(No Model.)

E. B. HASTINGS.

MAGNETIC APRON CYLINDER FOR ORE SEPARATING MACHINES.

No. 290,182. Patented Dec. 11, 1883.

Fig I,

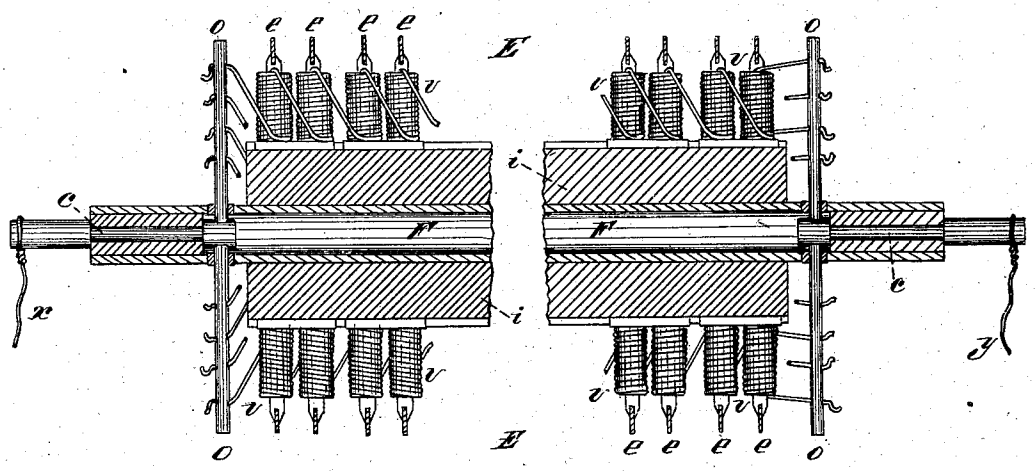


Fig II,

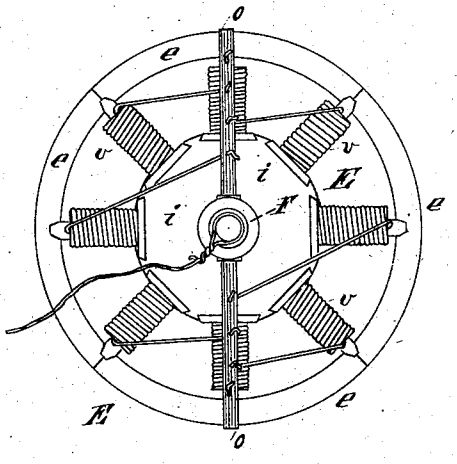
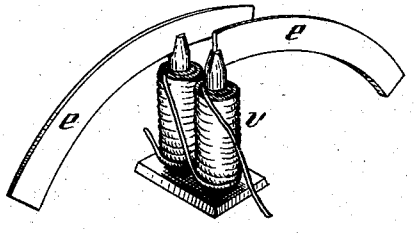


Fig III,



Witnesses,
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UNITED STATES PATENT OFFICE.

EMORY B. HASTINGS, OF PALMER, MASSACHUSETTS, ASSIGNOR TO THE HASTINGS CONCENTRATOR COMPANY, OF SAME PLACE.

MAGNETIC APRON-CYLINDER FOR ORE-SEPARATING MACHINES.

SPECIFICATION forming part of Letters Patent No. 290,182, dated December 11, 1883.

Application filed September 10, 1883. (No model.) Patented in England January 21, 1881, No. 277.

To all whom it may concern:

Be it known that I, EMORY B. HASTINGS, a citizen of the United States, residing at Palmer, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Magnetic Apron-Cylinders for Ore-Separating Machines, of which the following is a specification.

This invention relates to improvements upon the device for separating ores for which Letters Patent of the United States were granted me December 28, 1880, No. 236,023, to which reference is made, and which device, among other features, embraced a magnetic roll or drum, which was constructed to attract particles of metal found in crushed rocky ore, when the latter was distributed upon a metallic apron moving over the drum or roll, to retain said metallic particles upon the apron when the non-metallic substance had fallen off by gravitation; and this improvement relates to the construction of the magnetic drum, whereby in a strong and compact form a powerful electro-magnetic surface is formed, the improved surface of the roll itself being adapted to come in immediate contact with and sustain the apron, and through its increased power to more perfectly separate all metal from the refuse.

In the drawings, Figure I is a partial longitudinal section of my improved magnetic apron-drum. Fig. II is an end view of the same, and Fig. III is a detail view.

In the patented device before mentioned a porous endless apron moving over two rolls—one of which was the magnetic one—carried mixed refuse and metallic particles over the magnetic roll, the refuse to fall over the end of the machine, while the metal under magnetic influence adhered to the moving apron until, when it finally fell, a complete separation was effected. Said magnetic roll was constructed with a series of armatures arranged around it parallel to each other, each of them extending from end to end of the roll. Such a roll, however, lacks the requisite magnetic strength to wholly effect the object of its construction; but by forming the roll in the following manner ample power is secured. The entire surface of roll E, over which the apron of the machine passes, is composed of magnetic extended cores, as hereinafter described. The drum E, hung in suitable bearings on the shaft, may be provided with a driving-pulley, or may receive its motion from the apron. The drum E is constructed upon a hollow shaft, F, over which is a tubular wooden casing, *i*, and upon the outer surface of said wooden casing are secured the magnets *v*, arranged in longitudinal rows, as shown in Figs. I and II, and said magnets are provided with segmental-shaped extended cores *e*, secured in the slotted point of each of the magnetic cores, and are arranged relative to each other, as shown in Fig. III. Through perforations through the hollow shaft F, bushed with insulating material, are fixed four connection-posts, *o o o o*, of metal, which are firmly connnected to two copper or other suitable bars, *c c*, which are fixed in an insulated position in the end of shaft F, as shown in Fig. I. To the outer ends of bars *c* connection is made with any suitable electrical generator by wires *x y*, and the wires of each row of magnets on the drum are connected, and from the outer ones connection is made with posts *o*, as shown in Figs. I and II. The bearings of shaft F in the frame of the machine, when it is mounted therein, are so arranged as not to interfere with bars *c;* and it will be understood that the wires *x y* are held in contact with the surface of bars *c* as they revolve by means of any well-known devices used for that purpose.

It will be seen that the core-extensions *e* of the magnets are so arranged that the end of one stands opposite, or nearly so, the center of the adjoining one, as indicated in Fig. III. In so arranging the core-extensions, a more unbroken core-surface is formed on drum E for the apron to pass over, and an evener magnetic action is obtained, while by the construction of the entire drum E, as described, a powerful magnetic surface is obtained.

Now, having described my invention, what I claim is—

The within-described magnetic roll or drum for magnetic ore-separating machines, consisting of the hollow shaft F, tubular casing *i*, magnets *v*, core-extensions *c*, and connections *o* and *c*, all combined and arranged, substantially as shown and described, to form in effect an electro-magnetic cylinder of segmental core-extensions superimposed upon radial magnets.

E. B. HASTINGS.

Witnesses:
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