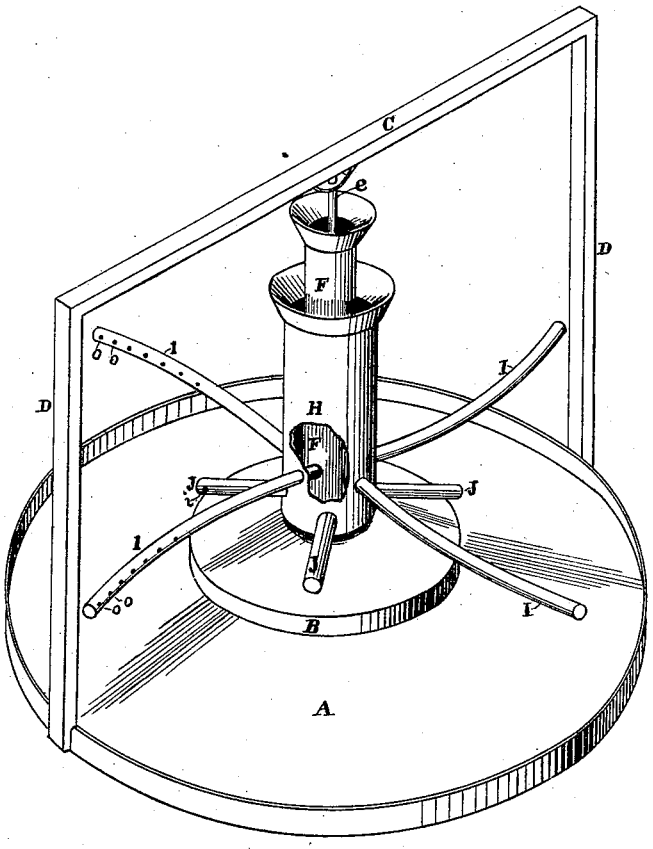
J. RICHARDS.

ORE-WASHER.

No. 191,370. Patented May 29, 1877.




Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH RICHARDS, OF BATTLE MOUNTAIN, NEVADA.

## IMPROVEMENT IN ORE-WASHERS.

Specification forming part of Letters Patent No. **191,370**, dated May 29, 1877; application filed April 13, 1877.

*To all whom it may concern:*

Be it known that I, JOSEPH RICHARDS, of Battle Mountain, county of Lander, and State of Nevada, have invented an Improved Automatic Buddle; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to certain improvements in buddles or ore-washers; and it consists in a novel arrangement for automatically discharging the pulp upon the inclined surface of the buddle, and at the same time delivering upon the inclined surface by the same automatic arrangement any number of moving uniformly directed jets or streams of water for washing the ore and carrying away the light portions, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is a perspective view.

Let A represent a circular pan, the bottom of which is inclined or convex. In the center of the pan is a circular raised portion, B, the surface of which is inclined or descending from its center to its outer edge. C is a timber which extends across above the center of the pan, and is supported by uprights D D. *e* is a vertical shaft, which is stepped in the center of the raised portion B of the pan, while its upper end is secured in a suitable bearing in the cross-timber C. F is an upright cylinder, which surrounds the shaft *e*, and is permanently secured to it, so that it will rotate with the shaft. Outside of the cylinder F another cylinder, H, of larger diameter, but which is shorter than the cylinder *e*, is secured by suitable connections, so that both cylinders will rotate with the shaft *e*.

The bottoms of both of these cylinders are tightly closed, while their upper ends are flared, as represented.

I I are hollow arms, which extend outward horizontally from the inside cylinder F. These arms pass through the outside cylinder H, and extend to the outer rim of the pan A, and are slightly curved in one direction.

J J are short hollow arms, which project horizontally from the outside cylinder H, and extend out to the outer rim of the raised portion B.

The outer ends of the tubular arms I and J are closed, and a small hole, *i*, is made on one side of the arms J, above the outer rim of the raised portion B, while a number of small holes, O O O, are made along one side of the arms I, above the inclined surface of the pan, outside of the raised portion.

It will now be perceived that this combination of upright shaft, concentric cylinders, and radiating arms form a compound Barker's mill, which will be rotated by the reaction of the water which escapes from the holes in the arms.

In practice, the pulp is delivered by a sluice, trough, or other means into the upper end of the outside cylinder H, while clear water is delivered by a suitable spout into the inner cylinder F. The water will then fill the arms I, and be delivered in a line of small streams through the holes O O O upon the inclined surface of the pan. The reaction of this escaping water will cause the entire device to rotate in a direction opposite to that in which the streams are projected. At the same time the pulp is discharged through the holes *i* in the arms J upon the outer edge or near it of the raised platform B, and flows down along the inclined bottom of the pan, where it is acted upon by the small jets or streams of water, by which it is washed, and the lighter portion separated.

This arrangement of the water-jets forms what I call a "hydraulic brush," which is automatically caused to sweep over the surface of the pan on which the pulp is spread, and by their gentle washing action separate the particles, and carry off the lighter portions down the incline without plowing or disturbing the body of pulp.

This device is extremely simple and inexpensive, as the operation is continuous and

automatic, the entire operation being maintained by the hydrostatic pressure in the inside cylinder.

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

The pan A, with its inclined bottom and raised central portion B, in combination with the concentric cylinders F H, with their perforated arms I J, said cylinders being connected together, and mounted on the vertical shaft *e*, so as to operate substantially in the manner and for the purpose above described.

In witness whereof I have hereunto set my hand.

JOSEPH RICHARDS.

Witnesses:
O. T. STACY,
FRANK A. BROOKS.