

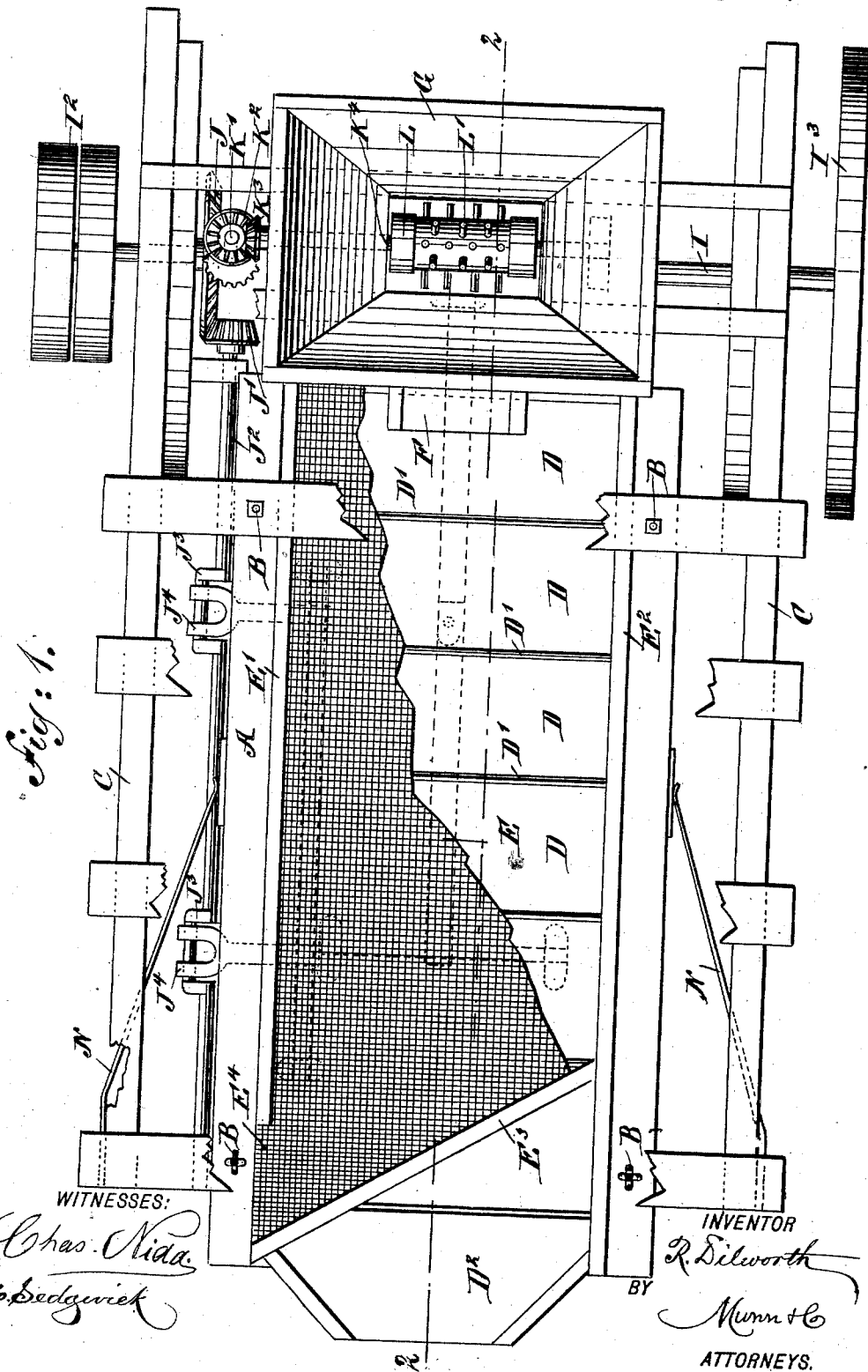
(No Model.)

R. DILWORTH.
ORE SEPARATOR.

3 Sheets—Sheet 1.

No. 503,454.

Patented Aug. 15, 1893.



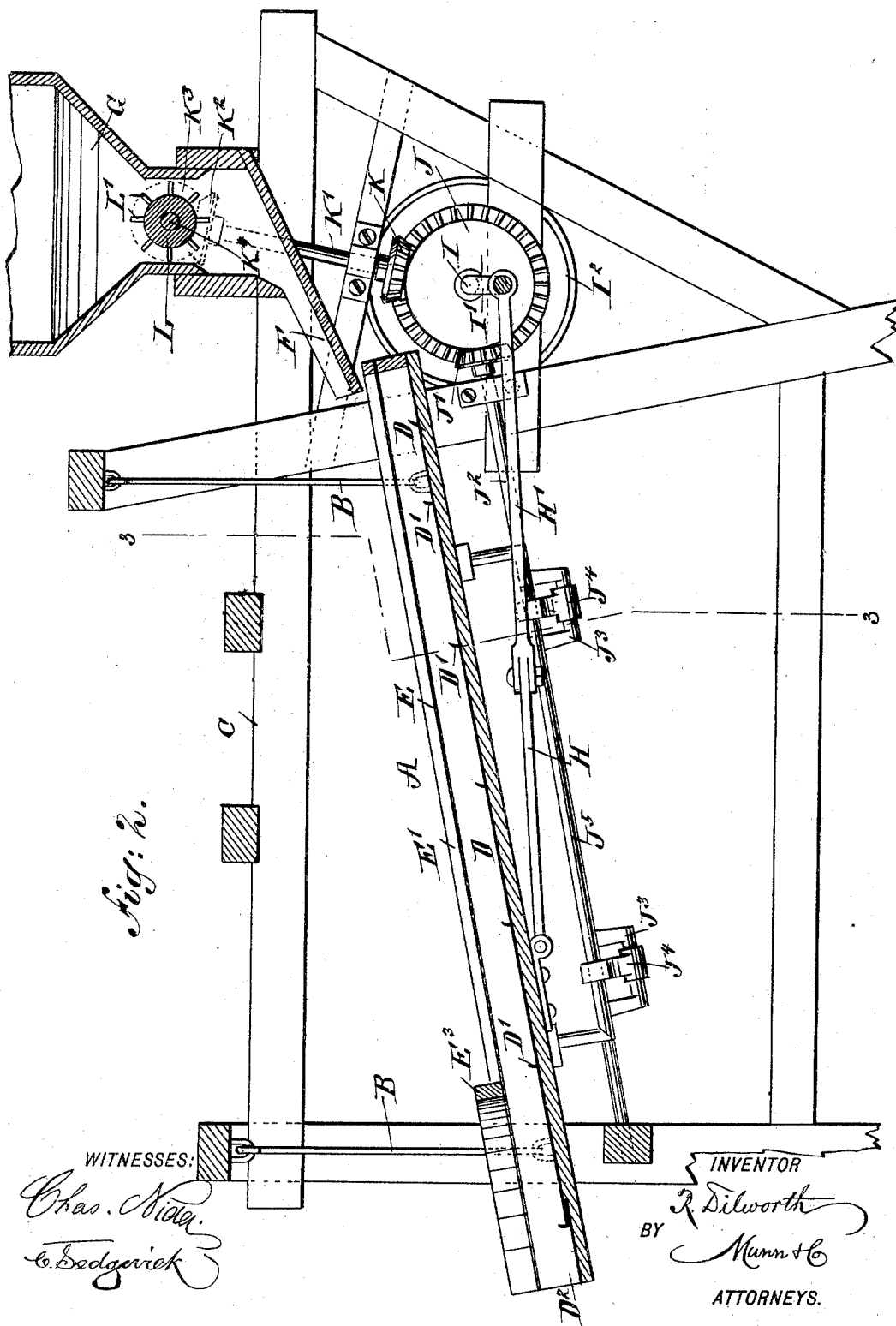
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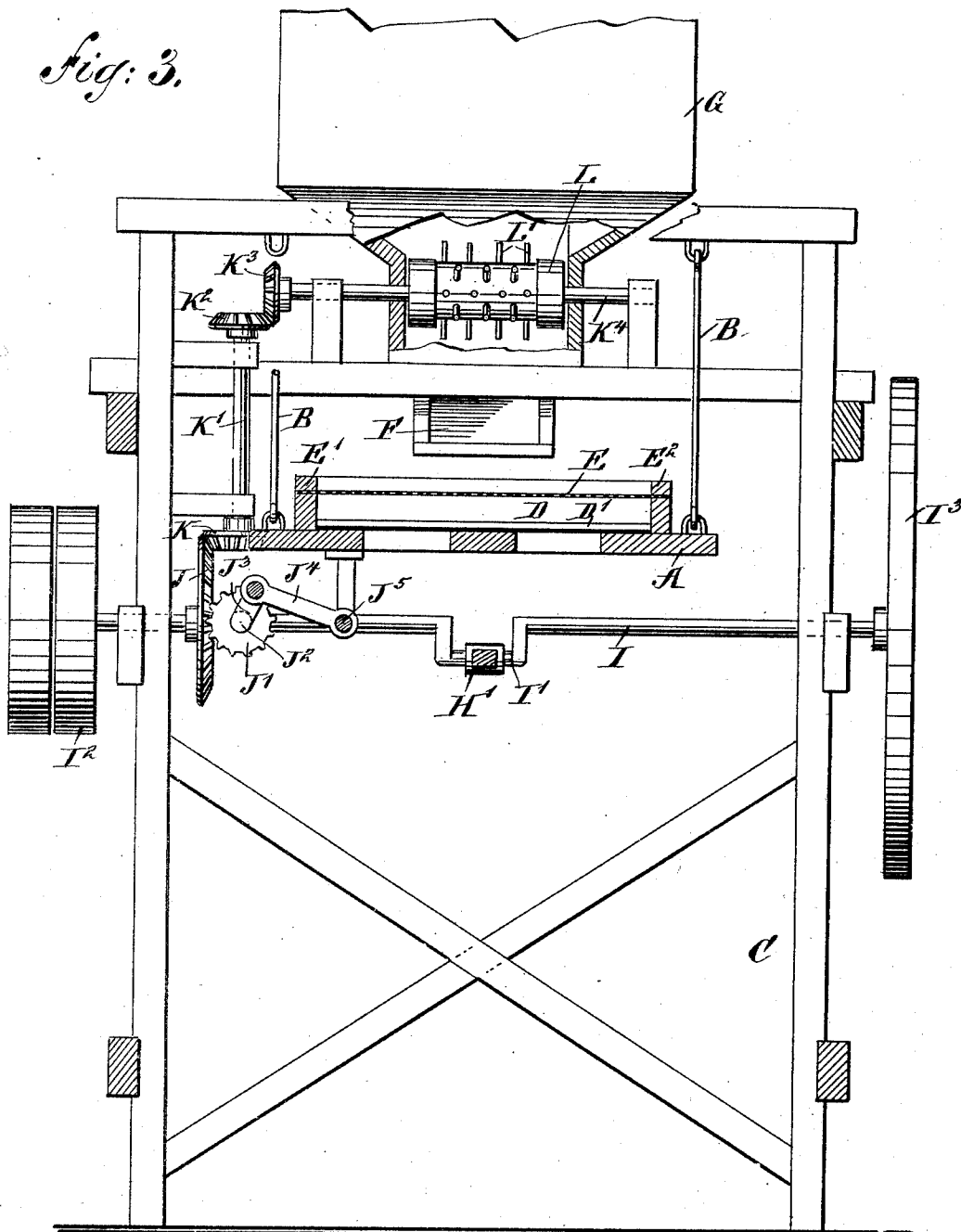
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Patented Aug. 15, 1893.

Fig. 3.



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ROBERT DILWORTH, OF EL PASO, TEXAS.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 503,454, dated August 15, 1893.

Application filed October 4, 1892. Serial No. 447,776. (No model.)

To all whom it may concern:

Be it known that I, ROBERT DILWORTH, of El Paso, in the county of El Paso and State of Texas, have invented a new and Improved Ore-Separator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved ore separator which is simple and durable in construction, very effective in operation, and more especially designed for thoroughly and rapidly separating precious metals, such as gold and silver, from the sand and other tailings.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement with parts broken out. Fig. 2 is a longitudinal sectional elevation of the same on the line 2—2 of Fig. 1; and Fig. 3 is a transverse section of the same on the line 3—3 of Fig. 2.

The improved ore separator is provided with a table A, held in an inclined position and supported on links B, held on cross beams of the frame C, of the machine. The table A is preferably made in the shape of a box open at its lower end and in which are set pans D, made of copper or other suitable material, the several pans being separated from each other by transversely-extending riffles D', as plainly shown in Figs. 1 and 2. The lowermost riffle D' of the last pan discharges into a trough D², through which pass the finer tailings.

Over the riffle pans D is stretched a wire screen E, held in place by side beams E' and E², on the top edges of the side beams of the table A, and also on the upper end beam of the latter. Near the lower end of the screen E is arranged a transversely-extending and diagonally-arranged bar E³, which serves to guide the coarser tailings to one side of the screen to discharge the tailings over one side of the table through an opening E⁴ at the lower end of the side beam E'. The material to be treated is fed onto the upper end of the screen E by a chute F, connected with a hopper G, supported on the frame C of the ma-

chine. It is understood that the material passing onto the screen is prevented from passing over the sides by the beams E' and E² holding the screen in place, as above described.

The table A receives a longitudinal and a sidewise swinging motion from a main driving shaft, the detailed construction being as follows: On the under side of the table A is pivoted a link H, connected by a vertically disposed pivot with a pitman H', connected with the crank arm I', formed on the main driving shaft I, extending transversely and mounted to turn in suitable bearings on the frame C. On one end of the driving shaft I are secured the fast and loose pulleys I², connected by belt with suitable machinery for imparting a rotary motion to the said main driving shaft I. On the other end of the latter is secured a fly wheel I³, for steadying the motion of the said shaft. Now, when the shaft I is rotated the crank arm I, pitman H' and link H impart a longitudinal swinging motion to the table A, as the latter is suspended on the links B. The sidewise motion is also obtained from the shaft I, and for this purpose a bevel gear wheel J, is secured on the shaft I and is in mesh with the bevel pinion J', secured on a longitudinally-extending shaft J², journaled in suitable bearings arranged on the frame C. On this shaft J² are formed two crank arms J³, connected by pitmen J⁴, with a longitudinally-extending rod J⁵, secured to the under side of the table A. It is understood that the pitmen J⁴ can slide on the rod J⁵, and as the shaft I is rotated and a rotary motion is transmitted to the shaft J², the latter, by its crank arms J³, pitman J⁴ and rod J⁵, imparts a transverse swinging motion to the said table. As at the same time a longitudinal swinging motion is given, the said table has a combined longitudinal and lateral oscillation, it being understood that the pivotal connection of the link H with the table and the sliding connection of the pitmen J⁴ with the rod J⁵ permits such motion. A pinion K, is also in mesh with the bevel gear wheel J, the said pinion being secured on the lower end of a vertically disposed shaft K', also journaled in suitable bearings on the frame C. On the upper end of this shaft K' is secured a bevel gear wheel K², in mesh with a bevel gear wheel K³, secured

at one end of a transversely-extending shaft K^4 , journaled in suitable bearings on the frame C and passing transversely through the lower end of the hopper G. On this shaft K^4 within the hopper G is secured a cylinder L, provided with pins or agitating arms L' , for dividing the material fed into the hopper G previous to the material being passed onto the spout F to be discharged on the screen E. When the main shaft I is rotated a rotary motion is transmitted by the bevel gear wheel J and pinion K to the shaft K' , the latter's motion being transmitted by the bevel gear wheels K^2 and K^3 to the shaft K^4 , so that the cylinder L rotates within the lower end of the hopper G and by its pins L' divides the material in the hopper and at the same time feeds the material downward onto the chute F. In order to steady the motion of the table A, I employ springs N, which press on the side beams of the table A, as plainly shown in Fig. 1.

The operation is as follows: The material to be treated is passed in either a wet or dry state, onto the screen E, as above described, so that the swinging motion of the table jigs the material, so that the precious metal and the finer tailings pass through the screen into the pans D in which the metal is retained on the riffles D' , the lighter tailings passing over the riffles from one pan to another until all the precious metal has been separated from the tailings and retained in the riffles D' . The tailings finally are discharged over the spout D^2 at the lower end of the machine. The heavier tailings pass down the screen E to finally come in contact with the deflecting bar E^3 which discharges the heavier tailings to one side of the machine, as previously explained. It will be seen that by this arrangement the heavier tailings do not pass into the

rifle pans at all, so that a quicker separation of the lighter tailings and the metal takes place in the riffle pans. The lighter tailings being separated from the heavier tailings may be returned to the hopper for a second passage through the apparatus while the heavier tailings may be returned or delivered to a stamp for further treatment.

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

1. An ore concentrator comprising a frame an inclined table A having imperforate pans D provided with transverse riffles D' on their upper sides and an outlet at the lower end of the table for the lighter tailings, links suspending the table loosely within the frame, a screen secured on the table over its riffles and having an outlet at its lower end delivering separately from the table outlet and mechanism for imparting a combined longitudinal and lateral oscillation to the table and its screen, substantially as set forth.

2. An ore concentrator comprising the frame, the inclined table suspended loosely therein, a transverse crank shaft having a gear wheel J at one end, a longitudinal crank shaft having a pinion J' meshing with wheel J, connections between the table and said two shafts for imparting a combined longitudinal and lateral oscillation, an upwardly extending shaft K' having a pinion K also meshing with wheel J, a hopper delivering to the upper end of the table and provided with a stirrer geared to the shaft K' , substantially as set forth.

ROBERT DILWORTH.

Witnesses:

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