(No Model.)

A. M. ROUSE.

Ore Separator.

No. 241,239. Patented May 10, 1881.

Fig. 1.

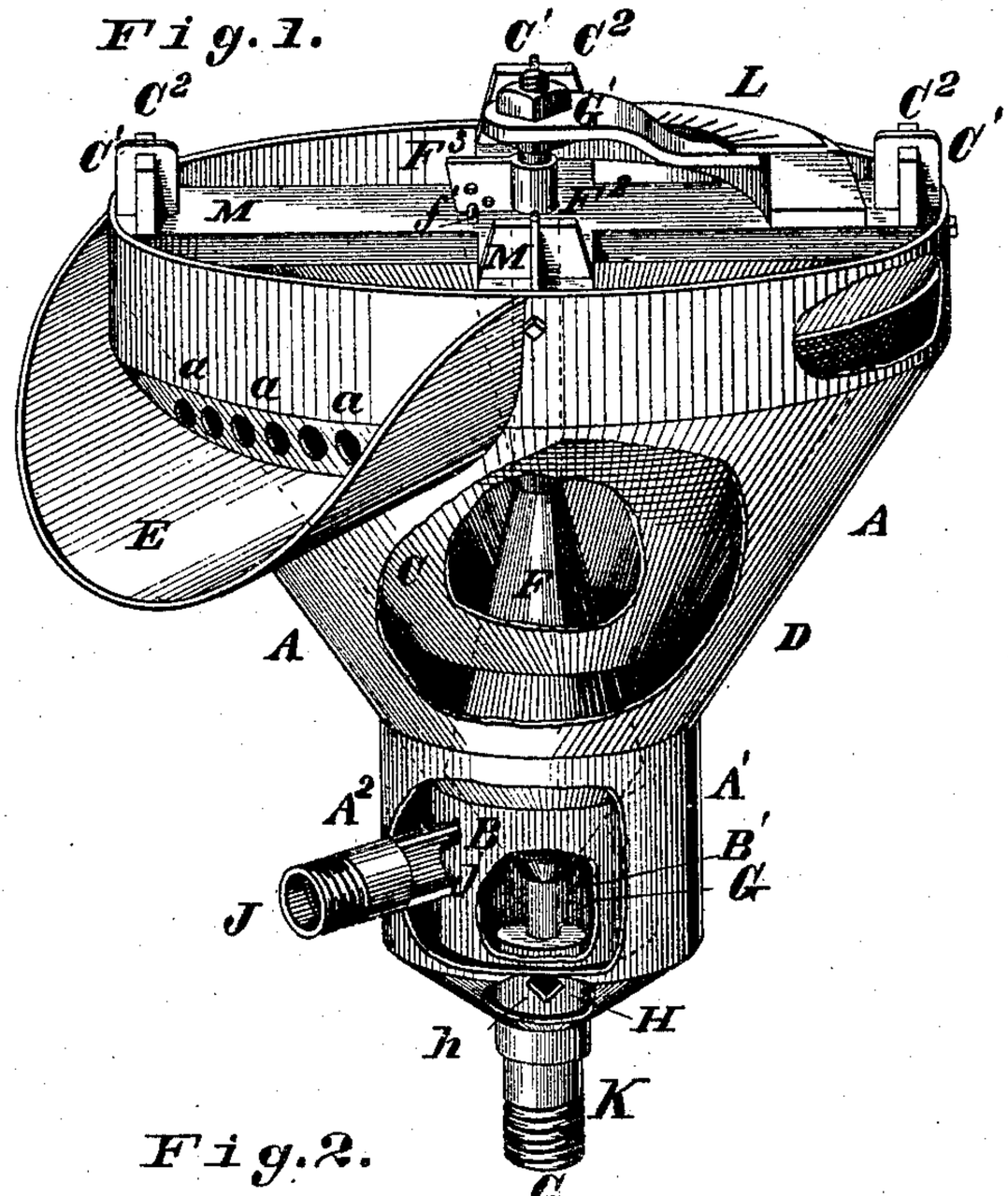
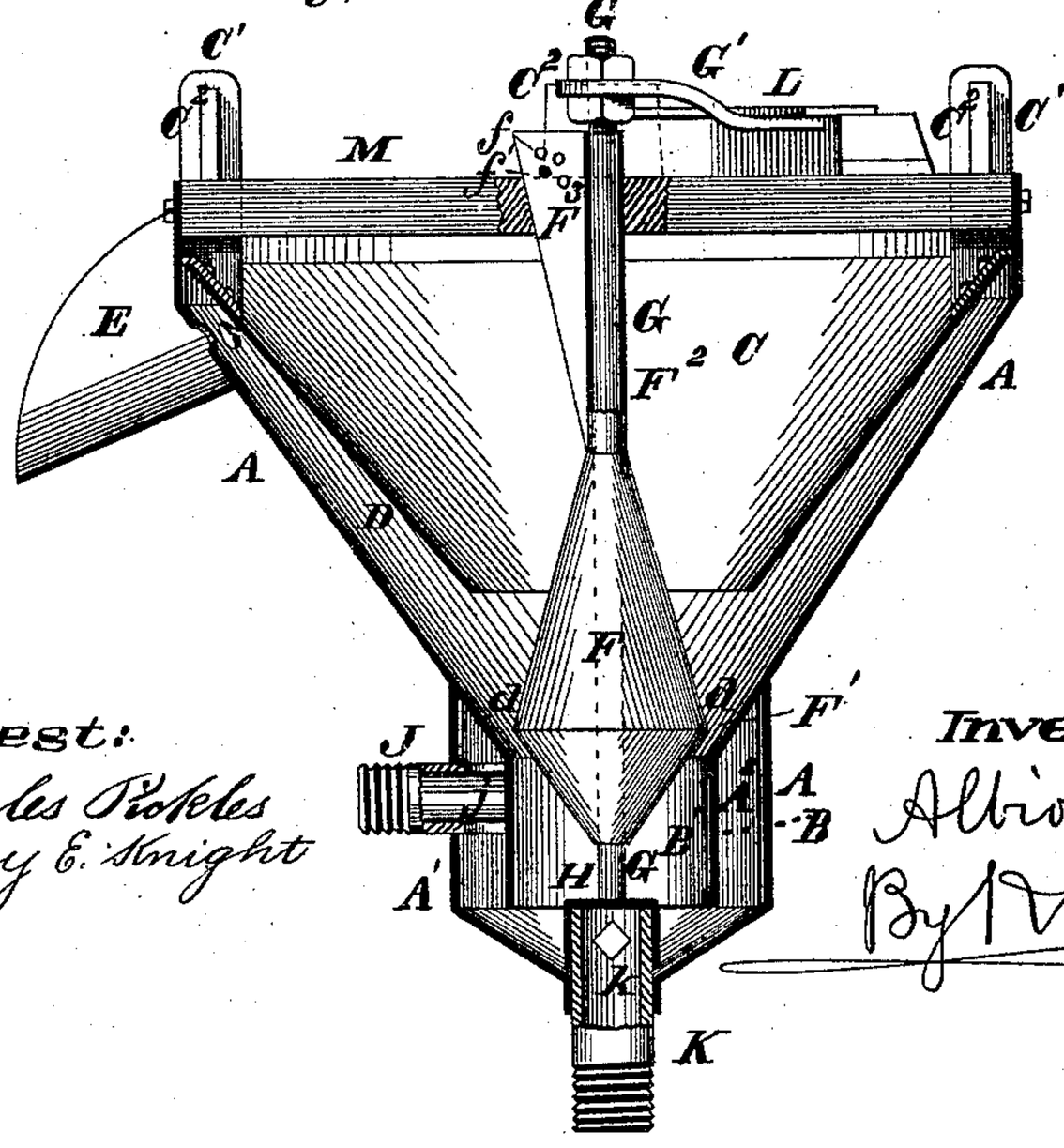


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALBION M. ROUSE, OF BOULDER, COLORADO.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 241,239, 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 Ore-Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

This improvement consists in the construction of the machine for separating reduced ores into grades of size and gravity, each grade to be concentrated by a suitable machine.

In the drawings, Figure 1 is a perspective view, with parts broken away to show the interior. Fig. 2 is an axial section.

A is the outer casing of the apparatus, having a funnel-shaped form, and ending at bottom in a cylindrical portion, B, open at bottom to admit the upward flow of water within it and the descent of the heavier portions of the ore under treatment.

C is an inner conical case or funnel-shaped hopper or box, concentrically placed in the outer case, A, so as to leave an annular space, D, between the two, made preferably to narrow or contract upwardly. Through this space D ascends the lighter portion of the ore, and escapes through orifice or orifices *a* in the case A into a discharge-spout, E. The stock-chamber or ore-box C may be kept nearly full of ore "slime"—that is to say, disintegrated ore mixed with water—which flows out through the bottom of the hopper C into the lower part of the space D.

The inner side of the case A, just above the cylindrical portion B, constitutes the seat F′ of the jet-valve F. This valve is adjustable vertically upon the rod G of valve H, and has a hollow stem, F^2, which forms the upper bearing of the valve-rod G. The jet-valve limits the size of the annular passage *d*, through which the heavier portions of the ore enter the chamber B′ within the cylinder B, where it is subjected to the sorting action of the water ascending in the chamber B′. The water enters the bottom of the chamber B′ from an annular clear-water chamber, A^2, with an extension, A′, of the case. The water enters the annular chamber A^2 through a side opening, *j*, in the supply-pipe J. It will be seen that the water enters the annular chamber A^2 in a tangential direction, and thus will impart to the water in the chamber a revolutionary motion, supplying the water equally to the chamber B′ upon all sides, and sweeping around the heavy ore-deposit to the discharge-orifices *h* in the inverted cup or cap valve H. The valve H fits as a cap over the top of the discharge-pipe K. The pipe K has orifices *k*, that are in conjunction with the orifices *h* in the valve H when the machine is in operation, or which may be closed by turning the valve until the orifices *h* and *k* are not in connection. By adjusting the valve the discharge-orifices may be regulated in size to allow the passage of the proper quantity of material. The valve-rod is turned by means of an arm, G′, turning beneath a scale-plate, L, whose marks indicate the position of the valve. The plate L is supported on a crucial frame-work, M, which is fixed to the case A, and which gives bearing to the hollow stem F^2 of the jet-valve. The hollow stem has a wing-plate, F^3, with a number of pin-holes, *f*, through any one of which a pin, *f′*, may be passed to sustain the jet-valve in any desired position, the pin bearing upon the top of the frame M.

The stock box or hopper C is supported by means of brackets C′, which extend up through mortises in the frame, and are mortised for the passage of gage-blocks C^2, whose lower edges rest upon the frame. Thus by changing the depth of the blocks the box C can be vertically adjusted in the case A, as may be required, to limit the size of the annular space D and the passage between the lower edge of the box and double conical jet-valve F.

The operation is as follows: Ore and water are admitted into the stock-chamber C, and clear water admitted through pipe J into space A^2. Valve H is set to discharge less water than is admitted at J; jet-valve F F′ is set to give the required velocity through space *d*. By this arrangement of parts all the water admitted into the stock-box C and the surplus admitted through J over that escaping by valve H must pass up and out through the space D. Therefore the stock-box must be adjusted to give a velocity in space D that will compare with the velocity in space *d*. Particles of ore having greater gravity than the force of the water in space *d* will pass down and out through open-

ings *h* and *k* in the valve H and nipple or pipe K, and from thence to the concentrators or dressers.

This machine has the following great practical advantages, viz: First, its great range of changes to suit various qualities of ore; second, its compactness, as two separators fifteen inches in diameter will separate ten tons of ore in twenty-four hours into grades; third, its great cheapness as compared with its capacity.

I claim as my invention—

1. The combination, with case A, induction-pipe J, and valve H, of the adjustable ore box or chamber C, for the purpose set forth.

2. The case A, having downward extensions A′ and B, valve H, outlet-pipe K, and induction-pipe J, with side openings, *j*, into chamber A^2, substantially as set forth.

3. The combination, in an ore-separator, of the outer case, A, with open-bottom extension B and close-bottom extension A′, valve H, discharge-pipe K, induction-pipe J, adjustable jet-valve F, and adjustable ore-box C, substantially as set forth.

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Witnesses:
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GEO. F. FONDA.