

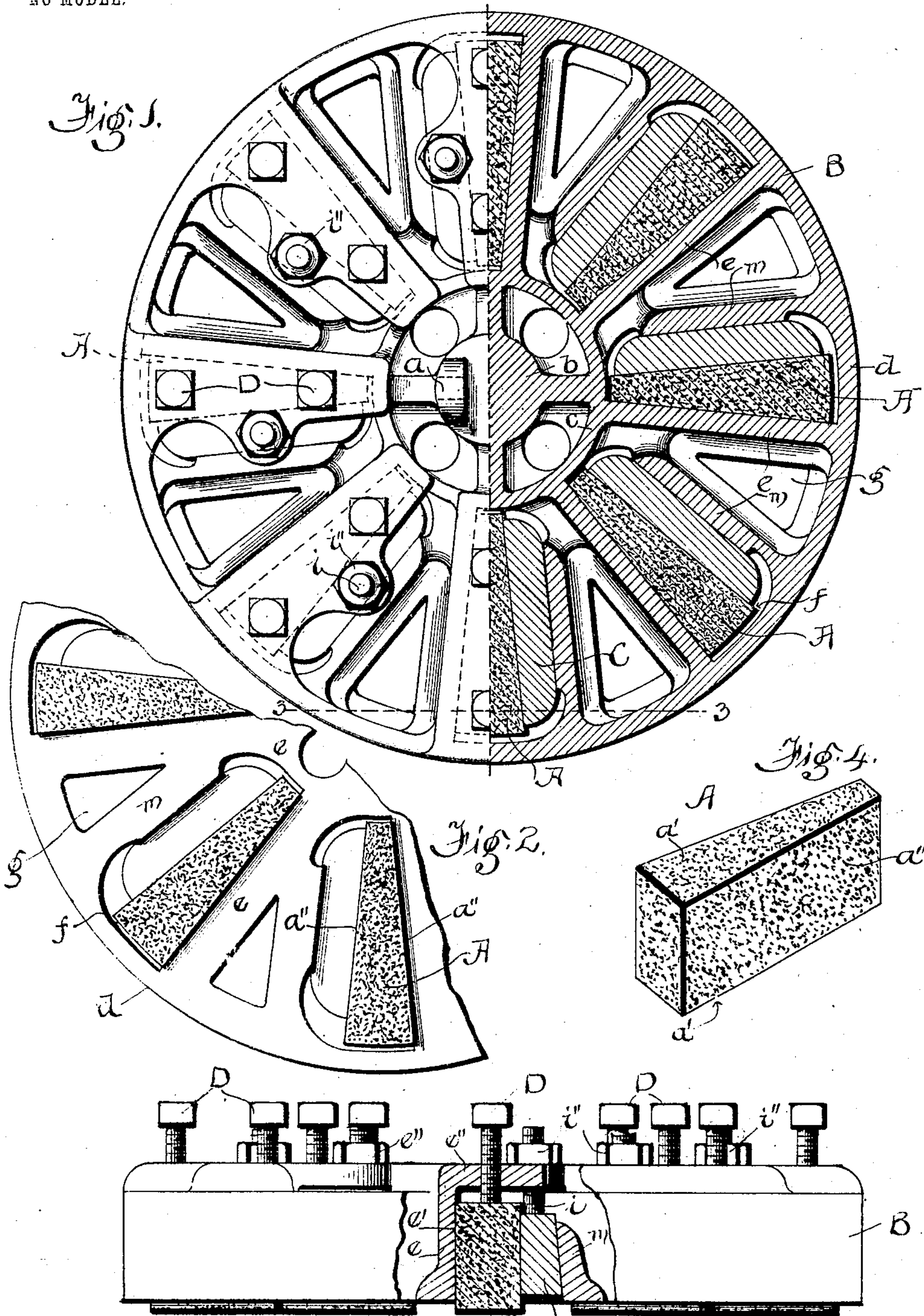
No. 774,513.

PATENTED NOV. 8, 1904.

R. GARDNER.  
ABRADING MATERIAL AND MOUNTING THEREFOR.

APPLICATION FILED JUNE 30, 1902.

NO MODEL.



Witnesses:-  
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Fig. 3 A C

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By his Attorney: B. F. Eibler



# UNITED STATES PATENT OFFICE.

ROLAND GARDNER, OF CLEVELAND, OHIO.

## ABRADING MATERIAL AND MOUNTING THEREFOR.

SPECIFICATION forming part of Letters Patent No. 774,513, dated November 8, 1904.

Application filed June 30, 1902. Serial No. 113,724. (No model.)

*To all whom it may concern:*

Be it known that I, ROLAND GARDNER, a subject of the King of England, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Abrading Materials and Mountings Therefor, of which the following is a specification.

My invention relates to improvements in abrading materials and mountings therefor.

In the polishing of hard and gritty surfaces, such as are provided by stone, &c., it is essential that the polishing wheel or carrier have its abrading-surface of such form as will insure a smooth polished surface on the article operated upon. To provide this, certain essential features are necessary. Among these are to be found the prevention of heating of the article, as far as this is possible; to provide an abrading-surface which will wear evenly, and to provide means whereby the residuum formed by the abrading action will either be removed from the surface being polished or so distributed that it will be fed to the part being subjected to the abrading action without liability of its damaging the surface being polished.

The object of my invention is therefore to provide an abrading-surface in which the operating-face will wear in an even manner, in which heating of the article will be prevented to a great extent, and in which the residuum will be evenly distributed over the operating-surface or be removed therefrom.

A further object is to provide a surface composed of sections, each section having its operating-face arranged in such manner as to cause an even wear of the face regardless of the difference in speed of movement of its different parts.

A further object is to provide an abrading-surface formed of sections, each of which is adjustable relative to the remaining sections and which is held securely against retrograde movement.

A further object is to provide a structure which is easily operated, durable in construction, and which can be made at moderate cost.

To these and other ends, the nature of which will be readily understood as the in-

vention is hereinafter described, said invention consists in the improved construction and combination of parts hereinafter fully described, and particularly pointed out in the appended claims.

In the drawings, in which similar reference characters indicate similar parts, Figure 1 is a plan view of a polishing-wheel constructed in accordance with my invention, a portion of the top surface being broken away. Fig. 2 is a fragmentary bottom plan view. Fig. 3 is a side elevation, parts being broken away, on the line 3 3 of Fig. 1; and Fig. 4 is a detail of one of the abrading-sections.

The carrier or casing B is shown in the drawings in the form of a wheel and having a hub *b*, to the upper end of which the usual lugs *a a* are secured or formed integral therewith, the inner and outer bands *c* and *d*, respectively, the latter being connected by the radially-extending wings *e*, the inner band being formed integral or secured to the hub *b*. As shown, each wing *e* has a horizontally-extending portion *e''* for a purpose hereinafter described.

Intermediate each wing *e* are arranged intermediate wings or webs *m*, which extend tangentially to an inner circle, thereby providing a surface which converges relatively to the face of the wing *e*, the space between the two opposing faces of the wings *e* and *m* below the portion *e''* forming an opening to receive the abrading-section hereinafter described. The portion of the carrier between the wings *e* and *m* which is not under the portion *e''* is formed with openings *g*, preferably arranged with sloping sides, as shown. It will thus be seen that I have provided alternating openings or slots for the abrading-sections, which slots are designated as *f* and the openings *g*. The side of the wing *m* facing the slot *f* is preferably inclined, as shown in Fig. 3.

The abrading-sections A are formed as shown in Fig. 4. Each section has two parallel sides *a'*, and two sides *a''*, which converge. The lower side *a'* forms the operating-face. The sections are made of any suitable or preferred material.

The sections are secured in position by



means of wedges C, each having a screw-threaded stem  $i''$ , which passes through an opening in the portion  $e''$ , one side of the wedge being straight and contacting with the section 5 A, the other being inclined and abutting against the inclined side of the wing  $m$ . The wedge is held in position by means of a nut  $i'''$ . By this construction the section A is held clamped laterally between the face  $e'$  of the 10 wing  $e$  and the straight face of the wedge C. To prevent retrograde movement of the section and to adjust its face relative to the faces of the remaining sections, suitable set-screws D are extended through the portion  $e''$ . By 15 this securing means practically the entire section can be used, the securing devices holding the sections secure until they have become worn to a slight thickness. It will be obvious that as each section is independently secured 20 and adjusted the structure need not have sections of equal thickness, worn ones being replaced by new ones when necessary without disturbing any of the remaining sections and with but little trouble and expense.

25 While I have above described the carrier and the general structure, the main feature of my invention consists in the form of the sections and their relative arrangement in the carrier.

30 As above pointed out, each section has its sides  $a''$  converging, giving the section in horizontal section a wedge shape. These sections being secured in position with the larger end toward the periphery of the carrier, it 35 will be readily understood that the wider ends of the section, which move more rapidly than the inner ends and also operate against a greater extent of surface, are subjected to greater wear than the inner ends. Were both 40 ends of the same thickness the greater action of the outer end would become worn more rapidly than the inner end, and thereby provide an uneven abrading-surface. By giving the section the shape shown and described, 45 however, this is obviated, as the increased contacting surface prevents such uneven wear.

In arranging the sections the operating-faces extend radially and are spaced, the sections forming a relatively small portion of the 50 surface of the carrier. This construction provides relatively large spaces or conduits between adjacent sections, these conduits leading from the center to the outer circumference. These conduits receive the water through the 55 openings  $g$ , by means of which the article is not only kept cool, but which also aids in the polishing, and in addition permit of a circulation of air through all parts of the structure, aiding in keeping the article cool. Further- 60 more, it will be readily understood that the forward edge of the rotating sections being

radial, or substantially so, will tend to move the residuum resulting from the abrading action outward toward the end of the section, thereby distributing it and gradually forcing 65 it out from the path of the abrading-surface.

Having thus described my invention, what I claim as new is—

1. An abrading-surface comprising a series of spaced independently-removable abrading- 70 sections extending radially, each section having an increased operating-face toward its outer end, and means for limiting the retrograde movement of each of the sections.

2. An abrading-surface comprising a series 75 of spaced independently-removable abrading-sections, extending radially, each section having an increased operating-face toward its outer end, and means for adjusting the operating-face of each section relatively to the re- 80 maining sections, said means forming a support against retrograde movement of the sections.

3. In an abrading-tool, the combination with a carrier, of a series of spaced abrading-sec- 85 tions extending radially, each section having an increased operating-face toward its outer end, and independent spaces formed between each section, openings being formed in the carrier leading to said spaces. 90

4. In an abrading-tool, the combination with a carrier, of a series of spaced abrading-sec- 85 tions extending radially, each section having its operating-face of wedge shape, means for limiting the retrograde movement of each of 95 the sections, and independent adjustable securing devices for retaining said sections in operative position.

5. In an abrading-tool, the combination with a carrier, of a series of spaced abrading-sec- 100 tions extending radially, each section having its operating-face of wedge shape, means for limiting the retrograde movement of each of the sections and an adjustable wedge for each section, whereby the sections will be held in 105 operative position.

6. In an abrading-tool, the combination with a carrier, of a series of spaced abrading-sec- 100 tions extending radially, each section having its operating-face of wedge shape, means for 110 adjustably moving the sections independently, said means forming the support against a retrograde movement of the sections, and an independent adjustable wedge for retaining each section in its adjusted position. 115

Signed at Cleveland, Ohio, this 29th day of May, 1902.

ROLAND GARDNER.

Witnesses:

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