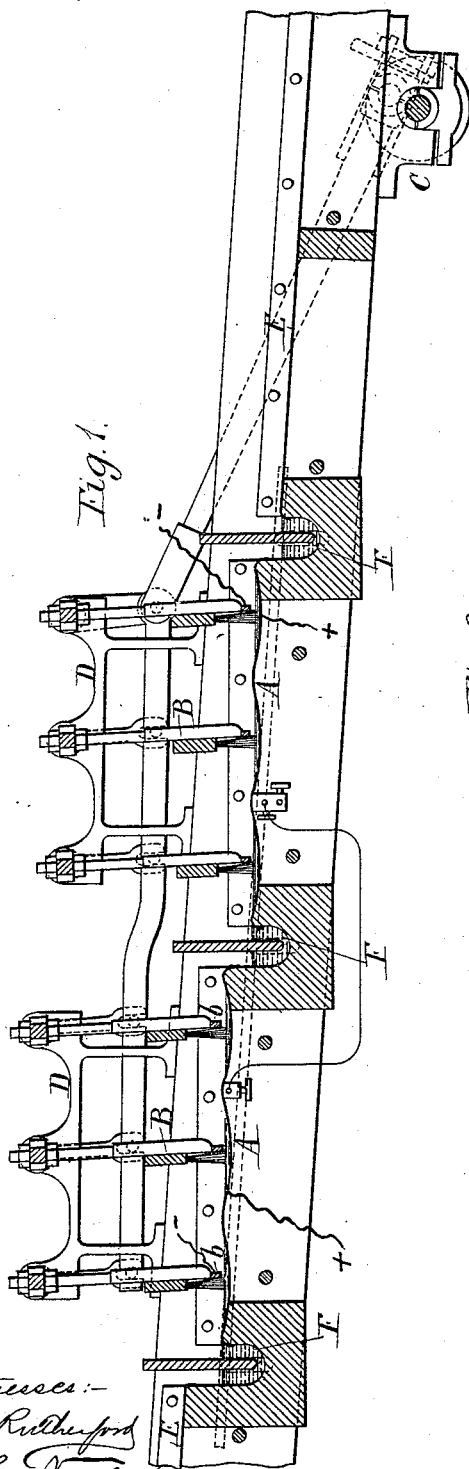


(No Model.)

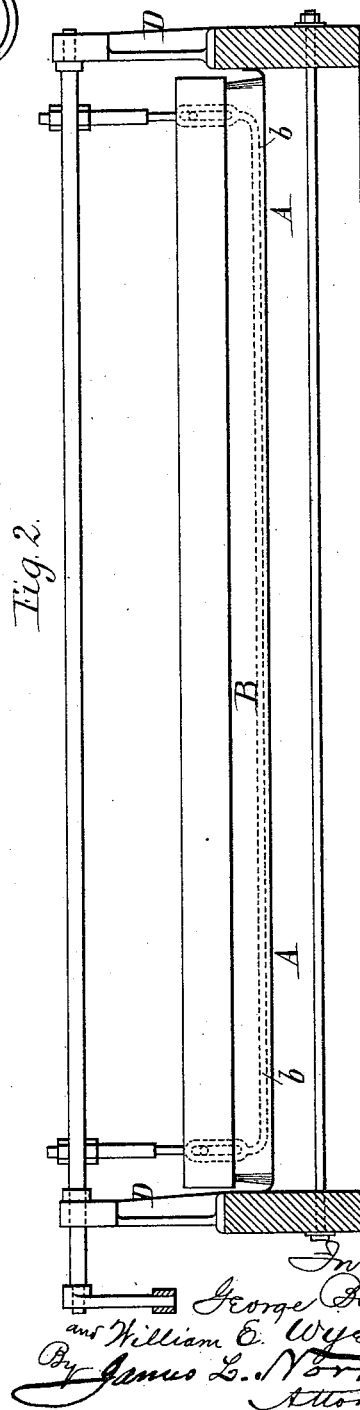
G. BUTTON & W. E. WYETH.
APPARATUS FOR EXTRACTING GOLD AND SILVER FROM THEIR ORES
BY ELECTRICAL AMALGAMATION.

No. 455,164.

Patented June 30, 1891.



Witnesses:-
J. A. Rutledge
A. H. Norris.



Inventors:
George Button,
and William E. Wyeth.
By James L. Norris.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE BUTTON AND WILLIAM E. WYETH, OF KIMBERLEY, GRIQUALAND
WEST, SOUTH AFRICA.

APPARATUS FOR EXTRACTING GOLD AND SILVER FROM THEIR ORES BY ELECTRICAL AMALGAMATION.

SPECIFICATION forming part of Letters Patent No. 455,164, dated June 30, 1891.

Application filed September 10, 1890. Serial No. 364,537. (No model.)

To all whom it may concern:

Be it known that we, GEORGE BUTTON and WILLIAM EDWARD WYETH, engineers, citizens of England, both residing at Kimberley, Griqualand West, South Africa, have invented a new and useful Improved Apparatus for Extracting Gold and Silver from their Ores by Electrical Amalgamation, of which the following is a specification.

Our invention relates to an improved apparatus for extracting gold and silver from their ores by the combined action of mercury and electricity.

Figure 1 is a longitudinal section, and Fig. 2 is a transverse section, of this apparatus.

We construct a table having transverse shallow channels or corrugations A, in each of which is contained a body of mercury, and the finely-crushed ore to be treated is made to flow, together with water, along the table, passing across these channels A. Above each channel is mounted on a framing D a brush B, composed of any desired bristles ordinarily employed in making brushes, such as stiff hair of pigs and others animals, said brush extending the whole width of the table and its bristles of such length as to dip into the water and nearly touch the surface of the mercury. Against one side of each brush is fixed a conducting-bar *b* adjustable in height. The brushes all receive from a crank or eccentric C a reciprocating motion, so as to sweep to and fro over the surface of the mercury.

The table, which is by preference formed of corrugated copper plates, is connected to the negative electrode of a dynamo-machine or other source of electricity, while the conducting-bars *b*, bearing against the brushes, are connected to the positive electrode. Thus as the ore and water flow continuously along the table, passing from channel to channel,

while an electric current is transmitted by the bars to the brushes and through the ore-bearing liquid and the mercury to the table, the electrolytic action combined with the stirring action of the brushes, causes the gold or silver to be effectually taken up by the mercury and amalgamated with it.

The corrugated plates are preferably coated with gold burned into the copper, so as to prevent any action upon the latter.

The ore and water are made to flow over flat plates E, both before and after passing over the corrugated table, and these plates are also preferably coated with gold burned in. It is also of advantage to have dams F containing mercury.

Having thus described the nature of our invention and the best means we know of carrying the same into practical effect, we claim—

For extracting gold and silver from their ores, the combination of a transversely-corrugated metal plate having mercury in its hollows and connected to the negative electrode of a dynamo-machine or other source of electricity, with horizontally-reciprocating brushes connected to the positive electrode and moving over the mercury through a layer of pulverized ore flowing with water over the successive hollows of the corrugated plate, a crank or eccentric, and a connection between the latter and the brushes for reciprocating the latter, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 7th and 27th days of May, A. D. 1890.

GEORGE BUTTON.
WILLIAM E. WYETH.

Witnesses:

J. C. HAARHOFF.
H. OBAS HULL.