D. L. Furnier,

Riddle for Sand Washer,

No. 64,091, Patented Apr. 23, 1867.

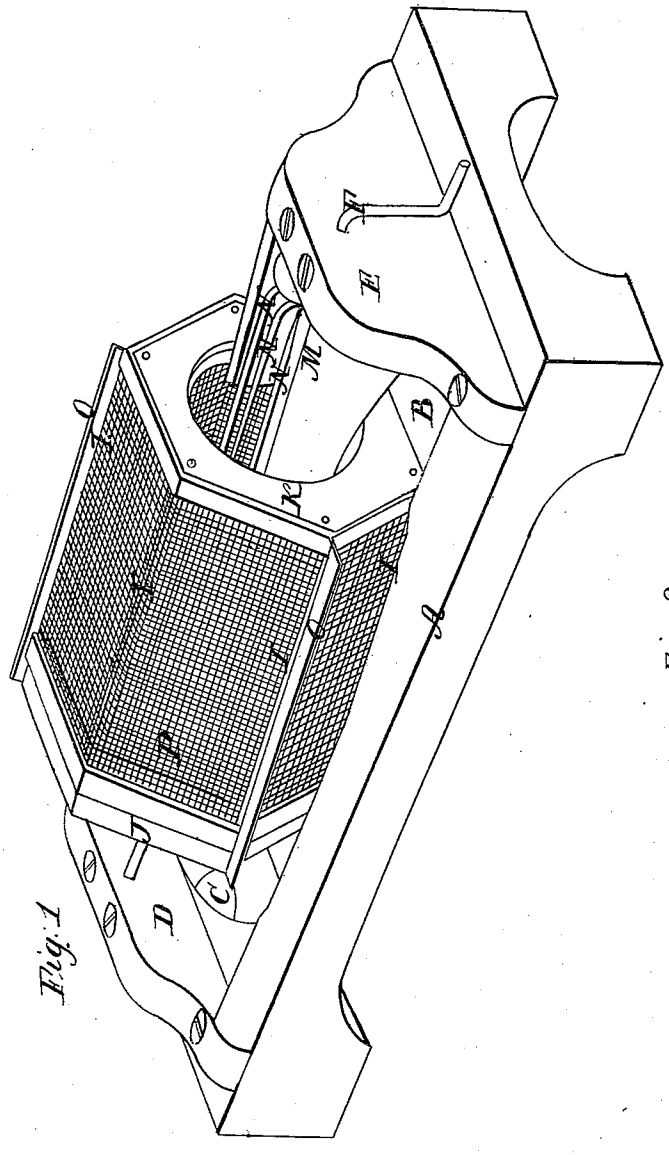

Fig. 1

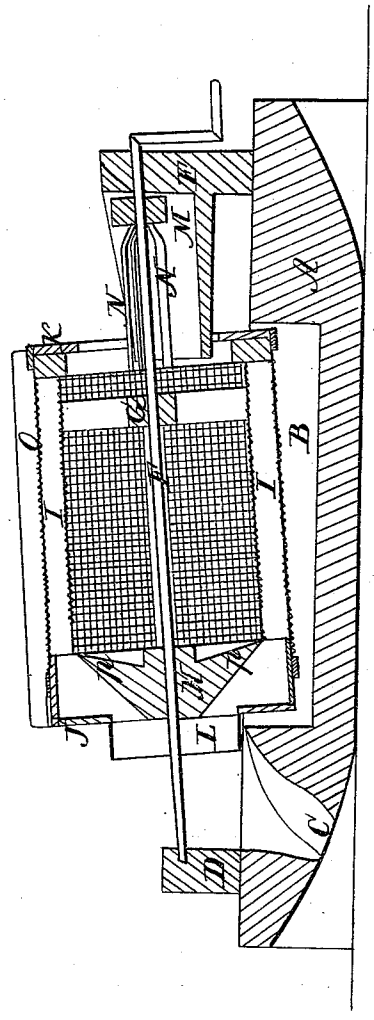

Fig. 2

Witnesses;
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United States Patent Office.

DAVID L. FURNIER, OF ROSTRAVER, PENNSYLVANIA.

Letters Patent No. 64,091, *dated April* 23, 1867.

IMPROVEMENT IN RIDDLES FOR SAND-WASHERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAVID L. FURNIER, of Rostraver, in the county of Westmoreland, and State of Pennsylvania, have invented a new and useful Improvement in Riddles for Sand-Washing; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of my riddle.

Figure 2 is a vertical sectional elevation of the same.

That others may understand my invention, I will particularly describe it.

A is the bed or frame which supports my riddle, and receives the sand and water as they pass through the same. In the central part of the bed A is the trough B, and at one end the discharge chute C. At each end is a pillow-block, D E, to support the bearings of the shaft F, upon which revolves the riddle. This last is composed of two hubs, G H, with radiating spokes, the blades I I, and the heads J K. Over the blades I is stretched a screen of wire cloth of proper mesh, and around the inner side, secured also to the inner edges of the blades, is another screen of similar wire cloth. A web, P, connects the spokes radiating from the hub H, nearly extending to their outer extremities, so that a small space is left around said web, but between the two screens, over which gravel may pass to be discharged at the tail of the machine. The spokes from the hub H are very wide in the direction of the length of the screen, and join the inner surface of the head K, and thus the compartments formed by the blades and the screens are continued over the web and down to the tail spout L, which encircles the opening through the head K and conducts all the sand and gravel which cannot pass through the outer screen into the discharge chute C. At the head of the machine is the hopper M, into which a stream of water constantly pours from some convenient reservoir, and into which the foul sand is shovelled. Also within the chute M, and secured upon the shaft F, are the stirring arms N, which thoroughly disintegrate the earthy masses of sand, &c., as they come from the shovel and before they pass down into the interior of the riddle. Along the outer side of the riddle, and secured to the edges of the blades, are the wings O, which dip into the trough to its bottom and keep in continual agitation the sand and water therein.

The operation of my machine is very simple. It has been found impossible to clean sand from its earthy admixture except by constant agitation in running water, which will take up and hold in suspension the earthy particles and gradually carry them away over the tail. When sand mixed with earthy matter is thrown upon a screen upon which a stream of water is pouring, the action is confined to that portion of the screen upon which the water actually impinges, and the remainder of screen surface is covered with an unmoving coating of wet sand. With my device this is perfectly obviated, because the entire surface of the screen is passed through the water in the trough B, at every revolution, and there can be no clogging. When the earthy sand is shovelled into the chute or hopper M, it is broken up and disintegrated by the arms N N, and is washed down into the interior of the riddle, the lower side of which is always immersed in water. As the riddle is revolved the earthy particles are gradually separated from the sand and become suspended in the water. All of the sand except very coarse gravel will pass through the innermost screen, and that portion of the sand which is not above the standard degree of coarseness will pass through the outer screen also into the trough. That portion which is too coarse to pass through the meshes of the outer screen will, by the slightly inclined position of the riddle, and its constant revolution, be gradually moved to the tail end, and there discharged over the web and into the chute C. The trough is always full of water to a point above the edge of the chute C, so that there is a constant overflow at that part into said chute, and as the riddle revolves the wings continually move the sand and earthy matter which have passed through both inner and outer screen, so that they are constantly exposed to the action of flowing water, and the earthy particles are very effectually taken up and removed, while the clean sand is little by little removed by the wings O, and thrown over the side of the bed A. The riddle may be caused to revolve by any convenient motive power.

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

A hollow screen or riddle revolving on an axis, with one portion always immersed in a vessel through which a stream of water constantly flows, when said riddle receives the earthy sand into its interior at one end and discharges the coarser particles over a tail chute at the other end, as set forth and described.

In combination with a hollow revolving riddle, constructed substantially as described, and revolving in a water trough B, the chute M and stirrers N N, for the purpose set forth.

In combination with a hollow revolving riddle, constructed substantially as described, the web P, and tail spout L, for the purpose set forth.

In combination with a hollow revolving riddle, constructed substantially as described, the wings O O upon its outer side to agitate and remove the sand from the trough, as set forth.

The combination of the hollow revolving and bed-frame A, provided with the trough B, and waste chute C, constructed and arranged as set forth and described.

DAVID L. FURNIER.

Witnesses:

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