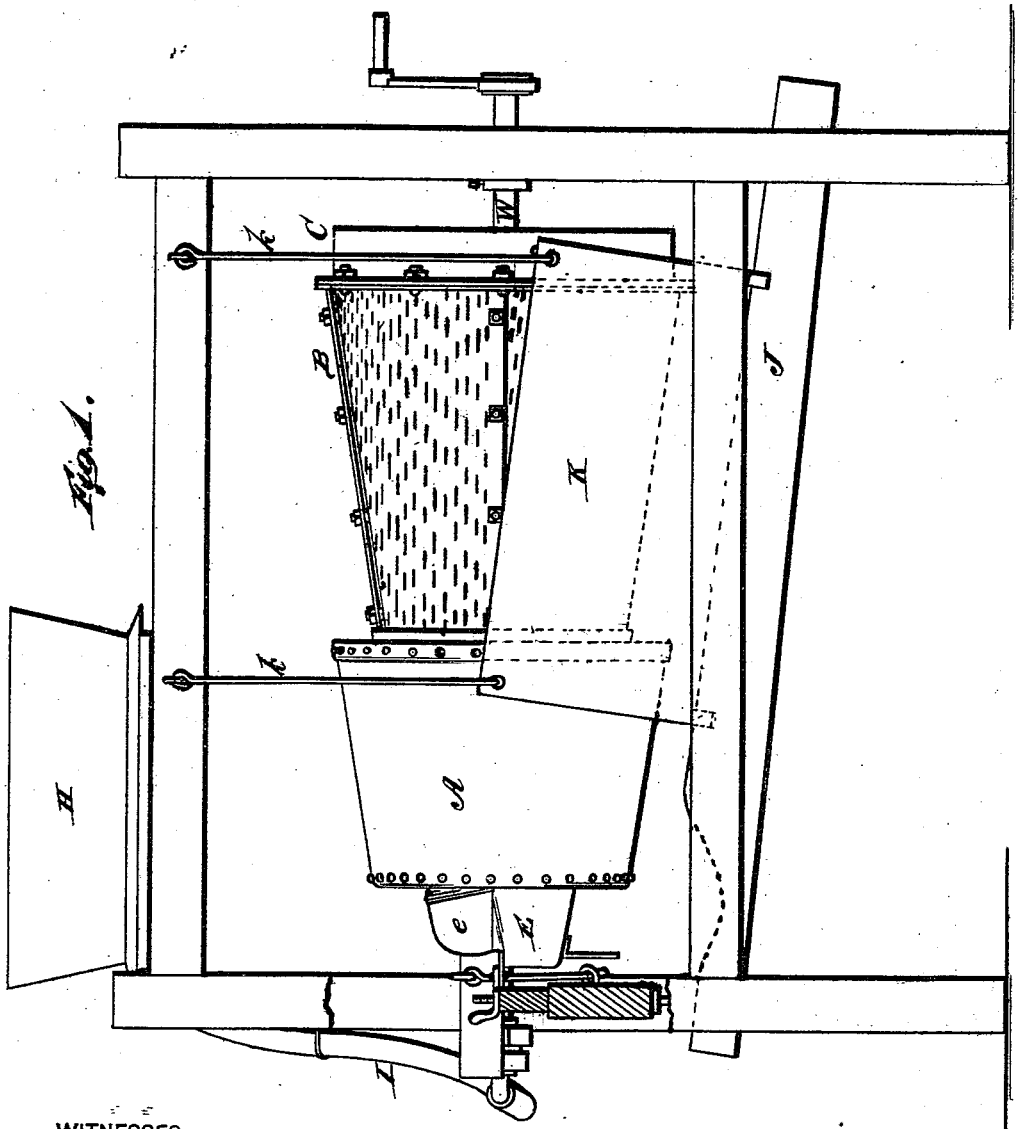

Fig. 1.

WITNESSES

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2 Sheets—Sheet 2.

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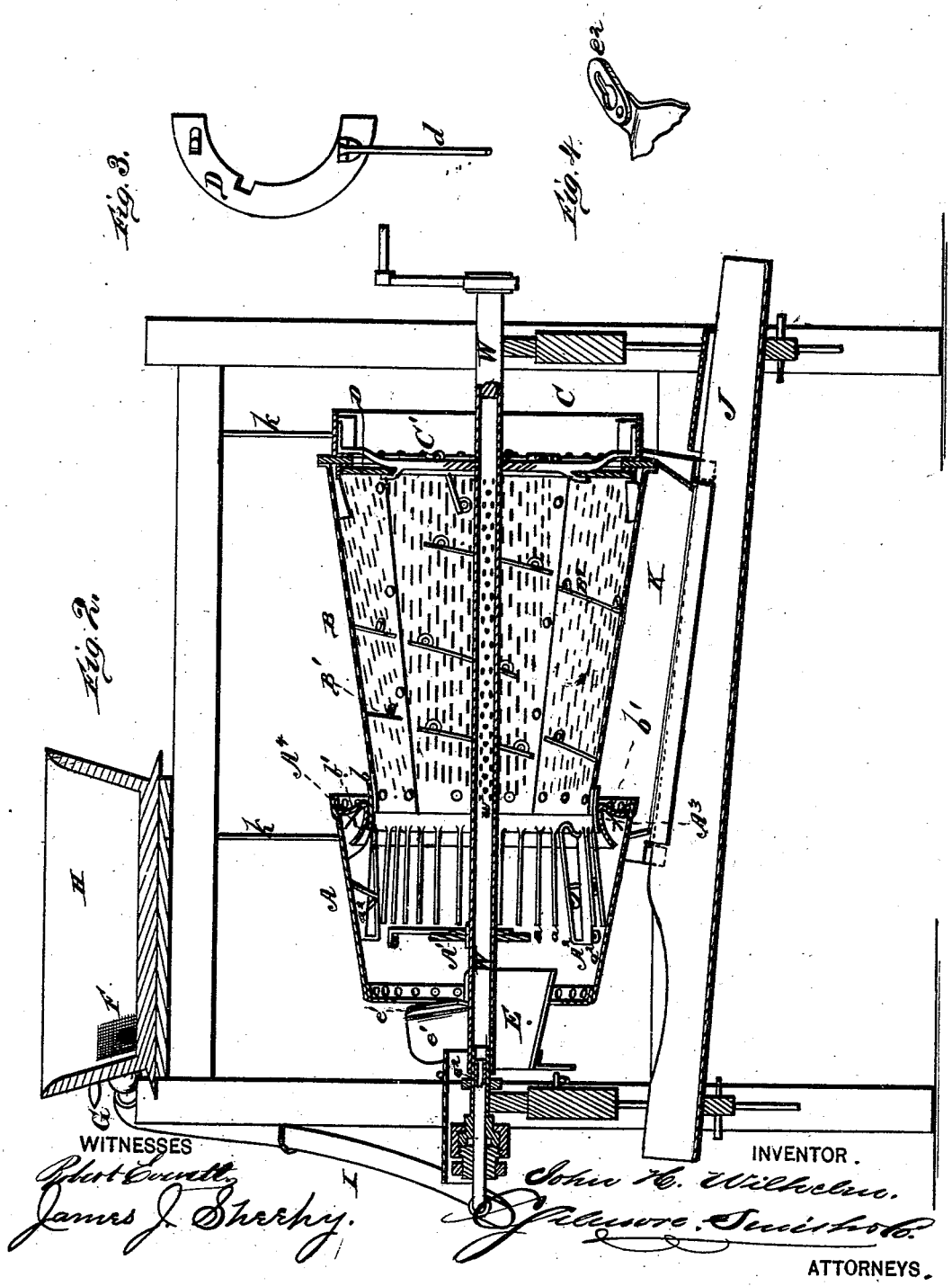

UNITED STATES PATENT OFFICE.

JOHN H. WILHELM, OF DENVER, COLORADO.

IMPROVEMENT IN ORE-WASHER AND AMALGAMATOR.

Specification forming part of Letters Patent No. **211,824**, dated January 28, 1879; application filed December 3, 1877.

To all whom it may concern:

Be it known that I, JOHN H. WILHELM, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful Improved Ore-Washing and Amalgamating Machine, which I call the "Dry Placer Gold Separator;" 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 accompanying drawings, making a part of this specification.

My invention is an improvement upon the device patented to me October 16, 1877, numbered 196,174.

In the art to which my invention belongs it is a desideratum to economize water, as, in many instances, but little water can be obtained, and even such small quantities at great trouble or expense.

The object of my invention is to separate and gather the native gold from the auriferous débris of placer mines by using a small quantity of water, and in most cases to do this without the use of free quicksilver or amalgamated plates.

In some localities where no water at all can be obtained, by my invention I can concentrate the gold-bearing dirt and save the gold with or without the use of quicksilver and amalgamated plates.

Using but a comparatively small quantity of water, I am enabled by my invention to pump the water so used back into the tank, and reuse it as often as practicable.

The accompanying drawings, which fully illustrate my invention, form a part of this specification.

Figure 1 is a side elevation, partly in section. Fig. 2 is a vertical longitudinal section, and Figs. 3 and 4 details.

Referring to the drawings, the revolving cylinder is composed of the water-tight portion A, the perforated screen B, and the part C, the two former being of regularly-graduated different diameters from extremity to extremity, as shown. It is made of sheet metal, of desired size, and revolves by means of a central hollow horizontal shaft, W, as shown, which has bearings in end cross-pieces of a suitable frame. This frame, as shown, comprises four posts with necessary sidings and braces; but as these form no part of my invention they may not be particularly described. The cylinder is secured centrally on the shaft W by arms passing across the diameter of the cylinder at each end.

The portions of the cylinder A and B are conical in form, and the portion at its larger end is bolted to a circular collar, b', of ogee shape, of cast metal, which collar is also secured to the smaller end of the screen or perforated portion B. Inside the water-tight portion, secured to the inner side at one end and the inner periphery of the collar b' at the other, equidistant apart, and having free passage beneath them, are strips of metal or rods a. At equal distance apart between these rods a are four or more frames, A^2, extending farther inward, and radially outward beneath these frames are leaves a^2.

The rods a and frames A^2 act as dashers in the water-tight portion A of the cylinder, and while they secure a thorough washing of the dirt they leave a passage beneath for the gold to be held by its greater specific gravity.

The leaves a^2 serve to detain the gold and allow the agitated water, dirt, &c., to be thrown outward until it is sufficiently treated in this chamber and passes to the next. The object is to save as much gold as possible in this chamber, and this gold is gathered by elevating the crank end of the cylinder, and allowing the gold to wash out to the plain surface between the outer ends of the rods a and the inlet to the portion A.

The rods a, frames A^2, and leaves a^2 are all inclined longitudinally, so as to incline the water backward, retaining it for service in the part A of the cylinder as long as possible.

The frames A^2 serve to protect the rods and leaves from injury in case large bowlders should be thrown in, and to throw such bowlders out into the screen B.

The rods a serve to catch and entangle the wire-gold, and the leaves a^2 to catch the particles large and small.

The large end of the portion A of the cylinder is bolted to the ogee collar, and to this same collar, on its inner surface, is secured the smaller end of the screen B.

In the concave portion A^3 of the ogee collar b', in the chamber of the water-tight portion A beneath the dashers, the gold gathers, being carried there by the incline of the portion A and by the efflux of the water.

Secured to the ogee collar b' is an outwardly-flaring circumferential flange, A^4, and behind this flange is a chamber, which receives the coarser gold nuggets compelled thereto by means of their greater specific gravity.

B represents the conical screen, having long narrow perforations, made of sheet metal in sections, and bolted or riveted together, the smaller end being secured to the ogee collar b' and larger one to the cylindrical part C. The long perforations serve to allow wide leaves of gold to pass through, which would not pass through simple perforations.

The shaft W is perforated at w, and through this shaft I introduce the water used. A portion falls into the chamber of the part A; but the great volume passes into part B. By this means I utilize all the water to the best advantage, and the water used in the part A passing to the screen B renders its further use profitable.

The perforations w, as they approach the larger end of the portion B, are larger, to allow egress to dirt, &c.

In order to thoroughly wash the auriferous matter, I furnish ledges B′, slightly inclined or wormed, with open spaces left at irregular intervals. These ledges serve to arrest the dirt, gold, and water until the washing with a given quantity of water has reached its maximum, and the recesses serve to allow the bowlders, which would not bound over the ledges, to pass through said recesses. The end of this shaft is imperforate, and to this end is attached a crank, as shown; but a pulley may be used, attached to any motor, if desired.

D represents segmental plates or doors, movable and adjustable, having their bearings against the ledge, which forms the junction of the parts B and C, and held thereto by bars secured to each plate in two places, said bars passing outside of, and bearing against, the cross-bar C′. These segmental plates serve to hold the water when the supply is very limited; and when no water at all is attainable, they may be closed, and the dirt run through the cylinder A dry.

E represents the hopper, made of one piece of sheet metal, having flaring sides e, with inwardly-extending flanges e^1, and they are attached to the framing which furnishes bearings for one end of the shaft W by means of pivoted eye-plates e^2. By means of these eye-plates the hopper may be easily engaged or disengaged without displacing the shaft. The hopper leads directly into the smaller end of the part A of the cylinder.

H represents the water-tank above and on top of the framing, and from this tank is an outlet governed by a stop-cock, G, said outlet being covered by wire-cloth or other suitable screen, as seen at F. A tube, I, leads from this cock G to the end of the hollow shaft W.

J represents the sluice-box, depressed at the end farthest from the tank or inlet, and it rests upon adjustable cross-bars dependent from the frame. This sluice is adapted to be adjusted to suit the volume of water at hand, and is made narrow, so that a small quantity of water will carry off the fine sand and dirt, and assist any bowlders from the feeding to roll down and escape.

K represents fenders or guides hung from rods k on the frame. They are adapted to hang under the screen B on both sides, their lower portions resting in the sluice J, and they serve to deflect the fallings from the screen into the said sluice-box.

When it is desirable to save the gold by the use of quicksilver, these plates K may be made of copper and amalgamated, and ridge-plates may be used, so as to multiply the copper-amalgamated surface, arranging them so that one plate will deflect the runnings on another.

The operation of my machine from the foregoing description is obvious.

I claim—

1. A revolving cylinder consisting of a water-tight portion, A, screen B, a cylinder, C, and a central perforated shaft, W w, as specified.

2. The hopper E, having flaring sides e, with flanges e^1, and secured by pivoted ears e^2, having perforations, as and for the purpose specified.

3. The movable segmental doors D, in combination with the screen B, the cross-bar C′, and securing-bars d, as and for the purpose specified.

4. The bell-shaped cylinder A, having rods a, frames A^2, and leaves a^2, inclined to retard the outflow of water, and to violently agitate the same while retarded, as specified.

5. The screen B, combined with the guides K k and sluice-box J, as and for the purpose specified.

6. The ogee collar b', provided with the flange A^4, forming a nugget-chamber, in combination with the casing A, as specified.

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Witnesses:

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