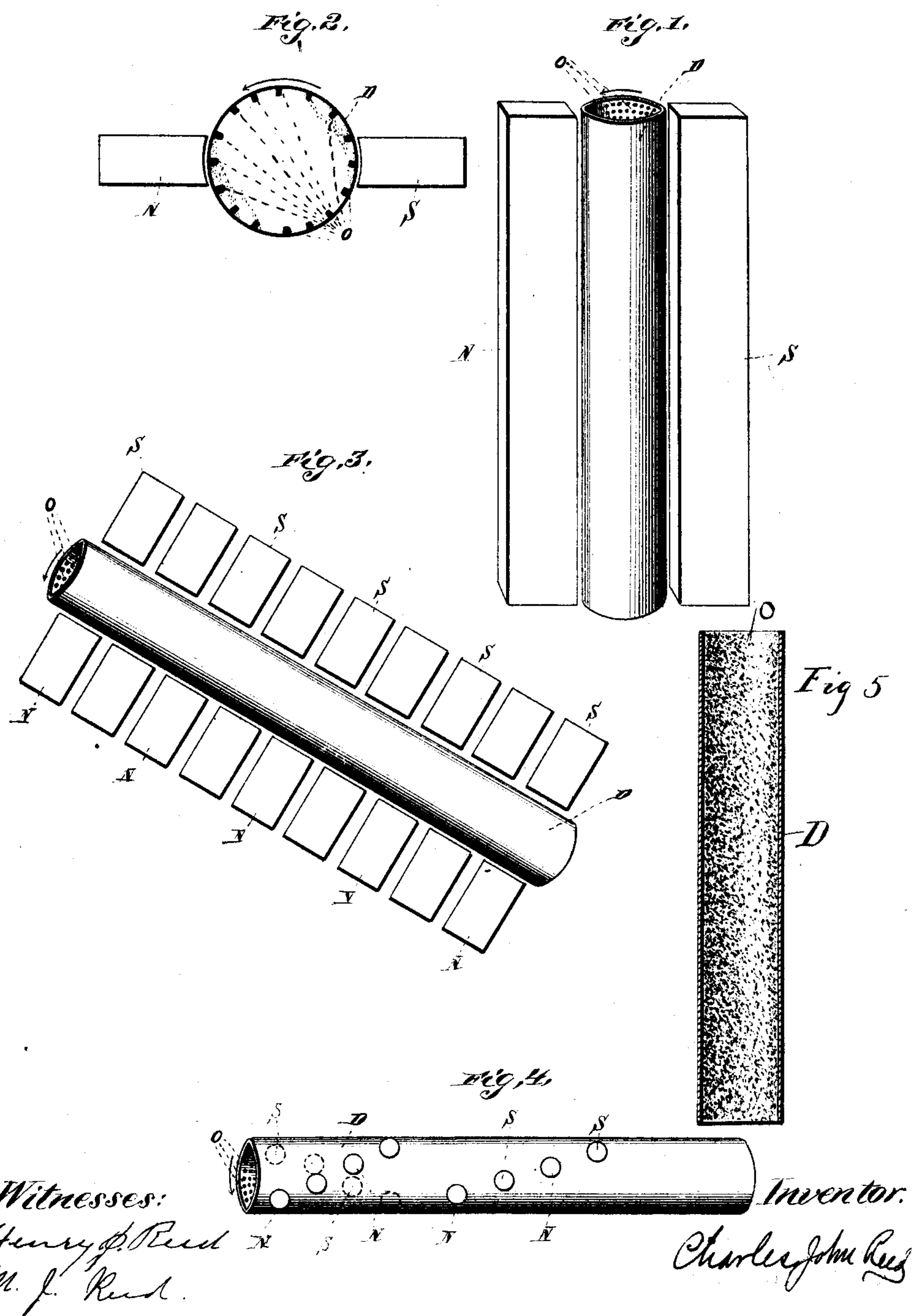


(No Model.)

C. J. REED.
ORE SEPARATING MACHINERY.

No. 466,514.

Patented Jan. 5, 1892.



UNITED STATES PATENT OFFICE.

CHARLES JOHN REED, OF ORANGE, NEW JERSEY.

ORE-SEPARATING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 466,514, dated January 5, 1892.

Application filed December 1, 1890. Serial No. 374,246. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JOHN REED, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Ore-Separating Machinery, of which the following is a specification.

My invention relates to improvements in ore-separating machinery described in my application for patent, Serial No. 368,050, series of 1890, in which the powdered ore passes longitudinally through a revolving drum while it is acted upon by gravity, an air current or blast, and by fixed magnets outside of the drum.

The object of my invention is to increase the agitation of the powdered ore in the drum, so as to effect a more perfect separation. I attain this object by roughening the interior surface of the revolving drum. This may be done in several ways, viz: by coating the interior surface of the drum with paper, cloth, sand, or other textile or granular material, as shown by Figure 5; by grooving, corrugating, or otherwise roughening the material of the drum itself on the interior surface; by fastening bars, rods, points, or other projections on the interior of the drum, as shown in Figs. 1 and 2.

The kind of machines to which my invention is to be applied is illustrated in the accompanying drawings, in which—

Fig. 1 is a side view of a portion of a machine. Fig. 2 is an end view of the same. Fig. 3 is a side view of a portion of a different machine, and Fig. 4 is a side view of a portion of a third machine. Fig. 5 is a longitudinal sectional view taken through Fig. 4 and showing a drum with a roughened interior surface of sand, paper, textile fabric, or the like.

Similar letters refer to similar parts throughout the several views.

D represents a hollow revolving drum, revolving upon its axis in one direction, as indicated by an arrow in each of the several views.

N represents the north pole, and S the south pole, of a magnet.

O represents projections or irregularities on the interior surface of the drum.

In Fig. 1 the drum is in a vertical position. In Fig. 3 it is inclined at any convenient angle, and in Fig. 4 it is horizontal. It will be seen that the machinery consists, essentially, of a hollow revolving drum, in combination with fixed magnets outside of the drum. The powdered ore is passed longitudinally through the revolving drum, together with an air current or blast, which carries away all non-magnetic particles, while the magnetic particles are drawn to the side of the drum, separated from the non-magnetic particles, and finally disposed of by passing out at one end of the drum into a suitable receptacle.

These machines are described in detail and claimed in my application, Serial No. 368,050, filed October 13, 1890, in which I state that the drum may be of any form approximating that of the cylinder, and that the magnets may be of any number and arranged in any form and position.

In Fig. 2 the small shaded spaces inside of D and close to N and S show the position taken by the magnetic particles.

The operation of my invention is as follows: When the drum through which the ore passes is revolving, the particles of ore tend to remain near the side of the drum if the surface is smooth and there is very little agitation of the ore. By roughening the interior surface of the drum or covering it with points or projections the particles of ore are lifted up by the projections of the revolving surface and allowed to drop again. This action is continually repeated, producing a violent agitation of the mass.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an ore-separator, a hollow drum having a roughened interior, substantially as described.

2. An ore-separator having a hollow drum with a roughened interior, in combination with magnets arranged exterior to the drum, substantially as described.

3. An ore-separator having a hollow rotary drum with a roughened interior, through which the powdered ore is passed, substantially as described.

4. An ore-separator having a hollow rotary drum roughened on its interior, in combina-

tion with magnets arranged exterior to the drum, substantially as described.

5 5. An ore-separator having a hollow rotary drum through which the powdered ore is adapted to pass longitudinally, in combination with electro-magnets arranged exterior to the drum and in close proximity thereto and means for creating a blast through the drum, said drum being roughened on its interior, substantially as described.

10 6. An ore-separator provided with a hollow rotary drum having means on its inner sur-

face for agitating the powdered ore as it passes longitudinally through the drum, substantially as described.

15 7. An ore-separator provided with a hollow rotary drum having agitators carried by its inner surface, in combination with magnets arranged in close proximity to the exterior of the drum, substantially as described.

CHARLES JOHN REED.

Witnesses:

M. J. REED,

R. J. SICKELS.