2 Sheets—Sheet 1.

P. PLANT.

Ore-Separator.

No. 207,622. Patented Sept. 3, 1878.

Fig. 1.

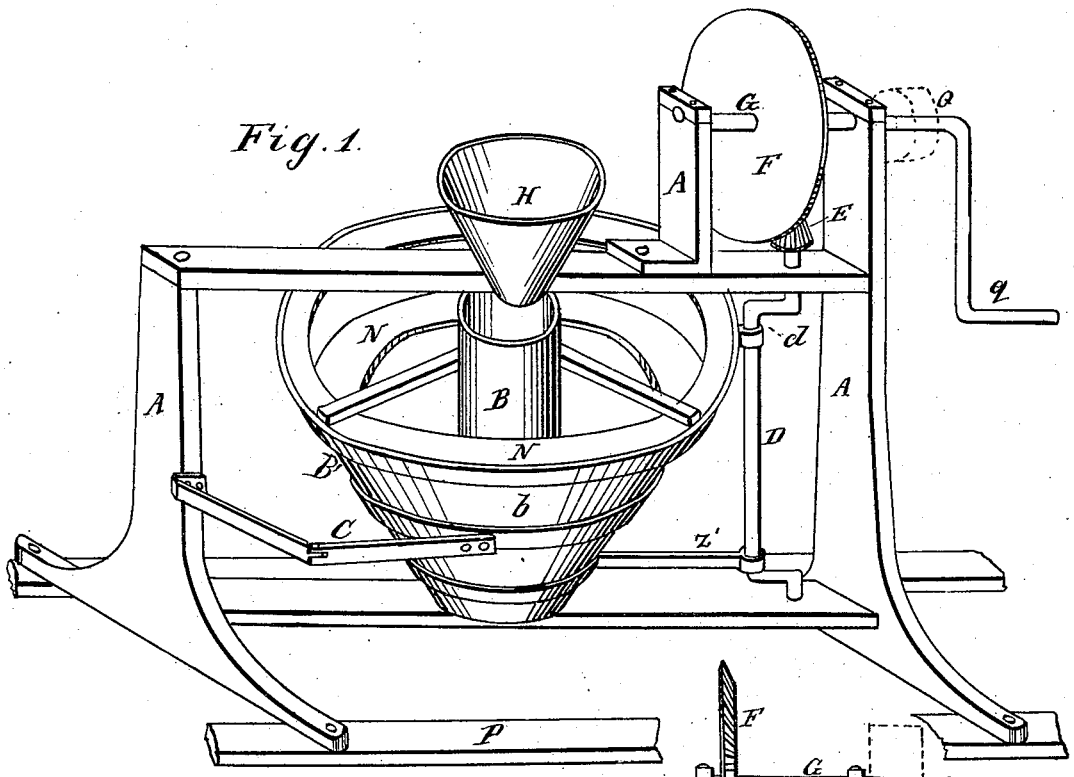
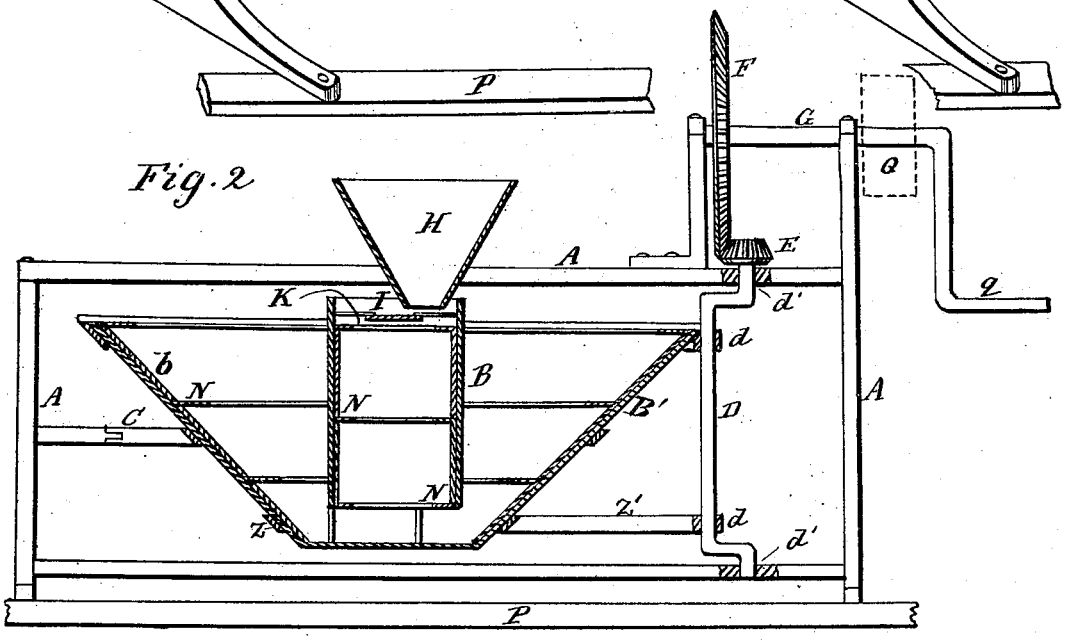


Fig. 2.



Witnesses
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John Wagner

Inventor
Paschal Plant

2 Sheets—Sheet 2.

P. PLANT.

Ore-Separator.

No. 207,622. Patented Sept. 3, 1878.

Fig. 9.

Fig 3.

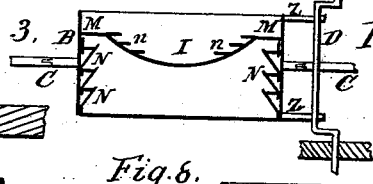


Fig. 4.

Fig. 8.

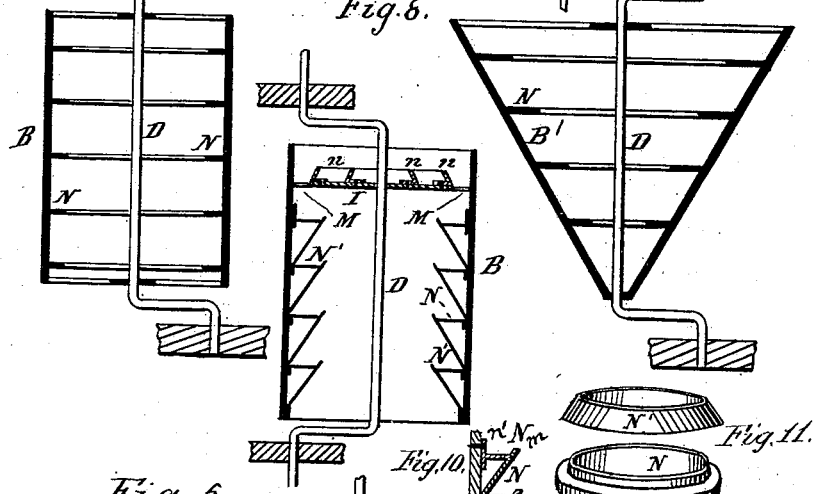


Fig. 5.

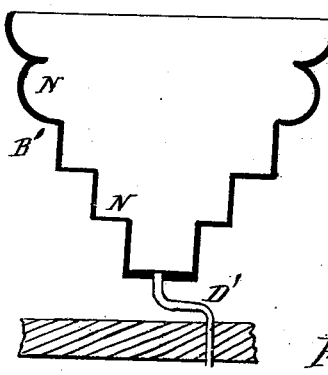


Fig. 10.

Fig. 11.

Fig. 6.

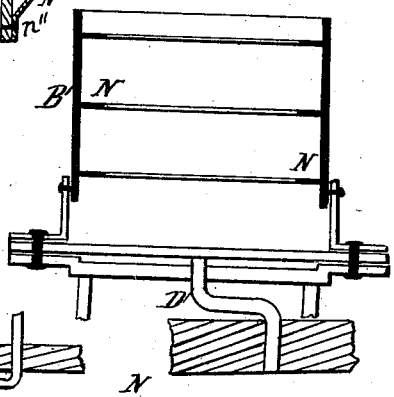
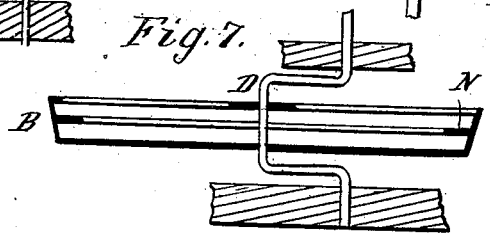


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

PASCHAL PLANT, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN ORE-SEPARATORS.

Specification forming part of Letters Patent No. **207,622**, dated September 3, 1878; application filed March 11, 1878.

To all whom it may concern:

Be it known that I, PASCHAL PLANT, of Washington, District of Columbia, have invented certain new and useful Improvements in Gold-Separators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved apparatus; Fig. 2, a vertical section, showing the gear mechanism. Figs. 3, 4, 5, 6, and 7 show modified forms of the cylinder or basin and means of operating the same. Figs. 8 and 9 show the cylinder, with modified forms of the distributer; and Figs. 10 and 11 are details, showing the construction of the ribs or shelves.

The object of my invention is to furnish an apparatus by which the fine particles of metal may be separated from auriferous and argentiferous sand, or earth, or pulverized quartz, more perfectly and at less cost and less labor than heretofore, which is at once cheap, portable, durable, and easily operated, and which may be used either with or without water.

The nature of my invention is to effect the separation of the particles of precious metal from the sand or earth with which they are mingled by centrifugal force; and it consists in imparting to the sand, earth, &c., a violent whirling or sliding motion around the inside of a suitable cylinder, basin, or pan, or upon a plate or table having suitable projections or shelves, to which is given, by any suitable means or mechanism, a circular swinging motion.

The simplest and cheapest construction is shown in Fig. 3, consisting of the cylinder B, open at both ends, and supported loosely upon the bent shaft D. This cylinder is provided upon the inside with the projections, which form annular pockets or shelves N. These shelves may be removable, so that when one set becomes worn they may be replaced by new ones.

The form of removable shelves which I prefer is shown in Figs. 10 and 11, having the upwardly-projecting lip *m* and the upper and lower shelves, with the flanges *n' n''*, by which they may be bolted to the cylinder, and thus, by means of these projections, secure the whole series within the cylinder. The cylinder is prevented from rotating upon the shaft by the stay or arm C. (Fully shown in Fig. 1.)

I, Figs. 2, 8, and 9, represents distributers, supported within the cylinder by arms M, so as to leave an annular space between the edge of the distributer and the inside of the cylinder. This distributer may be a plane disk, as shown in Fig. 1, or it may be plane, with the projections *n n* upon its upper surface, as shown in Fig. 8; or the distributer may be disk-shaped, with or without shelves or projections, as shown in Fig. 9.

Mechanism substantially such as shown in Figs. 1 and 2, to be hereinafter described, is employed to rotate the shaft. Rapid revolving swinging motion will thus be imparted to the cylinder. The ore, being fed through a suitable hopper, H, upon the distributer I, is first thrown upon the first or uppermost shelf, and, by the swinging motion of the cylinder, will be violently thrown or slid around the inside thereof upon this shelf, making a complete circuit once for every revolution of the shaft. The particles of greatest specific gravity being most affected by the centrifugal force thus obtained will hug the sides of the cylinder, and when this shelf has become full, the ore being continually fed, will crowd the lighter portions over the edge of this shelf, causing them to fall to the shelf below, where they are again thrown around the cylinder. When this second shelf becomes full the worthless portions will again be precipitated to the next lower shelf, and so on in succession through the cylinder, the worthless matter being discharged at the bottom having been subjected to the centrifugal action as many times as there are shelves in the cylinder, leaving the valuable portion upon the shelves, from whence it may be collected.

In the devices shown in Figs. 4, 5, and 7 the discharge is not at the bottom, as above described; but the material is fed in at the top, and discharged at the top also. In these devices there is no distributer. The ore is thrown within the cylinder, it being of conical shape. The rotary motion causes the ore to rise from shelf to shelf, and is discharged at the top, leaving, as before, the valuable portions upon the shelves.

The devices shown in Figs. 1 and 2 combine these two operations. The cylinder B, with its shelves N and distributer I, are supported by arms M within the basin B′. The bent shaft D, which supports the two cylinders, is journaled at the top and bottom in frame-work A. To the top of the shaft is secured the beveled pinion E, which meshes into the gear F on the end of the horizontal shaft G. This shaft is also supported by the frame-work A, and a crank, *q*, and a pulley, Q, are provided, by which to revolve the shaft and communicate motion to the cylinders. The stay or arm C, composed of an elbow-joint, hinged to the frame-work and the cylinder, prevents the rotation of the cylinder upon the shaft. In this device the ore, being fed upon the distributer, traverses the shelves of the plain cylinder B and falls upon the bottom of the conical cylinder or basin B′, from whence it rises from shelf to shelf until thrown out over the upper edge.

It is obvious that the same motion may be obtained by attaching the cylinder to the bent crank outside of the cylinder, as shown in Figs. 1, 2, and 9, by means of the rings *z* and arms *z′*, or, as in Figs. 5 and 6, with the bent support D′ at the bottom and the crank D″ at the upper edge, to which the gear will be attached.

The cylinders may be made of any suitable material, such as sheet-iron or sheet-copper; and the shelves may be made removable, so that when one set becomes worn a new set may be supplied.

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

1. The cylinder provided with the annular chambers or pockets, in combination with mechanism for imparting to the cylinder a circular swinging motion, substantially as and for the purpose specified.

2. The cylinder provided with the shelves, in combination with the bent shaft and the arm or stay to prevent the rotation of the cylinder upon the shaft, substantially as described.

3. The circular swinging cylinder provided with the shelves or projections, in combination with the distributer I, substantially as shown and described.

4. The circular swinging cylinder, in combination with removable shelves, having the lip *m* and the projection *n′*, substantially as shown.

5. The cylinder B, supported in basin B′, in combination with the bent crank, as and for the purpose set forth.

6. The basin B′, provided with the annular depressions or pockets, in combination with the bent crank D and arm or stay C, as and for the purpose set forth.

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