

(No Model.)

C. F. PIKE.
ORE WASHER OR CONCENTRATOR.

No. 528,972.

Patented Nov. 13, 1894.

Fig. 1.

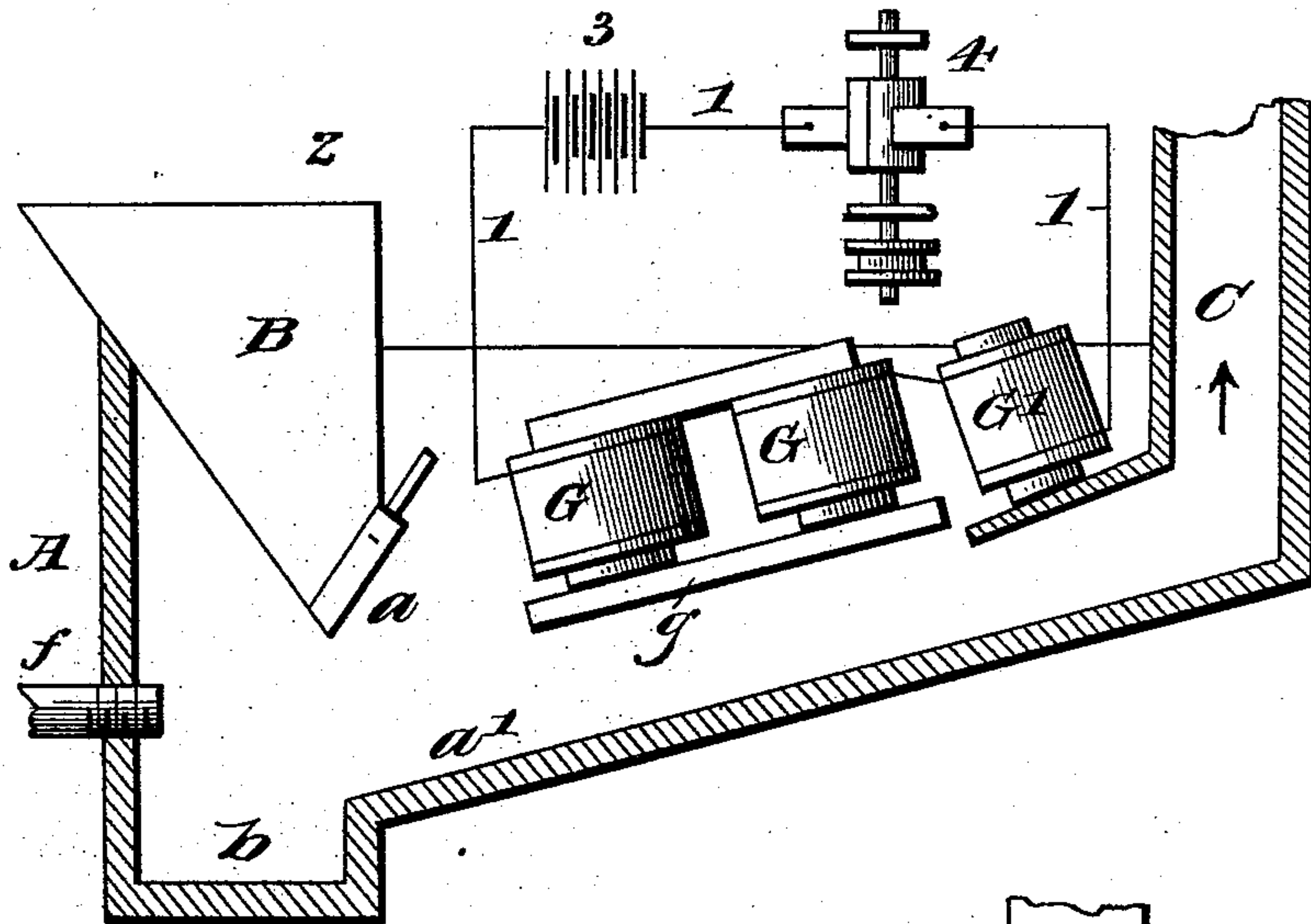


Fig. 2.

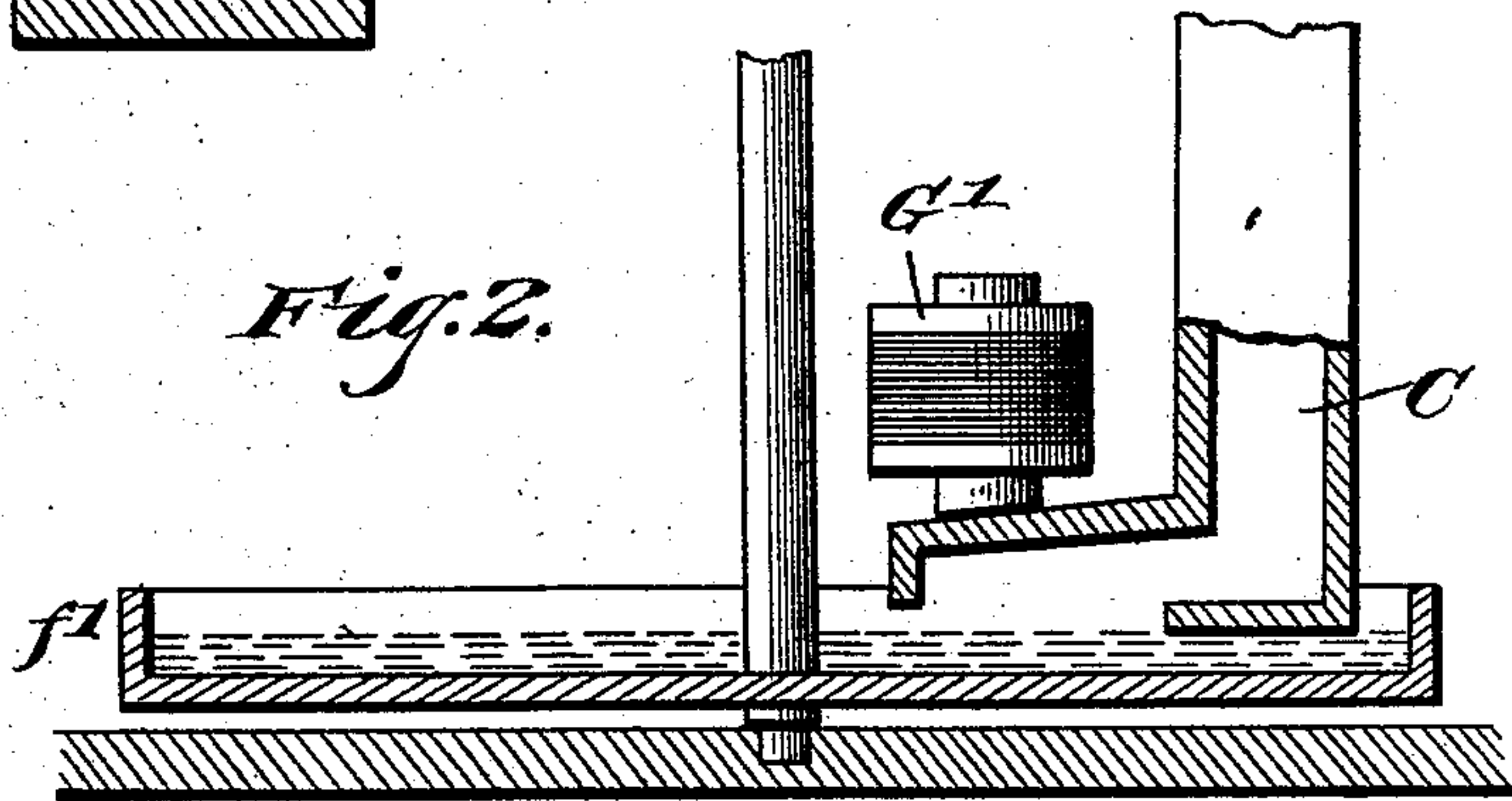
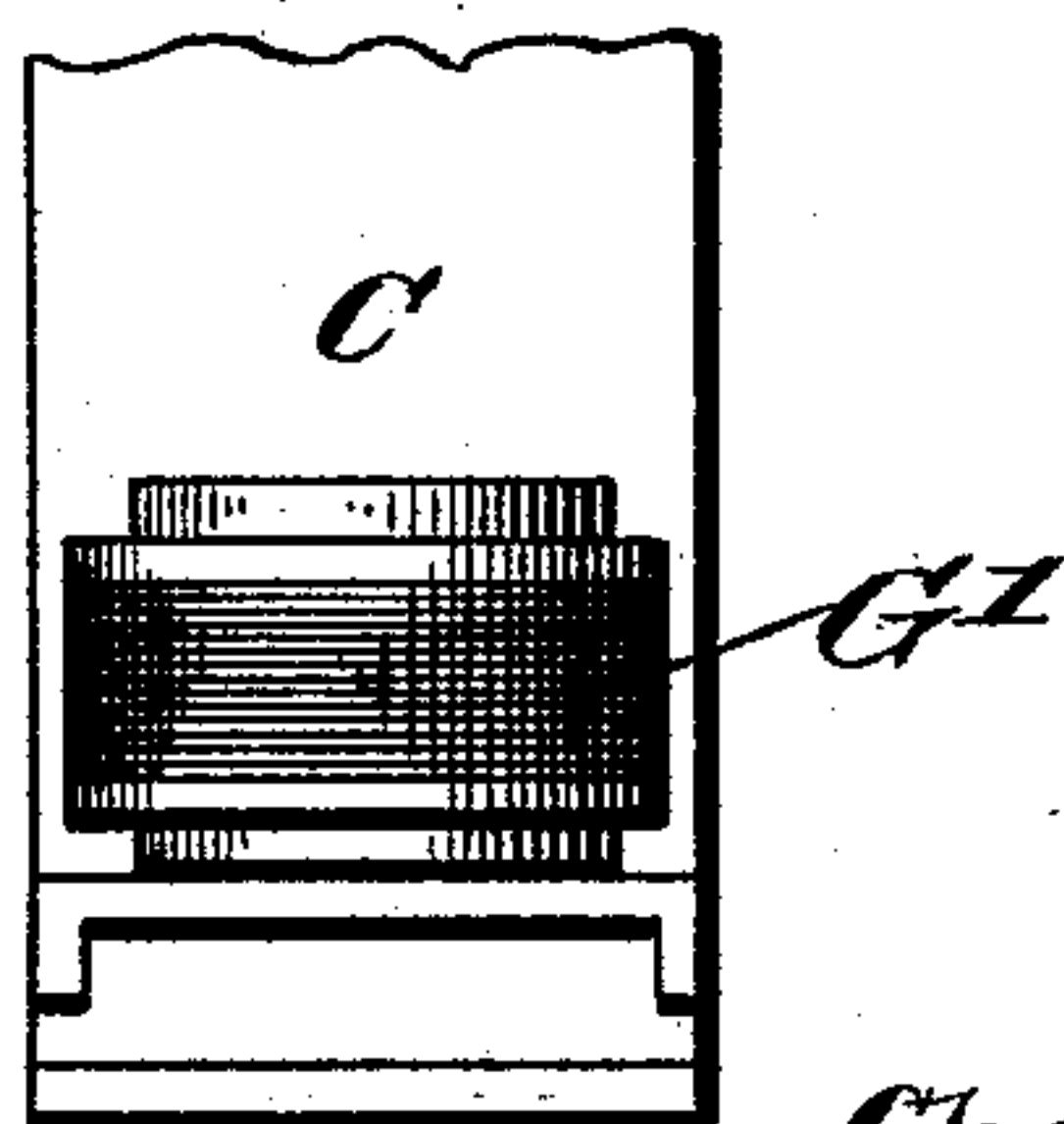


Fig. 3.



Witnesses.

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CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

ORE WASHER OR CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 528,972, dated November 13, 1894.

Application filed April 6, 1894. Serial No. 506,651. (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 having a feed device, a suction-discharge device, and one or more magnets between said devices above and adjacent to the flow of ore.

In the separation of gold from the black-sand in placer gravel it is very difficult to exhaust the sand by suction from the receiving vessel, owing to the high specific gravity of said sand, so that a powerful suction is necessary that is liable to carry off the lighter particles of precious metal with the sand.

The object of this invention is to provide means whereby the black-sand is practically held in a state of suspension at the inlet of the suction-discharge instead of allowing the same to subside more or less after having passed out of the magnetic field of the magnet or magnets arranged between the feed and suction-discharge. This I accomplish by subjecting the sand to the influence of a magnetic field in the immediate vicinity of the inlet of the suction-discharge, so that the said sand will be held in suspension at the said inlet. It is obvious that by holding the black-sand in suspension at the inlet of the suction-discharge a comparatively small or minimum suction force will take the sand out of the receiving vessel, while a very great or maximum suction force would be required if the sand were left to subside after having passed out of reach of the magnetic field between the feed and suction-discharge.

The invention, therefore, consists essentially in the combination with the suction-discharge of a magnet at or near the inlet thereof, as hereinafter more fully described and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a section of a washer and con-

centrator embodying my improvements, illustrating a jet-tube device as the positively actuated means for conveying or moving the ore from the feed device toward the discharge device. Fig. 2 is a sectional elevation of part of a washer or concentrator and amalgamator embodying another form of my improvements, the same showing a rotating pan or plate as the positively acting means for conveying or moving the ore from the feed to the discharge devices, and Fig. 3 is a front view of the form of suction-discharge inlet end with magnet thereon, shown in Fig. 2.

A represents a washer, concentrator or amalgamator of any suitable or desired kind, having a feed B, and a suction-discharge C as the demands of service require.

In Fig. 1 of the drawings above and adjacent to the bottom a' of the receiving vessel a is located a series of magnets G, which, if desired, may have their poles connected by a plate g , or the latter may be the top of the vessel a at such location.

3 represents the source of electrical power, and 1—1 the circuit connections for said magnets G, the circuit including a circuit breaker 4 for intermittently charging the magnets G simultaneously or successively according as they are in circuit with one another in any of the well-known ways. If desired an alternating current may be used for the magnets.

As the magnets G are alternately active and inactive the black-sand particles move to their poles and fall away therefrom to impart to them a zigzag movement in their travel to the discharge device C for maintaining them in a scattered or dispersed condition to admit of any segregated metal particles to separate and fall therefrom to the bottom a' of vessel a . The bottom a' of vessel a may be straight or inclined as shown in Fig. 1. In the latter case the metal particles pass down the incline and accumulate in a chamber b .

The circuit breaker 4 for the circuit 1—1 or for the magnets G may be operated from the dynamo shaft or by separate power mechanism, which may be electrical or mechanical as desired.

In Fig. 1 a jet-tube f is illustrated entering the vessel a below the feed B and in line with the path of travel of the ore from the feed to

the discharge devices. The jet from tube *f* acts to convey the ore or cause it to move toward the discharge tube C until it comes within the influence of its suction force, and also assists in dispersing or scattering the black-sand and other particles of the ore during such travel.

G', Figs. 1 and 2, indicates a magnet placed at the inlet of the suction-discharge C where- by the black-sand, after moving out of the magnetic field of magnets G is again sub- jected to the influence of a magnetic field for the purpose of keeping the sand in suspen- sion or scattered as it reaches the said inlet, so that but a comparatively small suction force is required to discharge the sand from vessel *a*, without danger of carrying away any of the lighter metal.

In Fig. 2 *f'* indicates a revolving mercury holding vessel or amalgam plate form of washer, said figure also showing a magnet G' located on the inlet end of the suction-dis- charge. Fig. 3 shows an end view of such suction-discharge inlet end detached from the machine.

In the form of suction-discharge tube C in Fig. 1 its outlet end is or may also be pro- vided with a magnet for acting upon the black-sand in the ore at such locality.

As the construction and arrangement of parts for practicing the invention may be greatly varied without departing from the spirit thereof, I do not confine myself to the same as shown and described.

I do not claim broadly an ore washer and concentrator having a receiving vessel with or without an inclined bottom, a feed device

and a suction-discharge device for said ves- sel, and one or more magnets with circuit connections and a source of electric supply located between the feed and the discharge and above and adjacent to the bottom of said vessel, as the same forms the subject matter of another pending application filed by me of even date herewith, Serial No. 506,654.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In an ore washer, concentrator, or amal- gamator, the combination of a receiving ves- sel, a suction-discharge therein, and a magnet at or near the inlet of said suction-discharge, substantially as and for the purpose set forth.

2. In an ore washer, concentrator or amal- gamator, the combination of a receiving ves- sel, a suction-discharge therein, and a magnet at or near the inlet of said suction-discharge, and circuit connections including a source of electric supply for said magnet, substantially as set forth.

3. In an ore washer, concentrator, or amal- gamator, a receiving vessel, a suction-dis- charge therein, a magnet at or near the inlet of said suction-discharge, and circuit con- nections including a source of electric sup- ply and a circuit breaker for said magnet, substantially as set forth.

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

CHARLES F. PIKE.

Witnesses:

THOS. S. RODGERS.

S. J. VAN STAVOREN.