APPARATUS FOR REMOVING TAILINGS.
(Application filed June 12, 1902.)
UNITED STATES PATENT OFFICE.

JOHN HUGH ALEXANDER MCPHEE, OF DUNEDIN, AND JOHN ERNEST LELLIOT CULL, OF CHRISTCHURCH, NEW ZEALAND.

APPARATUS FOR REMOVING TAILINGS.

Application filed June 19, 1902. Serial No. 111,416. (No model.)

To all whom it may concern:

Be it known that we, JOHN HUGH ALEXANDER MCPHEE, residing at 16 London street, Dunedin, and JOHN ERNEST LELLIOT CULL, residing at Canterbury College, Christchurch, New Zealand, British subjects, have invented a certain new and useful Improved Apparatus for Removing Tailings and the Like, of which the following is a specification:

Our invention relates to a method by which material, such as stones or boulders, may be efficiently and cheaply removed to a distance and at the same time elevated, and is more particularly adapted for use upon dredges and at the end of sluice-boxes when it is desired to remove the tailings to a distance and deliver them at such a height that they will not interfere with the working of the dredge or block the end of the sluice-box.

The object of the invention is to provide a cheap machine of comparatively small size and of simple construction which shall be rapid in operation and deliver materials to a satisfactory distance and height.

Our apparatus comprises a wheel or rotating device consisting of two disks united by vanes or blades shaped in a particular manner hereinafter described, and the whole is preferably partially covered. One of these disks is fixed to a shaft running in bearings, and the other has a large opening in its center, through which the materials are delivered into the wheel from a chute. The wheel is revolved at a comparatively high speed, and the material coming in contact with the vanes or blades is gradually accelerated until it flies off from the periphery of the wheel to the required height and distance.

In order more particularly to describe and ascertain the nature of our said invention, attention is directed to the accompanying drawings, wherein is shown a form of our apparatus, may take when applied to the purpose of removing tailings from a dredge or sluice-box.

In all the views similar parts are represented by the same reference-numerals.

Figure 1 is an end elevation of the apparatus with a disk removed, showing the drum-vanes and chute. Fig. 2 shows a section of the wheel-vanes at C D on Fig. 1. Fig. 3 is a general elevation showing the apparatus in position at the stern of a dredge and also the relation with the screen and screen tail-chute.

Vanes 2 are fitted with removable hardened plates 1, secured in position with countersunk bolts. There is an outside cover 3, with one end fixed to base 4 and curved to suit the drum 5, with sufficient clearance to allow the wheel 5 to revolve freely. A lug 6 is attached to the other end of the cover 3. A hole 7 in the side of the wheel 5 takes the lower end of drop-chute 8, through which the stones pass after being delivered from the screen tail-chute on the dredge. The chute 8 is suspended to a frame 9, with slots 10 provided to afford vertical adjustment. The bolts 11, which pass through the slots 10, hold the chute 8 firmly in position. The lower end of the frame 9 is attached to a bracket 12, which is pivoted at pin 13, the center of which is directly under and plumb with the lower end of the chute 8 for the purpose of laterally adjusting the chute 8. The wheel 5 is securely fixed to shaft 14, fitted with bearings 15 and pulley 16 for driving purposes. The vanes 2 are curved to a particular form, as shown, the curvature toward the center of the wheel being in reverse direction from the curvature in the part of the vane nearer the circumference. The general inclination of the vanes 20 is at a large angle with the radius of the drum, so that the vane when striking a stone, as at 17, Fig. 1, does not give it a severe blow, but gradually accelerates it. The inclination of the vane to the radius gets smaller toward the circumference until at the circumference the vane is almost radial in direction. In between the principal arms there may be shorter vanes of a curve similar to the corresponding part of the principal vanes, as shown at 18, Fig. 1, for the purpose of assisting in the ejection of material. The arrow in Fig. 1 shows the direction of rotation. The tailings are discharged from a chute at the end of the dredge or tailrace or other place into the chute leading to the center of the wheel, which is then rotated by any suitably-situated machinery. The chute leading to the center of the wheel may be adjusted in respect of inclination or fall so as to give a greater or less rapidity of delivery into the wheel, according to the circumstances of the case, and simi-
larly said chute may be adjusted laterally, so as to vary the delivery on to the vanes farther away from the center of the wheel, as desired. A short trial under given circumstances will enable the operator to set the apparatus so that it may have the desired effect. It is obvious that the curvature of the vanes will vary according to the size of the wheel, rate of rotation, and trajectory desired.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. An apparatus for removing tailings and the like comprising a rotatable wheel an axial entrance into said drum and curved vanes therein said vanes at their inner ends being at a greater angle to the radius of the wheel than at their outer ends substantially as and for the purposes set forth.

2. An apparatus for removing tailings and the like comprising a rotatable wheel an axial entrance into said wheel curved vanes in said wheel a chute leading into said entrance and means for rotating said wheel the curve of said vanes being sinuous substantially as and for the purposes set forth.

3. An apparatus for removing tailings and the like comprising a rotatable wheel an axial entrance into said drum curved vanes in said wheel a laterally and vertically adjustable chute leading into said entrance and means for rotating said wheel substantially as and for the purposes set forth.

4. An apparatus for removing tailings and the like comprising a wheel a partial cover thereon curved vanes therein an axial entrance thereinto an adjustable chute leading to said entrance and means for rotating said wheel substantially as and for the purposes set forth.

5. In an apparatus for removing tailings and the like comprising a rotatable wheel; an axial entrance into said wheel and means for removing material poured in at said entrance of said wheel during rotation to the circumference of said wheel with gradually-accelerated speed so as to eject said material said means consisting of a vane the inner end of which is at an angle to the radius of the wheel while the outer end is approximately coincident with the radius substantially as described.

6. The improved apparatus for removing tailings and the like consisting of a wheel a partial cover thereto attached to a base curved vanes in said wheel hardened plates secured on said vanes an axial entrance to said wheel a laterally and vertically adjustable chute opening into said entrance and means for rotating said wheel substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

JOHN ALEXANDER McPhee.
JOHN ERNEST LELLIOT CULL.

Witnesses to signature of John Hugh Alexander McPhee:
A. J. PARK,
J. R. PARK.

Witnesses to signature of John Ernest Lelliot Cull:
HENRY SLATER,
A. J. ALLARD.