

(No Model.)

C. F. PIKE.

APPARATUS FOR SEPARATING PRECIOUS METALS FROM MAGNETIC ORES.

No. 581,032.

Patented Apr. 20, 1897.

FIG. 1

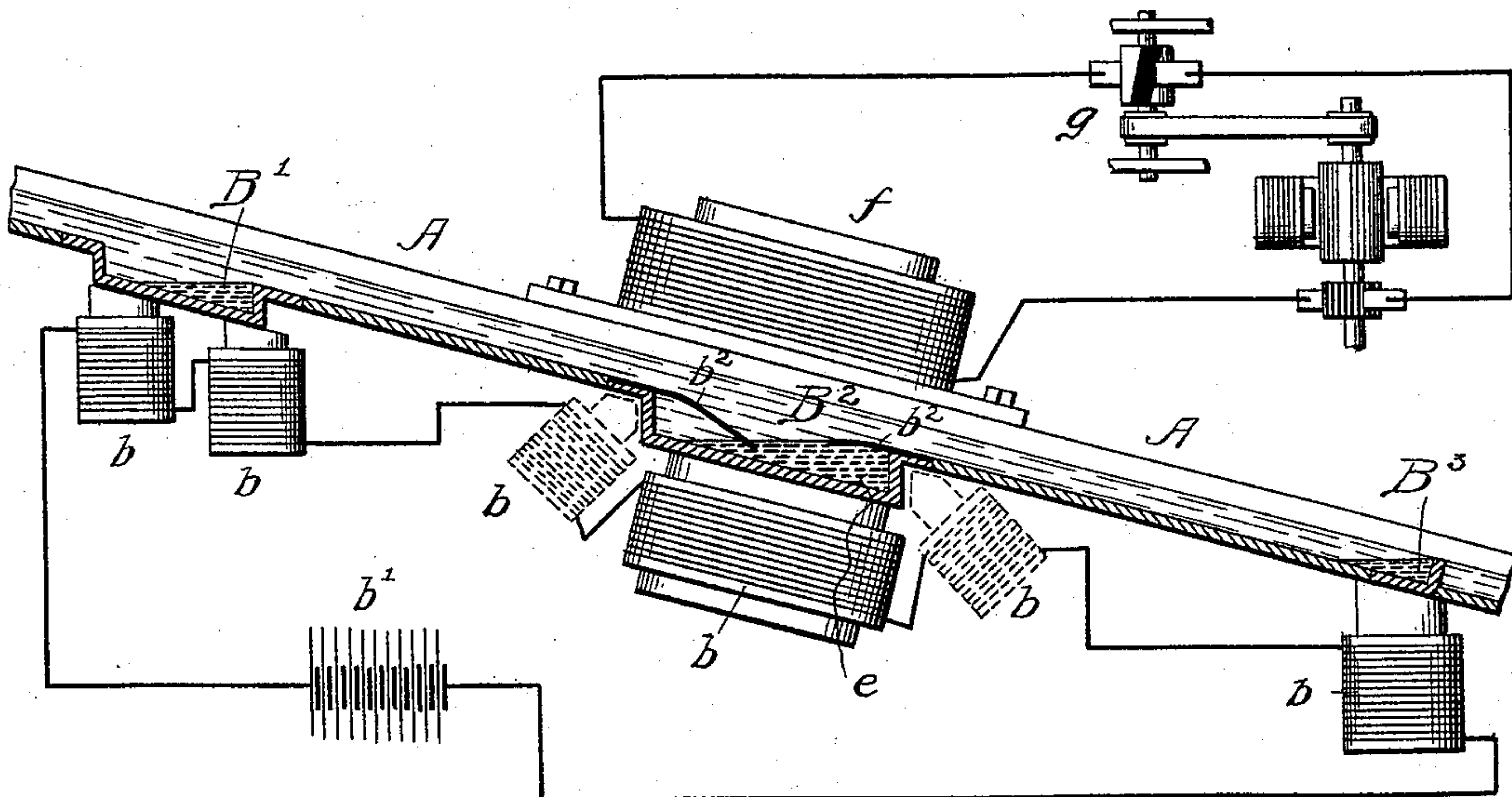
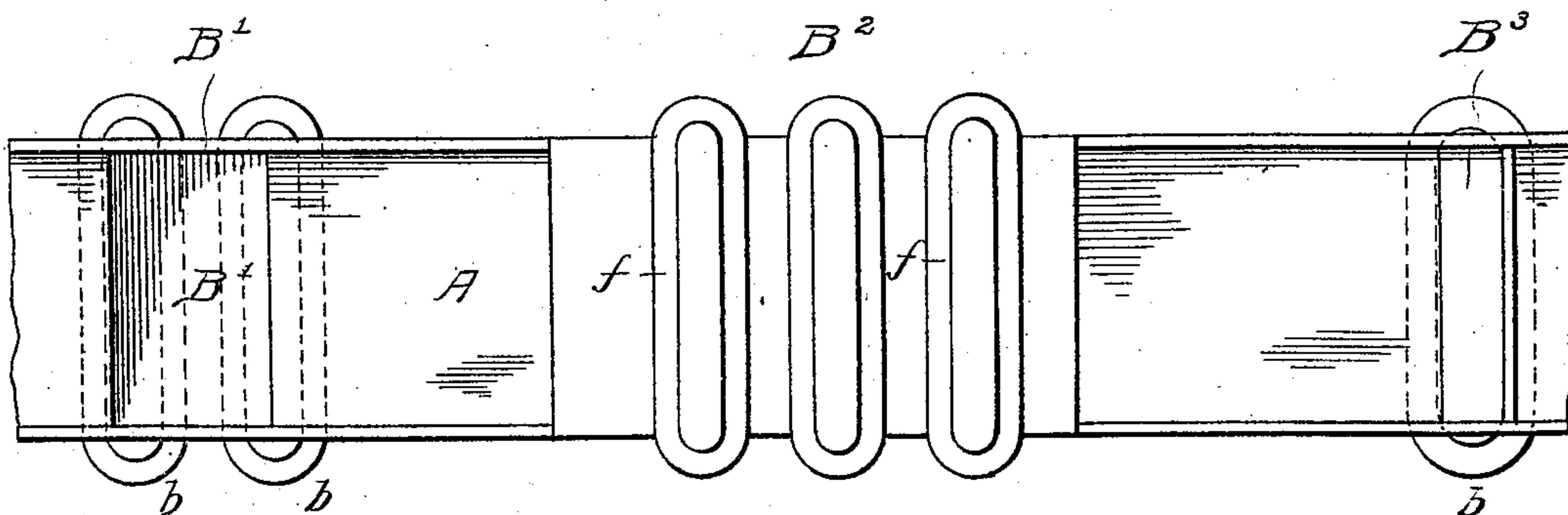


FIG. 2



Witnesses:
Jno. E. Parker
Burr Peoples.

Inventor:
Charles F. Pike.
By his Attorney
Wm. A. Pike.

UNITED STATES PATENT OFFICE.

CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR SEPARATING PRECIOUS METALS FROM MAGNETIC ORES.

SPECIFICATION forming part of Letters Patent No. 581,032, dated April 20, 1897.

Application filed April 6, 1894. Serial No. 506,655. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PIKE, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have invented certain Improvements in Apparatus for Separating Precious Metals from Magnetic Ores, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention has relation to ore-washers of the form having flumes or analogous receiving vessels with riffles thereon, in which the metal is recovered.

My invention has for its object a construction which prevents the magnetic ore or black sand gaining access to and accumulating in the riffle, thereby always maintaining it and its contained mercury in their normal condition and avoiding the washing or escape of the mercury from the riffle.

In the accompanying drawings, Figure 1 is a sectional elevation of a flume with riffles embodying my improvements, the same being broken away and illustrating different forms of the improvement; and Fig. 2 is a plan view of the same.

A represents the flume, and B' B² B³ different forms of riffles for use on the flumes. Whatever may be the form or construction of riffle used, it is included, either partly or wholly, within a field of magnetic or electrical force which acts to prevent the black sand accumulating in the riffle, as described hereinafter.

As shown at B', the riffle is depressed below the bottom of the flume and its under side is provided with an electromagnet *b*, of which the riffle itself may form the pole. This magnet *b* is in circuit with the source of supply *b'* to act to draw below the surface of the mercury all of the magnetic ore as it is washed down the flume, the shutting off of the current or the interruption thereof permitting at intervals the rising of the black sand above the mercury, so that it may be carried off by the current of water on the flume. If desired, the opposite edges of the riffle may be provided with lips *b²*, overhanging upon and into and penetrating the mercury to avoid any liability of black sand finding its way down between the bottom of the riffle or flume and the mercury.

As indicated at B³, the riffle is provided with a second series of magnets *f* above the riffle,

which act attractively to maintain the particles of sand suspended in the water of the flume. The magnets may be constantly or intermittently charged. When the latter is effected, a suitable circuit-breaker *g* is included in the circuit for said magnets.

By employing the intermittently-charged magnet the black-sand particles are repeatedly and successively dispersed and attracted to scatter such particles and afford freedom of escape of the metal particles to the mercury.

At B³ is shown a form of bar-riffle on the top surface of the flume, but, as before stated, any form of riffle may be used.

The magnets for the different riffles may be in a common circuit or each have its individual circuit.

The lips or flanges *b²* may be of any suitable material, and they may be rigid or flexible, as desired, and if the requirements of service admit they may be dispensed with.

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

1. In combination, a body of mercury upon or over which ore is placed or caused to move, an electromagnet above said body of mercury, an electromagnet below said body of mercury, and electric circuits in which said magnets are situated.

2. In combination, a body of mercury upon or over which ore is placed or caused to move, an intermittently-acting electromagnet above said body of mercury, an electromagnet below said body of mercury, and electric circuits in which said magnets are situated.

3. In combination with an ore-washing flume, a riffle thereon containing mercury, and overhanging edges, *b²*, at the opposite ends of the riffle, the inner free ends of said edges being below the upper surface of the mercury.

4. In combination with an ore-washing flume, a riffle thereon containing mercury, overhanging edges, *b²*, at the opposite ends of the riffle, the inner free ends of said edges being below the upper surface of the mercury, and a magnet above said riffle.

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

CHARLES F. PIKE.

Witnesses:

THOS. S. RODGERS,
S. J. VAN STAVOREN.