

R. R. OSGOOD.

Improvement in Machine for Washing Ores and Minerals.

No. 129,678.

Patented July 23, 1872.

Fig. 1

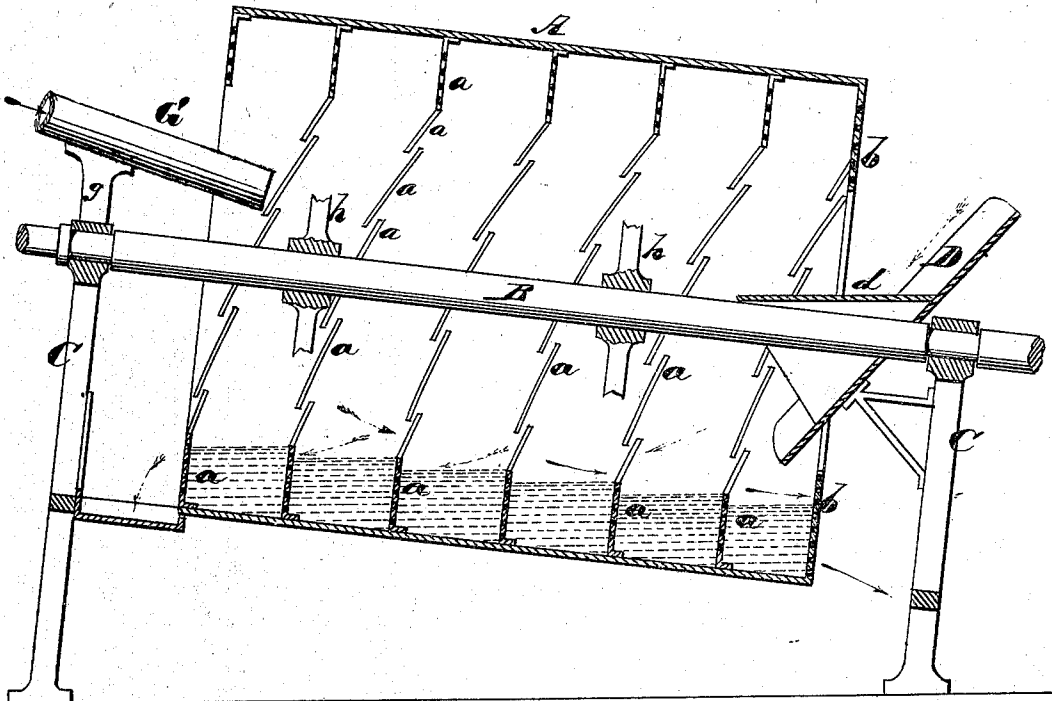


Fig. 2

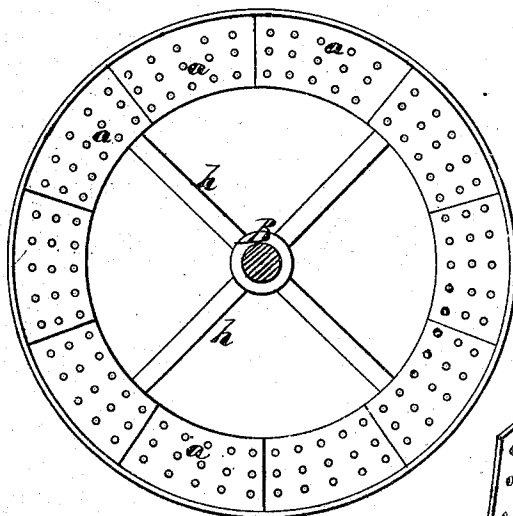
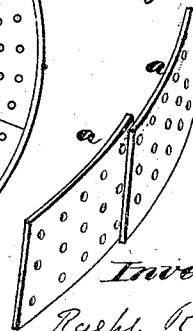


Fig. 3



Witnesses  
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Inventor  
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# UNITED STATES PATENT OFFICE.

RALPH R. OSGOOD, OF GREEN ISLAND, NEW YORK.

## IMPROVEMENT IN MACHINES FOR WASHING ORES AND MINERALS.

Specification forming part of Letters Patent No. 129,678, dated July 23, 1872.

*To all whom it may concern:*

Be it known that I, RALPH R. OSGOOD, of Green Island, in the county of Albany and State of New York, have invented certain new and useful Improvements in Machines for Washing Metallic and Mineral Substances; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a section taken diametrically through the improved machine in a vertical plane. Fig. 2 is an end view of the barrel or cylinder. Fig. 3 shows two sections of the spiral flange with broken or open lapped joints.

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

This invention is designed for washing metal or mineral substances generally, but it is more especially intended for separating sand and earthy matters from phosphate of lime when found mixed therewith.

The following is a description of a practical machine in which my improvements are embodied.

In the accompanying drawing, A represents a cylinder, which may be made of any desired diameter and length. This cylinder is concentric with and attached to a shaft, B, which shaft is supported in journal-boxes mounted upon standards C C. The radial arms *h* connect the cylinder with the shaft B, and there may be a number of these arms arranged at proper distances apart, according to the length of the cylinder.

Instead of supporting bearings for the shaft B, this shaft may be sustained by suspension bearings or brackets hung from above.

The cylinder drum or barrel A may be rotated either by a belt-pulley or by a toothed wheel, applied on one end of its central shaft B, and driven by any convenient prime motor.

It will be seen that the shaft B and its cylinder drum or barrel are inclined. This is important, in order to lift the material being washed from a lower to a higher level and to convey it successfully from one end to the other of the cylinder. The material is delivered into the cylinder A, at its lowest end, through a hopper or chute, D, on both sides of the central shaft B, and the hood or guard *d* arches over this shaft and is attached to the hopper D, so

as to divide the material on its way through the hopper into the cylinder. At the opposite or highest end of the cylinder A is a water-spout, G, which is supported by a standard, *g*, or in any other suitable manner. This spout G supplies water freely into the upper end of the cylinder A, which water flows through the cylinder over and through the spiral flanges *a*, which I shall hereinafter explain, in a direction which is opposite to the movement through the cylinder of the material being washed. The conveying spiral or spirals consist of a number of sections, *a*, which are secured permanently to the inside of the cylinder so as to revolve with it. The sections are perforated, and their ends are lapped with spaces between them. This lapping of the sections forms jogs or falls for the material, which have the effect of stirring it as it is moved through the cylinder. If desirable, the sections need not be perforated, as the water will flow between their open lapped ends, but not as freely as if these sections were perforated or grated.

Instead of working up the spiral or spirals of short open lapped sections, perforated or imperforated, the spiral or spirals may be continuous or unbroken from one end to the other of the cylinder. In this case the spiral should be grated or perforated.

I am aware that sand and ore washers have been made before my invention wherein an imperforated spiral flange was applied to a revolving cylinder or barrel; but without the perforations such a contrivance will not answer the purpose required of it. I am also aware that stationary cylinders, having rotary spiral flanges working in them, are not new; also that it is not new to stud the inside surface of a revolving barrel with oblique fins arranged at considerable distances apart; I do not, therefore, claim any of these old features as my invention.

I have an inclined revolving barrel, on the inside of which are spiral elevators, which, as this barrel is turned, elevates the material from a lower to a higher level at the same time that strong currents of water flow through it from a higher to a lower level. These opposing currents stir the material and wash out of it the foreign matters—such as sand and clay—and leave it in a free state to be delivered

from the upper end of the cylinder or barrel into a suitable receptacle. By means of this elevating-washer a crushing-mill can be arranged directly over the hopper or chute D, and the upper end of the barrel arranged so as to deliver the crushed and washed material directly into the vessels which are to transport it to different parts of the world. This will save much time and labor, as the material only requires to be handled once.

For the purpose of preventing the escape of the material from the lower end of the barrel or cylinder A a wide annular flange, *b*, is applied at this point, which may be perforated, as shown; or it may be imperforated and all the water and foreign matters allowed to flow over its edge.

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

1. A machine for washing mineral or metallic substances, consisting of a perforated spiral flange, applied rigidly to an inclined revolving barrel or cylinder, substantially as described.

2. A machine for washing mineral or metallic substances, consisting of perforated or im-

perforated flanges or fins lapped with open joints, and arranged in a spiral manner upon the inner surface of an inclined revolving barrel or cylinder, substantially as described.

3. The perforated or imperforated annular flange at the terminus of the lower end of the inclined barrel, substantially as and for the purpose specified.

4. The arrangement, in combination with an inclined revolving barrel having one or more spiral flanges applied inside of and attached to it, of the feed-hopper or chute for the material to be washed at the lower end of said barrel, and the spout, for supplying water thereto, at the upper or highest end, so that the movements of the said material and the water through said barrel will antagonize each other, substantially as described.

Witness my name in the matter of my application for Letters Patent of the United States for improvements in machines for washing metal and mineral substances.

RALPH R. OSGOOD.

Witnesses:

R. T. CAMPBELL,  
EDM. F. BROWN.