(No Model.)

A. F. WENDT.

JIG FOR SEPARATING ORES.

No. 247,281. Patented Sept. 20, 1881.

Fig: 1.

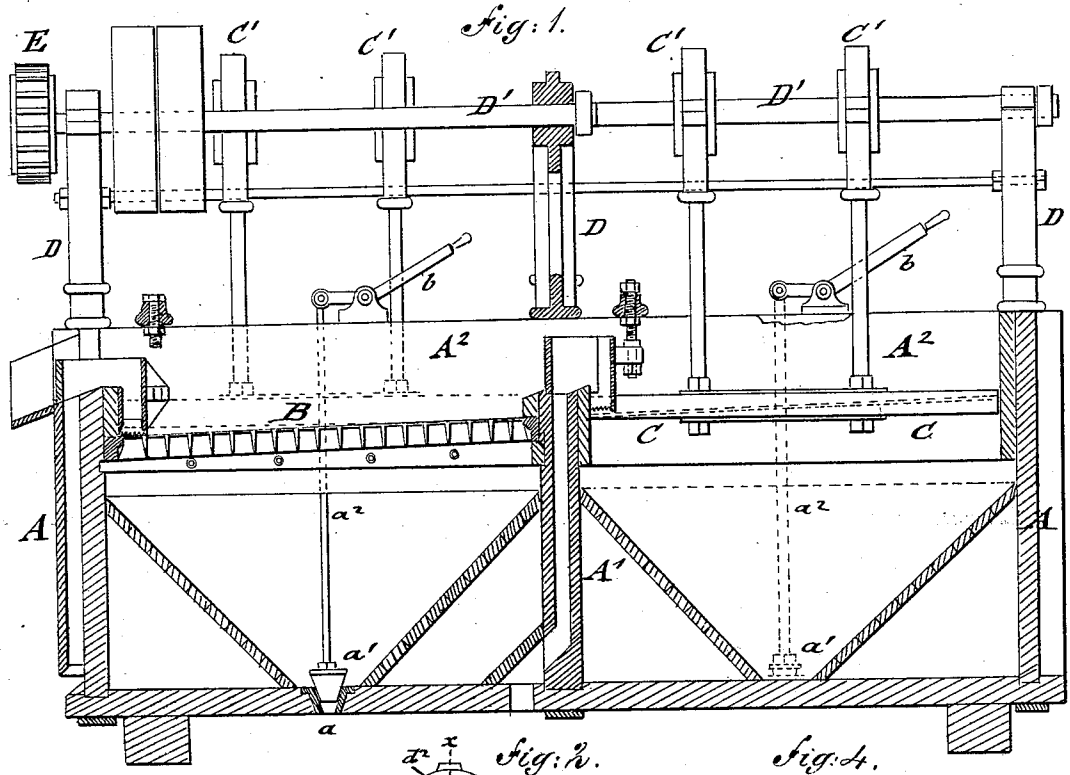


Fig: 3.

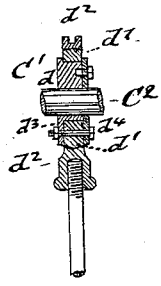


Fig: 2.

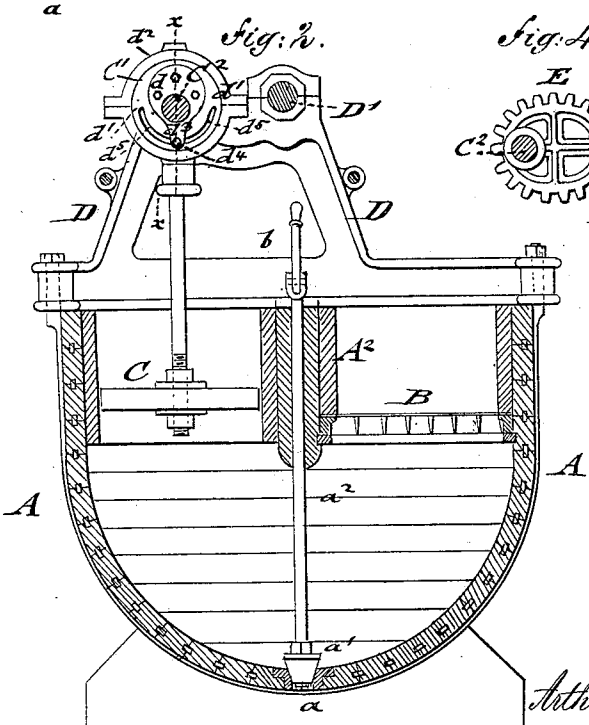
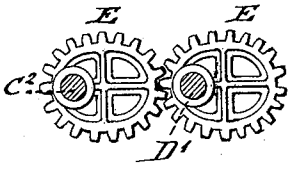


Fig: 4.



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JIG FOR SEPARATING ORES.

SPECIFICATION forming part of Letters Patent No. 247,281, dated September 20, 1881.

Application filed May 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR F. WENDT, of the city, county, and State of New York, have invented certain new and useful Improvements in Jigs for Separating Ores, of which the following is a specification.

This invention relates to an improved jig for separating ores and coal from stone and slate, with special reference to that class of jigs in which a vertically-reciprocating plunger is employed in one section of the trough for agitating the body of the water and forcing it into an adjoining section of the trough in which the coal or ore is lifted above a perforated and inclined grate; and the invention consists of a jig which is divided by a longitudinal partition that extends from the top half-way down into the trough, said jig having an inclined perforated grate at one side of the partition and a vertically-reciprocating plunger at the other side of the partition, the plunger being suspended by eccentrics, the stroke of which can be varied from a rotating shaft overhead, said shaft receiving motion from a second parallel shaft by means of elliptical gearings, so as to impart a variable motion to the plunger in such a manner that its average speed is greater on the downstroke than on the upstroke.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved jig for separating ores. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a detail transverse section of the adjustable eccentric on line *x x*, Fig. 2; and Fig. 4 represents the elliptic gear-wheels for imparting variable motion to the plunger.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents an oblong trough of tightly-jointed wood, which trough is made semicircular at the lower part and supported on suitable transverse bed-pieces. The trough A is preferably arranged of sufficient length, so that several separate jigs may be arranged therein, which are operated by the same driving-gear overhead. The jigs are separated by transverse partitions A′, and are furthermore divided by a longitudinal partition, A^2, which extends from a point on a level with the upper part of the trough downward to a certain distance below the same.

The trough is arranged at one side of the longitudinal central partition, A^2, with a fixed inclined and perforated grate, B, upon which the ore or coal to be separated is gradually moved forward, it being agitated by the motion of a body of water in the lower part of the trough. A plunger, C, works in the jig-section at the other side of the longitudinal partition A^2, as customary in plunger-jigs of this class. Vertical-reciprocating motion is imparted to the plunger C by means of eccentrics C′ of a shaft, C^2, supported in standards D of the trough, the motion of the piston acting upon the body of water in the trough and forcing the same like a piston in upward direction in the adjoining grate-section, where it passes through the perforations of the grate and alternately raises or drops the body of ore, so as to separate thereby the lighter from the heavier particles.

The bottom of each section of the trough is made hopper-shaped, as shown in Fig. 1. A central discharge-opening, *a*, at the bottom of each section is closed by a tightly-fitting plug, *a′*, which may be raised or lowered by a fulcrumed lever, *b*, attached to the upper end of the plug-spindle a^2, as shown in Figs. 1 and 2, whenever the jig is to be emptied of water or filled again after cleaning.

The stroke of the plunger C may be regulated—that is to say, made greater or smaller within certain limits, from four inches down to zero—by making the eccentric C′ in three parts, to wit, of an inner eccentric, *d*, keyed to the shaft C^2, of a second eccentric, *d′*, which encircles the former and is capable of axial adjustment on the same, and of an exterior circular strap or band, d^2, to a screw-socket of which the plunger-rod is applied. The inner eccentric, *d*, has an arm or extension, d^3, to which the second eccentric, *d′*, is secured by a screw-bolt, d^4, passing through an arc-shaped slot, d^5, of the eccentric *d′*, as shown clearly in Figs. 2 and 3. By adjusting the second eccentric, *d′*, axially on the inner eccentric, so as to produce a greater or less eccentricity for the exterior strap or band, the stroke may be regulated exactly to the condition required by the ore or coal, so as to work them to the best advantage. The regulating of the stroke is quickly accomplished, requiring but a short interruption of the working of the jig; but it

forms an important feature of my construction, as material of greatly-varying specific gravity may be worked successively without any inconvenience.

The plunger-shaft receives variable rotary motion from a driving-shaft, D′, by intermeshing elliptical gear-wheels E, of equal size, one on each shaft. The shaft D′ is supported on the standard D parallel to and on the same level with the plunger-shaft C′.

The elliptical gear-wheels E impart, in connection with the eccentrics, whose stroke can be changed at will, a variable motion to the reciprocating plunger, which takes place in the following manner: The speed of the plunger from the beginning of its downward stroke increases rapidly until it reaches its middle position, slackening gradually until the end of the downstroke, and slowing up still further on the beginning of the upstroke and until it again arrives at its middle position, from whence it again gradually increases its speed until the highest position of the plunger is reached. This variable motion of the plunger lifts by its downstroke all the material resting in the water and on the inclined perforated grate, no matter in what relative position the light and heavy particles may be, while the upstroke of the plunger, moving as described, allows the different particles to settle according to their gravity, separating thus by a succession of strokes effectively the lighter particles from the heavier and discharging them over the edges of the trough to the outside.

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

1. As an improvement in plunger-jigs, the combination, with a jig having a reciprocating plunger and inclined grate at opposite sides of a central longitudinal partition, of a plunger-shaft and eccentrics supported thereon, and of a second driving-shaft parallel to the plunger-shaft and connected therewith by intermeshing elliptic gear-wheels, so as to impart a variable motion to the plunger, substantially as specified.

2. In a jigger for separating ores and other substances, the combination of the reciprocating plunger, the eccentric on shaft C^2, adjustable for varying the length of strokes of the plunger, and the elliptic spur-wheels on shafts C^2 D′, for giving variable speed to the ascending and descending strokes of the said plunger without a pause or rest, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 21st day of April, 1881.

ARTHUR F. WENDT.

Witnesses:
PAUL GOEPEL,
CARL KARP.