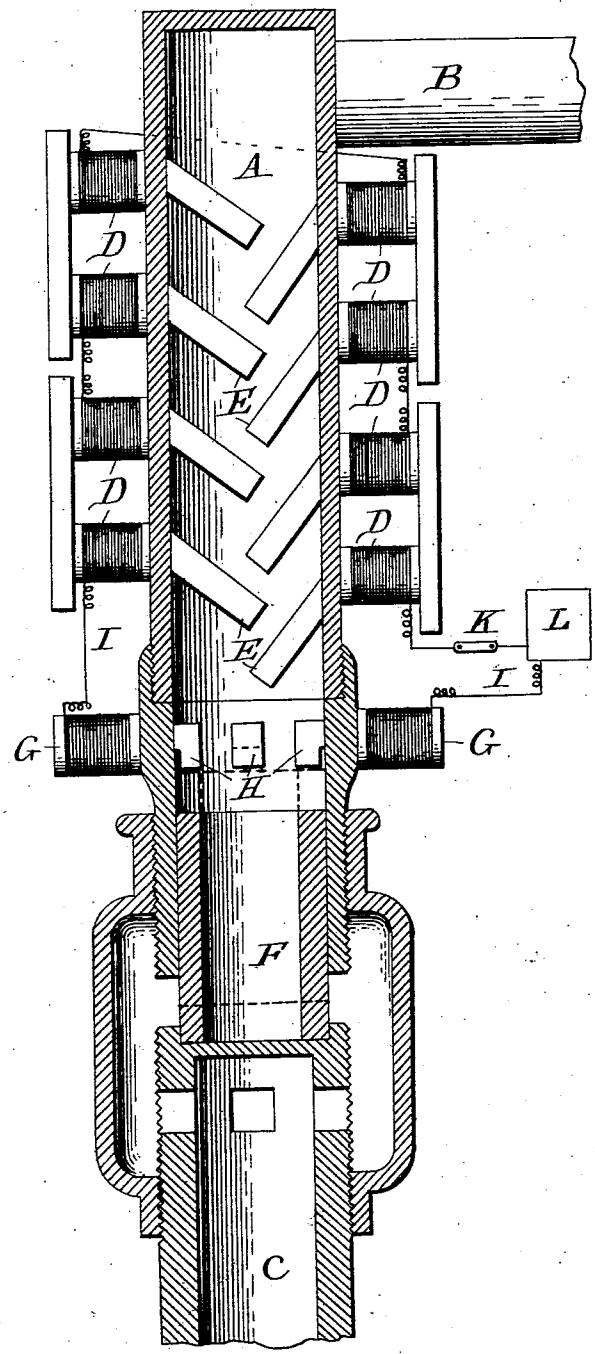
(No Model.)

H. H. WHITACRE & A. C. WOLFE.

ELECTRIC METAL SEPARATOR.

No. 564,859. Patented July 28, 1896.



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UNITED STATES PATENT OFFICE.

HARVEY HILLARD WHITACRE AND ANDREW CURTIN WOLFE, OF WELLSVILLE, OHIO.

ELECTRIC METAL-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 564,859, dated July 28, 1896.

Application filed November 8, 1895. Serial No. 568,327. (No model.)

To all whom it may concern:

Be it known that we, HARVEY HILLARD WHITACRE and ANDREW CURTIN WOLFE, citizens of the United States, residing at Wellsville, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Electric Metal-Separators; and we do 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, reference being had to the letters of reference marked on the accompanying drawing, which forms a part of this specification.

Our invention has for its object the separation or elimination of any iron or steel metallic particles which may be found in fluid, fluid solutions, or dry materials used in the various arts, such as in pottery-clays, &c., that contain metal particles which interfere in the process of molding, and which would discolor the products.

To accomplish this object, our invention consists in the following construction and combination of features, the details of which will first be described and the novel points then indicated and claimed.

The drawing illustrates a partial vertical section and elevation of an apparatus to which we have applied our improvements and which embody our invention.

Any fluid or pulverulent mass, of whatever description, containing iron or steel particles therein, is adapted to be acted upon by our apparatus for the purpose of eliminating such particles.

We have used our apparatus for the separation of metallic particles with the best results in the following cases: potters' clay, brickmakers' clay, china-clay, English ball-clay, spar, flint, enamels for brick, brick-glazes, china-glazes, &c.

A represents the separator-receptacle. This receptacle consists of any desired shape or form of trough, pipe, or box, having a suitable induction-pipe B and eduction-pipe C.

D is a series of magnets disposed upon opposite sides of the box, the poles of which project through the walls of said box A, where they are made fluid-tight, and are then inclined preferably toward the outlet of the box at an angle of about forty-five degrees, more or less. The relation of the poles E of the magnets D is such that those which project from one side of the box are substantially at right angles to those which project from the opposite side, thereby forming an interlocking or zigzag disposal of the poles, which provide a tortuous or irregular passage through the separator-box, in order to more thoroughly intercept, attract, and eliminate all the metallic particles from the solution as it passes therethrough. The efficiency of such a disposal of pole-pieces within the separator-boxes effects a more complete and speedy separation of the metallic particles from the solution than is possible where the poles project into the box at right angles thereto.

F is a tubular slide-valve located at the discharge end of the separator.

G is a radially-disposed series of magnets, the poles H of which project into the pipe and are bent at right angles, as shown, for the purpose of attracting the valve F thereto for the purpose of opening it. When these magnets G are not energized, the weight of the valve causes it to fall and seat itself.

L is a source of electrical energy, as a dynamo or battery, and I is a series of wire connections, connecting the magnets D and G in series.

K is a switch for opening or closing the circuit.

The metal-separator magnets D and the valve-operating magnets G are simultaneously operated, so that the valve F opens at the same time that the apparatus is put in operation.

To remove the separated material from the collector, the switch K is opened and the magnets demagnetized, which permits the material to fall off and sink to the valve-seat. The valve is then opened and a strong current of clear water sent through the pipes, which will wash away the accumulated material. A separate circuit for operating the valve-magnets may be employed, if desired.

We file of even date herewith cases relating to similar subject-matter, marked A and B, Serial Nos. 568,325 and 568,326.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination of a metal-separating receptacle, a series of magnets disposed alongside thereof the poles of which project therein, an electrically-operated valve connected with said receptacle, a magnet for operating said valve, a source of electrical energy, and wire connections, whereby the series of magnets and the valve-operating magnet are actuated.

2. A metal-separating receptacle provided with a series of magnets the poles of which project through the sides thereof, and incline toward one end of the receptacle at oppositely-different angles, a valve, and magnets having poles projecting into the receptacle and bent toward the valve to attract the same.

In testimony whereof we affix our signatures in the presence of two witnesses.

HARVEY HILLARD WHITACRE.
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Witnesses:
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