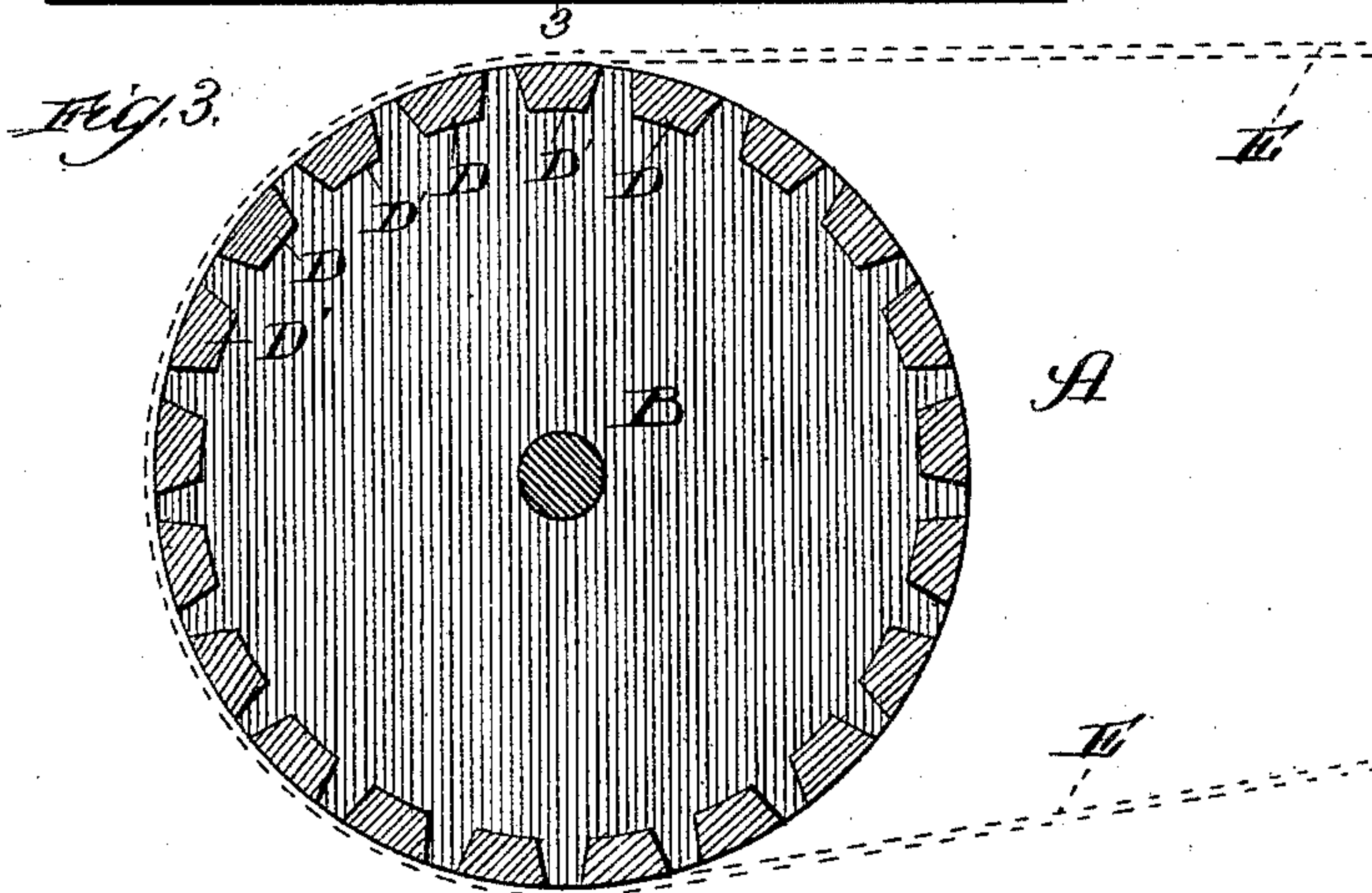
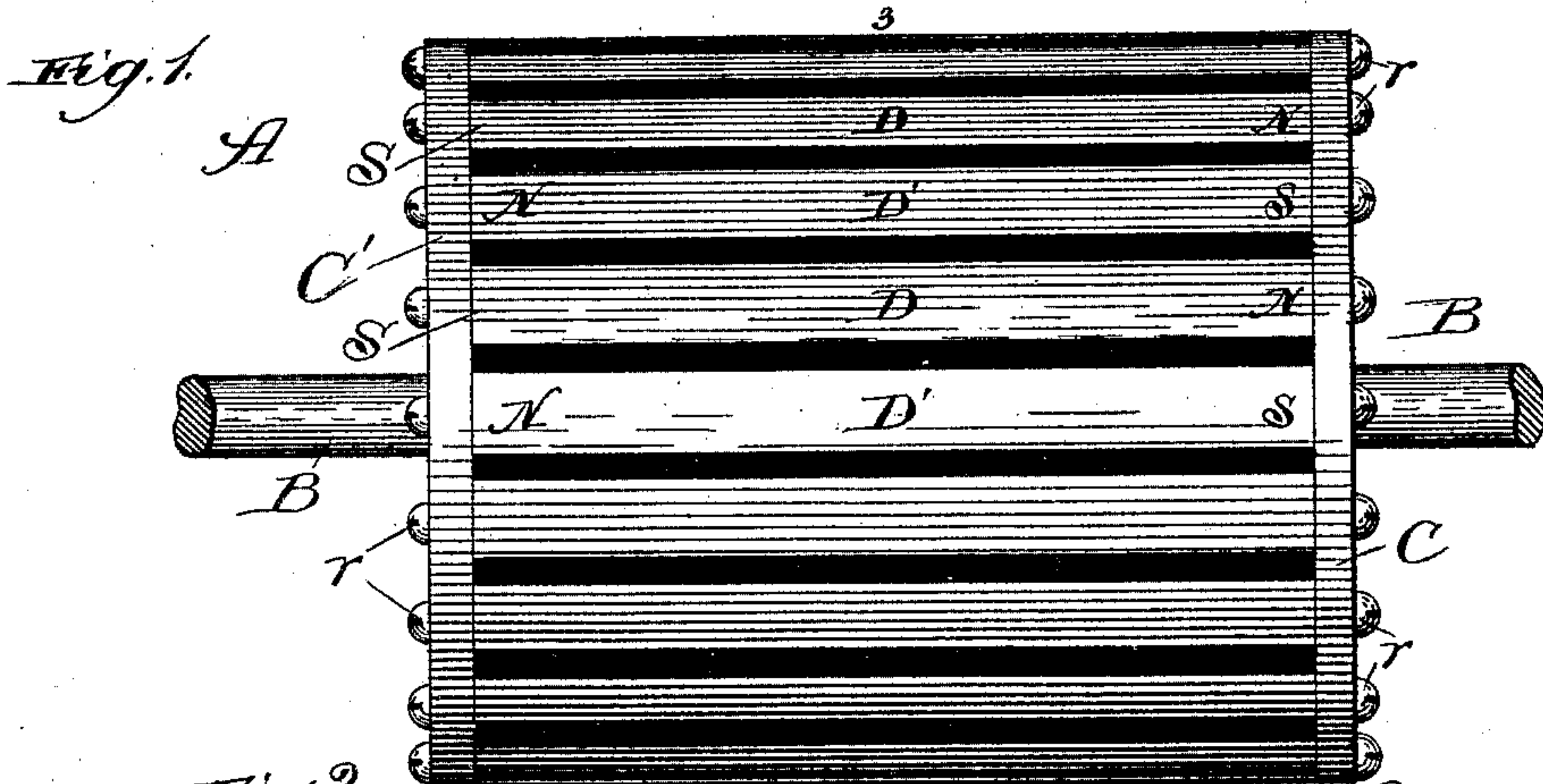


(No Model.)

G. S. FINNEY.  
MAGNETIC ORE SEPARATOR.

No. 443,044.

Patented Dec. 16, 1890.



Witnesses:  
Charles C. Mayhew  
Bruce L. Elliott.

Inventor:  
George S. Finney  
By *Wm. H. H. H. H.*  
Attorneys



# UNITED STATES PATENT OFFICE.

GEORGE S. FINNEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ROTARY  
MAGNETIC ORE SEPARATOR COMPANY, OF SAME PLACE.

## MAGNETIC ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 443,044, dated December 16, 1890.

Application filed March 25, 1890. Serial No. 345,248. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE S. FINNEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Magnetic Separator-Wheels, of which the following is a specification.

My invention relates to an improved construction of the wheel for use in a magnetic separator of the class in which the magnetism of the wheel acts upon the magnetically-attractable portion of the (pulverized) material to be treated for effecting the separation through a non-magnetic endless belt extending around the wheel and forming a conveyor of the material (as pulverized ore) to carry it to the wheel for the separation, and away therefrom to shed the separated refuse or non-magnetic portion and carry the remaining material beyond out of the magnetic influence of the wheel and there shed it.

The object of my improvement is to provide a simple construction of the wheel of the permanently-magnetic kind, which shall effectively serve its purpose.

In the accompanying drawings, Figure 1 is a view in elevation, with the shaft broken away toward opposite ends, of my improved permanently-magnetic wheel involving the preferred construction; Fig. 2, a similar view of the same, involving a modified construction; and Fig. 3, a transverse section, taken on the line 3 3 of Figs. 1 and 2, showing either construction as it appears in cross-section.

A is the wheel, comprising as the general construction a rotary shaft B, carrying-heads C and C', having extended between them and forming elements of the cylindrical circumference of the wheel permanently magnetic or magnetized metal bars D and D', alternating in polarity around the wheel,

In Fig. 1 the heads C and C' are formed of non-magnetic material, such as brass, and the bars D and D' of steel magnetized, and of the tapering form in cross-section illustrated, secured at opposite ends to the heads near their peripheries by means of screws r in a manner to leave a narrow space longitudinally between each adjacent pair, and arranged to have their opposite poles adjacent

to each other, as shown, by securing the negative pole of one bar to one head, as to the head C, its opposite pole to the other head, the negative pole of the next succeeding bar to the last-named head, and its opposite pole to the other head, and so on around the wheel.

In Fig. 2 the heads C and C' are formed of permanently-magnetic material, or material susceptible of permanent magnetization, such as magnetized steel, having the bars D and D' extended, thus, as pole-extensions, alternately from them, as shown, to form elements of the cylindrical surface of the wheel, being secured alternately at respectively opposite ends directly to the heads, as by iron or steel screws q, and at their other ends by screws of non-magnetic material, as brass r, such ends being insulated from the respective disks by suitable washers o, which may also be of brass.

If desired, for the construction in Fig. 2 the poles may be cast with their respective heads, and the two parts connected together and the plates insulated, as shown.

I have indicated the endless belt by E in Fig. 3. It extends, as usual, from a suitable roller (not shown) around the wheel A, and when caused to travel carries the material to be treated to the magnetic circumference of the wheel, which holds the magnetic portion of the material on the belt until the latter carries out of the magnetic influence of the wheel and drops the non-magnetic portion as soon as the belt carries it far enough over the wheel.

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

1. A permanently-magnetic wheel A for a separator, comprising a rotary shaft carrying heads C and C', and permanently-magnetic bars D and D', extending lengthwise between the heads, alternating in polarity around the wheel, and forming elements of its cylindrical surface, substantially as described.

2. A permanently-magnetic wheel A for a separator, comprising a rotary shaft carrying heads C and C', of non-magnetic material, and permanently-magnetic bars D and D', extending lengthwise between the heads in

series of alternating polarity around and forming elements of the cylindrical circumference of the wheel, substantially as described.

- 5 3. A permanently-magnetic wheel A for a separator, comprising a rotary shaft B, carrying heads C and C', of non-magnetic material, and permanently-magnetic bars D and D', extending lengthwise between the heads near

their peripheries in series of alternating polarity around and forming elements of the cylindrical circumference of the wheel, and secured at opposite ends to the heads by screws r, substantially as described. 10

GEORGE S. FINNEY.

In presence of—

J. W. DYRENFORTH,  
M. J. FROST.