

(No Model.)

C. F. PIKE.
ORE WASHER OR CONCENTRATOR.

No. 528,983.

Patented Nov. 13, 1894.

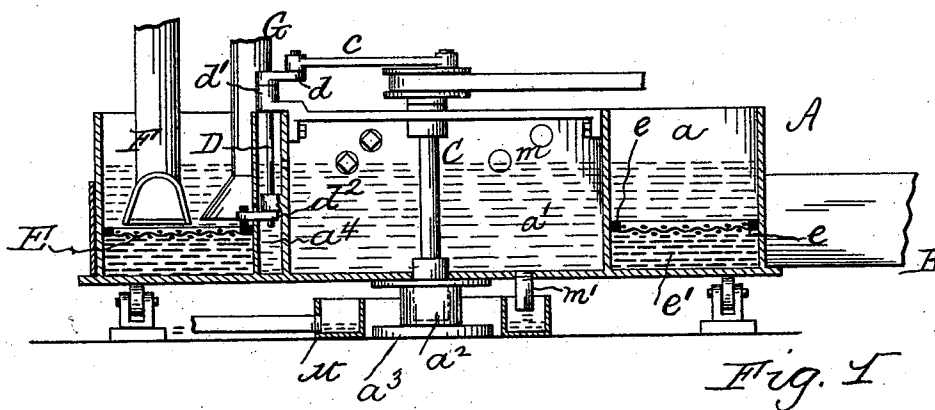


Fig. 1

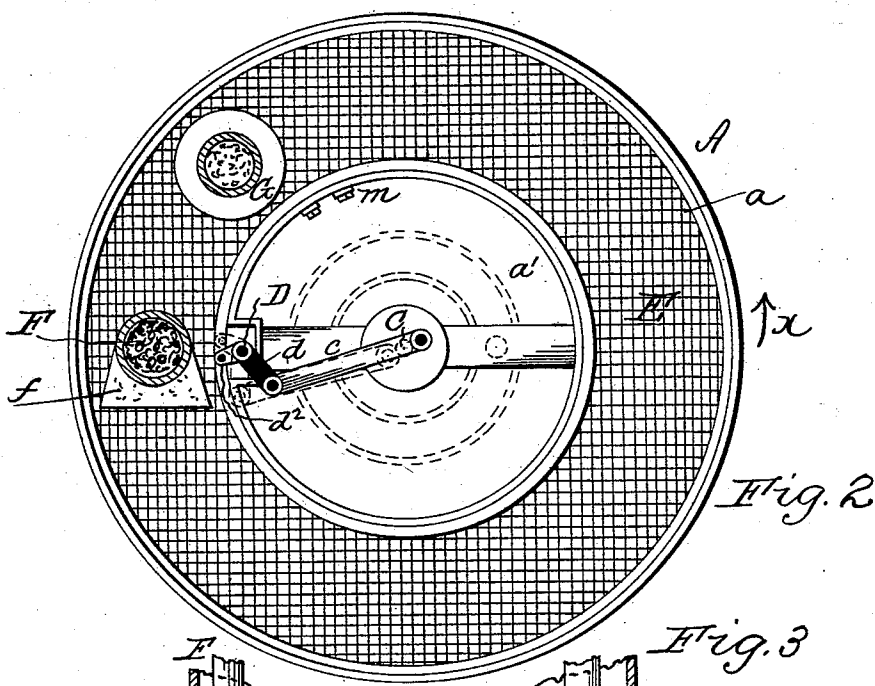


Fig. 2

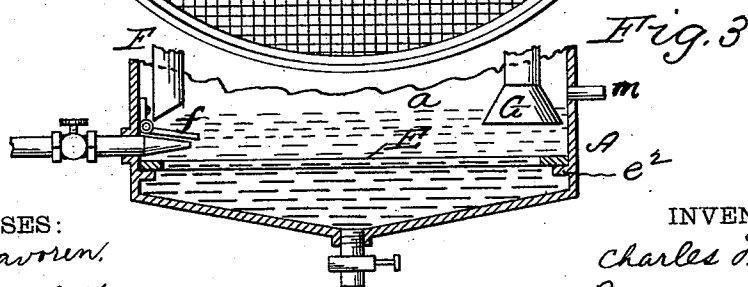


Fig. 3

WITNESSES:

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CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

ORE WASHER OR CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 528,983, dated November 13, 1894.

Application filed June 10, 1893. Renewed April 17, 1894. Serial No. 507,949. (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 in which the ore or gangue is supplied to a vessel and then caused to travel from the place of supply to a distant place of discharge; and it has for its object a simple and effective construction of mechanism for holding the ore or gangue in a state of suspension and agitating it during its travel from its place of supply to that of its discharge to effect a thorough division or comminution of the same and a corresponding free separation of the metal from the gangue or ore before arrival of the latter at discharging position, the device being equally applicable for ore washers and concentrators and for amalgamators.

My invention accordingly consists of the system of washing or concentrating gangue or ore and of the combinations, constructions and arrangements of parts as hereinafter more particularly described in the specification and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a vertical section of an ore washer, concentrator or amalgamator embodying one form of my invention. Fig. 2 is a plan view of the same, and Fig. 3 is a vertical section of another form of the same.

A represents any suitable form of vessel or receiver, which in Figs. 1 and 2 is represented as being circular and has a belt or other power attachment B for rotating it in any suitable manner if desired, but this rotation of the vessel may be dispensed with wherever the requirements of the work to be done permit of it. The said circular vessel is shown as of an annular form or having an annular chamber a by reason of having a centrally located chamber a' on the bottom of which is a suitably formed and attached step a^2 in a step-

bearing a^3 and in chamber a' is suitably supported a power shaft C having a link connection c with a bell-crank-lever d mounted on a counter shaft D located in a pocket a^4 at one side of chamber a' as indicated either in Figs. 1 and 2 or as desired. The shaft D is mounted in suitable bearings d' and at its lower end has a crank or other connection d^2 with an annular reticulated, perforated, slotted or analogous freely supported annular plate E fitting the annular chamber a of vessel A, so that when shaft C is rotated power transmitted to shaft D imparts to the plate E a circular reciprocating motion for agitating any ore or gangue deposited thereon as hereinafter more fully explained.

The plate E as shown in Fig. 1 consists of wire, textile or other suitable netting or any other desired reticulated or suitably formed perforated material may be substituted and it has stiffening edges or rims e as indicated so that it will loosely rest upon the surface of the mercury. If the requirements of service demand, suitable inwardly projecting flanges may be provided in the washer for said plate E to rest upon, a form of which is shown at e^2 Fig. 3. In the latter described form the mercury if desired may be dispensed with. Said plate E may be of any suitable material and construction. Thus for instance it may be of metal or of canvas or other flexible material.

F represents the ore or gangue supply pipe or device located at one point or place in chamber a and G is the suction pipe or discharge appliance. The feed or supply pipe F may have an arresting and distributor plate f at its lower end which terminates above the plate E. As the ore or gangue passes off of plate f or from pipe F to the plate E and the vessel A is rotated the plate E revolves with said vessel, supply and discharge appliances F and G being fixed or non-rotatable. Hence the ore or gangue is carried or caused to travel in the direction of arrow x , Fig. 2, to a discharge location G distant from the supply location F. During such travel the reciprocation of plate E by the power appliances therefor agitates the ore or gangue to spread it out over the entire transverse area of the plate E and agitates the same to cause a quick and thorough separation of the metal

from the ore or gangue, which metal falls through the perforations or openings in plate E to the mercury or to the space or chamber *h* below the plate, which space or chamber may be provided with a draw-off cock or valve *h'* as desired.

Instead of reciprocating the plate E backward and forward in the direction of its rotation it may be otherwise reciprocated, as, for instance, laterally, as shown and described in another pending application filed by me of an even date herewith, Serial No. 477,174.

Fig. 3 shows an oblong form of vessel A which has no rotating movement. Hence the plate E is fixed therein either on supports *e* or rests loosely upon the top of the mercury. The supply pipe F is at one end and the discharge appliance G at the opposite end, the ore or gangue being moved over the plate E from its supply place to its discharge location by a jet or jets of water, air or other suitable propelling medium.

In Fig. 4, the plate E is shown in the form of an endless belt suitably driven for causing the travel of the ore or gangue.

Suitable overflow openings *m* are provided in the walls of chamber *a'* for vessel A and from chamber *a'* leads an outlet pipe *m'* for conveying such overflow to a suitably located settling vessel M from which its overflow may be discharged as desired.

The suction pump for pipe G is not shown in the drawings as the same is well known and in lieu of the same siphonage or elevator buckets may be used as shown, described and claimed in other pending applications filed by me of an even date herewith.

From the foregoing it will be noted that the screen E only is reciprocated while the receiver vessel A travels onward in one direction and is not subject to any reciprocating motion, whereas in companion case No. 477,174 the said vessel is both rotated and reciprocated. The screen in the vessel partakes of such movements only by reason of the fact that it is located within such vessel.

From the foregoing it will be noted that the construction and arrangements of the essen-

tial parts for practicing my invention may be greatly varied and hence I do not confine myself to the same as shown and described.

What I claim is—

1. In an ore washer or concentrator, the combination of a receiving vessel, a traveling screen located within said vessel, a feed device, a discharge device for said vessel located above said screen, and actuating mechanism for imparting the traveling movement to said screen and for reciprocating it in the line of its traveling movement, substantially as set forth.

2. In an ore washer or concentrator, the combination of a traveling receiving vessel, a screen located within said vessel and traveling with it, a feed device, a discharge device in said vessel and above said screen, and actuating mechanism for imparting to the screen a reciprocating motion in the line of its travel, substantially as set forth.

3. In an ore washer and concentrator, the combination of a traveling vessel containing mercury, a screen loosely resting upon the surface of such mercury, actuating devices in engagement with said screen for imparting to it a reciprocating motion, substantially as set forth.

4. In an ore washer and concentrator, the combination of a receiving vessel, a screen within said vessel of the extent of its receiving area, a feed device and a suction discharge device located above said screen, substantially as set forth.

5. In an ore washer and concentrator, the combination of a vessel, a screen of the extent of the area of said vessel located therein and dividing it into an upper receiving chamber and a lower chamber for the concentrates, a feed device and a discharge device in the receiving chamber of said vessel, substantially as set forth.

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

CHARLES F. PIKE.

Witnesses:

THOS. S. RODGERS,
JAMES T. DAILY.