(No Model.) 3 Sheets—Sheet 1.

A. M. ROUSE.

Machine for Concentrating Ores.

No. 241,240. Patented May 10, 1881.

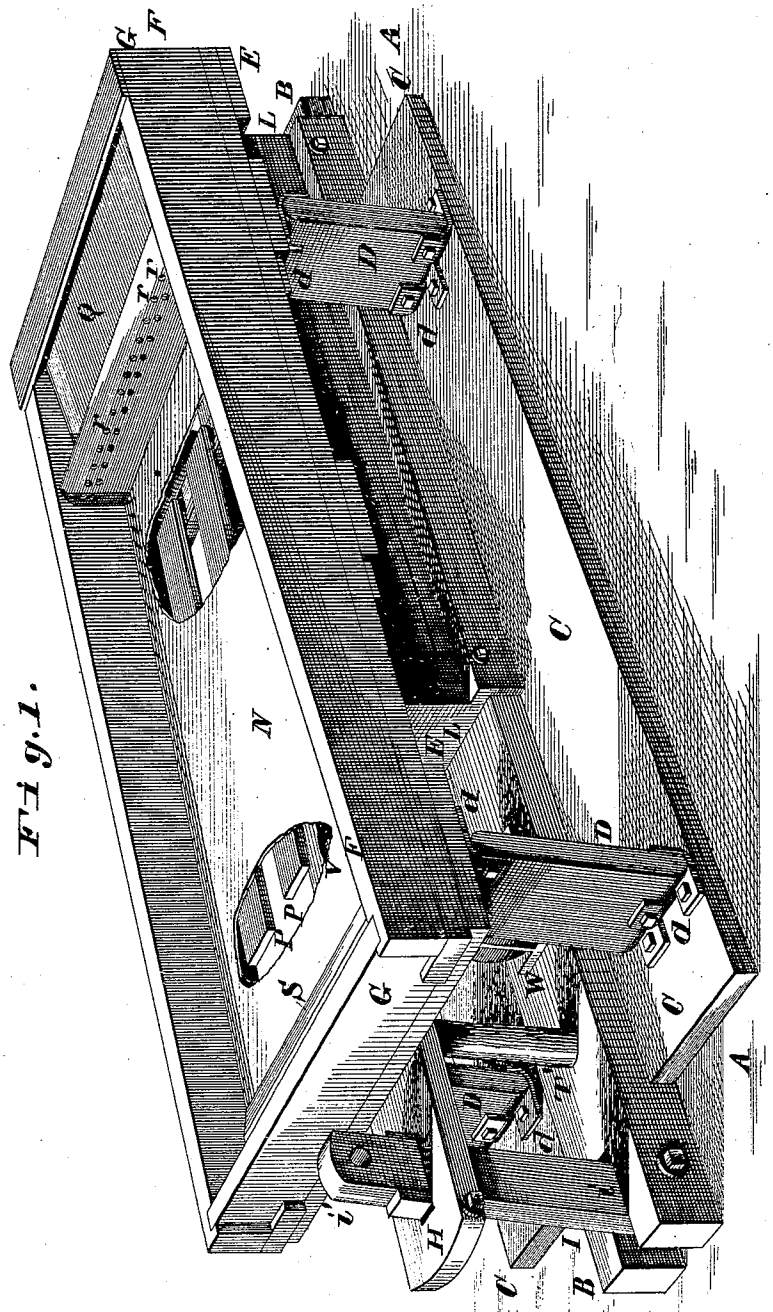

Fig. 1.

Attest:
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(No Model.) 3 Sheets—Sheet 2.

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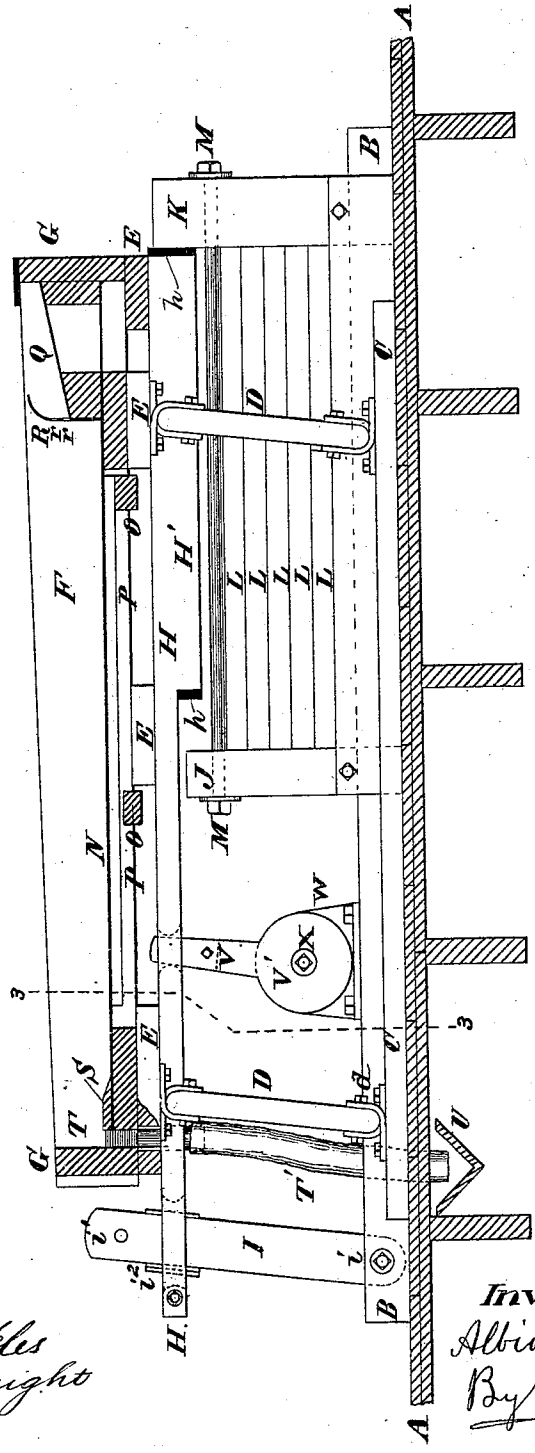

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

A. M. ROUSE.

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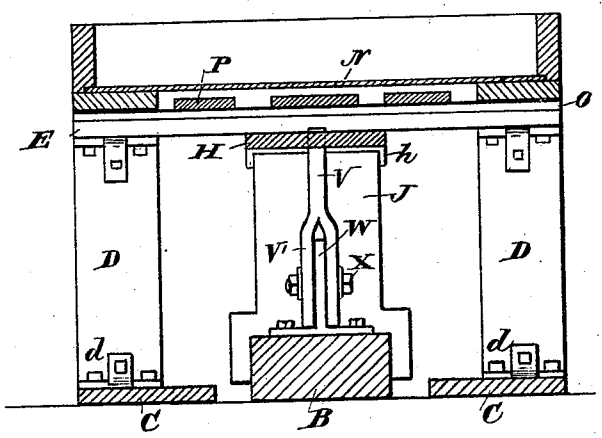
Fig 3,



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UNITED STATES PATENT OFFICE.

ALBION M. ROUSE, OF BOULDER, COLORADO.

MACHINE FOR CONCENTRATING ORES.

SPECIFICATION forming part of Letters Patent No. 241,240, dated May 10, 1881.

Application filed August 6, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALBION M. ROUSE, of Boulder, in the county of Boulder and State of Colorado, have invented a certain new and useful Improvement in Machines for Concentrating Ores, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This improvement relates to a machine for concentrating the valuable part of ores, and is especially intended for the treatment of low-grade ores.

The invention consists in the described construction of the table, its supports, and frame for receiving the impact of the table in its reciprocations.

In the drawings, Figure 1 is a perspective view, with parts broken away. Fig. 2 is a side elevation of the frame-work, with the table shown in central longitudinal section. The supporting-floor is also in section. Fig. 3 is a transverse section on the line 3 3, Fig. 2.

I will describe my preferred construction of the parts, but do not confine myself to exact details.

A represents a floor supporting the machine. Upon the floor is a main string-beam, B. Upon each side of the string-beam is a plank, C, secured to the floor and furnishing bearing to the hinged legs D, upon which the table is supported. The legs are connected to the plank and table by flexible strips *d*, which lap around their rounded ends, allowing an easy oscillatory movement to the legs upon the supporting planks or beams C. The table has cross-pieces E E, &c., side pieces, F, and end pieces, G. The legs D are hinged to the cross-pieces E. Beneath the cross-pieces E, and firmly attached to them, is a long central piece, H, extending beyond the table at one end and mortised for the passage of the lever I, which is fulcrumed at the lower end, *i*, to the beam B, and whose upper end, *i'*, is fitted for connection with a pitman, by which the lever is operated. This pitman should admit of variable stroke as to time and space, to regulate the movement of the table to the state of the "stock" under treatment. The lever has lost motion in the mortise, so that the table is capable of longer movement than the pitman, the momentum of the table carrying it in advance of the positive motion imparted by the lever at the end of each stroke. The lever I is preferably padded with leather or other material, i^2, to take the wear and to prevent violent jars. I show no motive power, because I claim no novelty in this. The lever I may be oscillated by steam, water, wind, animal, or manual power.

H' is a downward extension of H. Said extension may be in one piece with H, or may consist of a separate piece bolted thereto. The ends of the part H' are armed with leather, *h*, or other material, for impact against the standards J and K, whose office is to limit the movement of the table at the end of each stroke. The standards are braced by a solid wall of horizontal timbers, L, extending from one to the other, and the standards are connected together by a stay bolt or bar, M, extending through them.

N is what I term the "dressing-plate." This forms the bottom of the pan or table, and consists of a metal plate fastened at the sides and ends of the bars and side pieces of the table. The central portion of the plate rests on a flexible frame consisting of cross-bars O, attached at the ends to the side pieces of the table and supporting longitudinal bars or strips P, which are attached to the bars O. The frame allows a limited vibration of the dressing-plate. Without the supporting-frame O P the plate N would vibrate like a drum-head on a hoop. Although the vibration is an indispensable condition in the work of ore-dressing, neither extreme is admissible, and to regulate the feature I place in the space between the side rails, F, of the table or pan the auxiliary frame O P, (which is free from the main frame except at the four fastening-points at the ends of the cross-bars O,) and which forms a bed for plate N, and a bearing to which the plate can be made fast without losing the requisite amount of vibration resulting from light blows of the timber H' against the standards J K.

The head of the pan or table has an inclined bottomed box, Q, to receive the valuable product from an ore-separator, which flows from the box through holes *r* in a division, R, between the box Q and the main cavity N of the pan or table. Near to the tail end of the pan is a low partition or ripple-bar, S, secured to the

bottom N of the pan. Between the ripple-bar and the end G is the discharge-hole T, extending through the pan-bottom and connected by a hose or flexible pipe, T′, with the off-flow through U beneath. The blows of the timber H against the standards J and K produce the dressing-wave from the perforated head-plate R. The ripple-bar S at the discharge end of the plate N has the double purpose of giving depth to stock on the plate N and producing a neutralizing-wave, by which a neutral ground or plane is established by ore in its movement from head to foot of the plate N, and is held in check by the ripple-bar wave counteracting in part the force and movement of the head or dressing wave. By this arrangement time is given for the ore to stratify, and a hiding-place given for the precipitated mineral below the rock and earth matter, and the force of the dressing-wave which is spent in carrying off the light or top stratum while the heavier stratum has settled onto the plate N, where it moves toward the head, owing to the force of the blow upon the standard K being more forcible than that upon the standard J. To cause this inequality in the blow the legs are made to incline with their tops toward the head of the table by placing the planks C in the proper relative position to the standards. The comparatively heavy head below carries the precipitated mineral to the head or receiving end of the table and there packs it, to be shoveled up and off, which can be readily done while the table is in motion. This can be done with the finest "slimes" when the depth of stock on the dressing-plate is enough to make room for the precipitated slimes to get below the action of the dressing-wave. This can only be done by a combination of parts that will give a large measure of vibration resulting from a short movement and light blows on the abutments. Without sufficient depth of stock there is no place for mineral below the wave action. Deep stock will pack without great vibration of the dressing-plate. As the head-wave is proportionate to the length of movement, a heavy blow is inadmissible; therefore I have arrived at the before-described construction and combination of parts to produce conditions that are suitable for any grade of ore.

To prevent the rebound of the table from the abutments J and K, I have a brake-arm, V, which extends through a mortise in the timber H, and whose hub V′ is slotted, and embraces a flat standard, W, to which its sides are pressed (with more or less force, as may be needed) by an axial bolt, X, passing through the hub and the standard. It takes three or four tables for the treatment of from ten to fifteen tons of ore in twenty-four hours, and each table should be free for adjustment as to time and space of movement without affecting the movement of the others, each table moving, say, from one to four inches.

I claim as my invention—

1. The combination of frame E F G, plate N, and auxiliary frame O P, arranged and operating substantially as set forth.

2. The combination, with an ore-concentrating pan or table having a metal bottom, of the vibrating frame O P, for the purpose set forth.

ALBION M. ROUSE.

Witnesses:
L. B. MOODY,
GEO. F. FONDA.