

(No Model.)

J. C. WISWELL.

MACHINE FOR WASHING AND CONCENTRATING ORES.

No. 300,426.

Patented June 17, 1884.

FIG. 1.

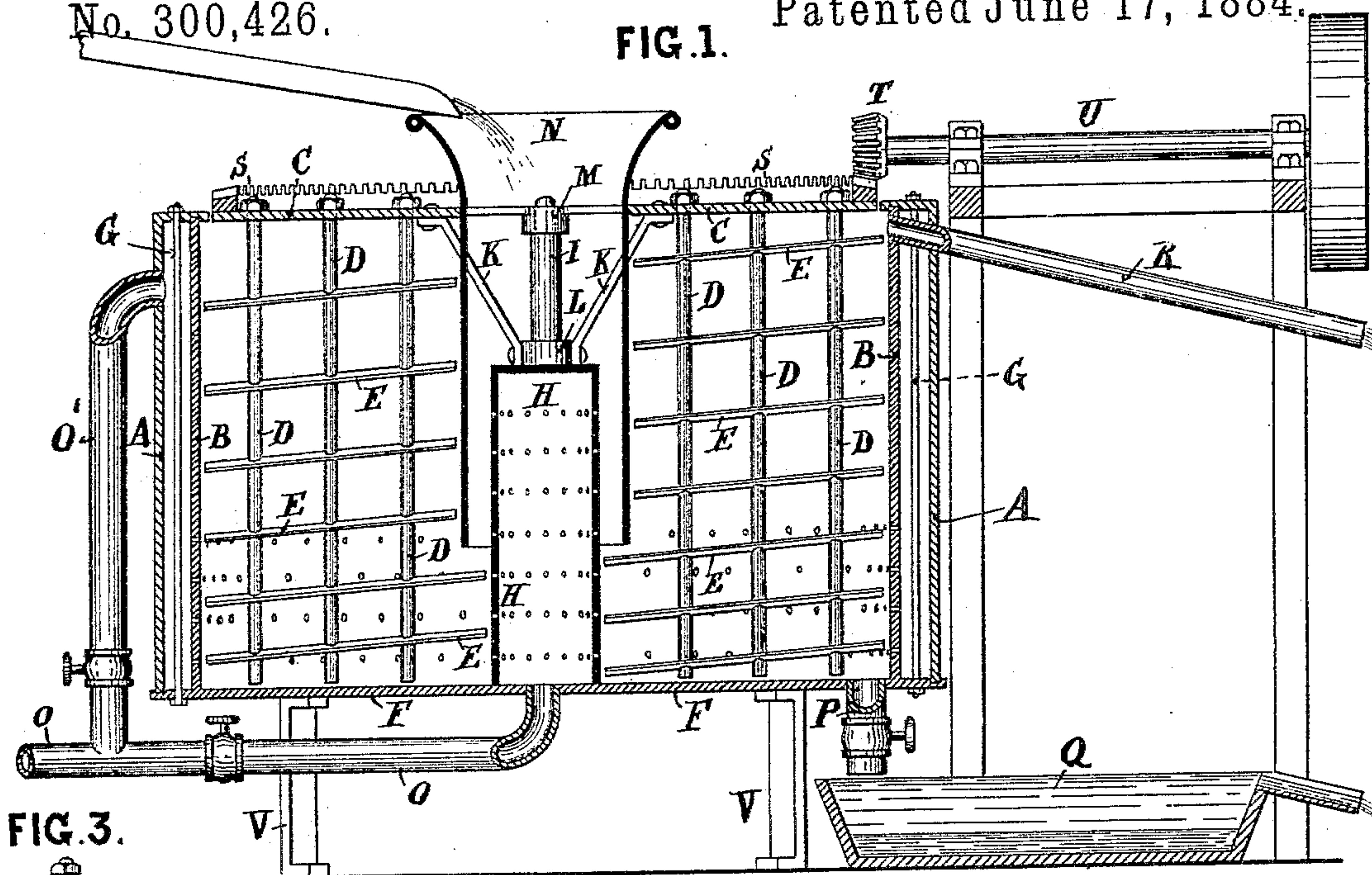


FIG. 3.

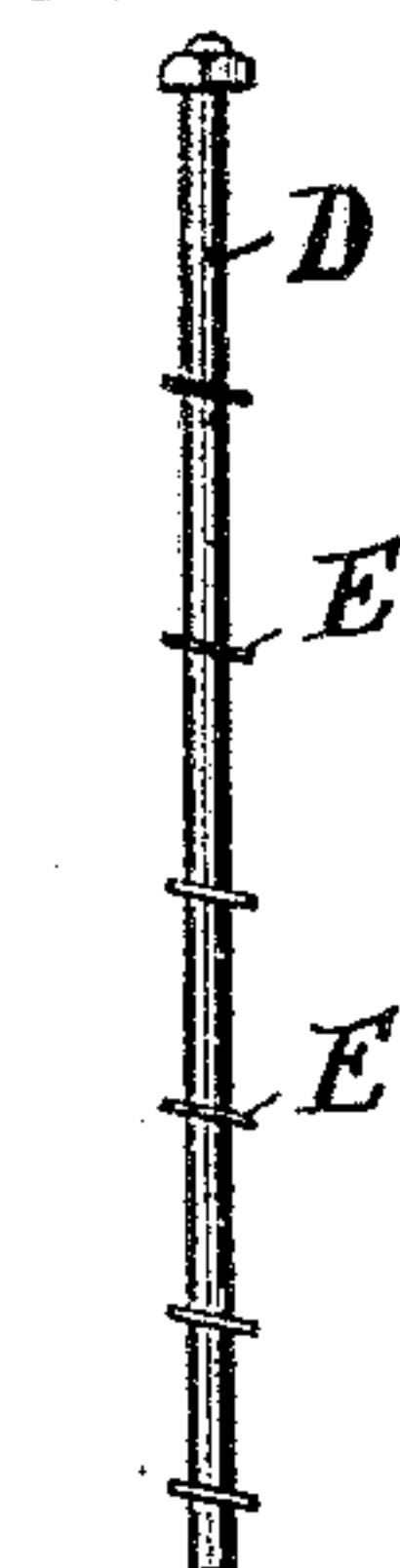
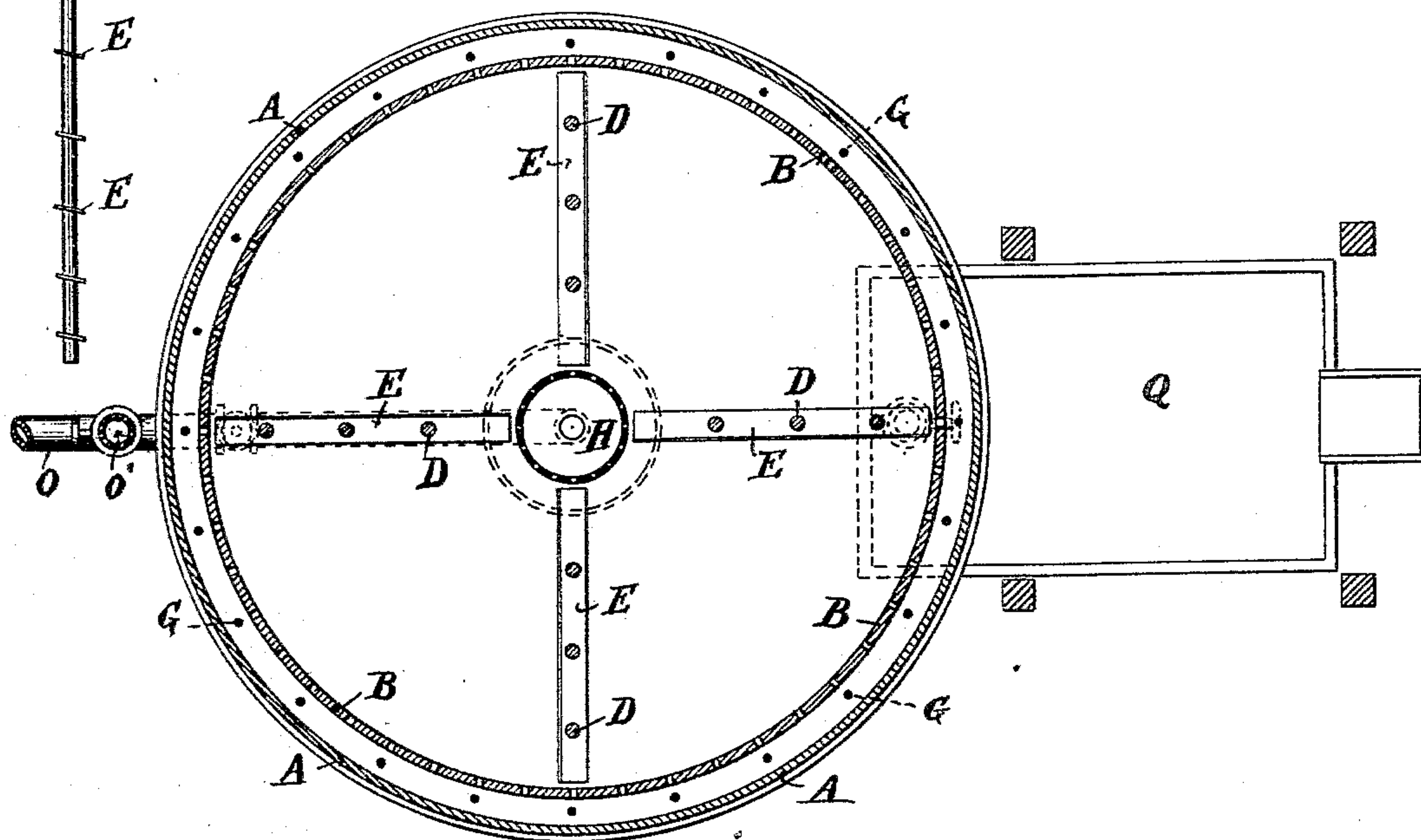


FIG. 2.



Witnesses.

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Inventor.

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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR WASHING AND CONCENTRATING ORES.

SPECIFICATION forming part of Letters Patent No. 300,426, dated June 17, 1884.

Application filed October 1, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB C. WISWELL, a citizen of the United States, residing at West Medford, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Machines for Washing and Concentrating Ores, of which the following is a specification.

The object of my invention is to produce a simple, durable, and effective machine for washing and concentrating all classes of ores; and the invention consists of a tank or vessel composed of two metal cylinders arranged one within the other, with a water-space between the two. Within the inner cylinder is arranged a series of vertical rods attached at their upper ends to the top or cover of the cylinder, which top is supported upon a spindle or shaft, so as to admit of its being rotated together with the vertical rods. Secured to these vertical rods is a series of bars or slats inclined in such a manner that as the rods and bars are rotated the water and the refuse particles from the ores will be forced to the top of the tank, rising outwardly in a spiral direction, and be discharged into a spout or tube fixed to the upper part of the cylinder, while the cleaned ore is discharged at the bottom of the machine. To the bottom of the tank, on the inside, is fixed a perforated tube connected with a water-supply pipe underneath. The lower portion of the sides of the inner cylinder is also perforated, and connected to the upper portion of the outer cylinder is a water-supply pipe communicating with the water-space between the cylinders. When the machine is in operation, water is forced through the perforations of the inner cylinder from the circumference toward the center, and also from the perforated central pipe outward toward the circumference, the opposing jets thus meeting at any desired pressure, and causing the ore to be thoroughly and rapidly cleansed.

Referring to the accompanying drawings, Figure 1 is a vertical transverse section of a machine embodying my invention. Fig. 2 is a horizontal section of the lower portion of the same. Fig. 3 shows one of the vertical rods with about the angle of elevation at which the transverse bars or slats are secured thereto.

A is an iron cylinder having a bottom, F, and constituting the outer casing of the machine.

B is an inner cylinder, between which and the outer cylinder is a water-space. The two cylinders are secured together by means of rods G and nuts, as shown.

C is a plate forming the top or cover, and is fitted within the inner cylinder, so as to rotate freely in the same. The top C is connected by bars to a box, M, which is fitted on a spindle or shaft, I, and rotates on the same. The spindle I is secured to the top of the central pipe, H.

K K are braces attached at their lower ends to a box, L, on the spindle I, for further supporting and strengthening the top C.

On the upper edge of the top C are cogs S, which gear with a pinion, T, attached to a shaft, U, having a pulley at its outer end, which is put in motion by a belt from any suitable power.

To the top C is secured a series of metal rods, D, extending down to near the bottom of the tank, and to these rods are attached a series of inclined bars or slats. These are arranged at two angles—namely, one end of the slat lower than its other end, and the front edge of the slat lower than its rear edge. This arrangement causes the refuse particles to be washed from the bottom of the tank upwardly and outwardly over each slat in a spiral direction until discharged through the pipe R.

To the bottom of the inside of the tank or cylinder is secured a perforated tube, H, extending upward, as shown, and to the top C is attached a hopper or funnel, N, which extends downward and surrounds the upper half of the tube H, so as to keep the unwashed ore which is fed into the hopper N confined in the pipe until it comes in contact with the two opposing jets of water issuing from the perforated circumference of the inner cylinder and the perforated pipe H.

Communicating with the bottom of the perforated pipe H is a pipe, O, leading to any source of supply of water to which force is to be applied, and connecting with the pipe O is a pipe, O', which communicates with the upper portion of the space between the cylinders A and B. The pipes O O' are supplied with



proper cocks or shut-offs, so that the force or supply of water can be regulated as desired through either or both pipes.

5 R is a discharge-pipe attached to the upper part of the tank, for carrying off the refuse and waste water.

P is a discharge-pipe connected to the bottom of the tank, for carrying off the cleaned ore, which passes into a basin, Q.

10 The tank is supported upon a stand, V, or other suitable support.

The operation is as follows: Water is first admitted into the space between the two cylinders A and B and into the central pipe, H.

15 The cover is then set in motion and rotates, carrying the rods or stirrers D and bars E. The ore is then fed into the hopper N, and, falling down, encounters the jets of water, which are forced in opposite directions toward each other through the perforations in the inner cylinder and central pipe, the jets serving to keep the water in constant agitation. The inclination of the cross-bars at two angles, as described, causes the water and particles separated from the ore to be carried outward from center to circumference, and at the same time upward in a spiral direction to the top of the

tank, where the refuse and waste water are discharged through a pipe, thus thoroughly cleansing the ore, which falls to the bottom 30 and is discharged through a pipe into a receptacle below.

What I claim as my invention is—

1. In an ore washing and concentrating machine, the combination of the cylinders A B, 35 having an intermediate water-space between them, the rotating top C, vertical rods D, and inclined bars E, substantially as described.

2. The combination of the cylinder A, the perforated cylinder B, and the perforated central pipe, H, provided with their several supply-pipes, as and for the purpose specified. 40

3. The combination, in an ore washing and concentrating machine, of the hopper or funnel N, the rotating top C, the boxes L and M, 45 spindle I, and the central perforated pipe, H, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB C. WISWELL.

Witnesses:

JOS. H. ADAMS,

E. PLANTA.