

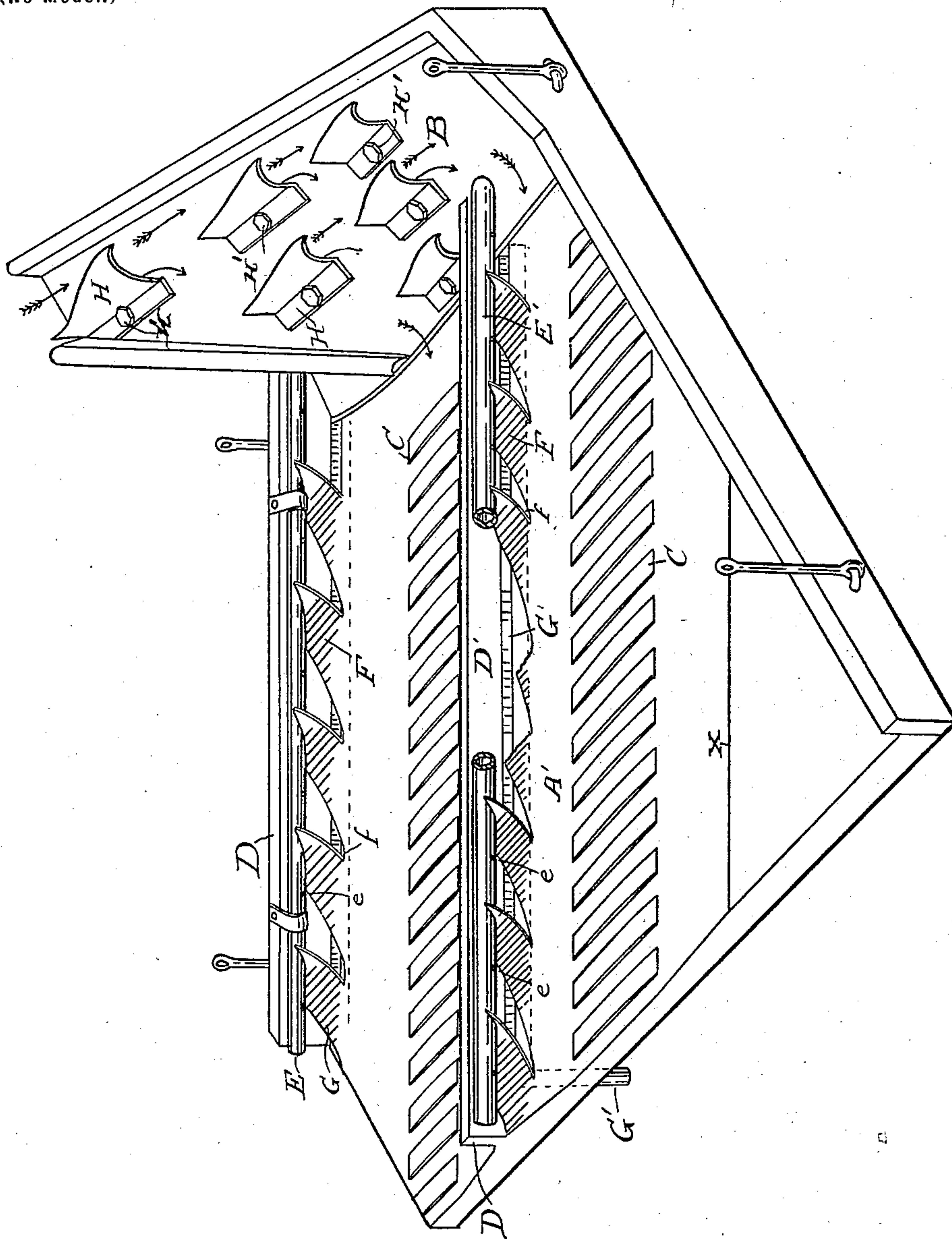
No. 698,737.

Patented Apr. 29, 1902.

M. D. ROCHFORD.
CONCENTRATOR.

(Application filed Dec. 27, 1900.)

(No Model.)



Witnesses
Harry A. Brooks
Mattie McGinnis

Inventor
Mark D. Rochford
By
Hazard & Larpham
Attorneys

UNITED STATES PATENT OFFICE.

MARK D. ROCHFORD, OF KINGMAN, ARIZONA TERRITORY.

CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 698,737, dated April 29, 1902.

Application filed December 27, 1900. Serial No. 41,302. (No model.)

To all whom it may concern:

Be it known that I, MARK D. ROCHFORD, a citizen of the United States, residing at Kingman, in the county of Mojave, Territory of Arizona, have invented new and useful Improvements in Concentrators, of which the following is a specification.

My invention relates to devices for separating valuable, heavy, and precious metals and sulfurets from worthless sand and light tailings; and the object of my invention is to improve the means whereby the material to be separated is fed to the concentrating-table and to improve the table to accord therewith. I accomplish these objects by means of the apparatus herein described, and shown in the accompanying drawing, which is a perspective view of the top of my improved concentrating-table and the inclined extension B thereof, some of the parts being broken away for clearness of illustration. This table is approximately horizontal with sufficient inclination downward toward the foot of the table to allow the water to carry off the lighter portion of the material to be concentrated. On the table are two rows of transversely-fixed strips or riffles C of proper material extending at right angles to the inclination of the table. These riffles are thin at the ends and gradually increase in thickness as the center is approached until the center of the riffles are reached, where they are thickest. The purpose of providing riffles of this construction is to expose the material to be separated to the different actions of the water as it runs over different portions of these inclined riffles—that is to say, the water will exert the least effect on the material while opposite the center of the riffles; and that effect will increase as the material approaches the ends of the riffles until the ends of the riffles are reached. Between these rows of riffles is a partition-strip D', which divides the table into two parts A and A'. Along the outer edge of the part A of the table and forming the rim is another strip D. Lying adjacent to and along these strips are water-supply pipes E and E'. In these pipes, properly spaced apart, are openings e and so disposed on said pipes as to eject a small stream of water at the proper point upon the deflec-

tors F and F' to properly separate the material carried onto these deflectors. Below these deflectors are the concentrate-troughs G and G' for carrying off the concentrated product. On the inclined extension of the table I affix a plurality of deflectors H, forming troughs. By means of the lug-screws H', which adjustably screw these deflectors to the inclined extensions, the angle of these deflectors may be adjusted to suit the character of the material acted on and the flow of the water used in separating. These deflectors will spread the stream over the inclined extension and cause it to carry the lighter portion of the material to be separated farther along the incline, while the heavier material will fall onto the deflectors lower down on the inclined plane, as shown by the arrows, the course of the heavy material being shown by broken arrows and the course of the lighter material being shown by full arrows, the purpose of which is to separate the material to be concentrated before it reaches the concentrating-table and deposit a different product on each portion of the table containing the riffles, and thereby greatly facilitate the work of concentration.

The material to be separated, mixed with a sufficient quantity of water for that purpose, will be fed to the inclined portion B of the table in the direction and at the point indicated by the arrows at the top of the drawings and will pass down in the direction indicated by the arrows. The concentrator is provided with the well-known means (not shown) to impart the necessary intermittent motion thereto to properly assist in separating the material fed therein by throwing the heavy portion laterally along the riffles C and C', through the catches F and F', and into the troughs G and G'. As the material is fed to the table A from the inclined portion B the heavy particles will be deposited between the riffles C, and by the movement of the table will be conveyed to the troughs G and G', while the water, assisted by the inclination of the table, will carry the gangue or lighter material down and across the riffles to the foot of the table. To prevent as much as possible any portion of the gangue going into the troughs, I provide a series of deflectors F and

F', shaped much like the moldboard of a plow, at the lower point of which a passage is provided from the table to the trough. To prevent as much as possible any gangue from passing into the troughs, I provide a series of openings in the water-supply pipe, through which a jet or stream of water will be ejected onto the moldboard portion of the deflector, which will spread itself in an even flow over the concentrated product as it is conveyed through the deflectors by the intermittent motion of the table. This will have a tendency to prevent the gangue or waste material from passing through into the concentrating-troughs and being discharged as concentrates.

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

1. In a concentrator, the combination of a concentrating-table having along one side a concentrate-trough and superposed water-supply pipe, and having along another portion a line of riffles, extending transversely and tapering in the direction of their length to form central portions of greater thickness than the ends whereby the material at the ends of the riffles is agitated with greater effect than the material at the thickened center, and a deflecting surface extending in line with the trough and below the water-supply pipe, and rising from the table in a series of independent and gradual curves.

2. A concentrator-table having an inclined extension at one end, to which the pulp is fed said extension having a series of deflectors said deflectors disposed substantially in line with the floor and having one portion fitted to the extension and a second portion made trough-like and capable of spreading the stream over the extension and causing it to carry the lighter portion of material a greater distance along the inclined extension than the heavier portion.

3. The combination with an inclined concentrating-table, of a series of deflectors at the head end thereof said deflectors disposed substantially in line with the floor and having one portion fitted to the table and another portion made trough-like and extending in the direction of the flow of pulp, and means whereby the deflectors may be adjusted to

different angles to suit the character of pulp acted on, and the flow of water.

4. The combination in a concentrator of a concentrating-table A; a series of rows of transversely-placed riffles running from the head of the table to the foot thereof, the said riffles being thick in the center and decreasing in thickness therefrom to the ends thereof; a series of deflectors rising from the table in gradual curved lines, and extending from the head to the foot of the table; water-supply pipes disposed above said deflectors and having properly-spaced apertures thereon adapted to direct a jet of water on the moldboard portion of the deflectors; a concentrate-trough below said pipe and adjacent to the deflectors to carry off the concentrates.

5. The combination in a concentrator of a concentrating-table A, divided into two parts by the partition-rib D, extending centrally from the head to the tail thereof; a row of transversely placed riffles on either side of said partition-rib extending from the head to the tail, thin at the ends and thick in the middle; deflectors F extending from the head to the tail, and rising above the table in gradual curved lines; water-supply pipes D, disposed above said deflectors and having discharge-apertures spaced apart, adapted to direct a jet of water onto the deflectors, the troughs G below the surface of the table, and adapted to receive and carry off the concentrates; and the inclined portion B at the head of said table and connecting therewith, the said extension being provided with a plurality of deflectors H, arranged to spread the pulp over the concentrating-table.

6. In a concentrator the combination with a water-supply and a table, of a series of deflectors along the side of the table and beneath the supply-pipe, and consisting of plates extending above the table and curved in the direction of their length.

In witness that I claim the foregoing I have hereunto subscribed my name this 21st day of November, 1900.

MARK D. ROCHFORD.

Witnesses:

G. E. HARPHAM,
HENRY T. HAZARD.