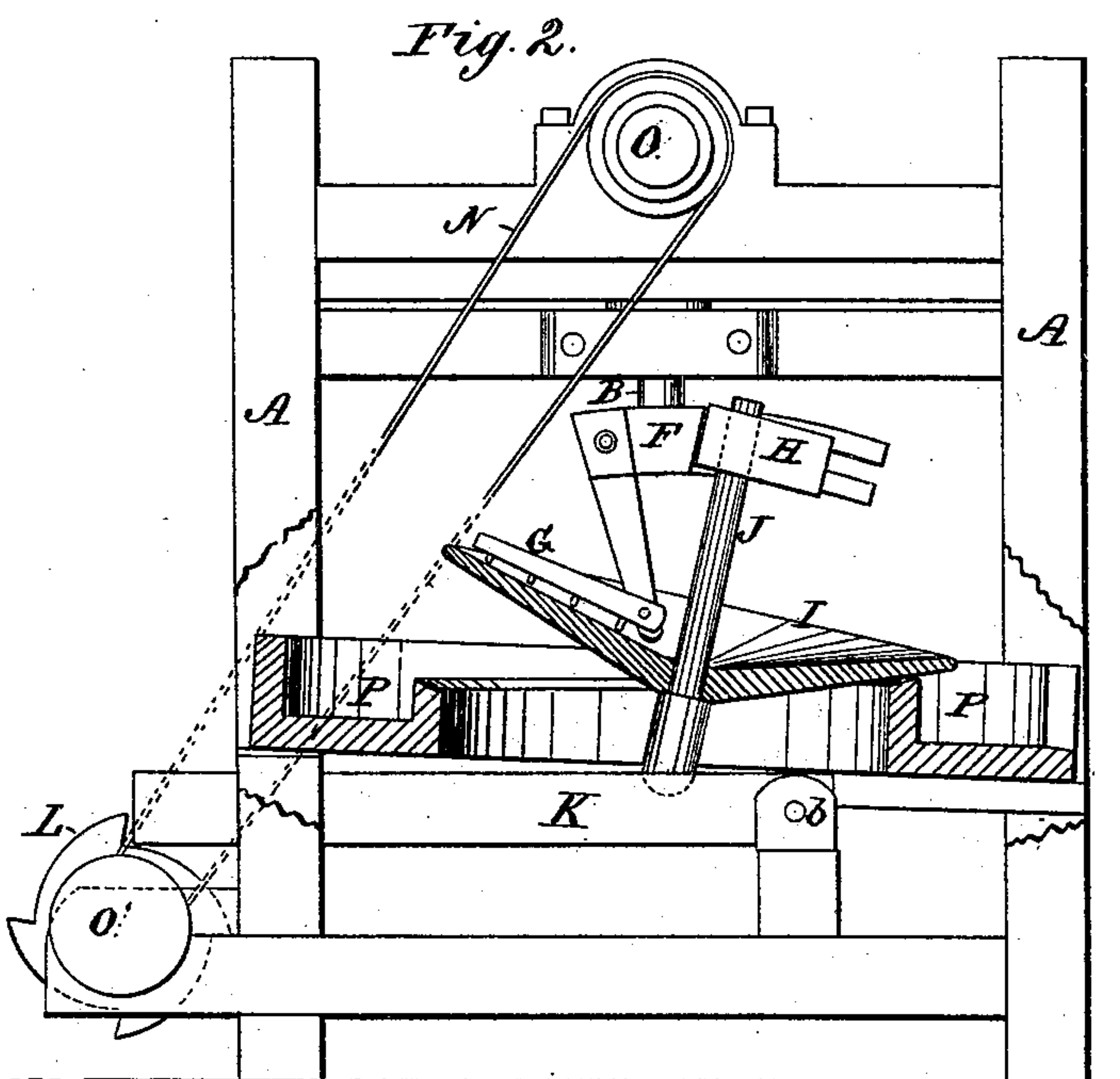
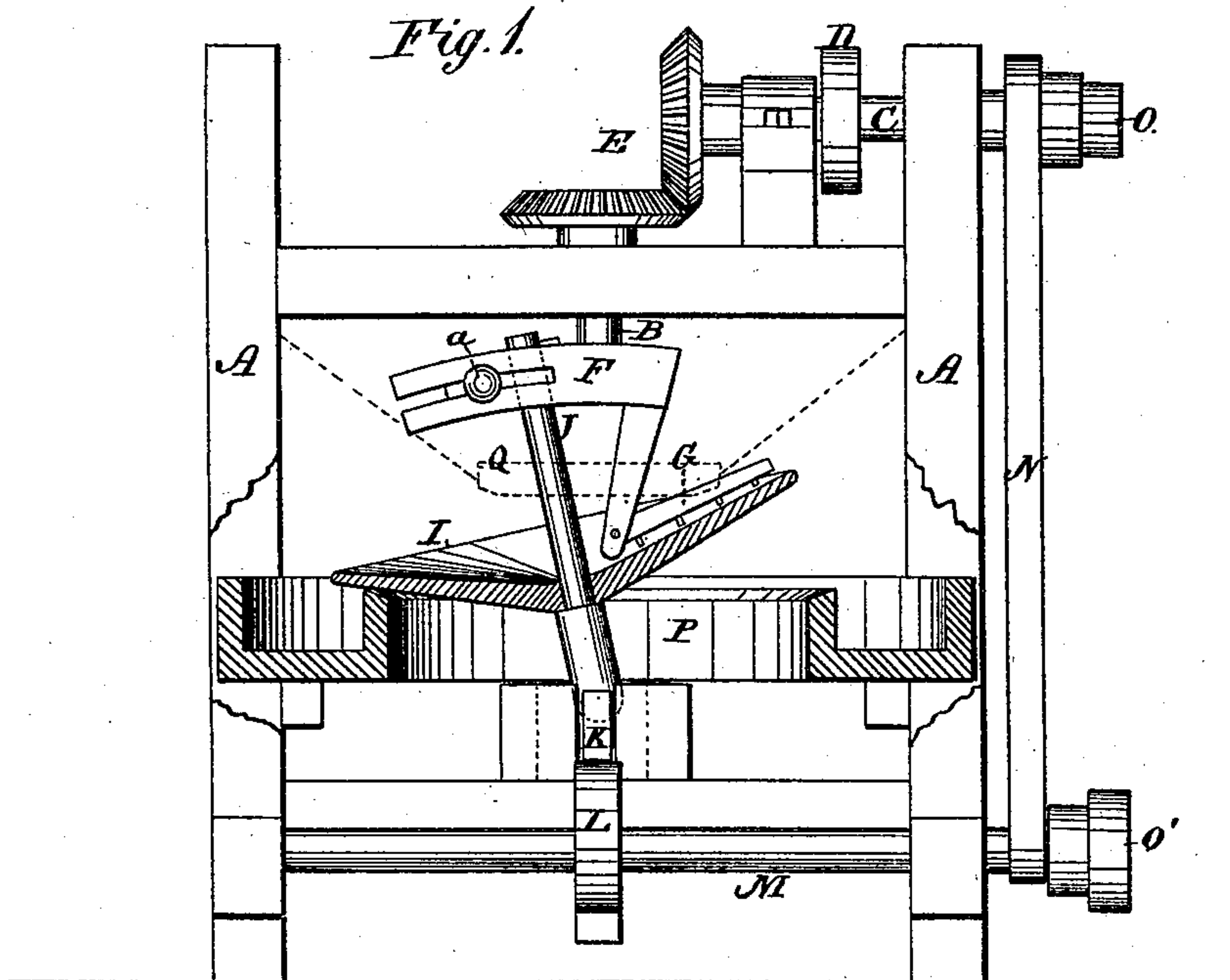


D. D. HENDRICK.
ORE-WASHER.

No. 190,585.

Patented May 8, 1877.



WITNESSES:

W. W. Hollingsworth
John C. Kemmer

INVENTOR:

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ATTORNEYS.

UNITED STATES PATENT OFFICE

DEXTER D. HENDRICK, OF CALUMET, MICHIGAN, ASSIGNOR OF ONE-HALF
HIS RIGHT TO HORACE B. ROGERS, OF SAME PLACE.

IMPROVEMENT IN ORE-WASHERS.

Specification forming part of Letters Patent No. **190,585**, dated May 8, 1877; application filed
March 26, 1877.

To all whom it may concern:

Be it known that I, DEXTER D. HENDRICK, of Calumet, in the county of Houghton and State of Michigan, have invented a new and Improved Vanning Process Mineral-Dresser; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figures 1 and 2 are elevations, partly in section, from different sides of the machine, the views being taken at right angles to each other.

My invention relates to an improved vanning process mineral-dresser, or a machine for dressing minerals which operates upon the principle of separating the rich ore from the lighter earthy matter by reason of their different specific gravities when the pulverized material is agitated with water, the rich ore gravitating to the bottom, while the lighter earthy matter is thrown off at the top.

The machine consists in a receiving-pan, which, by a tilting motion, imparts to its contents a rotary motion without revolving upon its own axis, which pan is provided with means for regulating its degree of inclination or tilt, and is supported upon or stepped in a jigger-lever, which is alternately lifted and allowed to drop by means of a cam or wiper-wheel, so as to further agitate the contents of the pan, a revolving rake being employed in connection with the pan, which is always upon the high side of said pan, as hereinafter more fully described.

In the drawing, A represents the framework of the machine, in which is journaled a short vertical shaft, B, and a horizontal shaft, C, which latter is provided with a driving-pulley, D, and imparts motion to the vertical shaft through the bevel-gear wheels E. Upon the lower end of shaft B is rigidly attached a cross-head, F, which, upon one side of the shaft, carries a downwardly-projecting arm, to which a rake, G, is pivoted in such a manner as to rest radially upon the high side of the pan. The other side of the cross-head is extended and slotted or bifurcated to permit

the adjustment of the box H, which is held to said bifurcated extension of the cross-head by means of a set-screw, *a*. I is the receiving-pan, which is but slightly dished, and made in the form of a very obtuse cone. This pan is rigidly attached to its shaft J, whose lower end is "stepped" in a bearing in the jigger-lever K, and whose upper end passes through a perforation in the box H. The jigger-lever is pivoted at one end, *b*, to the main frame, and at the other rests upon a cam or wiper wheel, L, carried by a shaft, M, which latter is rotated by means of a belt, N, and cone-pulleys O O', all of which are driven by the main driving-pulley D. P is the waste launder, which is constructed in the form of an annular trough, and is arranged about the edge of the receiving-pan to catch and carry away the waste and overflow from the said receiving-pan. Q is the feed or distributing pan, (shown in dotted lines,) which is arranged about the shaft of the receiving-pan, and to which the material is fed and thence delivered to the receiving-pan.

In operating the machine as thus described, a sufficient quantity of water and the pulverized material is admitted to the receiving-pan, and, the device being set in motion through the driving-pulley D, it will be seen that the upper end of the shaft of the receiving-pan, and also the rake, are rotated, which has the effect to continuously tilt the pan in a given direction through a series of constantly-changing planes, which movement, while it does not rotate the pan itself, nevertheless produces a rotary current in the pan, which, together with the up and down movement of the pan from the jigger-lever and the action of the rotary rake, serves to wash and agitate the materials, and to carry the light earthy matter over the edge of the pan into the waste launder, while the heavier particles of the rich ore gravitate to the bottom of the pan, as in the vanning process, whence they are removed as fast as they accumulate in sufficient quantities.

In adjusting the tilt of the pan, this may be effected by moving the box H in the slot of the cross-head and fixing its position by means of the set-screw, and for this purpose

the cross-head F is preferably formed at its slotted end in the arc of a circle, having the shaft of the pan as its radius.

As the inclination of the pan is altered by the adjustment just described, the pivoted rake automatically adjusts itself to said change in inclination. It will be observed also that in all parts of its revolution the rake is always on the high side of the tilting frame, in which position it serves to stir and uniformly distribute the pasty mass without the objection of throwing out portions of the rich ore, which might exist if the rake passed through the water upon the low side of the pan.

By extending the shaft of the pan through its box H, or locating it in a bearing permitting longitudinal movement, it will be seen that I am enabled to secure the compound movement of the pan, *i. e.*, the tilting and the up and down or jigger movement, without the interference of the one with the other.

Having thus described my invention, what I claim as new is—

1. The receiving-pan, arranged to operate with a continuously-tilting movement combined with an up and down movement, substantially as described.

2. The combination, with the continuously-

tilting pan, of a rake or stirrer, arranged to be always upon the high side of said pan, as and for the purpose set forth.

3. The combination, with the pan I, its shaft J, and the cross-head F, attached to the driving-shaft, of the box H, made adjustable in guideways in the cross-head to increase or diminish the tilt of the pan, as described.

4. The combination, with the pan I, its shaft J, and the cross-head attached to and rotated by the driving-shaft, of the adjustable box H, and the adjustable rake G, as and for the purpose described.

5. The combination of the wiper-wheel L, jigger-lever K, the pan I, having its shaft stepped in said lever, and the rotating cross-head F, carrying the upper end of the pan-shaft upon one side of its axis, and a rake upon the other, substantially as described, and for the purpose set forth.

The above specification of my invention signed by me this 12th day of March, A. D. 1877.

DEXTER D. HENDRICK.

Witnesses:

FRED. MACKENZIE,
JAMES GRIERSON.