

No. 649,275.

Patented May 8, 1900.

E. F. DAVIS.
CONCENTRATOR.

(Application filed Nov. 10, 1899.)

(No Model.)

FIG. 1.

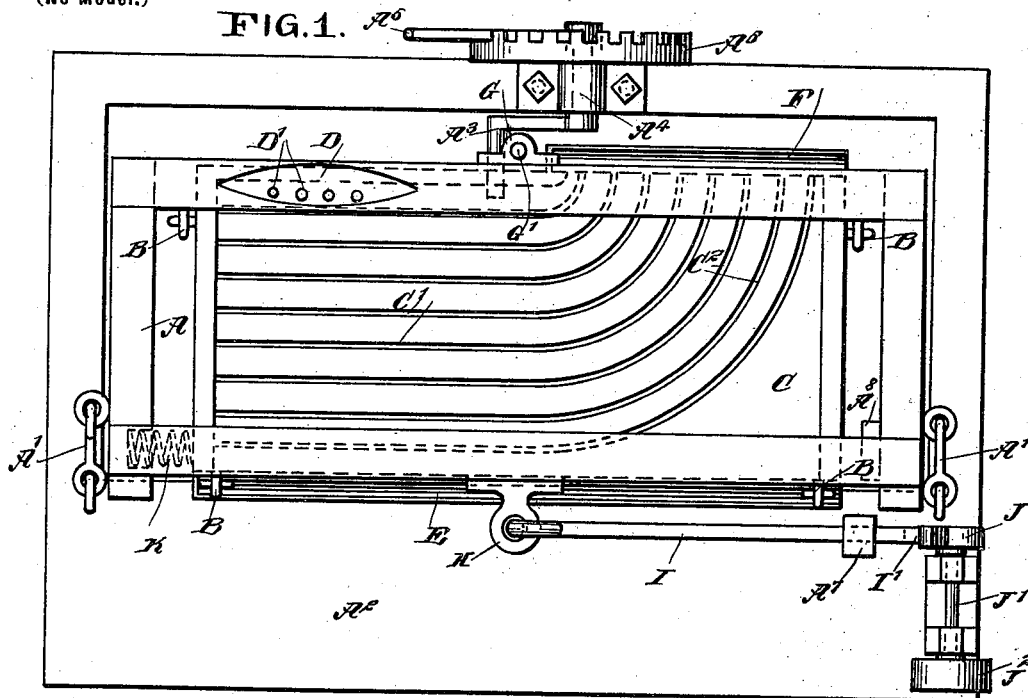


FIG. 2.

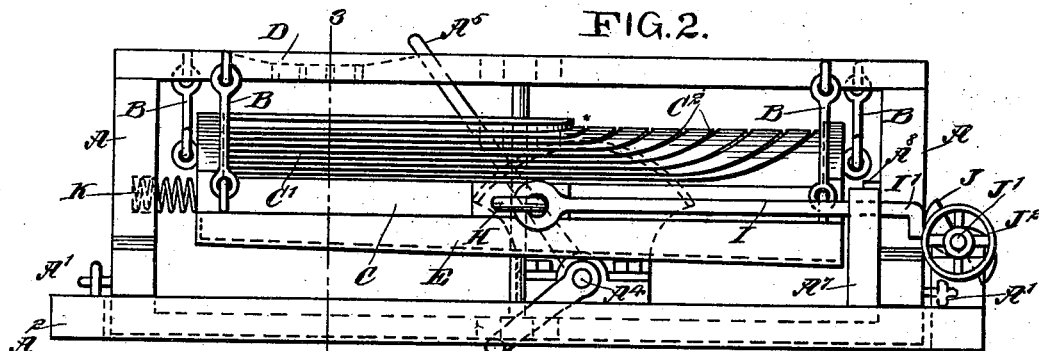
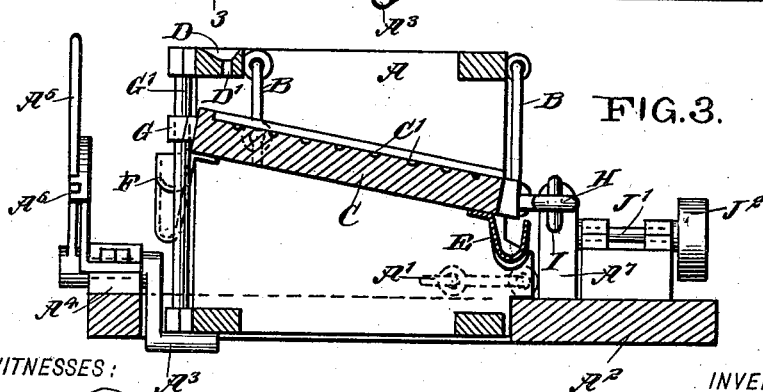


FIG. 3.



WITNESSES:

Donn Twitchell
Rev. G. H. Foster

INVENTOR

Edson F. Davis

BY

Mumford
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDSON FRANCIS DAVIS, OF WETMORE, COLORADO, ASSIGNOR OF TWO-THIRDS TO IRA RYAN PORTER AND EMMET EDGAR JENNINGS, OF SAME PLACE.

CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 649,275, dated May 8, 1900.

Application filed November 10, 1899. Serial No. 736,453. (No model.)

To all whom it may concern:

Be it known that I, EDSON FRANCIS DAVIS, a citizen of the United States, residing at Wetmore, in the county of Custer and State of Colorado, have invented a new and Improved Concentrator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved concentrator which is simple and durable in construction, very effective in operation, and designed for concentrating ores or for separating placer-gold from sand without the use of water.

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

A practical embodiment of my invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement; Fig. 2 is a side elevation of the same, and Fig. 3 is a transverse section of the same on the line 3 3 in Fig. 2.

The frame A of the concentrator is hung at its forward end on links A', connected with a suitable base A², and the rear end of said frame is supported on a crank-arm A³, attached to a shaft A⁴, journaled in suitable bearings on the base A², a handle A⁵ being secured to the shaft and adapted to be locked in position on a notched segment A⁶, secured to or forming part of the base A². By the operator manipulating the handle A⁵ a turning motion can be given to the shaft A⁴, so as to swing the crank-arm A³ up or down to tilt the frame A whenever it is desired to do so.

In the frame A is hung on links B a concentrating-table C, extending in an inclined position from the rear to the front, and which inclination of the table can be increased or diminished by the operator manipulating the handle A⁵, as described, to tilt the frame A more or less and in so doing increase or decrease the inclination of the table C. On the top of said table C are formed riffles, each of which has a part, C', extending longitudinally from near one end to about the middle of the

table, while the remaining part, C², of each riffle is curved from the middle upwardly and transversely to the upper rear edge of the table, the opposite ends of the riffles terminating at opposite sides of the table-pivot, and the said riffles are of uniform depth and have parallel sides throughout their length, as is plainly illustrated in the drawings.

The ore or placer material to be treated is placed in a hopper D, secured to or formed on the frame A, openings D' leading from the hopper downward upon the upper edge of the table above the longitudinal portions C' of the riffles, so that when a reciprocating motion is given to the table C then the tailings or sand and gravel work down the riffles, while the gold or heavier material works along the riffles and up their curved parts C². The tailings, working downward on the table, finally pass into a trough E, connected with a suitable conveyer for carrying the tailings to a pump, and on the upper end of the table, at the discharge end of the riffle parts C², is arranged a trough F for receiving the gold or heavy material working along the bottom of the riffles when the table C is reciprocated, as above mentioned.

In order to impart the desired motion to the table C, the rear end thereof is provided at its middle with a bearing G, engaging a shaft or post G', carried by the frame A, and on the front of said table, directly opposite the bearing G, is arranged a ring H, engaged by one end of a rod I, extending longitudinally and fitted to slide in a bearing A⁷, carried by the base A². The outer or free end of the rod I is formed with a curved offset I', adapted to be engaged by the arms J of a shaft J', extending transversely and journaled in suitable bearings attached to the base A². On said shaft J' is secured a pulley J², connected by belt with other machinery, so that a rotary motion is imparted to the shaft J' to cause the arms J to successively engage the end I' of the rod I to push the latter to the left, and thereby impart a swinging motion to the table C, the latter turning on the shaft G' as the pivot. The left-hand forward end of the table C is adapted to press against a spring K, held on the frame A, so that when

the table receives a swinging motion by the action of an arm J and the rod I then the spring K is compressed, and when the arm J leaves the end I' of the rod I then the compressed spring returns the table C to its forward position and against a bumping-block A⁸ on the frame A opposite the spring K, so that the table C is subjected to a bumping action.

10 It is evident that when the material is fed in a dry condition upon the upper end of the table C above the riffle part C' and a reciprocating motion is given to the table C, as described, and said table is subjected during
15 each movement to a bumping action then the material on the table is agitated, so that the gold or other heavy particles settle in the bottom of the riffles and work along the same, to be finally discharged into the trough F, while the tailings, sand, or other light material work over the riffles, down the inclined table, and finally pass into the trough E—that is, when the table strikes the bumping-block
20 at the right-hand side then the heavy concentrates are caused to move to the right, owing to the bumping action, and as the riffles curve to the right and rearward it is evident that the concentrates travel up the riffles and discharge. From the foregoing it is
25 evident that by the arrangement described the mechanical operation of the table insures a thorough and quick separation of the gold from the tailings or sand.

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

1. An ore-concentrator, comprising a table inclined upwardly from the front to the rear, a vertical pivot to which the rear side of the
40 table is attached, means for imparting a bumping reciprocal motion to the table, and riffles on said table having portions extended lengthwise and portions extended transversely in a curved line, substantially as specified.

45 2. An ore-concentrator, comprising a frame, an inclined table hung in said frame and pivoted thereon, means for imparting a bumping reciprocating motion to said table, a feed-hopper for discharging the material upon the ta-

ble at the upper end thereof and at one side, 50
and riffles on said table and extending partly straight in a longitudinal direction below said feed-hopper and partly curved in an upward and transverse direction, said straight and curved portions of the riffles extending on opposite sides of the table's pivot, as set forth. 55

3. An ore-concentrator, comprising a frame, an inclined table hung in said frame and pivoted thereon, means for imparting a bumping reciprocating motion to said table, a feed-hopper for discharging the material upon the table at the upper end thereof and at one side, riffles on said table and extending partly straight in a longitudinal direction below said feed-hopper and partly curved in an upward 60
and transverse direction, a trough on the lower front end of the table, for receiving the tailings, and a trough on the upper rear end of the table at the discharge end of the curved parts of the riffles, for receiving the gold, substantially as shown and described. 65 70

4. An ore-concentrator, comprising a frame, an inclined table hung in said frame and pivoted thereon, means for imparting a bumping reciprocating motion to said table, a feed-hopper for discharging the material upon the table at the upper end thereof and at one side, riffles on said table and extending partly straight in a longitudinal direction below said feed-hopper and partly curved in an upward 80
and transverse direction and a spring against which abuts one end of the table, as set forth.

5. An ore-concentrator, comprising a frame, an inclined table hung in said frame and pivoted thereon, means for imparting a bumping reciprocating motion to said table, a feed-hopper for discharging the material upon the table at the upper end thereof and at one side, riffles on said table and extending partly straight in a longitudinal direction below said feed-hopper and partly curved in an upward 90
and transverse direction, and means, substantially as described, for tilting said frame, as set forth.

EDSON FRANCIS DAVIS.

Witnesses:

C. D. SHAEFFER,
KENT L. ELDRED.