

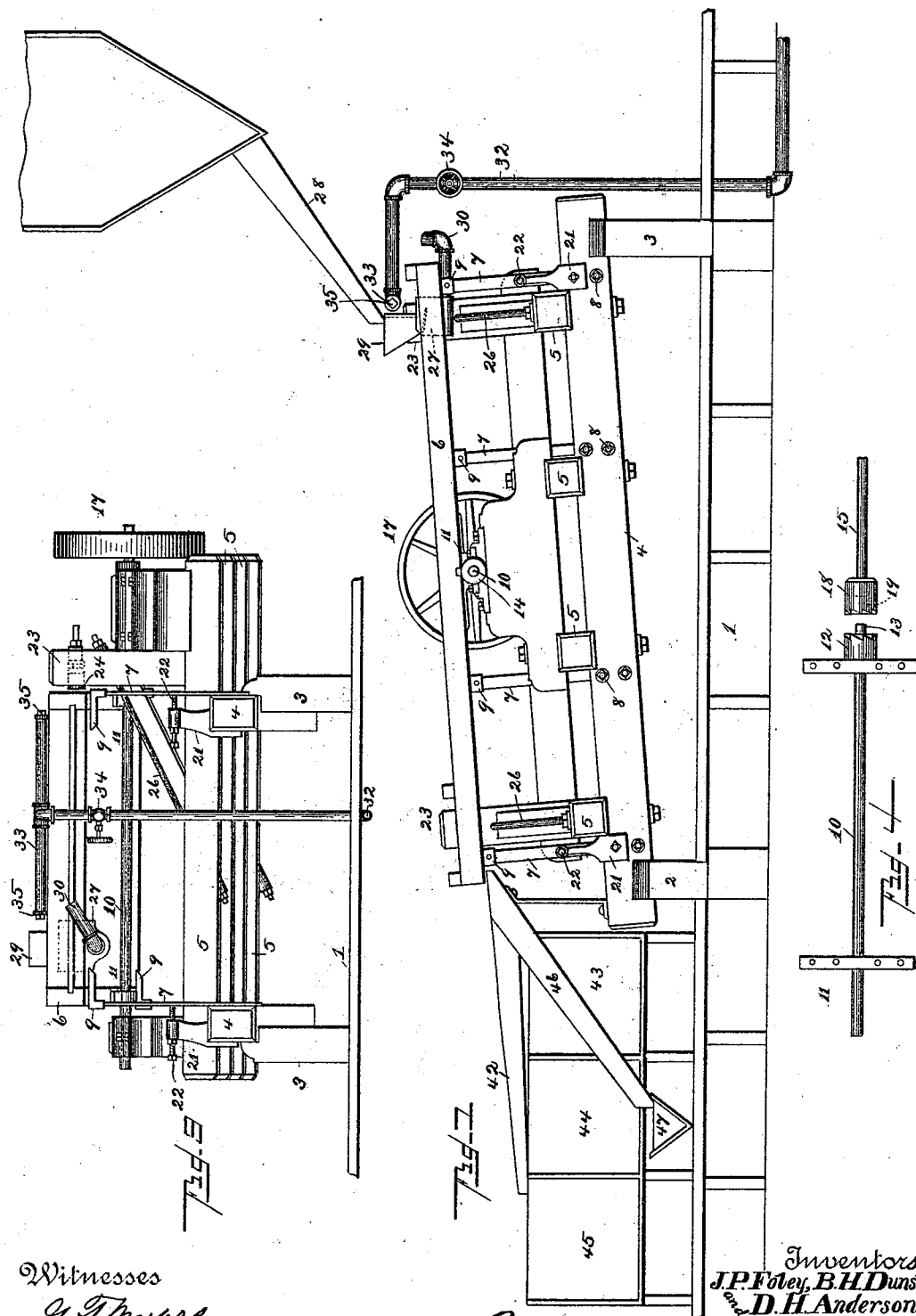
(No Model.)

2 Sheets—Sheet 1.

J. P. FOLEY, B. H. DUNSHEE & D. H. ANDERSON.
ORE SEPARATOR AND CLASSIFIER.

No. 517,799.

Patented Apr. 3, 1894.



Witnesses

E. J. Myers
J. M. Withrow

Inventors
J. P. Foley, B. H. Dunshee
and D. H. Anderson.

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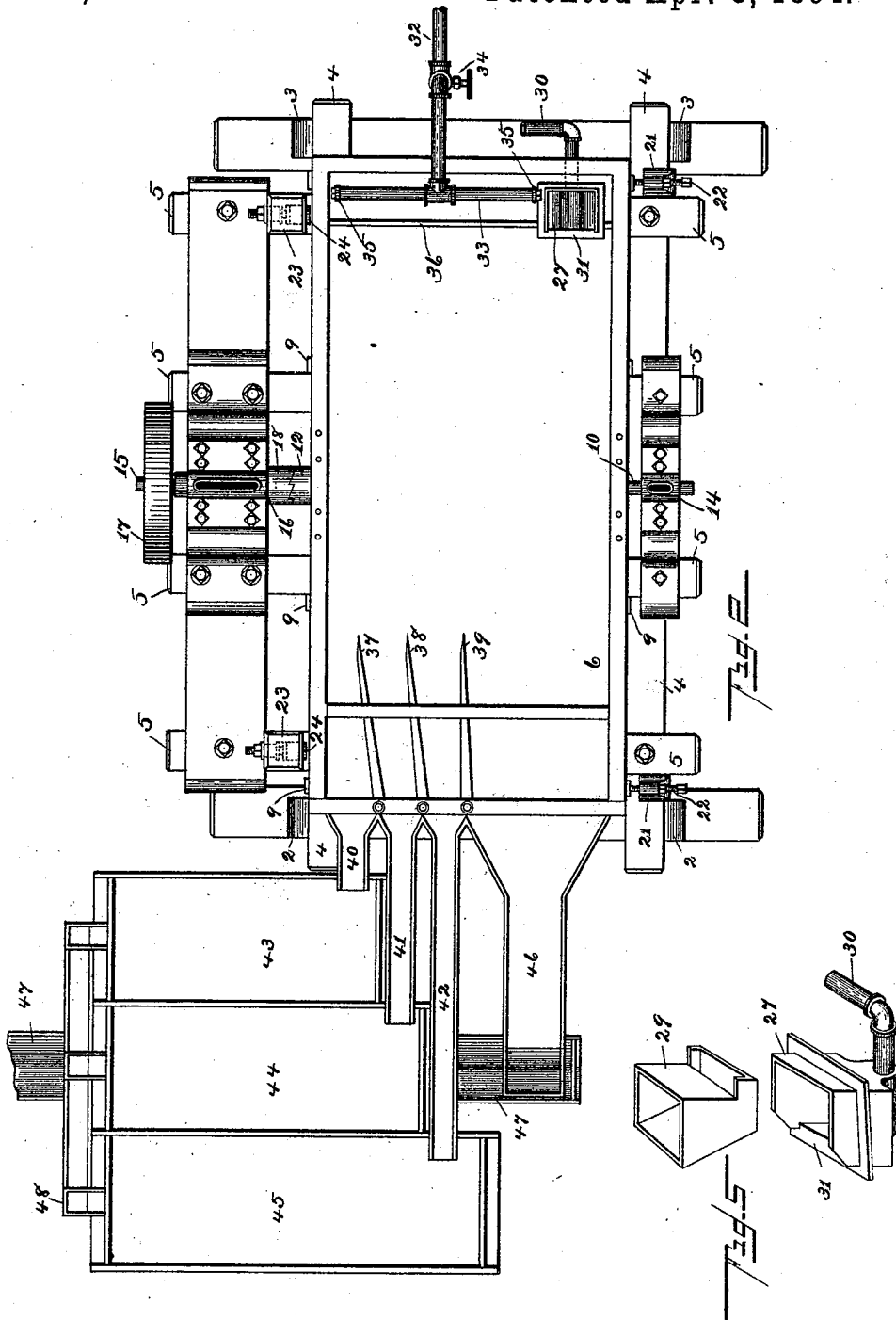
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UNITED STATES PATENT OFFICE.

JOHN P. FOLEY, BERTRAM H. DUNSHEE, AND DAVID H. ANDERSON, OF
PHILLIPSBURG, MONTANA.

ORE SEPARATOR AND CLASSIFIER.

SPECIFICATION forming part of Letters Patent No. 517,799, dated April 3, 1894.

Application filed April 20, 1893. Serial No. 471,099. (No model.)

To all whom it may concern:

Be it known that we, JOHN P. FOLEY, BERTRAM H. DUNSHEE, and DAVID H. ANDERSON, of Phillipsburg, in the county of Deer Lodge, State of Montana, have invented certain new and useful Improvements in Ore Separators and Classifiers, of which the following is a specification, reference being had to the accompanying drawings.

The object of our invention is to produce an improved device for separating and classifying wet ores, and it consists in the combination and arrangement of parts as will be hereinafter specified in detail and succinctly set forth in the appended claims.

In the accompanying drawings: Figure 1 is a side elevation of our machine. Fig. 2 is a top plan view thereof. Fig. 3 is an end elevation; Fig. 4 a plan view of the main shaft; and Fig. 5 is a perspective view of the mercury pot and discharge chute or hopper detached.

Referring to the figures on the drawings: 1 indicates a suitable platform and 2 and 3 uprights thereon. The pair of uprights 2 is preferably shorter than the pair 3, so that the beams 4, which are respectively secured to one pair of the uprights 2 and 3, are inclined, as illustrated.

5 indicates cross beams which are, for example, four in number, securely bolted to the beams 4.

6 indicates a vibrating table or frame, supported as by flat springs 7, bolted at one end, as indicated at 8, to the beams 4 and riveted into sockets 9 secured to the bottom of the vibrating frame. For imparting vibratory movement to the frame 6, we prefer to employ a fixed shaft 10 secured to brackets 11 that are firmly bolted to the bottom of the frame 6. Upon one end of this shaft is securely fastened a cam head 12, beyond which, a short distance, projects the end of the shaft 10, as indicated at 13. The end of the shaft 10, opposite the cam head 12, reciprocates within a box 14 carried upon the cross beams 5.

15 indicates a revoluble shaft carried in suitable bearings 16. On its outer end it carries a pulley 17 secured to it and adapted to impart motion to it, and upon its inner end a cam head 18 corresponding with the head 12,

adapted to fit the same and, when rotated rapidly, to impart quick, successive movements to the shaft 10 and the frame 6 that is carried thereon. The head 18 is provided with a recess 19 within which the end 13 of the shaft 10 fits to insure steadiness of movement to the shaft 10, which is thereby, in effect carried between two fixed bearings.

21 indicates studs secured to the beams 8 and provided with set screws 22 that are adapted to regulate the tensions of the springs 7 and cause them to impart a more or less forcible return movement to the frame 6 after each shock or motion imparted to it by the cam head 18.

23 indicates firm abutment posts adapted to withstand the blow of the table 6. The abutment posts are provided with buffers 24 which may be either air or spring buffers, provided with mechanism for adjusting the degree of their resistance. These buffers receive the direct impact of the table when actuated by the springs 7. The jar of the table is, by the springs 7 and the buffers 24, rendered regular and uniform, the table being held, as it were, between cushions that prevent excessive jar from either side.

26 indicates stay rods passing through each one of the cross beams and one of the abutment posts and adapted to brace it against the shock of the table.

27 indicates a mercury pot fixed into the surface of the table preferably at one corner, as illustrated, and adapted to receive mixed ore and mercury from the quartz mill, as from a chute 28 discharging into a hopper 29. The pot 27 is provided in its lower part with a hinged pipe 30, the end of which being raised or lowered determines the lever of the mercury in the pot. The purpose of the mercury pot is to collect the mercury for use and to discharge from the surface of the mercury the ore which is to be separated and classified. As the commingled mass descends into the pot, the ore overflows the edge 31 of the pot and is discharged upon the table. The table is covered with a suitable smooth covering, as for example, oil cloth or rubber, which is impenetrable to water.

32 indicates a water supply pipe and 33 a water discharge pipe at right angles thereto,

and communicating therewith. A valve 34 controls the flow of water through the pipe 32. The pipe 33 is preferably closed, as by plugs 35, at opposite ends and is provided with a row of perforations on its under side, by which the water is discharged across the upper end of the table. In front of the pipe 33 is a dam rib 36 that causes the water to pass evenly over it and to completely cover the surface of the table below it. The motion of the table tends to move the ore from the mercury pot in the corner toward the other side. The heavier particles are moved farthest by each jolt of the table and in that manner the metals, of different specific gravity, are separated. The entire mass is swept down across the table by the water discharged over the dam 36. The sand and impurities, being lightest, remain nearer the side of the table from which they started.

In the lower end of the table we provide hinged fingers 37, 38 and 39 that are adapted to be adjusted to determine the width of channels between them. The separated and classified ore is discharged through their respective channels and, through conduits 40, 41 and 42, are conveyed to their respective settling troughs 43, 44 and 45. The conduit 46 conveys the impurities into a waste way 47. The settling troughs are provided with sluices 48 for use in the ordinary manner.

We do not confine ourselves to the details of construction herein illustrated and described, but reserve the right to modify and vary the same at will within the scope of our invention.

What we claim is—

1. In an ore separator and classifier, the combination with a frame and vibratory inclined table, of a mercury pot carried near

the upper end of the table, and a water discharge pipe near the same end, substantially as and for the purpose specified.

2. In an ore separator and classifier, the combination with the frame and vibratory inclined table, of a mercury pot near the upper end of the table, a dam rib, and a water discharge pipe adapted to discharge above the rib, substantially as and for the purpose specified.

3. In an ore separator and classifier, the combination with the frame and inclined vibratory table, of a mercury pot near the upper end of the table, and a hinged pipe in the lower end thereof adapted to regulate the level of the mercury in the pot, substantially as and for the purpose specified.

4. In an ore separator and classifier, the combination with the frame, of a table, spring-supported, thereon, longitudinally movable shaft secured to the table, a cam head upon one end of the shaft, a revoluble shaft, and cam head in proximity thereto adapted to vibrate the table, substantially as set forth.

5. In an ore separator and classifier, the combination with the frame, and table, spring-supported, thereon, a cam head near one end of the shaft, a revoluble shaft, a cam head thereon having a recess adapted to receive the projecting end of the shaft upon the table, all co-operating substantially as and for the purpose specified.

In testimony of all which we have hereunto subscribed our names.

JOHN P. FOLEY.

BERTRAM H. DUNSHEE.

DAVID H. ANDERSON.

Witnesses:

FRANK MAXERTON,
JAMES STUART.