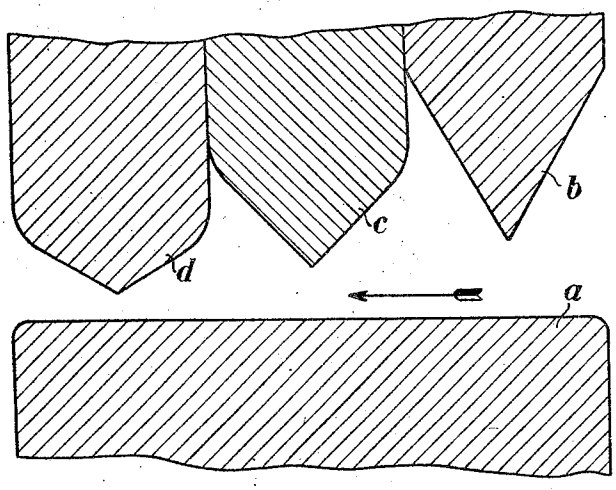
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ZONE POLE FOR MAGNETIC SEPARATORS

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ZONE POLE FOR MAGNETIC SEPARATORS.

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To all whom it may concern:

Be it known that GEORG ULLRICH, citizen of the German Republic, residing at Magdeburg, Germany, has invented certain new and useful Improvements in or Relating to Zone Pole for Magnetic Separators, of which the following is a specification.

The present invention relates to zone poles such as are fitted to magnetic separators in order to grade the magnetic material according to its permeability.

In magnetic separators heretofore known there is often placed opposite one or more poles, a counter pole or armature common to all those poles and provided, at its surface attracting the magnetic material, with edges running in the direction of the material outlet, the distance of said edges from the other pole decreasing in the direction of the outlet for the material. This pole or armature forming the zones consists either of one single piece or else it is composed of plates or lamellæ or concentric rings, each usually having only one edge or blade and individually adjustable in relation to the other pole. These edges or blades have been found to be advantageous because the lines of force so concentrate themselves in them that the magnetic material will not settle upon the whole breadth of the pole surface but merely upon the blade or cutting edges, and because it is consequently possible for it to be more easily and completely removed from these cutting edges than would be the case if it were to adhere to the entire pole or zone breadth. Such blades have, in the zone separators heretofore known, in all cases the same same angle for each blade.

Now the invention consists in the fact that the blades, plates or rings of the poles attracting the material are formed with blade angles increasing in the direction of the material outlet so that, consequently, the blade attracting the most strongly magnetic material has the smallest blade angle, whilst the blade attracting the most weakly magnetic material has the largest blade angle.

As in the case of sharpened poles the ideal pole lies the closer to the point, the greater the blade angle is, and it will, with an unaltered distance between the cross sectional point and the material to be attracted, also be all the closer to the latter the greater the angle of the blade. The pole with the greater blade angle will, therefore, attract the material more strongly than, with the same gap, would be the case with a pole having a smaller blade angle. Of course the size or magnitude of the blade angle is restricted by the other condition that an effective concentration of the lines of force must always be prevalent at the cross sectional point.

The new formation of the zone poles therefore affords, in comparison with the zone poles hitherto known, the advantage that, in addition to the concentration of the lines of force at the pole blades, an approach of the ideal pole to the blade edge is obtained, which corresponds with a decrease from zone to zone of the permeability of the magnetic material, and consequently a greater magnetic influence upon the material is effected.

In order that the invention may be clearly understood and readily carried into effect it will be described with reference to the accompanying drawing which is a cross section taken through a pair of cooperating magnetic poles.

The lower pole *a* is made with a flat surface, the upper pole consisting of the lamellæ or plates *b*, *c*, *d* while the material to be separated is guided through the magnetic field in the direction shown by the arrow. The most strongly magnetic material is attracted to the plate *b* the point of which is most distant from the pole *a*. The plate or lamella *c* at a medium distance from the pole *a* attracts the middle product and the plate *d* with the smallest distance of the three plates from the pole *a*, attracts the most weakly magnetic material. The blade angle is smallest on the plate *b*, has a medium magnitude at the plate *c* and is largest on the plate *d*. The arangement is applicable to zone separators of all kinds.

I claim:

1. A zone pole for magnetic separators in

which the blade angle is varied in the different zones.

2. A zone pole for magnetic separators in which the angle of the blades forming the zones increases from zone to zone in the direction of the outlet for the material.

3. In combination, a zone pole for magnetic separators in which the angle of the blades forming the zones increases from zone to zone in the direction of the outlet for the material, and a complementary flat pole opposite said first mentioned pole.

4. A magnetic separator as set forth in claim 3 in which the distances between the flat pole and the blades of the zone pole decreases progressively with increase of the blade angle.

In testimony whereof the foregoing specification is signed.

DR. ING. C. H. GEORG ULLRICH.