

(No Model.)

T. A. EDISON.  
MAGNETIC ORE SEPARATOR.

No. 263,131.

Patented Aug. 22, 1882.

Fig. 1.

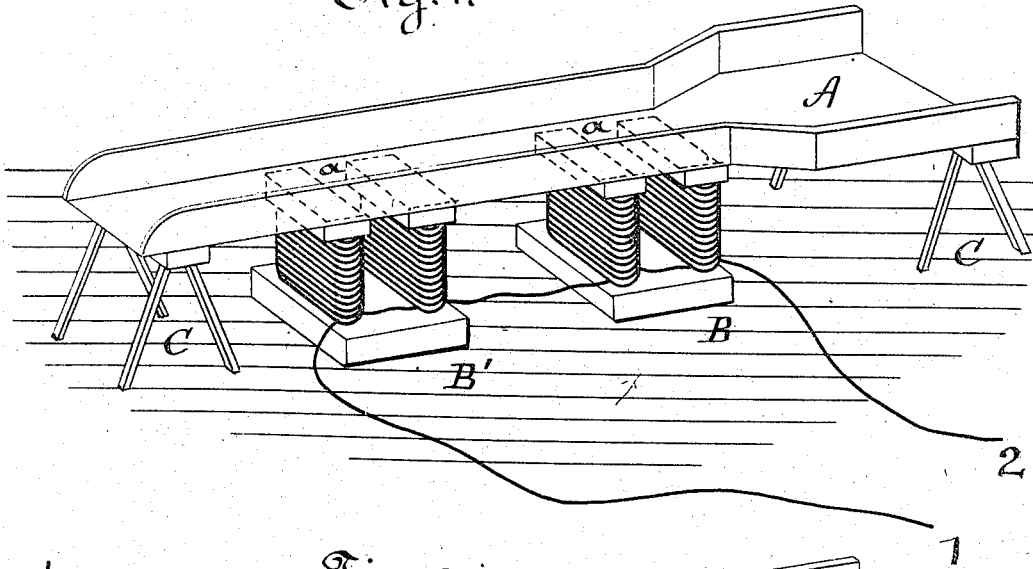
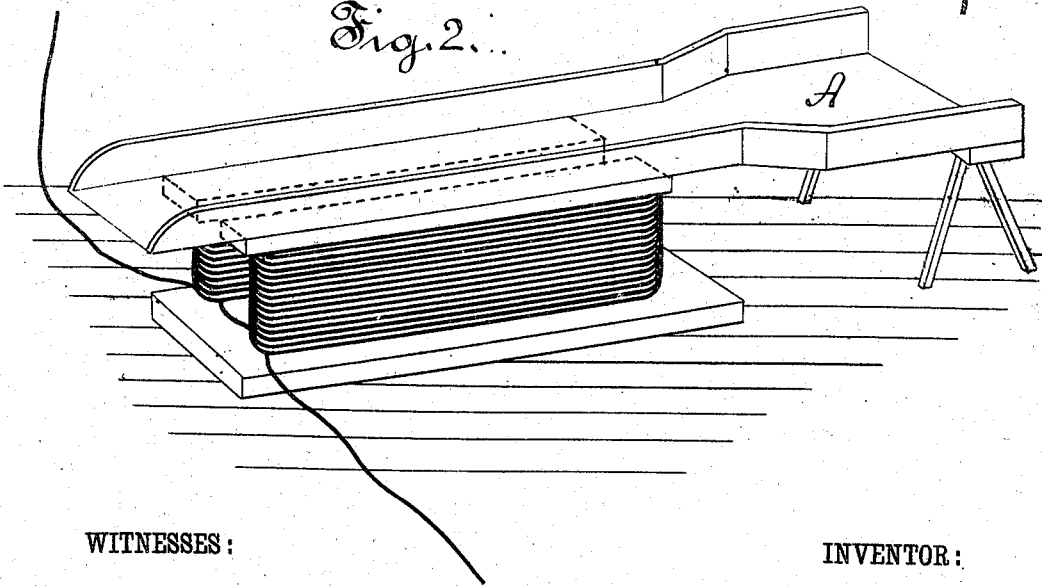


Fig. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## MAGNETIC ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 263,131, dated August 22, 1882.

Application filed June 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Magnetic Ore-Separators, (Case No. 329;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In my Patent No. 228,329, granted June 1, 1880, I have shown an apparatus for the separation of magnetic from non-magnetic substances. The present invention has in view the same object, but may be used in connection with hydraulic mining. The mingled magnetic and non-magnetic substances, accompanied by a stream of water, enter the upper end of an inclined trough or sluice, beneath which are placed a series of powerful magnets. When the magnetic substances pass above these magnets their motion is arrested and they collect at these points, while the remainder of the mixture is washed down to the end of the sluice.

One use of the invention is in the separation of magnetic iron from the sand and other substances which are usually found mixed therewith; and it may also be used in connection with hydraulic gold-mining, in which case the magnetic substances, which are always mingled with the auriferous material in sufficient quantities for the purpose, are held at various points in the bottom of the sluice-box and there form riffles for stopping the gold, these riffles being preferable to those ordinarily used, because they will never wear out, their substance being recruited by fresh supplies of material as fast as the first is carried away.

Convenient devices for carrying my invention into effect are shown in the annexed drawings, in which Figure 1 is a view in perspective of such a sluice or trough, while Fig. 2 shows a different arrangement of the magnets.

A is a suitable trough or sluice supported on proper standards C C in an inclined position. This trough may be of any desired material. If of magnetic material—as iron—it forms polar extensions of the magnets herein-after referred to, while if it be of non-magnetic material the magnets act therethrough sufficiently to accomplish the result desired.

B B are powerful horseshoe-magnets, preferably electro-magnets energized through conductors 1 2 from any suitable source of electricity. As shown, they are arranged in series, 55 but, if desired, they may be placed in multiple-arc or derived circuits.

The mixture of magnetic and non-magnetic substances enters the upper end of the trough, and is washed down by a stream of water. 60 The mixture may be a magnetic iron-sand, or any combination of magnetic with other materials. When the mixture comes within the influence of the magnet B the magnetic substances therein are attracted and a portion of 65 them are held to the bottom of the sluice, while the rest of the mixture passes on to the next magnet, B', where the same operation is repeated. A sufficient number of magnets are used to thoroughly separate the substances. 70 In Fig. 2 the magnets are placed under the sluice parallel therewith, and the magnetic substance collects between the poles thereof. The magnets, as seen, may be used to support the sluice, the standards C C being dispensed 75 with.

It is evident that permanent magnets, instead of electro-magnets, may be used, though the latter are preferable. The non-magnetic substance and the water are discharged at the 80 lower end of the sluice, and the magnetic material may be collected in any suitable manner. This construction involves the utmost simplicity and economy, and permits the change of any ordinary sluice box into a magnetic separator 85 without any cutting or fitting thereof, leaving it in such condition that it may be used, when desired, in any other method—results which, I believe, have not before been attained in this class of devices. Both the sluice-box and the 90 magnets being stationary, the iron particles are held in place and forced to do duty as riffles in the sluice-box.

As stated, in hydraulic gold-mining there will always be found mixed with the auriferous material, sand, &c., a certain amount of magnetic substance. This last, accumulating at the different points *a a* in the sluice beneath which magnets are placed, acts, instead of the usual riffles, to retain the particles of gold, 100 while the sand, &c., flows on to the end of the sluice. The gold and magnetic substance may

then be collected and separated by the process shown in my above-mentioned patent, or in any other suitable manner.

What I claim is—

- 5 1. The combination of a stationary sluice box or trough having a solid bottom or feeding-surface and one or more stationary magnets secured beneath the same, substantially as and for the purposes set forth.
- 10 2. The method of forming riffles in a mining-

sluice, consisting in arresting any magnetic substances which enter the sluice and holding these substances at various points by magnetic attraction, substantially as set forth.

This specification signed and witnessed this 4th day of June, 1881.

THOS. A. EDISON.

Witnesses:

H. W. SEELY,  
RICHD. N. DYER.