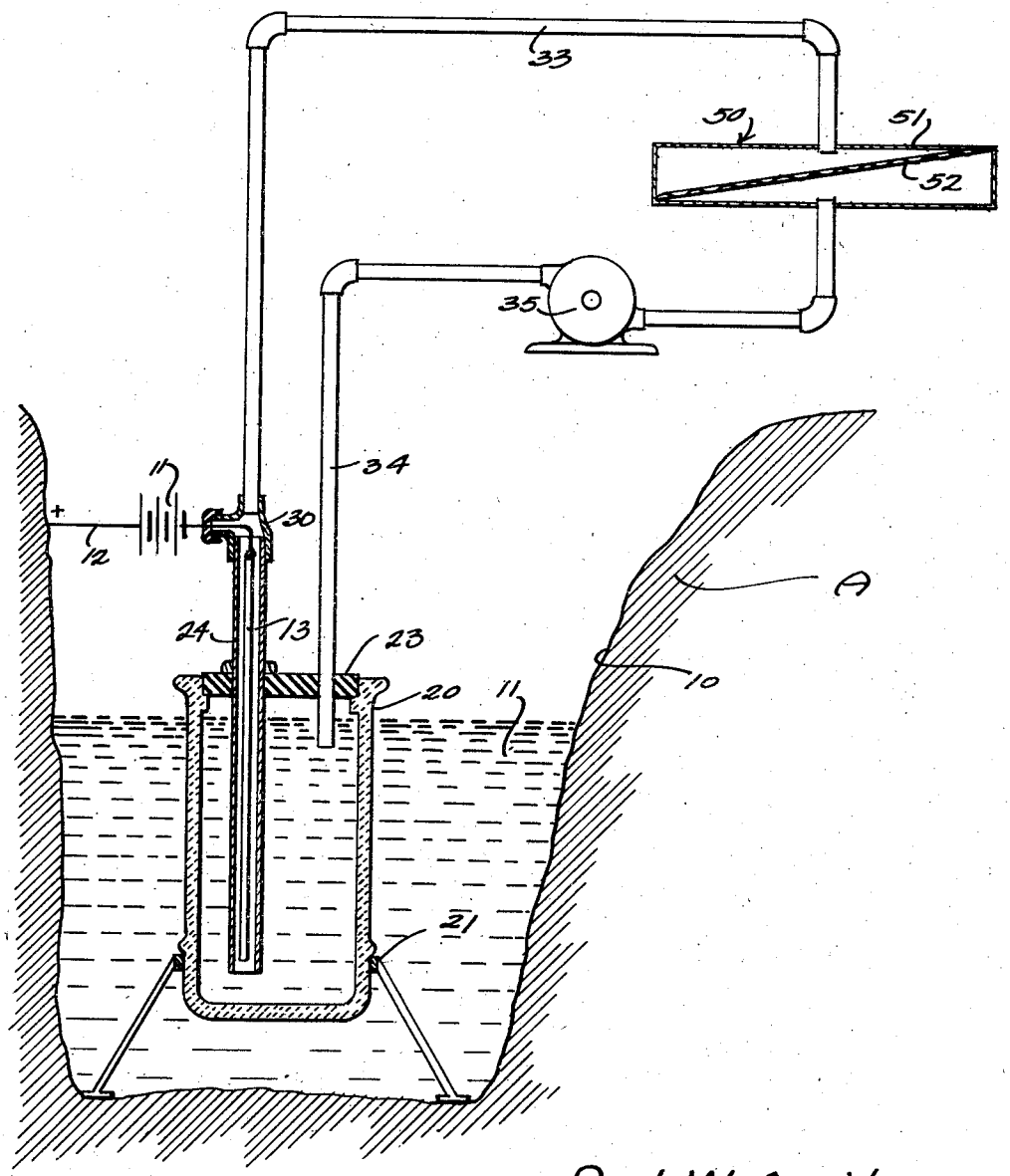
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METHOD OF MINING NATIVE COPPER

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METHOD OF MINING NATIVE COPPER

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1 Claim. (Cl. 204—10)

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The present invention relates to improvements in methods of electrometallurgically mining copper.

A further object of this invention is the provision of a practical method of electrometallurgically extracting copper from native copper beds; the process being a continuous one and carried out under such circumstances that liability of failure is reduced to a minimum.

Other objects and advantages of the invention will be apparent from the following detailed description.

In the accompanying drawing, forming a part of this specification, and wherein similar reference characters designate corresponding parts thruout the view,

The figure designates a bed of copper showing part of the apparatus in its association therewith for the mining of the copper; some of the apparatus being shown diagrammatically.

In the drawing, the letter A may generally designate a bed of native copper in which I provide a depression 10 adapted to receive an electrolyte 11, preferably of copper sulphate and sulphuric acid.

I prefer to provide a source of current 11, such as a generator or battery, having its positive pole connected as at 12 with the copper bed which serves as the anode, and the negative side being wired to a cathode 13. I realize that it is not new to remove copper from a positive bed of copper in this general manner. However, in addition to securing deposit or "plating" of the copper upon the cathode, I provide a continuous process which automatically removes the copper from the cathode and I also protect the cathode. The latter is accomplished by providing a porous receptacle 20, of some refractory or other suitable porous material, which consists of an insulator. It is supported as by any approved means 21 in the depression 10 so that the major portion or all of the receptacle is immersed in the electrolytic bath. The supporting means 21 may, of course, be of insulation material if desired. A cap 23 of insulation is provided upon the receptacle and the cathode 13 is supported in a tube or conduit 24; the latter being carried by the cap 23 and the cathode supported within this tube

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in any approved manner (not shown) and connected with the wiring to the negative side of the battery 11. A coupling 30 may be provided for convenience and access to the cathode parts. A closed conduit system 33 extends from the coupling 30 and this system terminates in a conduit 34 which enters the cap 23 and has an open end in the porous cup 20, as shown in the drawing. In this conduit system there is provided a centrifugal pump 35 for insuring continuous travel of the electrolyte thru the conduit 24 and thru the system 33. In this system 33 there is also provided a filter arrangement 50 which comprises a receptacle 51 and a continuous filter member 52 which may be of the travel type if desired.

In actual operation the source of current 11 provides a voltage which is greater than necessary for the ordinary depositing of copper upon the cathode. This excessive voltage causes a fluffy deposit of copper upon the cathode. The coating or "plating" is very loose and as an incident of cycle travel of the electrolyte thru the conduit system, the copper deposited upon the cathode will be picked up and carried along with the flow of the electrolyte and deposited upon the filter member 52 from which the copper may be removed in any approved manner.

Various changes in the arrangement of parts and alteration to the steps of the process may be made without departing from the spirit of the invention or scope of the claim.

I claim:

In a continuous process for the removal of copper from native copper beds, the steps of which consist in filling a depression in the native copper bed with a suitable electrolyte, providing an electric circuit with a source of power in which the native copper bed serves as the anode with a cathode immersed in the electrolyte, causing the copper to deposit upon the cathode in rather loose, fluffy masses, continuously removing the deposited copper from the cathode by loosening it therefrom by causing the electrolyte to wash continuously over the cathode in a confined, rapid, uninterrupted stream, flowing in one direction only, and filtering said copper from said stream.

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