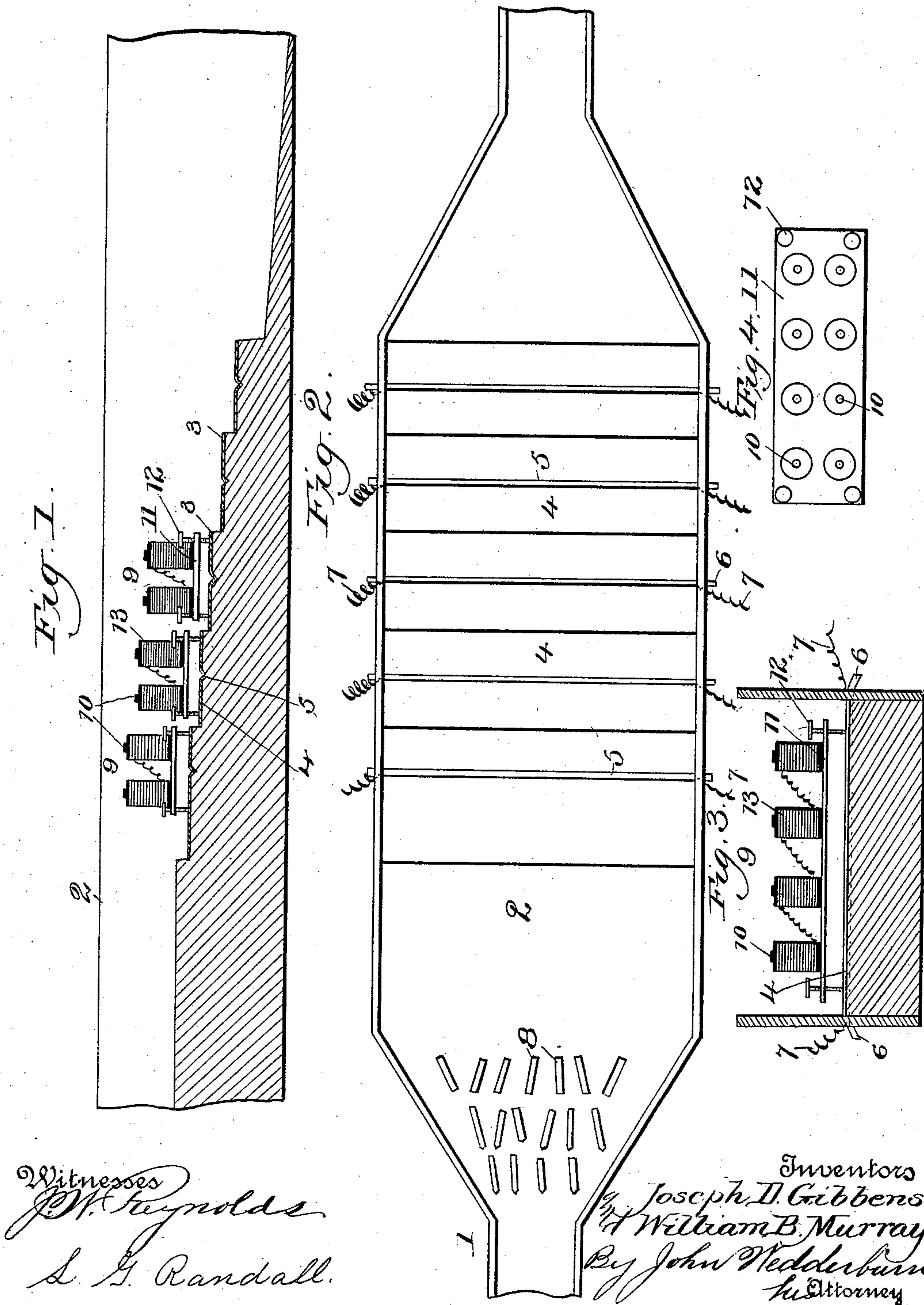


(No Model.)

J. D. GIBBENS & W. B. MURRAY.
ELECTROMAGNETIC GOLD SEPARATOR.

No. 539,804.

Patented May 28, 1895.



Witnesses
J. H. Reynolds
L. G. Randall.

Inventors
Joseph D. Gibbens
W. B. Murray
By *John Hedderburn*
his Attorney

UNITED STATES PATENT OFFICE.

JOSEPH D. GIBBENS AND WILLIAM B. MURRAY, OF PORTLAND, OREGON.

ELECTROMAGNETIC GOLD-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 539,804, dated May 28, 1895.

Application filed October 20, 1894. Serial No. 526,447. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH D. GIBBENS and WILLIAM B. MURRAY, citizens of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Electromagnetic Gold-Separators; and we 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.

Our invention relates to improvements in electro-magnetic ore separators, and has for its object the provision of means whereby flour gold may be quickly and readily removed from black sand during its course through a sluice in which are located amalgamating devices.

The invention consists of a stepped section or extension of the sluice-box covered with copper plates having lateral grooves therein for the reception of the mercury for amalgamating purposes, the said plates having placed thereon, a series of adjustable electro-magnets having a broad flat armature or core extension.

The invention further consists of certain details of construction and combination of parts which will be hereinafter more fully set forth.

In the drawings, forming a part of this specification, Figure 1 is a side elevation of a portion of a sluice extension with the side pieces removed. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation of one set of magnets, showing their common armature or core extension and the means for adjusting the same; and Fig. 4 is a plan view of the armature or core extension of the magnets.

Referring to the drawings, 1 represents a sluice box and 2 an enlarged extension thereof, in which are located our improved devices. We form the said extension into steps 3 gradually leading downward, and cover the said steps with copper plates 4 having lateral grooves 5, in the upper surfaces thereof. These grooves are adapted to hold mercury, and have spouts 6, through which the mercury may be drawn off. The said grooves are also provided at their outer ends with electric circuit wires 7, 7, connecting the same with a suitable source of electricity, by which the

mercury is enlivened. At the entrance of the extension 2, we place blocks of wood or other suitable obstructions 8, for the purpose of spreading the material to be treated from the sluice, in thin sheets over all portions of the plates 4.

9, 9, represent a gang of electro-magnets having soft iron cores 10, 10, which are made integral with or are attached to a common broad flat armature, or core extension 11. One gang of magnets with a single armature, is located upon each step 3, and the said armature is supported thereon at a slight distance therefrom, by means of the hand screws 12, 12, which adapt the said magnets with their common armature to be adjusted to and from the said steps. The coils 13 of the electro-magnets are connected up in series or in multiple arc, as may be desired. The magnets are located at such a distance from the steps 3 that they will not attract the magnetic particles mixed with the flour gold to them, but are near enough thereto to have such particles within the field of force of such magnets, to counteract the force of gravity upon the said particles, causing the same to flow off with the water and the free gold to be caught up by the mercury in the grooves 5.

The magnets can be adjusted to suit different qualities of sand by means of the screws 12, and a suitable resistance coil may be located between the dynamo or other source of electric supply and the magnets, for regulating the power of the latter.

It will be seen that we have devised a simple and effective device for the purpose, and one which will be within the reach of all as to cost. This has been described in its preferred form, but it is obvious that many minor changes may be made therein without departing from the nature or spirit of our invention or sacrificing any of its advantages.

Having now described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination with a stepped extension, of a sluice-box having grooved copper plates thereon adapted to be filled with mercury for amalgamating purposes, of electro-magnets arranged in gangs, located above the said steps

and provided with means for adjusting the same to and from the said steps, substantially as and for the purpose described.

2. In a device of the character set forth, the
5 combination with a stepped extension of a sluice-box having grooved copper plates thereon adapted to be filled with mercury for amalgamating purposes, of electro-magnets arranged in gangs having a common armature
10 or core extension, located above the said steps and provided with means of adjusting the same to and from the said steps, substantially as and for the purpose described.

3. In a device of the character set forth, the
15 combination with a stepped extension, of a sluice box, having grooved copper plates thereon adapted to be filled with mercury for

amalgamating purposes, of electro magnets arranged in gangs having a common armature or core extension located above said steps, set
20 screws passing through said armature and projecting on the under side thereof, upon which said magnets are adapted to rest whereby the same may be adjusted to and from said steps, substantially as and for the purpose de- 25 scribed.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JOSEPH D. GIBBENS.
WILLIAM B. MURRAY.

Witnesses:

SAML. GILLISCH,
J. L. WELLS.