

(No Model.)

4 Sheets—Sheet 1.

G. L. CUDNER.
ORE CONCENTRATING APPARATUS.

No. 537,756.

Patented Apr. 16, 1895.

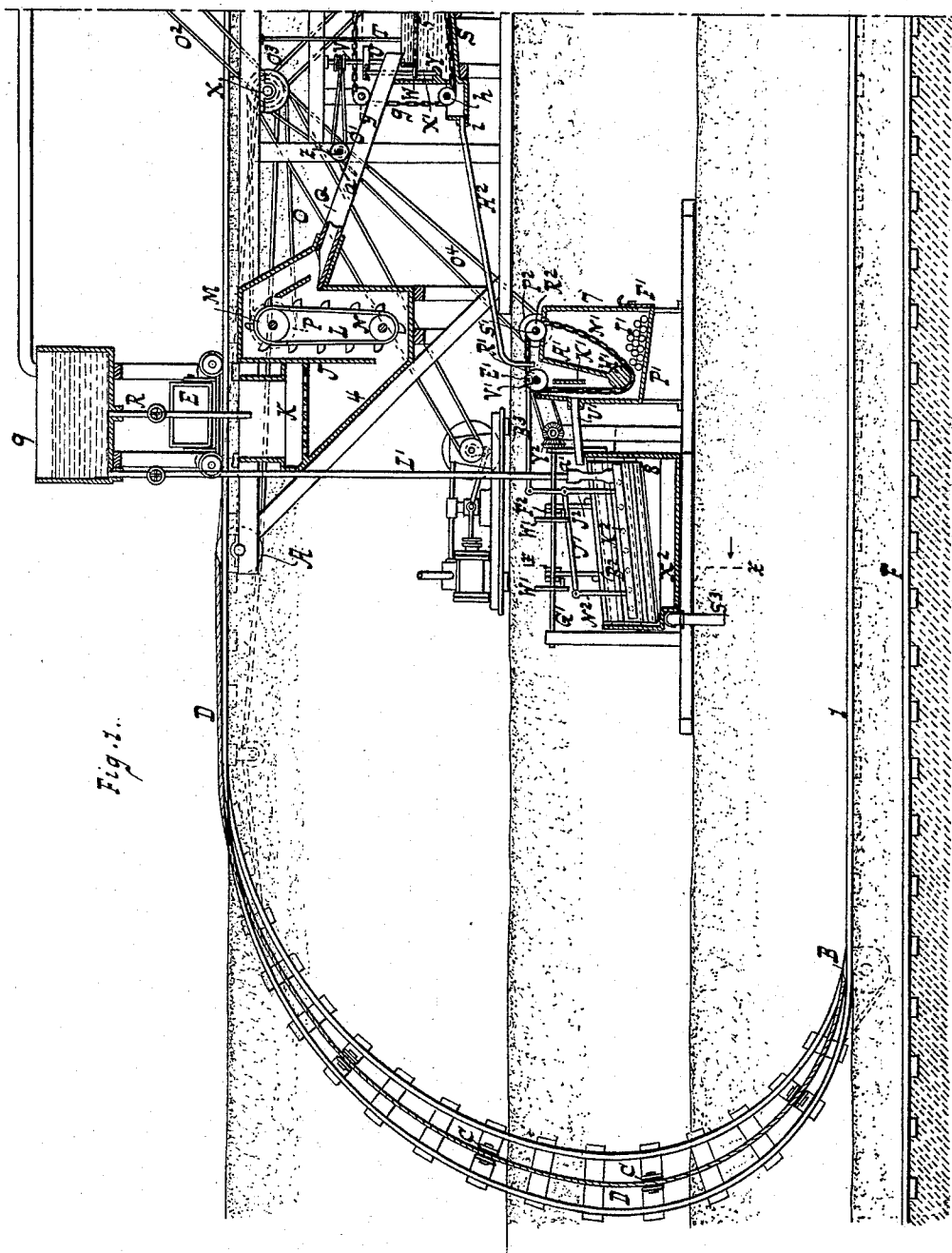


Fig. 1.

WITNESSES:

William Miller
Chas. C. Boonsgen

INVENTOR:

Gustav Lorrimer Cudner

BY

Hauff & Hauff

ATTORNEYS.

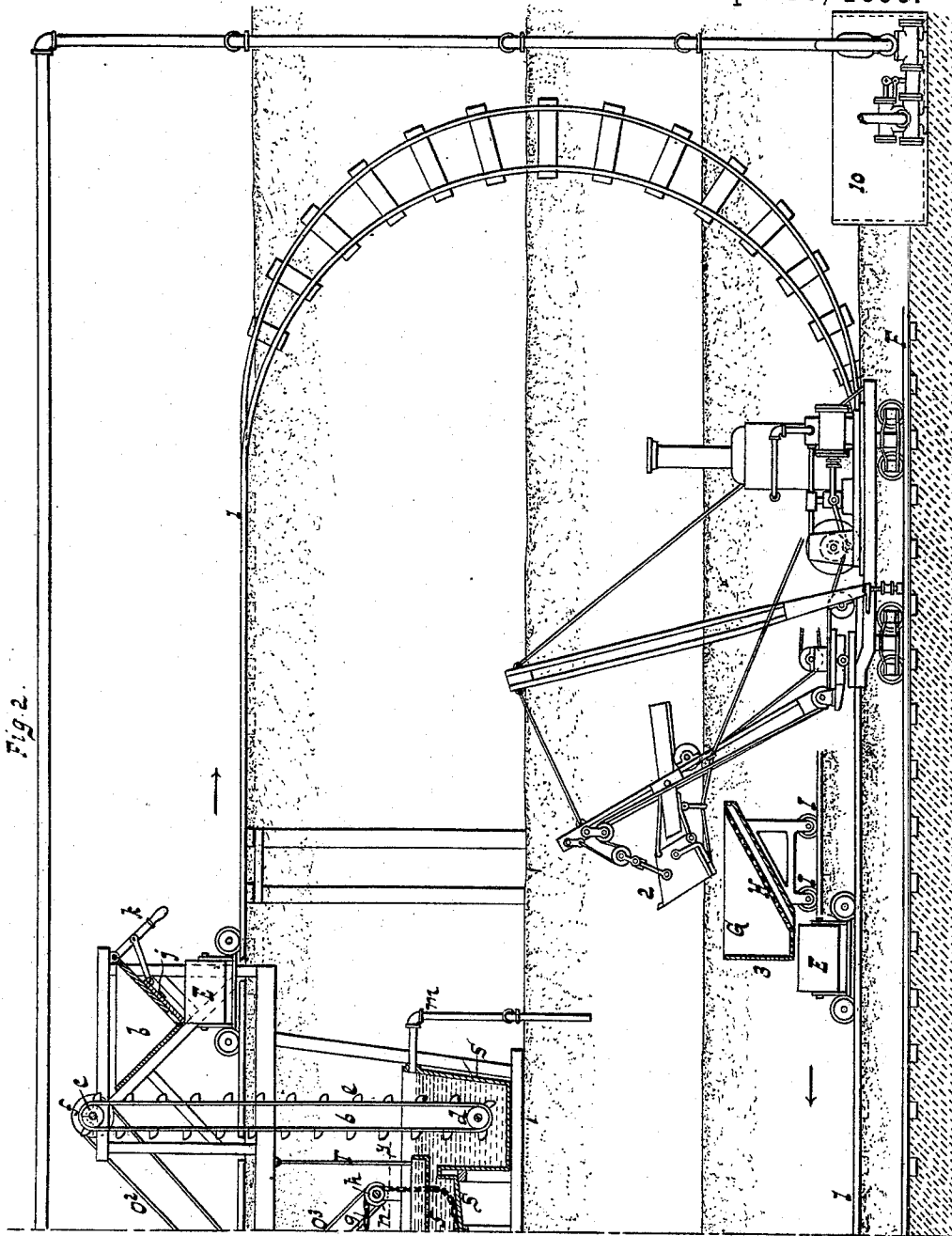
(No Model.)

4 Sheets—Sheet 2.

G. L. CUDNER.
ORE CONCENTRATING APPARATUS.

No. 537,756.

Patented Apr. 16, 1895.



WITNESSES:

William Miller
Chas. E. Doensgen

INVENTOR:

Gustav Lorrimer Cudner

BY

Hauff & Hauff

ATTORNEYS.

(No Model.)

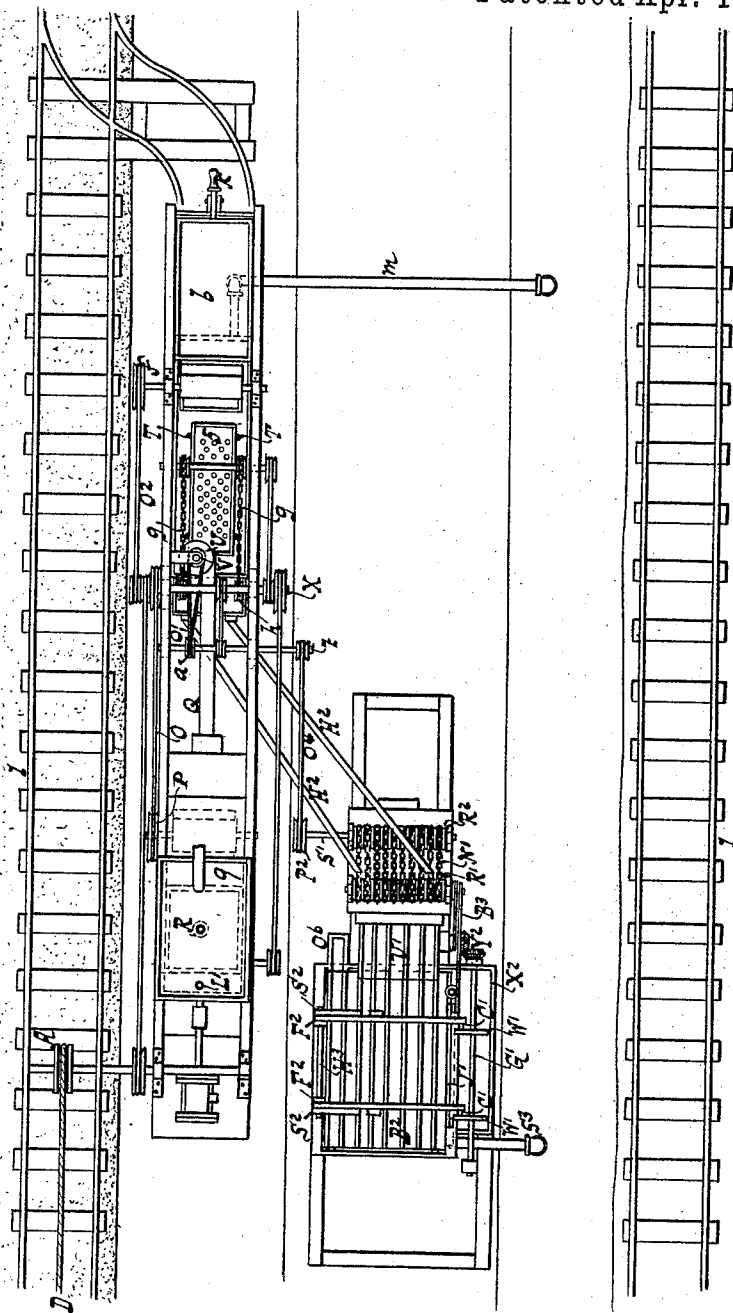
4 Sheets—Sheet 3.

G. L. CUDNER.
ORE CONCENTRATING APPARATUS.

No. 537,756.

Patented Apr. 16, 1895.

Fig. 3.



WITNESSES:

William Miller
Chas. E. Poenagen

INVENTOR:

Gustav Lorrimer Cudner

BY

Hauff & Hauff

ATTORNEYS.

(No Model.)

4 Sheets—Sheet 4.

G. L. CUDNER.
ORE CONCENTRATING APPARATUS.

No. 537,756.

Patented Apr. 16, 1895.

Fig.4.

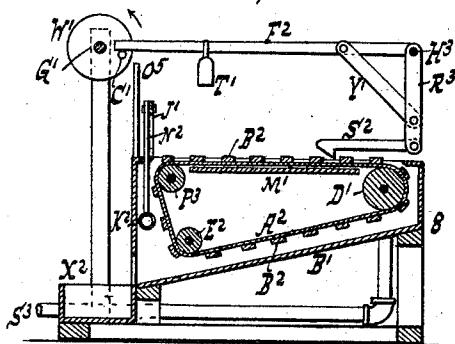
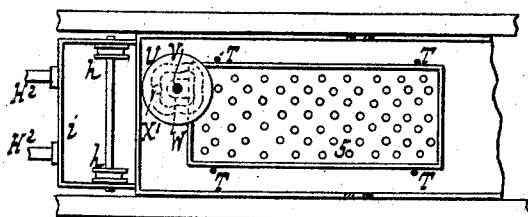


Fig. 5.



WITNESSES:

William Miller
Chas. E. Prangen.

INVENTOR:

Gustavis Lorrimer Cudner

BY

BY
Hauff & Hauff
ATTORNEYS.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GUSTAVIS LORRIMER CUDNER, OF NEW YORK, N. Y., ASSIGNOR TO THE GOLD AMALGAMATOR AND CONCENTRATING COMPANY, OF LOS CERVILLOS, TERRITORY OF NEW MEXICO.

ORE-CONCENTRATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 537,756, dated April 16, 1895.

Application filed March 23, 1894. Serial No. 504,827. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVIS LORRIMER CUDNER, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Ore-Concentrating Apparatus, of which the following is a specification.

The ore concentrating apparatus forming the subject of this invention is capable of working in such placers or localities where the water supply is limited and where there is no fall convenient for tailing off débris, and the invention consists in the novel features of construction set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figures 1 and 2 represent a sectional elevation of the plant. Fig. 3 is a plan view of part of Figs. 1 and 2. Fig. 4 is an elevation of a blanket table sectioned along $x x$ Fig. 1. Fig. 5 is a plan view of a screen sectioned along $y y$ Figs. 1 and 2.

The endless railway 1 is constructed so that the track is all down grade except a short distance, where the cars are carried up the grade by a cable or belt system.

A is the head wheel for the cable; B, the foot wheel; C, the idle pulleys; D, the cable or link belt.

The railway is provided with dump cars or buckets E.

The steam shovel 2 is on a separate track F.

The boulder screen 3 comprises a hopper G and a coarse screen H mounted on wheels I.

The disintegrating tank 4 is of the shape shown in the drawings, with a partition J, a coarse screen K, elevator chain and buckets L, head wheel M, foot wheel N, with a driving pulley P and a sluice-way Q.

The disintegrator is supplied with water by the pipe R from the upper water tank 9.

The elevator L is rotated by means of a belt O extending from the line shaft X to the pulley P.

A fine screen 5 works in a tank of water S. The tank is of the shape shown in the drawings. The screen 5 is suspended by four rods T. The screen has four motions by means of the cam or crank U which is on the vertical

shaft V. On the upper end of the screen 5 is an attachment or lug W. A vertical shaft X' passing through the attachment W is pivoted in the step Y and connected with the crank U at the top. The shaft V is rotated by means of the belt O' from the pulley a on the counter shaft Z.

The elevator 6 which raises the coarse débris coming from the end of the screen 5 into the receiver b has a head wheel c and a foot wheel d , chain and buckets e and a driving pulley f which is rotated by means of the belt O² from the line shaft X. The receiver b has a gate j and a lever k . The screen tank S has rotating chains g which pass around pulleys h and which aid the fine matter which has passed through the screen 5 in the tank S to discharge into the trough i . The chains g are rotated by means of the driving pulley n connected by belt O³ with the line shaft X. Near the top of the screen tank S is a pipe m which is for the purpose of discharging water and slimes.

The precipitator and amalgamator 7 is a tank having an inclined floor P' with a partition A' and a partition K'. At the bottom of the partition A' is an iron guide H'. At the lower end of the floor P' is a movable plate or door F'. At the top of the tank is a shaft V' with sprocket wheels R' and a shaft S' with sprocket wheels R², and on the end of the shaft S' is a driving pulley P². There are a number of endless cable chains N' which pass around the sprocket wheels R' R² and around the guide way H'. By means of a belt O⁴ connected with the pulley P² and the shaft Z the chains N' are actuated.

Pipes H² conduct the pulp from the trough i to the precipitator 7.

The automatic blanket table 8 is a frame work with inclined floor B'. It has three long rollers running lengthwise P³ E² D'. Fastened to the belt A² are lags or slats of iron or wood B² running lengthwise parallel with the rollers. The slats form narrow gutters upon the table M'. A shaft H³ runs lengthwise of the table with two arms R³, lever F², brace Y' and two latches S². On the lever F² is a weight T' and at the end is a crank wheel

W' which is on the end of the shaft G'. In the crank wheel W' is a pin C' and the shaft G' is actuated by bevel or driving gears Y².

A beam J' runs lengthwise of the table and is provided with arms J² and N² pivoted thereto and a connecting rod B³ which connects with a crank E' at the end of the shaft V' of the precipitator 7. At the bottom ends of the arms N² and J² is a perforated pipe K² running lengthwise of the table. At the end of the pipe K² is a rubber hose a' connected with the water pipe L'. At the lower side of the inclined floor B' is a receiving trough X². There are gutters U' which conduct the pulp from the precipitator to the blanket table.

The system is operated as follows: By means of the steam shovel 2 the material is scooped up and thrown upon the boulder screen 3 which throws off the coarser matter. The finer material then passes through the screen into the dump car E. The car E passes by gravity down the railway 1. When the car is elevated by cable D or otherwise the material is dumped upon the screen K of the disintegrator 4. The water from the pipe R flows upon the material and washes it down through the screen K. The water flows down the sluice Q and the material is lifted up by the elevators L and dumped into the sluice Q, whence it runs down upon the screen 5. The fine matter passes through the screen into the tank S, the coarse débris being carried up by the elevator 6 into the receiver b whence it is dumped into the car E by opening the gate j by means of the lever k. The car is loaded from the receiver and passes down the inclined track and the coarse débris is dumped at any suitable point as into an arroyo. The fine matter which has passed through the screen 5 into the tank S is by means of the rotating chains g carried with part of the water to the trough i whence it passes down through the pipes H² into the precipitator and amalgamator 7. The precipitator has a quantity of pebbles I' which are kept partly in suspension by the upward motion of the chains N' which brightens amalgamates and precipitates the precious metal. The amalgamator 7 is kept supplied with mercury as required for amalgamation. The débris passes from the precipitator 7 down the gutters U' upon the blanket table where it passes down the gutters or spaces between the slats B² and out through the discharge or gutter S³. The fine matter which has been received by the precipitator 7 carrying gold and fine particles of ore of value which has not amalgamated and precipitated, has flowed out upon the blanket table and settled in the fissures. The shaft G' revolves slowly. The pin C' in the wheel W' lifts the lever F² and by means of the arms R³ the latches S² are moved forward so that they hook on to a strip B². When the lever F² is released from the pin C' the weight T' causes the lever to fall upon the stop or beam O⁵ thus moving the entire blanket upon

table M' the distance between two adjacent strips B². This brings another one of the spaces between two strips B² containing value and some remaining light matter opposite the small tank O⁶ at the head of the table. This tank is supplied with water which runs thence onto blanket A² and the light matter is thus washed off the blanket down into the discharge gutter S³. As the belt A² moves a space regularly at every revolution of the wheel W' the perforated pipe K² swings on arms N² and J² by means of the connecting rod B³ and crank E'. The water flowing from the perforated pipe K² upon the nearly perpendicular side of the blanket or belt A², washes from the fissures or spaces on the blanket the concentrated value down into the trough X². The coarse débris being dumped below the plant and the fine débris and water being discharged above the coarse débris the water will filter through the coarse débris and run down into the cistern 10 whence it is pumped up into the upper water tank 9 to be again used. This feature of the system enables the work to be carried on with little loss of water.

The cistern 10 is placed at a low, or preferably the lowest point of the plant, so that the water from any arroyo or other source will descend into the cistern.

I have found it to be of advantage to provide the precipitator and amalgamator 7 with two upper rollers R' R² as thereby the chains N' are spread and prevented from bunching or clogging at the bottom of the precipitator, by which bunching or clogging interruption or breakage might be caused.

The manner of raising cars E is of course immaterial as these cars can be either run up an incline by cable D or raised by any suitable elevator or lift.

What I claim as new, and desire to secure by Letters Patent, is—

1. A case or frame provided with a table M', an inclined bottom B' and rollers D' E² P³, combined with a belt made to travel about the rollers, strips B² secured to the belt, a pawl or catch S² made to engage the strips and an actuating lever for the pawl substantially as described.

2. A case or frame provided with a table M', an inclined bottom B' and a traveling belt provided with lags or slats B², combined with a tank O⁶ at one end of the slats and a discharge S³ at the opposite end of the slats and a gutter or discharge X² placed parallel to the slats and made to communicate with the bottom B' substantially as described.

3. A case or frame provided with a table M', an inclined bottom B' and a traveling belt provided with strips B², combined with a pipe or jet arrangement K² for throwing a jet against the belt, swinging arms N² J² made to support the pipe, and an actuating link B³ connected to one of the pipe supporting arms substantially as described.

4. A mining plant comprising an endless

railway with dump cars or buckets, a steam
shovel and a bowlder screen for supplying the
cars, a disintegrating tank adapted to be fed
by the cars and provided with a sluice way,
5 a water tank provided with a screen or sieve
adapted to be fed by the sluice way, an ele-
vator and receiver fed from the sieve, a pre-
cipitator and amalgamator fed from the sieve
tank, an automatic blanket table fed from
10 the precipitator and amalgamator, an upper

water tank, and a cistern located at a low
point in the plant and made to feed the upper
water tank substantially as described.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing 15
witnesses.

GUSTAVIS LORRIMER CUDNER.

Witnesses:

WM. C. HAUFF,

E. F. KASTENHUBER.