(No Model.) 3 Sheets—Sheet 1.

L. G. ROWAND.

MAGNETIC ORE SEPARATOR.

No. 590,808. Patented Sept. 28, 1897.

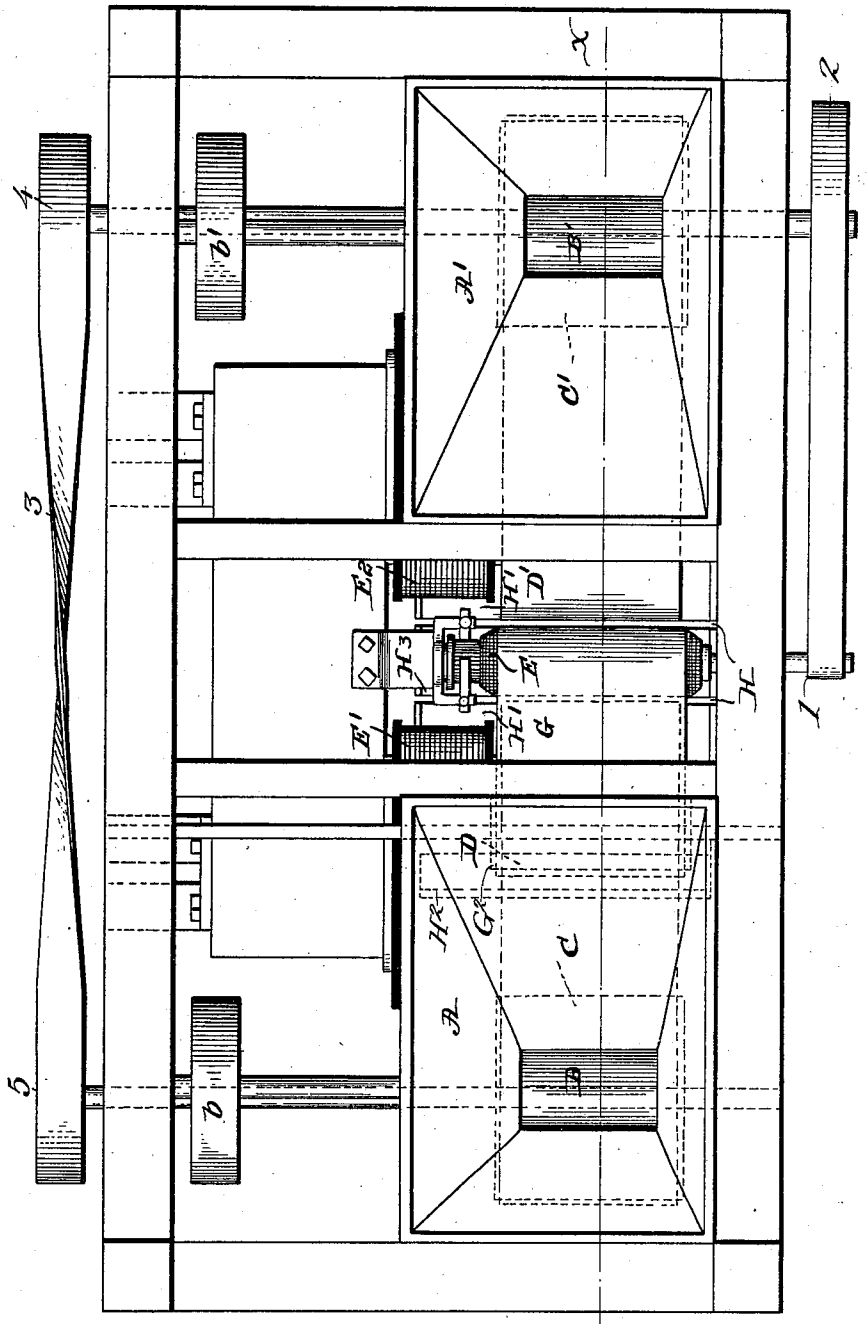


Fig. 1.

Witnesses.

Jesse B. Heller

Carol H Deshong

Inventor.

Lewis G. Rowand

W. G. Harding

Attorney.

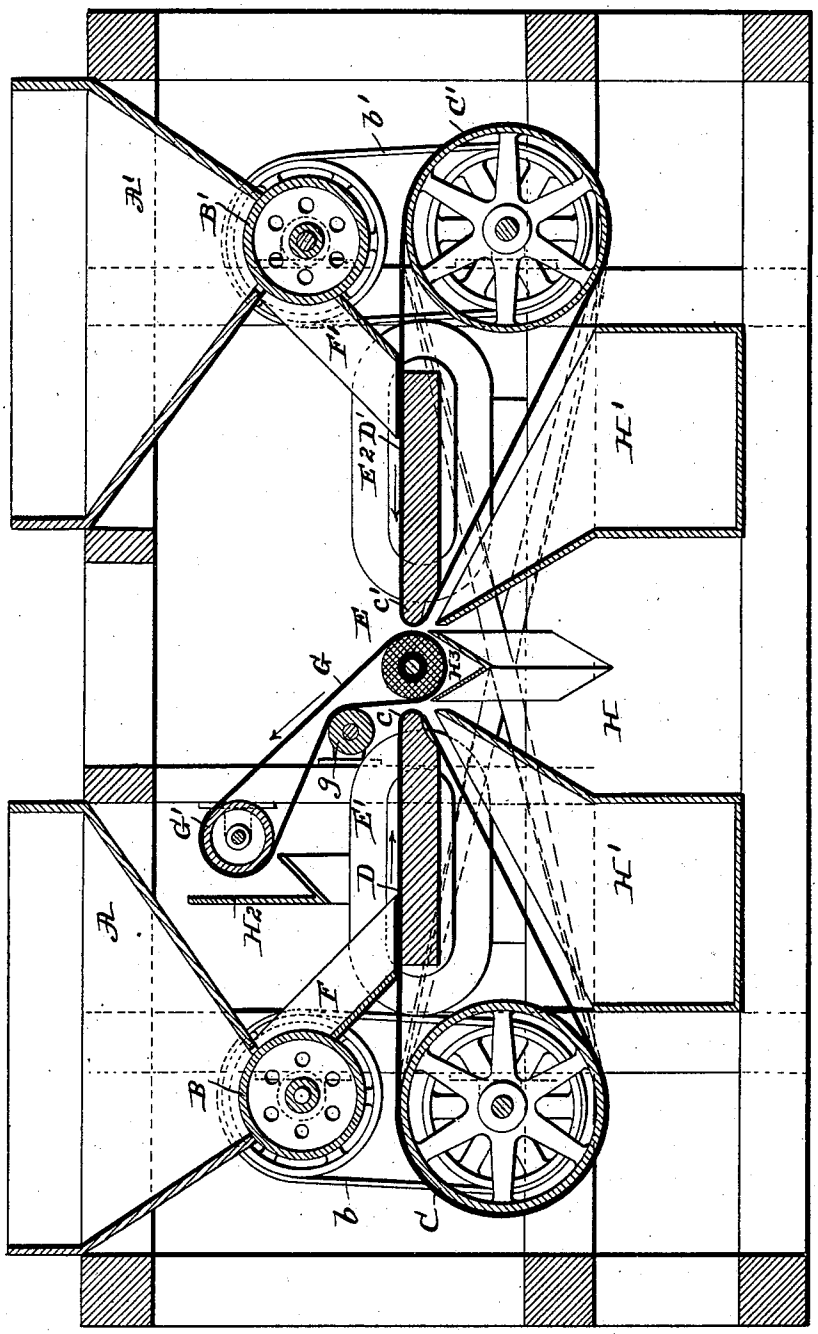
THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

L. G. ROWAND.

MAGNETIC ORE SEPARATOR.

No. 590,808. Patented Sept. 28, 1897.



Witnesses.

Jesse B. Keller.

Carol H. Deshong.

Fig. 2.

Inventor.

Lewis G. Rowand

by G. D. Harding

Attorney.

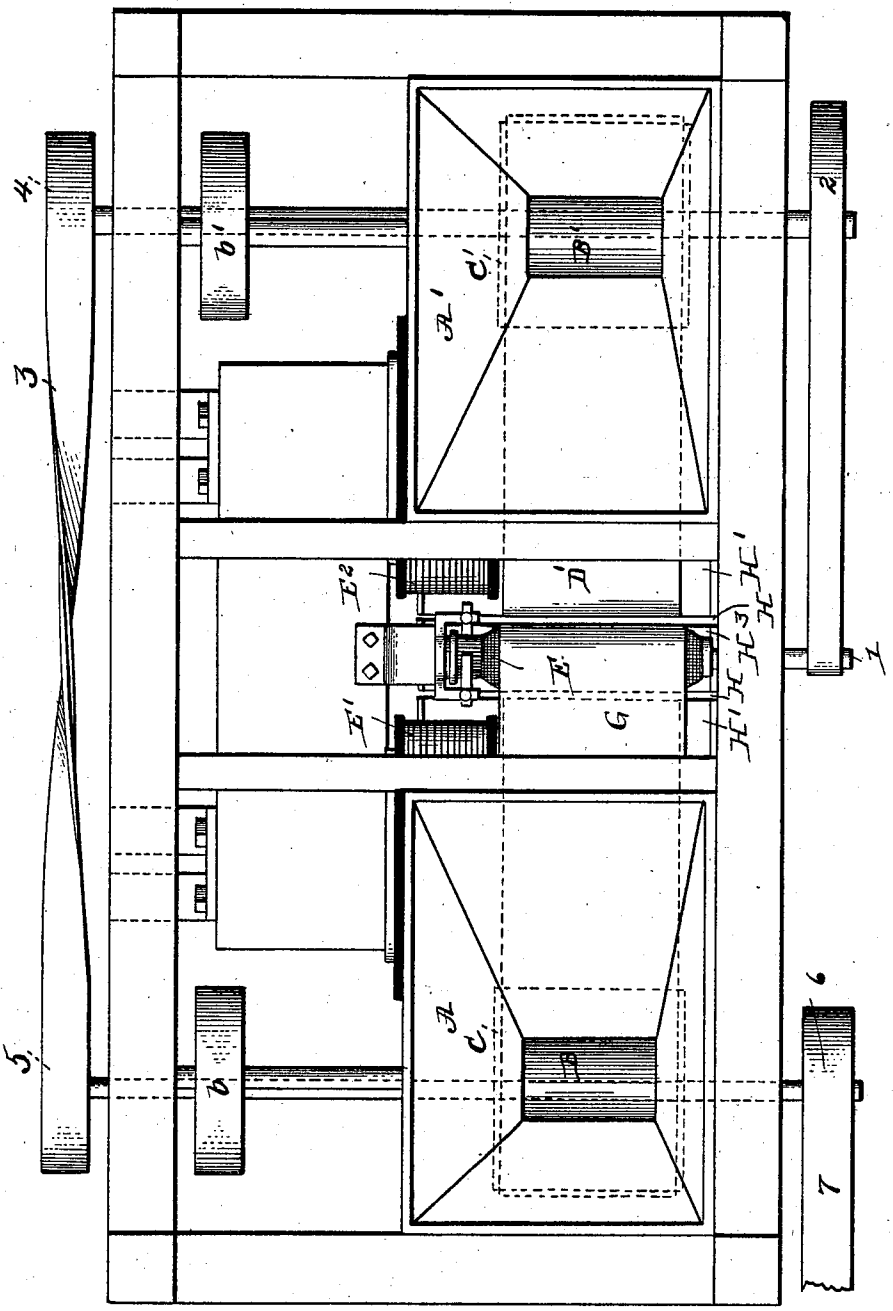
THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

L. G. ROWAND.

MAGNETIC ORE SEPARATOR.

No. 590,808. Patented Sept. 28, 1897.



Witnesses.
Jesse B. Keller.
Carol. H. Deshong.

Inventor.
Lewis G. Rowand
by J. P. Steadman
Attorney.

FIG. 3.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LEWIS G. ROWAND, OF CAMDEN, NEW JERSEY.

MAGNETIC ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 590,808, dated September 28, 1897.

Application filed December 22, 1896. Serial No. 616,671. (No model.)

To all whom it may concern:

Be it known that I, LEWIS G. ROWAND, a citizen of the United States, residing at Camden, county of Camden, and State of New Jersey, have invented a new and useful Improvement in Magnetic Ore-Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object the production of certain improvements in magnetic ore-separators to make their construction more simple and less expensive and to cause the separation to be more certainly and better carried out. To that end, speaking generally, instead of charging the magnet from a source independent of itself and using separate mechanism to drive the conveying-belts, &c., I use an electric machine to generate the magnetic field and use said machine not only to form a magnetic field, but by connecting said machine and the conveying-belts, &c., I can operate the same from a single source of power or use the electric machine to drive the conveying-belts, &c.

I will first describe the embodiment of my invention illustrated in the accompanying drawings and then point out the invention in the claims.

In the drawings, Figure 1 is a plan view of my improved device. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a view similar to Fig. 1, showing the connection for the dynamo.

A A′ are the ore-hoppers.

B B′ are the feed-rollers.

C and C′ are the belt-conveyer rollers, and D D′ are conveyer-belts.

E is the armature of the electric machine, and E E′ its magnets. A belt passes from a small pulley 1 on the shaft of the belt-conveyer roller C′, and a crossed belt 3 connects pulleys 4 and 5 on the shafts of rollers C′ and C, respectively. A belt *b* connects shaft of roller C and shaft of roller B, and a belt *b′* connects shaft of rollers C′ and B′. The rounded ends *c* and *c′* of magnets E′ and E^2 are in proximity to armature E, and the belts, by the revolution of the rollers C and C′, respectively, are moved toward the armature E.

F F′ are spouts or chutes connecting the feed-rollers B and B′, respectively, with their corresponding belts.

G is a belt leading from the armature around roller G′, *g* being a guide-roller for said belt.

If the electric machine is a motor, it is connected with a source of current-supply and its armature revolved. This causes the belts D and D′ and G to move in the direction of the arrows and causes the feed-rollers to revolve. Now the ore being fed into the hoppers A and A′ is by the feed-rollers carried to the chutes F and F′ and passes onto the belts D and D′. By these belts the ore is carried into the magnetic field, when such portion of the ore as is magnetic is attached to the conveyer-belt, so that when the belt passes around the ends of magnets *c c′* the magnetic ore passes around with the belt, while the non-magnetic ore falls into the receptacle H.

As soon as the magnetic ore carried by the belt around the ends *c c′* gets beyond the magnetic field it ceases to be affected by it and drops into the receptacle H′. While the belt is passing around the ends *c c′*, a certain portion of the magnetic ore may be attracted by the armature. This would be caught by belt G and either fall into receptacle H^3 or be carried out of the magnetic field, when it would drop into the receptacle H^2.

Instead of using an electric motor to form the magnetic field I can use a dynamo connected to the conveyer-belts, &c., the same as the motor, and drive the dynamo from a source of power, and the dynamo will in turn create a magnetic field and operate the conveyer-belts, &c., as in the case of the motor. Where I use the term "electric machine" in this specification and claims, I intend to define either a motor or a dynamo. When I use a dynamo to form a magnetic field, the construction is such as shown in Fig. 3, which is the same as Fig. 1, with the exception that upon the shaft of the roller C, I place a pulley 6, upon which passes a belt 7 from an appropriate source of power.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a magnetic ore-separator, the combination of an electric machine, a conveyer-belt traveling within and beyond the magnetic field of said electric machine, a receptacle

beneath said conveyer within vertical lines through the horizontal limits of the magnetic field, and a receptacle beneath said conveyer beyond the magnetic field of said electric machine.

2. In a magnetic ore-separator, the combination of an electric machine, a conveyer-belt traveling within and beyond the magnetic field of said electric machine, a receptacle beneath said conveyer within vertical lines through the horizontal limits of the magnetic field, and a receptacle beneath said conveyer beyond the magnetic field of said electric machine, and connection between the shaft of the electric machine and the driving-pulley for said conveyer.

3. In a magnetic ore-separator, in combination, an electric machine, conveyer-belts each traveling partially within and beyond the magnetic field of said electric machine, a receptacle beneath said conveyers within vertical lines through the horizontal limits of the magnetic field, and a receptacle beneath each conveyer beyond the magnetic field of the electric machine.

4. In a magnetic ore-separator, in combination, an electric machine, conveyer-belts each traveling partially within and beyond the magnetic field of said electric machine, a receptacle beneath said conveyers within vertical lines through the horizontal limits of the magnetic field, a receptacle beneath each conveyer beyond the magnetic field of the electric machine, and a conveyer extending from the armature to a point beyond the magnetic field of the electric machine, and receptacles beneath said conveyer, one within, the other beyond said magnetic fields.

5. In a magnetic ore-separator, in combination, an electric machine, conveyer-belts each traveling partially within and beyond the magnetic field of said electric machine, a receptacle beneath said conveyers within vertical lines through the horizontal limits of the magnetic field of the electric machine, and receptacles beneath said conveyers beyond the magnetic field of the electric machine, and connection between the armature-shaft and the driving-pulleys of said conveyers.

In testimony of which invention I have hereunto set my hand.

LEWIS G. ROWAND.

Witnesses:
CAROL H. DESHONG,
M. F. ELLIS.