(No Model.)

R. A. RIPLEY & J. BRIDGFORD.

MAGNETIC ORE SEPARATOR.

No. 306,778. Patented Oct. 21, 1884.

Fig 1

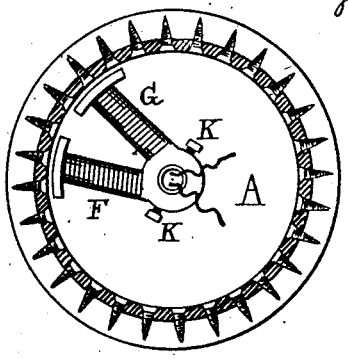
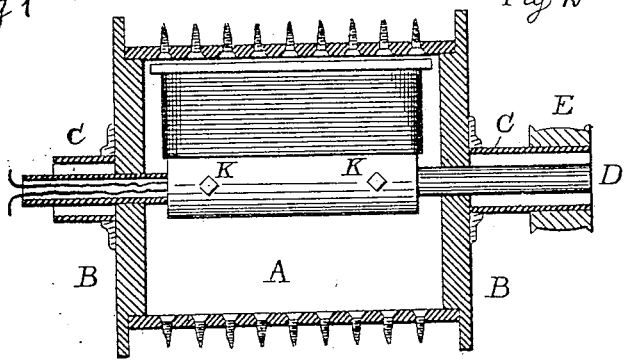


Fig 2



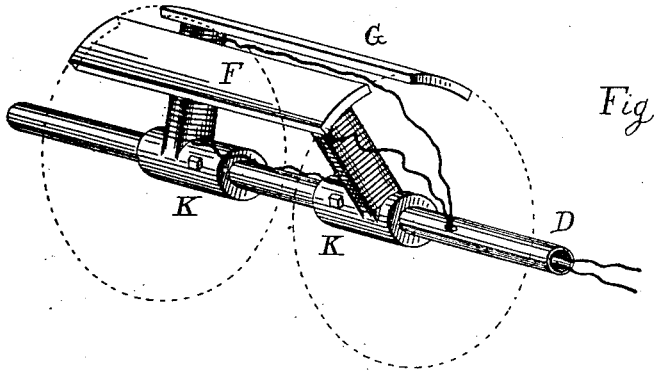


Fig 3

Fig 4

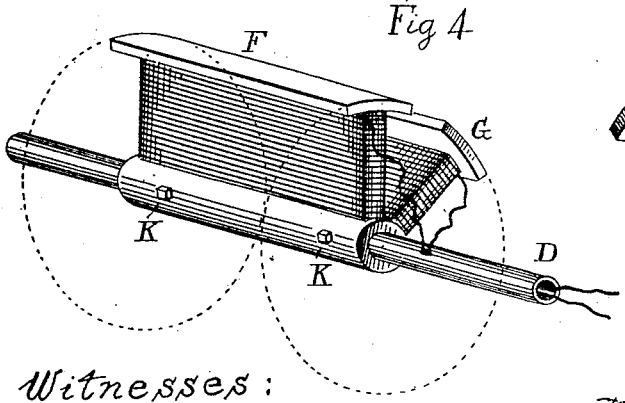
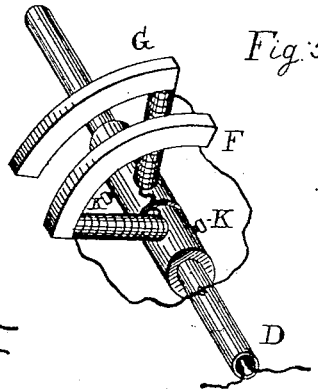


Fig 5



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UNITED STATES PATENT OFFICE.

ROBERT A. RIPLEY, OF NEW YORK, AND JOHN BRIDGFORD, OF ALBANY, N. Y.

MAGNETIC ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 306,778, dated October 21, 1884.

Application filed December 18, 1883. (No model.)

To all whom it may concern:

Be it known that we, ROBERT A. RIPLEY, and JOHN BRIDGFORD, citizens of the United States, and residing, respectively, at the city, county, and State of New York, and at the city of Albany, county of Albany, and State of New York, have invented a certain new and Improved Magnetic Ore-Separator, of which the following is a specification.

This invention pertains to certain special improvements in the construction of magnetic ore-separators; and it consists, chiefly, in the combination, with a revolving cylinder, of spikes or projections upon its periphery, over which the ore in a finely-pulverized condition is permitted to fall in a sheet, and one or more pairs of stationary electro-magnets within the cylinder, as hereinafter particularly described, and pointed out in the claims. In the interior of said cylinder is arranged one or more pairs of electro-magnets, having their surfaces located in such proximity to the projecting spikes or points on the exterior that they will become magnetized, so as to attract the metallic portions of the ore in its descent upon them, and carry it around in its rotation out of the descending stream of gangue or waste products.

Figure 1 represents a transverse section of the cylinder with one pair of electro-magnets arranged upon the stationary axle in the interior. Fig. 2 is a longitudinal section of the cylinder. Fig. 3 is a perspective view representing a modified construction of magnets as supported upon the stationary axle. Fig. 4 is a perspective view of the magnets shown in Fig. 1. Fig. 5 is another view, in which the magnetic poles are represented as arranged circumferentially with respect to the axle, but also embodying the same principle of construction.

At A is represented the cylinder, which may be formed of wood or any other substance which is a non-conductor, and may consist of staves supported upon wooden heads, as at B, which are provided with bearings at C, for revolving upon the hollow shaft, as at D, said shaft or axis being supported in any suitable manner, as upon pedestals, upon a frame or otherwise. Upon one of the sleeves connected with the cylinder is a pulley, as at E, by which motion may be given to the cylinder. Upon the said hollow axis are mounted the electro-magnets F and G, which may be made of any desired form, and are fastened and held in any desired position upon the said axis by set-screws K. The wires that lead to and from the battery or generator extend out through the said fixed axis or tube, as represented, so that the said magnets are constantly in action while such connection exists, and as the poles of said magnets are in close proximity to the interior of the heads of the metallic spikes, which may be screws extending through the wooden staves of the cylinder, there will be a magnetic field formed upon the exterior projections of said spikes for the purpose of collecting the ore upon them as it falls upon the periphery of the cylinder, and as the cylinder slowly revolves over said field the ore collected and held by the spikes will be carried over or under, as the case may be, out of the way of the descending current of pulverized material, and after it passes the said magnetic field it will then cease to be attached upon the spikes, and will drop therefrom or be separated from contact therewith.

The form of magnets as represented at Figs. 3 and also at 5 are merely modifications of well-known forms of magnets, corresponding substantially to what is known as the "horse-shoe-magnet," and the poles are mounted upon arms which extend out from the support fastened upon the stationary axis. In these modifications the poles extend longitudinally in opposite directions from the arms to which they are connected, so as thereby to reverse the poles, the object being to equalize the magnetic force of the magnets over the interior surface of the cylinder.

The magnets represented at Fig. 4 are the same as those represented in Figs. 1 and 2, having their arms extending the entire length of the surface constituting the magnetic field.

By using ordinary soft-iron screws or spikes of a similar character it is evident that a very large extent of magnetic surface can be produced for the purpose of separating the ore from the gangue, and by such a construction an ore-separating machine may be made very cheaply, and at the same time very efficient in its operation.

We claim—

1. In an ore-separator, the combination of a revolving cylinder having a non-conducting

periphery, a series of conducting projections extending from the periphery of the cylinder, magnets mounted in a fixed position within the cylinder and in proximity to said projections, and means for revolving the cylinder to carry the said projections into and out of the magnetic field, substantially as described.

2. In an ore-separator, the combination of a revolving cylinder having a non-conducting periphery, a series of soft-iron projections extending from the periphery of the cylinder, and magnets mounted in a stationary position within the cylinder, with their poles extended longitudinally in opposite directions from the arms to which they are connected, substantially as described.

In witness whereof we have hereunto subscribed our names and affixed our seals in the presence of two subscribing witnesses.

ROBERT A. RIPLEY. [L. S.]
JOHN BRIDGFORD. [L. S.]

Witnesses:
EUGENE ELIOT,
HARRY L. EDWARDS.