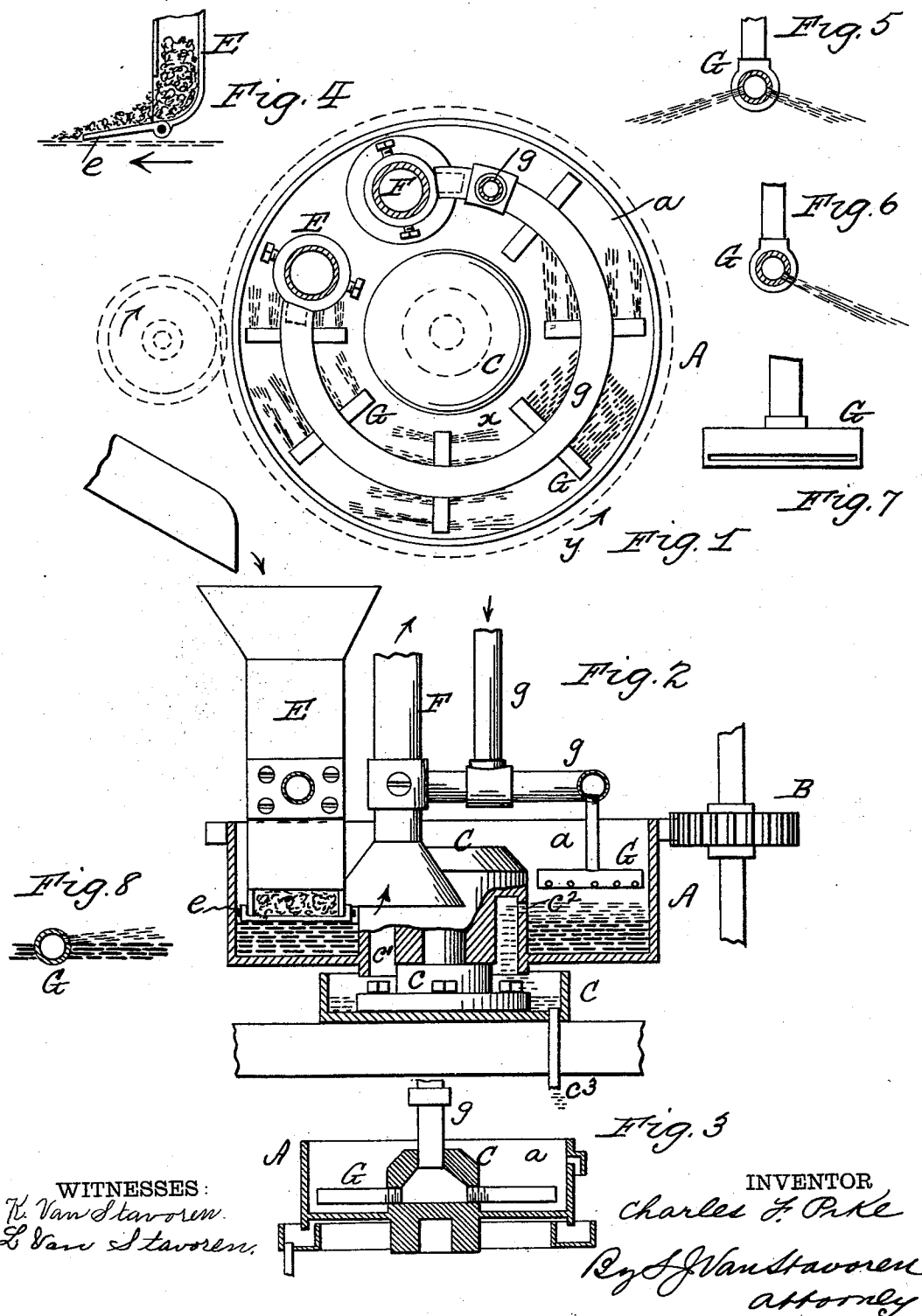


(No Model.)

C. F. PIKE.
ORE WASHER OR CONCENTRATOR.

No. 528,981.

Patented Nov. 13, 1894.



UNITED STATES PATENT OFFICE.

CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

ORE WASHER OR CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 528,981, dated November 13, 1894.

Application filed June 10, 1893. Renewed April 17, 1894. Serial No. 507,947. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PIKE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ore Washers or Concentrators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to ore washers and concentrators of the form having a continuously rotating surface of mercury from a feed to a discharge appliance; and it consists in the arrangement of a system of jet agitators between the feed and discharge for dividing or comminuting the ore or gangue to effect a more thorough and rapid separation of the metal from the ore.

My invention further consists of the combinations, construction and arrangement of parts as hereinafter more fully described in the specification and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a plan, partly sectional of an ore washer and concentrator embodying my improvements. Fig. 2 is a vertical section, partly in elevation. Fig. 3, is a like view drawn to a small scale, illustrating a modification in detail construction. Fig. 4, is a section of the lower end of the feed pipe with automatically adjusted arresting plate. Figs. 5 and 6 are end views, partly sectional of different forms of jet tubes. Fig. 7 is a front elevation of one of the same, and Fig. 8 is a section showing location of jet tubes immersed in the mercury.

A represents any suitable form of washer or concentrator which as shown consists of a rotating annular vessel *a* driven by a belt or other power transmitting appliance B. Said vessel is suitably mounted upon a step-bearing *c* and its hub has an annular recess *c'* open at its lower end and communicates at *c''* with chamber *a* to form an overflow from the latter to a settling chamber C having an outlet *c'''* leading to any desired fixture or to appurtenances as shown, described and claimed in another pending application filed of even date herewith, Serial No. 477,162.

E is the feed-tube or chute entering the chamber *a* and it has a jointed plate *e* at its lower or exit-end which is designed to adjust itself to and rest upon the surface of the mercury to form an arresting plate for the supply of ore fed to chamber *a*, so that it will not be forcibly fed into the same but will come to a comparative state of rest before depositing itself on the surface of the mercury.

F is the suction or discharge appliance and between it and the feed E are a series of jet tubes G having a common supply *g*, which may be arranged as shown in Fig. 1, so as to be suspended within chamber *a* above the mercury or they may project from the hollow hub C of vessel A into which leads the supply *g*, as indicated in Fig. 3, in which case the jet tubes G may be below the surface of the mercury as more plainly shown in Fig. 8. The jet tubes G may have perforations or slits, which may be only on one side as shown in Fig. 6 or on opposite sides as illustrated in Fig. 5 so as to project jets in opposite directions across the surface of the mercury as shown at *x* Fig. 1.

The operation is obvious. As the ore fed to the surface of the mercury rotates with vessel A in the direction of arrow *y*, Fig. 1, it is agitated by the jets of water or other medium from the tubes G either in direction of its travel or opposite thereto or in both directions, as illustrated in Fig. 1, as desired. These jets break up or comminute the ore and spread it out over the surface of the mercury to quickly and thoroughly effect a separation of the metal from the ore.

In concurrent pending application, Serial No. 477,172, I broadly claim the use of jets for agitating and conveying the ore or gangue in the washer, while in this case the specific idea of a series of jets located one after the other between the feed and the discharge tubes is the essential feature and is limited thereto.

It is evident that the jets may be variously located and provided for. I do not herein confine myself to the location and construction of the same as shown and described nor do I confine myself to the construction of the vessel in which they are used nor to the system of concentration or washing employed.

What I claim is—

1. In an ore washer or concentrator, the combination of a feed device, a suction discharge device distantly located from the feed, and a series of jet tubes located between the feed and the discharge, substantially as set forth. 5
2. In an ore washer and concentrator, the combination of a moving vessel containing mercury, means for actuating said vessel, a feed device and a suction discharge device, 10 and a series of jet tubes located between the feed and discharge, substantially as set forth.
3. In an ore washer and concentrator, the combination of a rotating vessel containing mercury, means for rotating said vessel, a 15 feed device, a suction discharge device, and a series of jet tubes between the feed and discharge and above the surface of the mercury, substantially as set forth.
4. In an ore washer or concentrator, the combination of a vessel into which the ore or 20 gangue is deposited, a feed device, a suction

discharge device, an overflow device and a settling chamber in communication with said overflow-device, substantially as set forth.

5. In an ore washer or concentrator, the combination with a receiving vessel, a feed device having at its discharge end a jointed or 25 hinged feed plate, and a suction discharge for said vessel, substantially as set forth.

6. In an ore washer or concentrator, the combination with a vessel containing mercury, a 30 feed device having at its exit end a hinged plate which floats on the surface of the mercury, and a discharge device for said vessel, substantially as set forth. 35

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES F. PIKE.

Witnesses:

THOS. S. RODGERS,
JAMES T. DAILY.