

(No Model.)

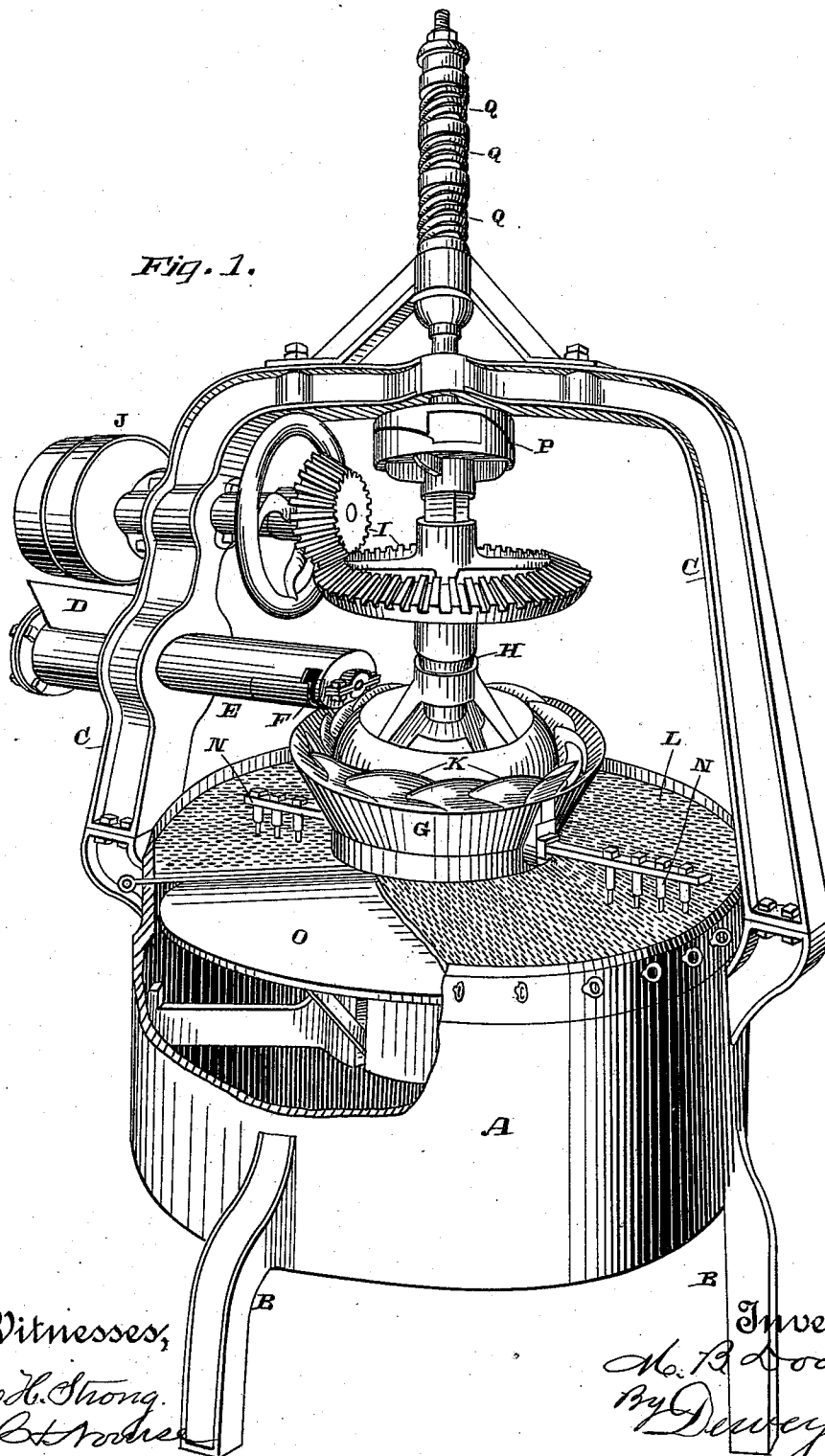
3 Sheets—Sheet 1.

M. B. DODGE.
DRY ORE CONCENTRATOR.

No. 417,476.

Patented Dec. 17, 1889.

Fig. 1.



Witnesses,
Geo. H. Strong.
J. H. Fisher.

Inventor,
M. B. Dodge
By Dewey & Co.
attys

(No Model.)

3 Sheets—Sheet 2.

M. B. DODGE.
DRY ORE CONCENTRATOR.

No. 417,476.

Patented Dec. 17, 1889.

Fig. 2.

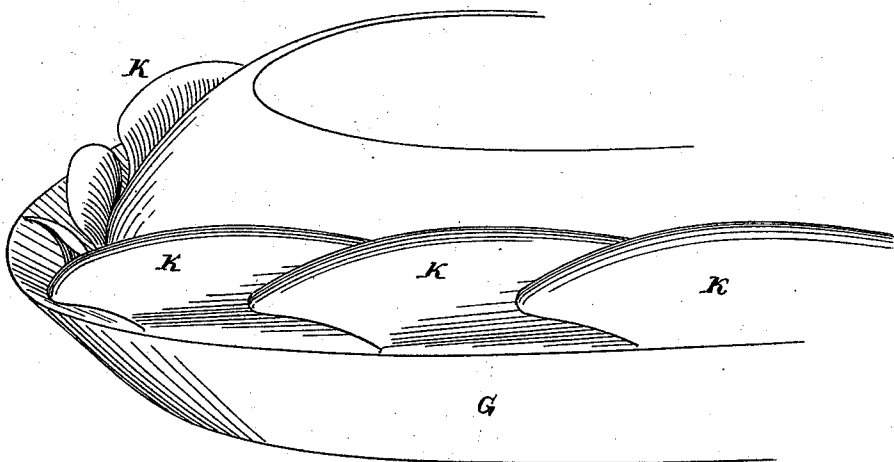
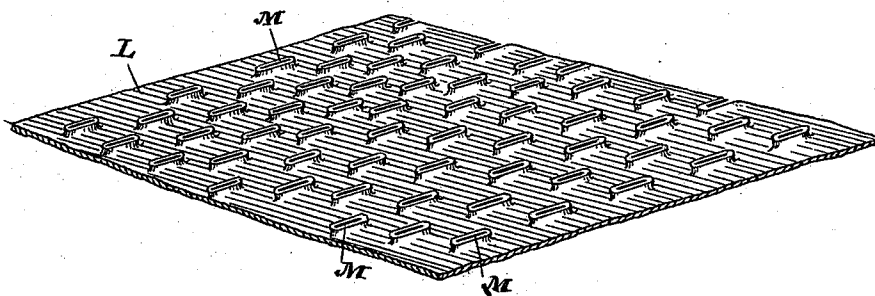


Fig. 3.



Witnesses,
Geo. H. Strong
J. H. House

Inventor,
M. B. Dodge
By Dewey & Co. atty

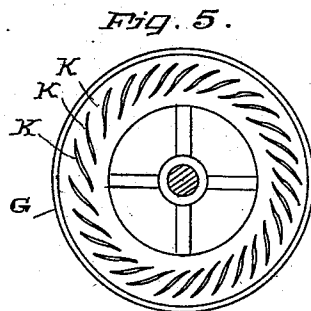
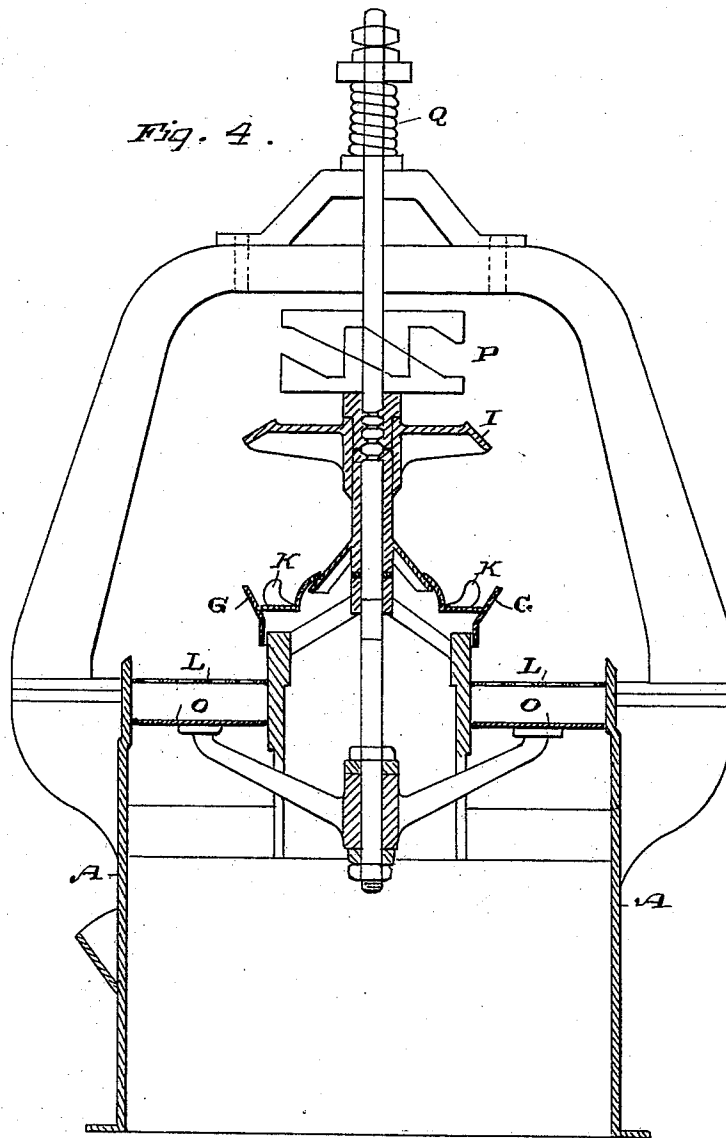
(No Model.)

3 Sheets—Sheet 3.

M. B. DODGE.
DRY ORE CONCENTRATOR.

No. 417,476.

Patented Dec. 17, 1889.



Witnesses,
Geo. H. Strong,
J. H. Munn

Inventor,
Miles B. Dodge
By Dewey & Co.
Atty

UNITED STATES PATENT OFFICE.

MILES B. DODGE, OF SAN FRANCISCO, CALIFORNIA.

DRY ORE CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 417,476, dated December 17, 1889.

Application filed July 6, 1888. Serial No. 279,207. (No model.)

To all whom it may concern:

Be it known that I, MILES B. DODGE, of the city and county of San Francisco, State of California, have invented an Improvement in Dry Ore Concentrators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in a machine for separating valuable heavy mineral or other substances from the lighter and worthless gangue.

My present invention is an improvement upon one for which a patent was issued to me June 19, 1883, No. 279,640; and it consists in the construction and combination of devices which I shall hereinafter fully describe and claim.

Figure 1 is a perspective view of my machine. Fig. 2 is an enlarged view of the distributor. Fig. 3 is a view of the section of the separating-surface. Fig. 4 is a central sectional view. Fig. 5 is a plan view of the hopper.

As concentrated ores must be shipped, smelted, or roasted in furnaces, it is of great importance that the ore is in a dry state instead of wet, and by pulverizing dry a much higher percentage can be obtained out of the ore than by a wet crushing. It is also important where water is scarce.

A is a cylinder, having legs B or other suitable support, and a yoke or frame C is bolted to its sides and extends in the form of an arch over the top, so as to provide sufficient support for the driving-shafts and feed mechanism. The ore is fed into a hopper D, passing thence into a horizontal tube E, within which a screw is caused to rotate by means of a friction-clutch. (Not here shown, but fully described in my former patent.) This screw causes the ore to advance until it reaches the slot F at the inner end of the tube, from which it is discharged into the central hopper G. This hopper is secured to the vertical shaft H, and is revolved with it by means of a bevel-gearing (shown at I) driven by a belt passing around the pulley J. Within the hopper G are fixed a series of curved plates or blades K. These plates overlap each other in such a manner that the ore which is delivered into the interior of the hopper G, falling inside these plates, is gradually dis-

charged between them and escapes over the edges of the hopper, falling upon the horizontal screen-surface L, which is fixed across the upper part of the cylindrical tub or pan A. The upper edges of the tub A extend slightly above the surface of the screen, so that the screen-surface may be covered with material which is discharged upon it through the hopper G, and when it is full the material upon the top will escape over the upper edges of the pan A and be discharged upon the outside, either into an inclined trough, as shown in my former patent, or it may simply fall upon the floor around the tub and be removed from time to time.

The screen L is peculiarly constructed, as shown in Fig. 3. Long narrow slots M are punched in this screen, and in punching them the metal is bent upward, as plainly shown, so that the holes are about a sixteenth of an inch above the surface of L. Between, on, and around these holes I dispose a quantity of heavy mineral crushed coarsely enough so that it will not pass through the slots M, and at the same time it forms a surface upon which the material discharged from the hopper G is received. This mineral, being heavier than the gangue, will prevent the latter from settling to the bottom or passing through the slots M. Stirrers or arms N are fixed to the side of the hopper G, so as to be rotated with it, and these stirrers assist in distributing and leveling the material which is discharged upon the surface L.

Beneath the surface L and within the cylindrical tub or pan A is a piston O, which is connected with a central vertical shaft, and by means of cams shown at P and springs at Q this shaft is caused to rise and fall while it is being rotated by the gears I, and it produces a sharp blast of air at each upward movement, which air, passing through the holes M, agitates the material upon the surface and causes the lighter gangue to rise to the top, while the heavier mineral settles to the bottom, and, being pulverized fine enough, it will gradually pass through the holes M into the interior of the pan A. The lighter material upon the surface will flow over the edges of the pan A, as before described, and be discharged.

The details of the various operating mech-

anism of this device are fully described in my former patent alluded to, and may be employed in the same manner in the present device. Not forming any part of my invention,
5 I have not described the same.

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

10 An improved ore-concentrator consisting of the pan or tub, a reciprocating piston therein, the screen-surface in the upper part of the

tub, having slotted projections, the centrally-placed feed-hopper and means for rotating the same, and the curved overlapping distributors within the hopper and operating
15 substantially as and for the purpose described.

In witness whereof I have hereunto set my hand.

MILES B. DODGE.

Witnesses:

JOHN E. HAMILL,

JAMES SMILEY.