Dec. 31, 1946. E. W. HALL 2,413,346

ROTARY DISK ABRADING TOOL

Filed Jan. 15, 1944

Fig. 1.

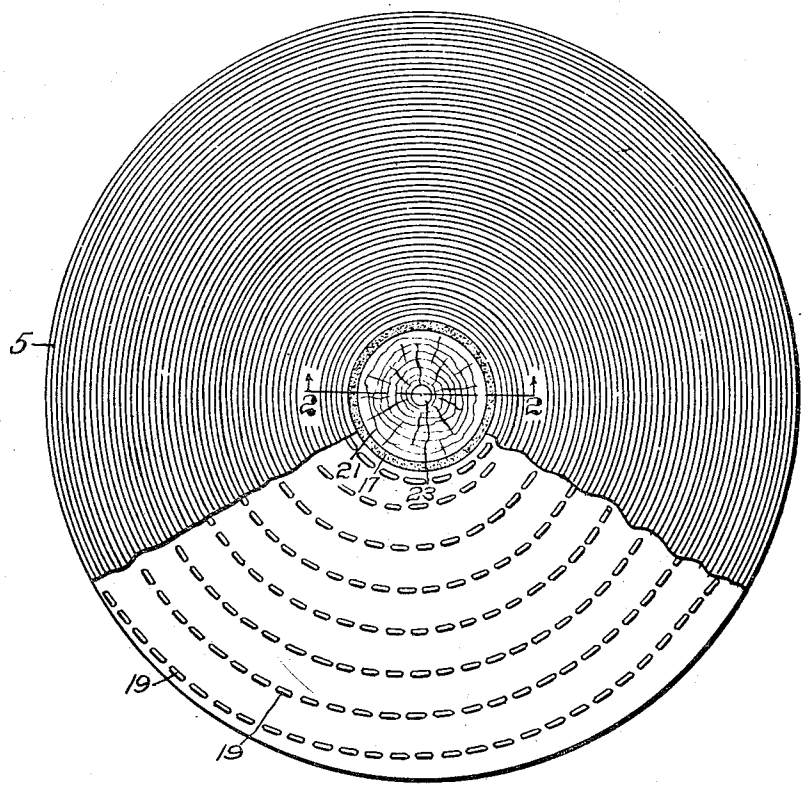


Fig. 2

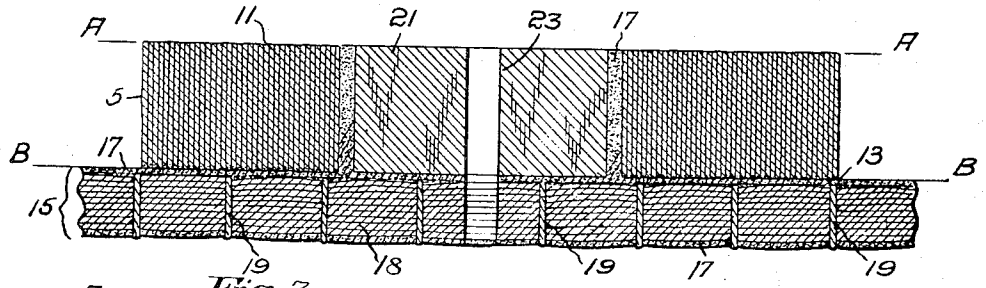
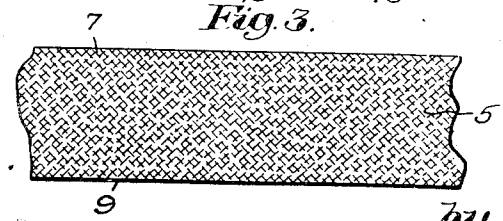


Fig. 3.



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ROTARY DISK ABRADING TOOL

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1 Claim. (Cl. 51—195)

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This invention relates to the class of rotary disk abrading tools in which the abrading is accomplished by a radial, plane abrading face. The invention is concerned with a tool in which layers of abrading material disposed face to face throughout, as by winding a strip upon itself, have one set of edges presented at the radial abrading face, and the other set of edges secured by adhesive material to a backing. The invention will best be understood by reference to the following description when taken in connection with the accompanying drawing of one specific embodiment thereof, while its scope will be pointed out more particularly in the appended claim.

In the drawing:

Fig. 1 is an elevation of a rotary disk abrading tool embodying the invention, a part of the abrading material which presents the radial working face being broken away to show the backing to which the abrading material is secured;

Fig. 2 is a sectional view on an enlarged scale on line 2—2 of Fig. 1; and

Fig. 3 is an elevation of a piece of the strip of abrading material.

Referring to the drawing and to the embodiment of the invention illustrated therein by way of example, there is shown a rotary disk abrading tool comprising a strip 5 of abrading material such as cotton cloth preferably bias-cut to prevent ravelling, and wound upon itself as a flat spiral continually receding from the axis of rotation of the tool. Thus, the strip presents two edges 7 and 9 (see Fig. 3), which, when the strip is wound occupy planes A—A and B—B (see Fig. 2) which are perpendicular to the axis of rotation. Herein, the edge 7 of the strip, when wound, constitutes a working face 11, while the edge 9, when the strip is wound, constitutes an attaching face 13 for attachment to a backing such as that presently to be described.

The working face possesses a unique quality in that it is at the same time compact and firm and yet soft, its characteristics being such that it is a satisfactory substitute for felt and yet it is much cheaper. Abrasive materials may be applied directly or indirectly to the working face. If greater firmness is desired, the coiled strip may be treated by immersion in a weak bath of adhesive such as animal glue which, however, still leaves some considerable degree of flexibility and even allows some separation of the layers when subjected to the pressure of the work.

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The coiled strip is mounted on a backing 15 (see Fig. 2) to which it is secured by adhesive 17, preferably resin glue of the urea-formaldehyde type, soluble in water, and cold setting, the same being waterproof when set. The glue will penetrate the edge 9 of the strip 5 slightly and will unite the strip with the backing 15 so firmly as to obviate the need of other fastening.

The particular backing which I have chosen as an example is composed of layers 18 of cotton cloth sewed through and through (compare Figs. 1 and 2) with threads 19, sewn spirally, for example, and uniting the layers firmly. In the present example, I have chosen to coat both faces of the backing with a thin coating of the aforementioned glue which penetrates the cloth somewhat and gives the backing greater firmness and hardness while still leaving considerable of its inherent flexibility.

If desired, a hub 21 may be added, the one chosen for example being of wood and secured in place as by adhesive of the aforementioned type about the perimeter of the hub and at the inner end of the latter so as to unite the hub firmly on the one hand to the center of the strip 5 and on the other hand to the adjacent face of the backing 15. The hub is provided with an axial hole 23 which, either initially or afterwards, is made the desired diameter to receive a spindle of the character desired for the driving of the tool.

Having thus described one embodiment of the invention, what I claim, and desire by Letters Patent to secure is:

In a rotary disk abrading tool in which the abrading is accomplished by a radial face, the combination of a bias-cut strip of cloth wound about the axis of rotation in the form of a flat spiral having two faces perpendicular to said axis, one of which faces is the working surface, and an inherently flexible backing to which one of said faces is secured, said backing being composed of layers of cloth sewed through and through with threads uniting said layers.

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