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ABRASIVE WHEEL AND MOUNTING

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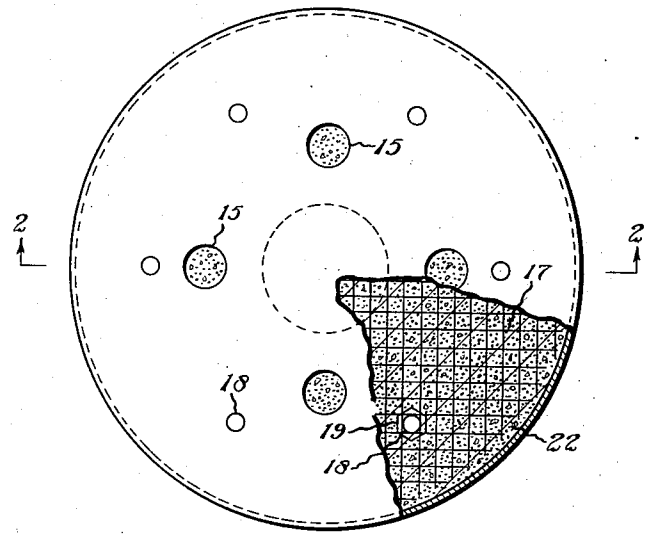


Fig. 1

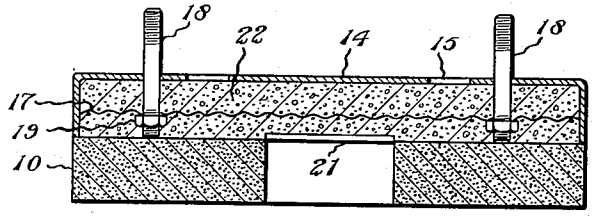


Fig. 2

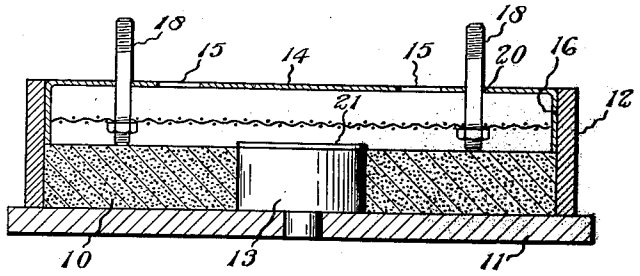


Fig. 3

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ABRASIVE WHEEL AND MOUNTING

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2 Claims. (Cl. 51—209)

The invention relates to abrasive wheels and with regard to its more specific features to grinding wheels grinding on a flat surface thereof.

One object of the invention is to provide an improved method for mounting a wheel of the character indicated. Another object of the invention is to provide an inexpensive method of forming a rigid backing plate on a grinding wheel. Another object of the invention is to provide a mounting for a grinding wheel which will withstand high temperatures without deterioration. Another object of the invention is to provide an extremely strong mounting for a grinding wheel. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts, and in the several steps and relation and order of each of said steps to one or more of the others thereof, as will be illustratively described herein, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of various possible embodiments of the mechanical features of this invention,

Fig. 1 is a plan view of the back of a combination grinding wheel and mounting constructed in accordance with the invention, a certain portion of the mounting being broken away more clearly to show the construction;

Fig. 2 is an axial sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is an axial sectional view through the grinding wheel and certain elements of the mounting prior to the completion thereof, and showing also the support holding the parts together for the carrying out of the method of construction.

Referring first to Fig. 3, I provide a grinding wheel 10 of any suitable type. The invention, however, is more particularly applicable for embodiment with ceramic vitrified grinding wheels, cement bonded grinding wheels and silicate bonded grinding wheels. Any desired type of abrasive material may be used with equally good results, commonly used abrasives being alumina, silicon carbide, and diamond.

I provide a bottom plate 11 and a ring 12 upstanding therefrom, these two parts constituting a form to hold together the grinding wheel and the metal casing during the process of forming the article. The parts 11 and 12 may be attached together or they may be simply brought together. For different sizes of grinding wheels, different sizes of rings 12 will be provided.

To the plate 11 is affixed a plug 13. The grinding wheel 10 is placed in the ring 12 and around the plug 13, as shown. The plug 13 is enough smaller than the central hole in the grinding wheel 10 to allow ready removal of the grinding wheel without leaving too much space between the plug 13 and the grinding wheel. Similarly, the grinding wheel 10 fits in the ring 12 with a fairly loose fit.

I provide a cup-shaped metal casing 14 having a plurality of holes 15 in the flat part thereof. The diameter of the cylindrical part 16 of the casing 14 is substantially the same as the diameter of the wheel 10. The ring 12 may be equal in width to the combined width of the casing 14 and the wheel 10. This casing 14, so far as the method of the invention is concerned, constitutes another form for the pouring of the cement mixture as hereinafter described.

I further provide a wire screen 17 and a plurality of bolts 18 and nuts 19. The bolts 18 I locate in additional holes 20 in the flat part of the casing 14. The bolts 18 are of a size to fit the meshes in the screen 17 and I place each bolt through the screen with the nuts 19 supporting the screen. I place the bolts 18 upon the upper face of the grinding wheel 10, the nuts 19 supporting the screen 17 parallel to the face of the grinding wheel 10, as shown. I then place the casing 14 in position over the bolts 18, the bolts 18 having been so placed in the screen 17 that they will mesh with the holes 20 in the casing 14.

Prior to putting the parts together, as shown in Fig. 3, however, I apply to the upper surface of the grinding wheel 10 a neat cement grout, or a mixture of one part of iron filings and sal ammoniac to five parts of cement. Before either of these adhesion promoting substances is applied, the upper surface of the grinding wheel 10 may be sandblasted, although this step may be omitted if the surface is already sufficiently clean.

I now pour cement through the openings 15. As an example of a cement formula which gives good results in actual practice, I may mention one part of Portland cement powder and one part of beach sand thoroughly mixed, with enough water to make a workable mixture. In order to avoid attaching the product to the plug 13, I may place a disk 21 on top of the plug 13, this disk having the same area as the plug 13.

After the cement has set, it will be found that the wheel 10, casing 14, the cement 22 and the

bolts 18 are rigidly secured together. Furthermore, the wire screen 17 reinforces the mounting so far as radial stresses are concerned and also holds the bolts 18 more securely in place against axial strains. An extremely effective adhesive bond between the concerete 22 and the abrasive substance of the wheel 10 is achieved. The union of the mounting and the wheel will not be destroyed by any amount of heat experienced in actual grinding practice. Furthermore, as the coefficient of expansion of the concrete 22 and the wheel 10 are reasonably close, no thermal stresses are set up during grinding, and none whatsoever are experienced during manufacture of the product in so much as no heat is involved in setting the cement.

The final product shown in Figs. 1 and 2 may be mounted upon the spindle of a grinding machine by means of the attaching bolts 18. Furthermore, the drawing herein is illustrative merely, and many other arrangements of attaching bolts and many other sizes and shapes of wheels can be adopted.

It will thus be seen that there has been provided by this invention a method and an article in which the various objects hereinabove set forth together with many thoroughly practical advantages are successfully achieved. As many possible embodiments might be made of the mechanical features of the above invention and as the art herein described might be varied in various parts, all without departing from the scope of the invention, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

I claim:—

1. Grinding apparatus comprising a disk shaped grinding wheel having flat sides, a metal casing open at one side having a rim whose edge throughout its entire circumference is in contact with one side of the disk grinding wheel and covers a substantial portion of the area of said side of the grinding wheel, leaving the other side of the disk grinding wheel free for grinding and leaving the periphery of the grinding wheel uncovered, and Portland cement concrete filling the casing and in contact with a large area of the disk grinding wheel and constituting by its adhesion the sole connection between the disk grinding wheel and the casing.

2. In apparatus as claimed in claim 1, the combination with the parts and features therein specified, of a wire mesh reinforcement in the Portland cement concrete.

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