J. M. BAILEY.
COAL AND ORE WASHER.

No. 191,511. Patented June 5, 1877.

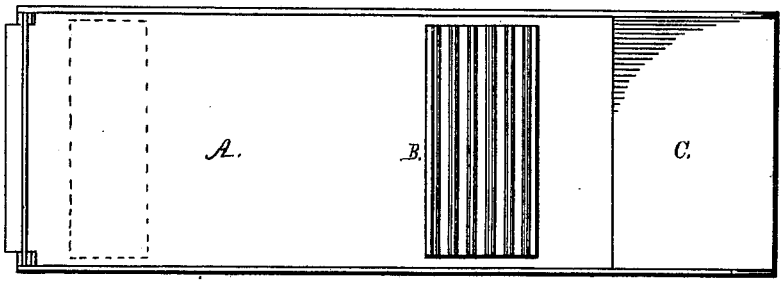

Fig: 1.

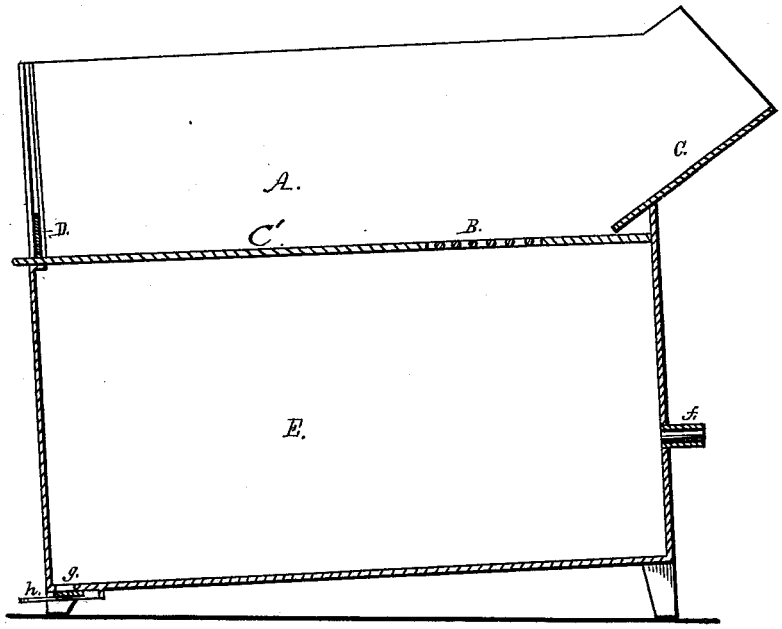

Fig: 2.

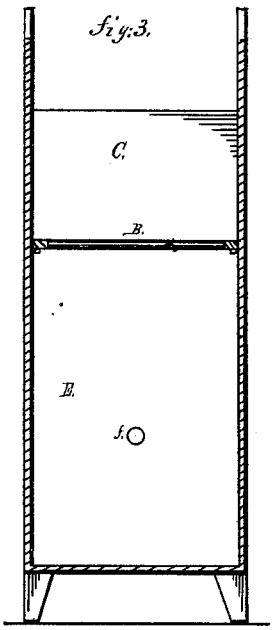

Fig: 3.

Witnesses.
James L. Johnston
A. L. Johnston.

Inventor.
James M. Bailey

UNITED STATES PATENT OFFICE.

JAMES M. BAILEY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN COAL AND ORE WASHERS.

Specification forming part of Letters Patent No. **191,511**, dated June 5, 1877; application filed February 29, 1876.

To all whom it may concern:

Be it known that I, JAMES M. BAILEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coal and Ore Washers for washing coal and other mineral and metallic matter; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improvement in apparatus for washing coal and other mineral and metallic matter; and it consists in subjecting such matter to the action of currents of water flowing so as to form counter-currents in an apparatus constructed substantially as hereinafter described.

In the accompanying drawings, forming part of this specification, Figure 1 is a top view or plan of my improved apparatus for washing coal and other mineral and metallic matter. Fig. 2 is a vertical and longitudinal section of the same. Fig. 3 is a transverse section of the same.

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

Referring to the drawings, A represents a trough or channel, having a chute, C. The bottom or bed of this channel C′ is a slightly-inclined plane, provided with apertures B. The end of the channel opposite the chute is provided with a removable gate or tail-piece, D. The object of having the gate D removable is to enable a variable amount of water to be retained in the channel so as to adapt the apparatus to the washing of material of different specific gravity.

The trough or channel A is arranged over a chamber, E, into which and through which flows a current of water from a pipe, *f*, connected to a water-supply. In the bottom of the chamber E, at *g*, is an opening provided with a gate or valve, *h*, for closing it. The opening *g* is used for discharging at suitable intervals the matter that accumulates in the chamber E.

The channel A and chamber E being connected with a suitable water-supply so that a current of water will flow continuously through them, the coal is charged into the chute, and is then carried by the force of the water into the channel, and is there subjected to active counter-currents of water, which subjects the coal to an agitating and thorough washing process. This cleanses the coal from sulphur and other impurities, which pass down through the apertures in the bottom of the channel and are collected in the chamber E, from which they are removed at suitable intervals through the opening *g*.

The washed coal is carried through the channel by the force of the current of water; but, in order that it may not be carried off too rapidly, and escape a thorough washing, I provide the end of the channel with the gate D, as before described. This gate must be removable for various reasons—primarily, to allow the body of water which must be retained in the channel to be increased or diminished in depth, and this because the coal varies in size and specific gravity, and it is essential that the body of water should be regulated to the nature of the substance to be washed. For this purpose the gate is adapted to be removed. The greater the specific gravity of the coal the greater must be the body of water in the trough to buoy it up. If the coal is very light a smaller body of water is required. As the coal is washed it is carried over the gate by the force of the current and deposited in a suitable receiver.

In the process of washing coal by this apparatus I find it necessary to assort the coal so as to have the larger pieces of a uniform size. The assorting is done by means of a screen, that which passes through the screen being subjected to the washing process in the apparatus.

In the process of washing sand or fine iron ore, to separate them from foreign substances, the sand or ore passes down through the apertures B into the chamber E, and the foreign matter is carried off through the trough or channel A.

Having thus described my invention, I claim—

A coal-washing apparatus, consisting of an

upper inclined trough, A, with removable end-gate D, and transverse opening B, and a lower water-chamber, E, provided with suitable inlet *f* and outlet *g*, the several parts being relatively arranged as described, whereby the entering material is buoyed up in a water-bath while subjected to the separating action of water currents injected from below, substantially as hereinbefore described, and for the purpose set forth.

JAMES M. BAILEY.

Witnesses:

JAMES J. JOHNSTON,

A. C. JOHNSTON.