

March 10, 1925.

1,529,410

A. J. DOERMANN

ABRASIVE DISK

Filed Jan. 18, 1922

Fig. 1.

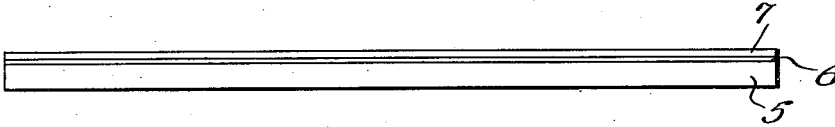


Fig. 2.

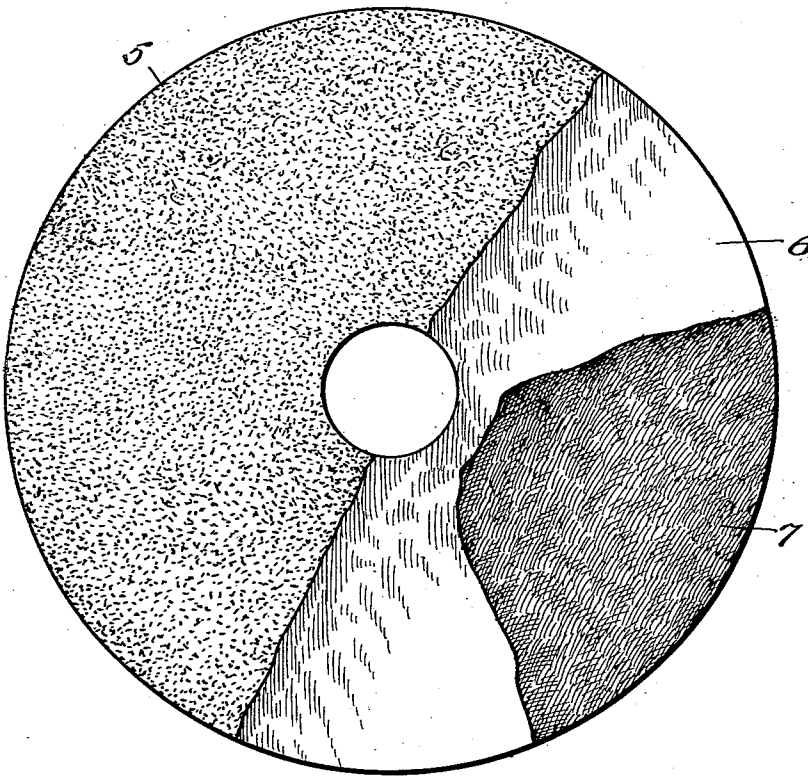
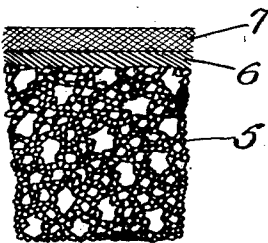


Fig. 3.



Inventor:
Albert J. Doermann
By *James F. Smith, Jr.* *Attorney*

UNITED STATES PATENT OFFICE.

ALBERT J. DOERMANN, OF CHICAGO, ILLINOIS.

ABRASIVE DISK.

Application filed January 18, 1922. Serial No. 530,172.

To all whom it may concern:

Be it known that I, ALBERT J. DOERMANN, a citizen of the United States, residing at 1839 West Garfield Boulevard, Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Abrasive Disks, of which the following is a specification.

This invention relates to improvements in grinding disks, and more particularly in disks which are mounted upon fabric backs, the faces of the disks being used in the grinding operation. It will be fully understood from the following description, illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of a disk prepared in accordance with the present invention, shown face down;

Fig. 2 is a face view of the disk, broken away to show the construction of the disk, and

Fig. 3 is an enlarged detail view, showing in diagrammatic form the character of the material forming the face of the disk.

In accordance with the present invention the abrasive body of the grinding disk, which, in the case of a fabric-backed disk, forms the face of the disk, is formed of particles of abrasive material and a binder. The binder preferably employed is a magnesium oxychlorid cement, into which is incorporated a finely divided corrodible material, such as finely powdered cast iron. The addition of this material materially lengthens the grinding life of the disk and permits of the use of a harder binder or cement than would be otherwise possible. It is readily apparent that other binders may be employed than magnesium oxychlorid cements: for example, oxyphosphate cements. The abrasive material may be any suitable material, for example carborundum, alloxite, alundum or the like, the particles of abrasive material being hereinafter designated grit.

In forming the fabric-backed disk, the abrasive disk may be formed and subsequently secured to the fabric back, for example, by means of casein glue, formaldehyde treated glue, sodium silicate solution or the like. In some cases, the facing of abrasive material may be directly formed upon the fabric back, this being particularly advantageous when the binder for the abra-

sive is of magnesium oxychlorid cement.

The drawings illustrate a disk made up of a face or disk of abrasive material 5 secured by an intermediate layer 6 of glue or sodium silicate to a fabric back 7. The abrasive facing may in the core be molded on an oiled paper back in a suitable form or press and stripped therefrom to be secured to the fabric back. In making up the abrasive face, the grit may be bonded with magnesium oxychlorid cement containing powdered cast iron, the corrosion of which is effected by the chlorid material of the cement. For example, to 16 parts grit and 4 to 5.5 parts of calcined magnesite 0.3 to 1 part of powdered cast iron may be added and the mixture thoroughly kneaded with sufficient magnesium chloride solution to make it damp and pasty. It is then stamped down into a mold, in which an oiled paper back or a fabric back may have previously been inserted. The magnesium chlorid solution may suitably be from 24° to 34° Bé. (saturated). The saturated solution is preferred, as it causes the formation of a harder and stronger bond.

In preparing the abrasive body of the disk the cutting grits are chosen for the particular purpose in view, as is well known in the art. Thus, for rapid work on large malleable castings, 16 mesh grit may be used for the cutting grit. In accordance with the present invention, the cutting grits are reinforced with finer grit up to 25%, for example, in the above case, from 10 to 20% of finer grit, say 24 mesh, may be added to make up the grit mixture for the abrasive body of the disk. In another case, in which the cutting grits were made up of 16 and 24 mesh grits in about equal proportions, from 5 to 25% of 30 mesh grit was added. In Fig. 3 the reinforcement of the cutting grit with finer grit is indicated in an exaggerated manner, the bond being indicated in black.

The oiled paper back may be removed from the abrasive disk body after its formation; the abrasive body being subsequently secured to a fabric back by a suitable adhesive, as hereinbefore set forth. If desired, the abrasive disk body may be formed directly upon the fabric back by placing the fabric back in the mold, coating its surface with a mixture of magnesite with sufficient magnesium chloride solution

to permit of application with a brush, and forming the abrasive body on the coated back.

I claim:

5 1. In an abrasive disk body, abrasive grit and a cementitious bond therefor, the bond containing finely divided iron.

2. In an abrasive disk body, abrasive grit and a magnesium oxychlorid bond
10 therefor, the bond containing finely divided iron.

3. In an abrasive disk body, abrasive grit, the grit comprising cutting grit and 5 to 25% of finer grit, and a cementitious
15 bond containing from 0.3 to 1 part of finely divided iron to 16 parts of grit.

4. In an abrasive disk body, abrasive

grit, magnesium oxychlorid bond formed with saturated magnesium chlorid solution, and finely divided corrodible material in-
20 corporated in said bond.

5. In a face-grinding disk, a body comprising a binder and abrasive grit incorporated therein, the cutting grit being reinforced by finer grits, and a fabric back
25 upon which said body is mounted.

6. In a face-grinding disk, a body comprising a binder, cutting grit incorporated therein, and finer grit incorporated in the binder to reinforce the cutting grits, the
30 proportion of finer grit being from 5 to 25% of the cutting grit, and a fabric back upon which said body is mounted.

ALBERT J. DOERMANN.