

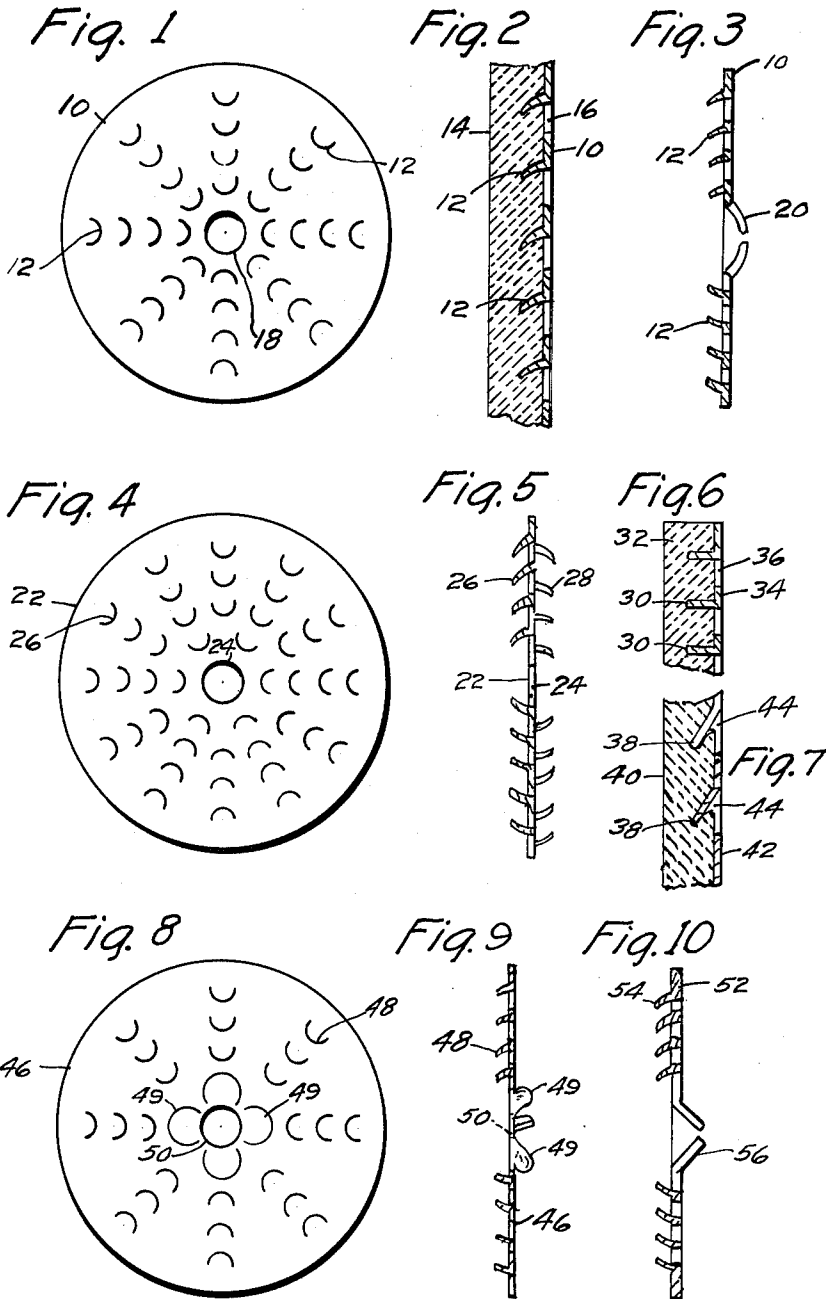
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GRINDING DISC

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GRINDING DISC

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1 Claim. (Cl. 51—207)

The present invention relates to grinding wheels, discs, and the like, used primarily for grinding and polishing surfaces of materials, and which are also used for cutting through materials such as masonry blocks or shapes, and in particular a disc for grinding and finishing welds, metal fabrications, and castings in which an abrading material is supported by protruding fingers or hooks on a backing element whereby the life of the grinding element is extended indefinitely.

The purpose of this invention is to provide a reinforcing backing member for grinding and polishing discs, wheels, and the like in which abrasive material is pressed, cast, or otherwise positively secured to the backing member.

The abrasive material of grinding wheels and discs has been reinforced by layers of fabric, wire mesh, and other materials. However, such materials do not prevent cracking or breaking of the rigid abrasive materials and, consequently, the life of such grinding and polishing wheels or discs is limited.

With this thought in mind this invention contemplates a backing element for an abrasive grinding wheel or disc in which hook-like fingers protrude from a disc of metal, Plexiglas, plastic, fiber glass, or the like, and are embodied in the abrasive material on the face of the backing element.

The object of this invention is to provide means for reinforcing abrading material comprising the body of a grinding wheel or disc without increasing the size of the wheel or disc.

Another object of the invention is to provide reinforcing for abrading material of a grinding wheel or disc in which the abrading material may be impressed or cast directly upon the reinforcing element.

Another important object of the invention is to provide means for reinforcing abrasive material of a grinding wheel or disc in which the abrasive material may be secured to both sides of a grinding or cutting wheel or disc so that the grinder may also be used for cutting.

A further object of the invention is to provide means for reinforcing grinding and polishing wheels or discs wherein absolute balance is obtainable.

A still further object is to provide reinforcing for grinding wheels and discs in which an abrasive can be composed of selected natural or artificial abrasives including diamonds, agglomerated with organic or ceramic bonds, pressed hot or cold and cured at determined temperatures.

And a still further object is to provide reinforced grinding, polishing, and cutting wheels or discs which are of simple and economical construction.

With these and other objects and advantages in view the invention embodies a disc of metal, plastic, or other suitable material, and a plurality of hook-like fingers struck from and extended from one or both sides of the disc, the said fingers being embedded in abrasive material pressed or otherwise secured to one or both sides of the disc.

Other features and advantages of the invention will appear from the following description taken in connection with the drawing, wherein:

FIGURE 1 is a front elevational view of a disc having fingers protruding from the face thereof providing a reinforcing element of an abrasive grinding or polishing wheel or disc.

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FIGURE 2 is a cross section through a portion of grinding wheel or disc showing fingers protruding from a backing element and embedded in an abrading disc carried by the backing element, the parts being shown on an enlarged scale.

FIGURE 3 is a cross section through the disc shown in FIGURE 1, being taken on line 3—3 thereof.

FIGURE 4 is a front elevational view of a backing element, similar to that shown in FIGURE 1, illustrating a cutting disc backing element in which fingers or prongs are provided on both sides of the backing element to facilitate cutting.

FIGURE 5 is a cross section through a reinforcing element of a cutting wheel or disc, taken on line 5—5 of FIGURE 4, and with the abrading material omitted.

FIGURE 6 is a cross section through a portion of grinding wheel, similar to that shown in FIGURE 2, illustrating a modification, wherein the abrasive holding fingers are positioned at right angles to the backing or holding disc or plate.

FIGURE 7 is a cross section, similar to that shown in FIGURE 6, showing a further modification, wherein the protruding fingers are positioned at an acute angle in relation to the backing plate.

FIGURE 8 is a view of a backing element, similar to that shown in FIGURE 1, illustrating a further modification wherein fan blades are provided at the center of the disc for creating suction or pressure to remove grindings resulting from operation of the grinder.

FIGURE 9 is a cross section through the backing element shown in FIGURE 8, showing the positions of the fan blades.

FIGURE 10 is a cross section through a backing and reinforcing element, as shown in the former figures, illustrating a further modification, wherein the disc is provided with a depressed or bulging hub.

While one embodiment of the invention is illustrated in the above-referred-to drawings it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any manner departing from the spirit and intention of the device, which is to be limited only in accordance with the appended claim. And while there is stated the primary field of utility of the invention it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout, and in which the numeral 10 refers to a disc providing a backing element, numeral 12 indicating protruding fingers or hooks struck from and protruding from the disc, and numeral 14 indicating an abrading or abrasive material pressed, cast, or otherwise secured to a face or surface of the disc 10, and in which the fingers or hooks 12 are embedded.

In the design illustrated in FIGURES 1, 2 and 3 the fingers 12 are struck from openings or perforations 16 in the disc 10, and the disc is provided with a center opening 18 around which a raised hub 20 is positioned.

In the design illustrated in FIGURES 4 and 5 a backing element or disc 22, having a center opening 24, is provided with fingers 26, on one side, and 28 on the opposite side, and with abrasive material pressed, cast, or otherwise secured to both sides a cutting disc or wheel is provided.

In the design shown in FIGURE 6 fingers 30, which are embedded in abrasive material 32 extend at right

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angles to a backing element 34, the fingers being struck from openings 36 in the backing element.

In FIGURE 7 fingers 38, which are embedded in abrasive material 40, extend at acute angles from a backing element 42, the fingers being struck from openings 44 in the backing element.

In the design illustrated in FIGURES 8 and 9, a backing element or disc 46 having fingers 48 extended from one side, is provided with fan blades 49 which are patterned to draw air inwardly, or force the air outwardly, whereby grindings of the grinding or polishing wheel or disc may be driven from the abrading surface of the grinding wheel or disc. The blades 49 are positioned around a center opening 50. It will be understood that as many blades may be used as desired, and the blades may be of any suitable shape.

In the design shown in FIGURE 10 a backing plate 52, having fingers 54 extended from one surface, is provided with a raised hub 56, and it will be understood that the hub may be raised or depressed, as may be desired.

The present invention relates to a grinding, polishing, or cutting wheel or disc and the grinding, polishing, or cutting abrasive is impressed, cast, or otherwise secured to a surface of a mounting or supporting disc. In the operative position hook-like fingers or prongs, extending from the backing or supporting disc, extend into a slab or mass of abrading material on the face of the backing or supporting element whereby the abrading element is rigidly supported and cracks or other damaging elements are substantially obviated.

The backing element is, preferably a round sheet of metal, plastic, or other relatively stiff material, and the hook-like fingers or prongs, which are preferably tempered, and which may be from $\frac{1}{16}$ to $\frac{1}{8}$ inch in length, may be cupped or curled, as desired. The fingers are embedded or built into the abrasive material. The fan

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blades and mounting elements thereof are built into the backing element or disc.

From the foregoing description it is thought to be obvious that an armor-clad reinforced abrasive wheel constructed in accordance with this invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out the invention in practice, except as claimed.

What is claimed is:

In an abrasive wheel the combination which comprises a relatively thin metal disc having radially disposed arcuate fingers struck from the intermediate part thereof providing radially disposed openings in the body of the disc, and a disc of abrasive material providing a cover for said fingers, and said arcuate fingers being embedded in said disc of abrasive material providing means for preventing accidental separations of said disc of abrasive material from said metal disc, the centers of said discs having aligned openings extended longitudinally there-through facilitating clamping said discs on a spindle, arbor, or the like.

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