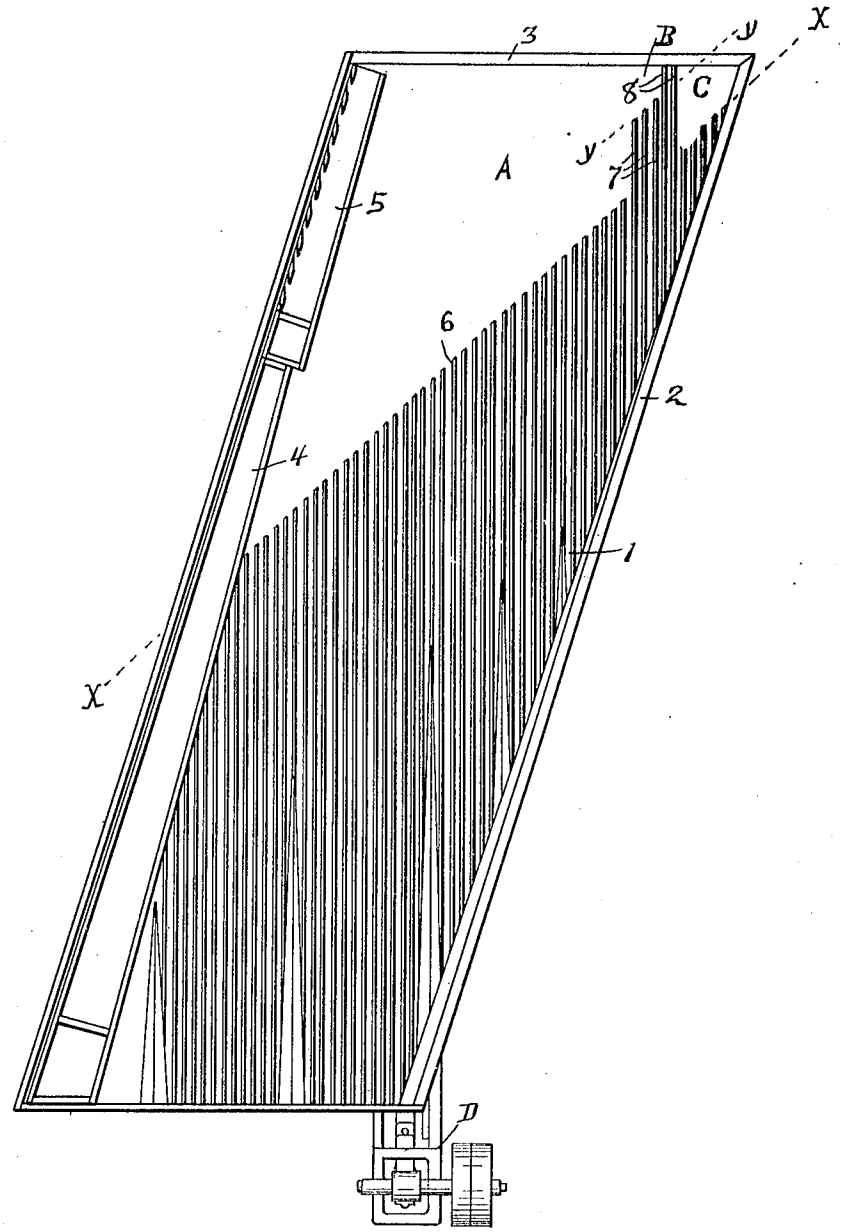
E. J. O'CONNELL.

ORE CONCENTRATING TABLE.

APPLICATION FILED MAR. 29, 1916.

**1,291,616.** Patented Jan. 14, 1919.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

EDWARD J. O'CONNELL, OF FORT WAYNE, INDIANA, ASSIGNOR TO DEISTER CONCENTRATOR COMPANY, A CORPORATION OF INDIANA.

## ORE-CONCENTRATING TABLE.

1,291,616. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed March 29, 1916. Serial No. 87,497.

*To all whom it may concern:*

Be it known that I, EDWARD J. O'CONNELL, a citizen of the United States of America, and resident of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Ore-Concentrating Tables, of which the following is a specification.

This invention relates to improvements in ore concentrators of the class in which a reciprocating table with a riffled surface is employed, and the object of the improvement is to effect a distinct separation of the mineral contents of ore pulp from the gangue as well as separate discharge of the various minerals recovered from the pulp as it passes over the table. For instance: In treating a pulp, containing lead and zinc, it is desirable that the two minerals be separated from each other as well as from the gangue inasmuch as the several minerals are better suited to subsequent metallurgical treatment when separated.

The invention contemplates such particular arrangement of the riffles and smooth unobstructed areas on the table as will effect the separation of the minerals from each other as well as from the gangue, even though the quantity of pulp flowing over the table may vary to some extent.

The object of the improvement is accomplished by the construction illustrated in the accompanying drawing which shows a plan view of a concentrating table of a well known type with riffles and unobstructed surfaces arranged in accordance with the invention.

Referring now to the indicating characters marked upon the drawing: 1 is a reciprocating table, (2) is the tailings discharge side thereof and (3) is its concentrates discharge end. 4 is the feed box and (5) is the dressing water distributing box, both of which are of the usual construction and arrangement. It is contemplated that the table shall be supported and connected with driving mechanism of the usual construction and in the customary manner, and therefore, these being well known, are not herein shown.

In constructing the invention the table (1) is formed in the usual manner with a linoleum surface and with a series of superimposed riffles (6) extending in parallel relation with each other, the forward ends of the riffles terminating respectively along a line $x$—$x$ that extends diagonally forward from the feed-box to a point at the tailings discharge side a short distance from its juncture with the concentrates discharge end, except a portion (7) of said riffles near said juncture that extend beyond the line $x$—$x$ to a line $y$—$y$ parallel therewith and also several riffles (8) next following the riffles (7) which extend entirely to the concentrates discharge end of the table. The rear portion of the table presents a riffled surface and the forward portion of the table presents a large, smooth unriffled area (A) between the major portion of the riffles and the concentrates discharge end of the table, and also an unriffled portion (B), an extension of the former unriffled portion, that lies between the extended riffles (7) and the concentrates discharge end, as well as a third unriffled portion (C) lying between the extended riffles (8) and the tailings discharge side of the table. Thus, the table is formed with a series of riffles that terminate upon a diagonal line, there being an intervening group of riffles, some of which terminate upon the table in a diagonal line parallel to the former line of termination and another portion of which extend beyond the latter riffles to the discharge end of the table, the intervening riffles dividing the unriffled areas (A) and (B) from the unriffled area (C).

In the operation of the invention, pulp is introduced into the feed-box from whence it passes onto the adjacent surface of the table and owing to the slant thereof tends to flow across to the tailings discharge side. Dressing water introduced into the box (5) also passes onto the surface and flows across in a similar manner. As the table is set in reciprocating motion, by means of the driving mechanism D, the solids of the pulp form in a flowing mass along the riffle terminals, the heavier mineral portions thereof, being influenced to a greater extent because of the impellent movement of the table, being projected out upon the unriffled area beyond the lighter solids where they are subjected to the cross-flow of dressing-water. As the flowing mass of solids encounters the extended riffles it becomes projected to some extent forwardly toward the area (B), the heavier mineral portions being especially influenced forwardly while the lighter worth-

less solids tend to pass across the extended riffles, their movement toward the tailings discharge side being aided by the cross-flow of dressing water. That portion of the mineral which is of greatest specific gravity becomes projected farther forward than the comparatively lighter portions and passes onto the area (B) and is directed by the extended riffles (8) to the discharge edge of the table while being subjected to the cleaning effect of the dressing water that flows across its path. The lighter constituents of the mass of solids that flow along the terminals of the major portion of the riffles become diverted by the extended riffles to a lesser extent than the heavier mineral portions, and readily pass across the extended riffles and become discharged over the tailings discharge side of the table. The mineral portions however are obstructed in their transverse movement to a greater extent by the extended riffles, the lighter mineral particles being displaced by the heavier particles as the latter crowds against the sides of the extended riffles, so that the lighter mineral as it becomes thus displaced passes across the extended riffles onto the smooth area (C), which, affording no obstruction to the lateral movement of the mineral allows it to flow away from the extended riffles before becoming discharged from the table. In this manner the heavier mineral becomes discharged separately from the lighter mineral, as it leaves the table directly over the area (B) and at the end of the extended riffles (8).

What I claim is:—

In an ore concentrator of the class described, a table having a series of riffles upon its surface extending forwardly from its rear end and terminating in a diagonal line that extends from its feed side to a point on its tailings discharge side suitably distant from its concentrates discharge end, and an intervening group of riffles extending beyond the diagonal terminal line of the major portion of said riffles and extending to the concentrates discharge end of the table, there being a smooth unobstructed area on each side of the said extending riffles lying between the said diagonal terminal line and the concentrates discharge end, one of said unobstructed areas extending on one side along the tailings discharge side of the table and extending also along that portion of the concentrates discharge end adjacent thereto.

In testimony whereof I affix my signature, in presence of two witnesses.

EDWARD J. O'CONNELL.

Witnesses:

MATILDA METTLER,

W. G. BURNS.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**