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E. GATES.
MEANS FOR ELECTRIC SEPARATION.
APPLICATION FILED MAR. 25, 1903.

NO MODEL.

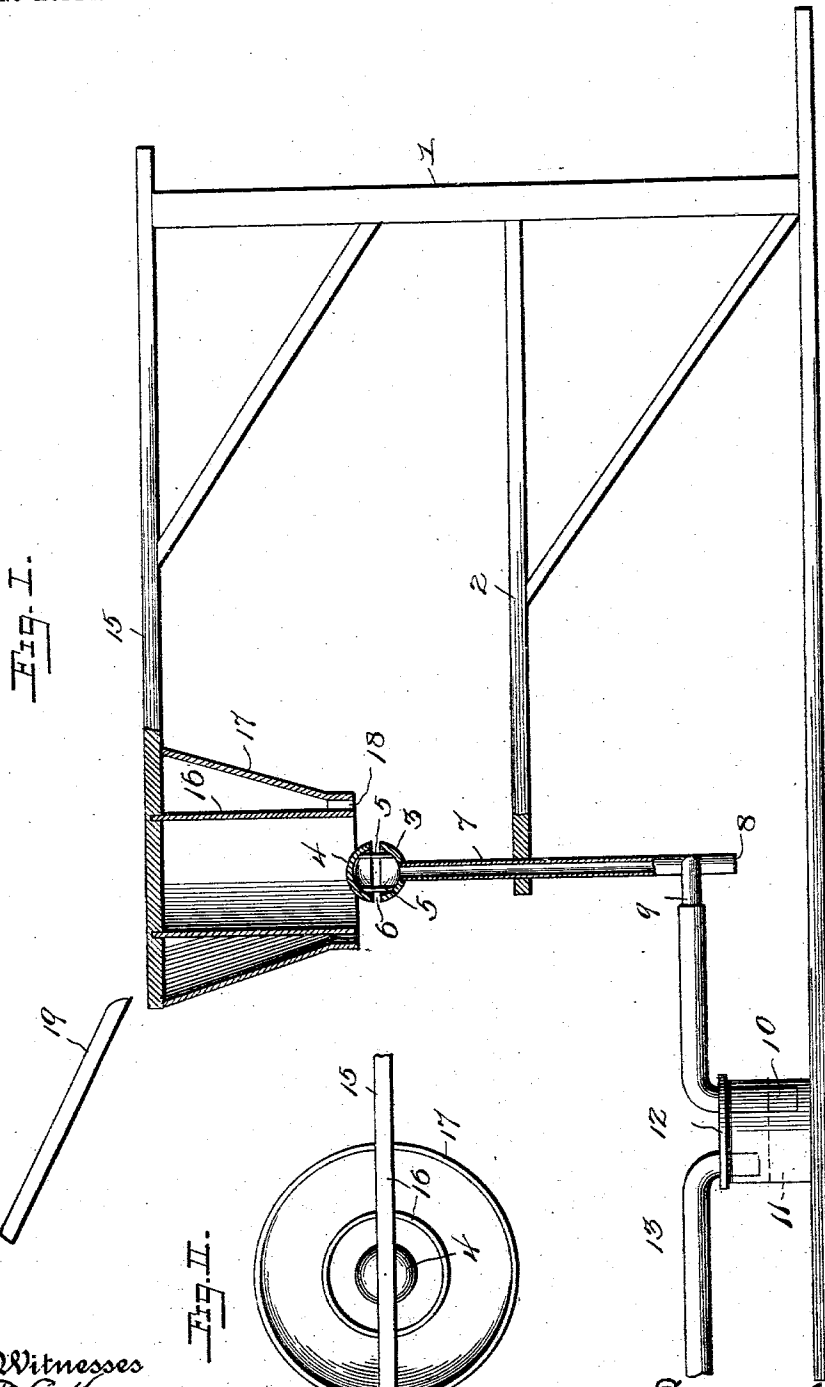


Fig. I.

Fig. II.

Witnesses
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MEANS FOR ELECTRIC SEPARATION.

SPECIFICATION forming part of Letters Patent No. 743,710, dated November 10, 1903.

Application filed March 25, 1903. Serial No. 149,548. (No model.)

To all whom it may concern:

Be it known that I, ELMER GATES, of Chevy Chase, in the county of Montgomery, State of Maryland, have invented a certain new and useful Means for Electric Separation, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of my invention is to produce improved means for practicing the method described and claimed in my application Serial No. 141,090, filed January 30, 1903, whereby the operative area of the electrified body or collecting member described therein is amplified and the efficient operation of the method augmented.

In the accompanying drawings, Figure I is a side elevation, partly in section, of a portion of the apparatus for practicing electric separation in accordance with my method described in the application above referred to. Fig. II is a top plan view of the hopper and collecting member shown in Fig. I.

Referring to the numerals on the drawings, 1 indicates a portion of the frame or case of a static electric machine, which, as upon a bracket 2, projecting therefrom, supports one of the terminals of the machine, of which, as is well understood in the art, there are always present two. The terminal is in general contour of the usual spherical shape, but is composed of a pair of oppositely-disposed hemispheres 3 and 4, united, as by studs 5, and separated peripherally, so as to present an annular crevice 6 between them. The members 3 and 4, which are substantially and by preference hemispheres, but not exactly so, owing to the presence between them of the crevice 6, are supported by a tube 7, whose open end opens into the interior of the collecting member defined by the parts 3 and 4 and whose lower end 8 is closed. Communicating with the interior of the tube 7 is a branch pipe 9, whose end 10 dips into a volume of liquid 11, contained within a closed receptacle 12, from an air-space, within which leads a pipe 13, that communicates with a source of suction or rarefaction of air. (Not illustrated.)

From the foregoing description it will be apparent that the apparatus above described differs from that described in my previous ap-

plication hereinbefore referred to only in respect to the construction of the collecting member, by which the annular crevice 6 is defined. The crevice 6 or opening into the collecting member is made annular in order to utilize the entire field of energy, which is in practice generated about the collecting member on all sides, it being obvious that if the mass to be separated be exhibited to the collecting member in a tubular veil a collecting member such as I have herein shown and described may be employed advantageously to separate therefrom the electrically-attractable constituents. With that end in view I provide upon a suitable support—for example, a shelf 15—a pendent cylinder 16, coaxially disposed about the collecting member, and an inverted truncated cone 17, surrounding the cylinder 16, and defining between them at their lower ends a thin annular discharge-aperture 18, which serves by the action of gravity to exhibit to the collecting member a thin veil of material to be separated of tubular shape. 19 indicates a spout by which the commingled mass of material to be separated is fed to the interior of the hopper defined by the members 16 and 17.

It is obvious that inasmuch as my invention consists in exhibiting material to be separated in a cylindrical or tubular veil to a collecting member provided with an annular crevice to receive the attractable particles drawn from the mass by the electrical attraction of the collecting member it would be practicable to transpose the relative positions of the veil of material and the collecting member—in other words, to surround the veil of material to be separated by the collecting member instead of surrounding the collecting member by the veil. This, however, is a mere formal variation, and the preferred structure of apparatus embodying the principle of my invention is described and illustrated.

The operation of my apparatus is as follows: Material to be separated being fed from the spout 19 in a loose or pulverulent mass slips through the opening 18 from the hopper in the form of a tubular veil disposed about the collecting member. That member being properly electrified, the electrically-attractable particles are drawn toward it. As they

approach the collecting member they are caught by a current of air produced by suction upon the pipe 13 and are drawn in through the crevice 6, tube 7, and pipe 9 into the liquid 11, where they are held ready for convenient separation in any suitable manner—such, for example, as distillation.

What I claim is—

1. In apparatus for practicing electric separation the combination of an electric terminal constituting a collecting member, provided with an annular crevice, means communicating with said crevice for drawing into it electrically-attractable particles electrically attracted toward the collecting member, and means for exhibiting to the collecting member the mass to be separated in a thin tubular veil, whereby the entire field of attractive energy generated about the collecting member is utilized.

2. In apparatus for practicing electric separation the combination with an electric terminal constituting a collecting member, provided with an annular crevice, and means communicating with said crevice for drawing into it electrically-attractable particles electrically attracted toward the collecting member, of an annular hopper provided at its lower end with a thin annular discharge-aperture coaxially disposed about the collecting member and constituting means for exhibiting to the collecting member in a thin tubular veil the mass to be separated.

In testimony of all which I have hereunto subscribed my name.

ELMER GATES.

Witnesses:

CHAS. E. RIORDAN,
FRANK J. KENT.