

No. 816,461.

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G. GORTON.
CLEARANCE SPACE GRINDING DISK.
APPLICATION FILED DEC. 22, 1904.

Fig. 1

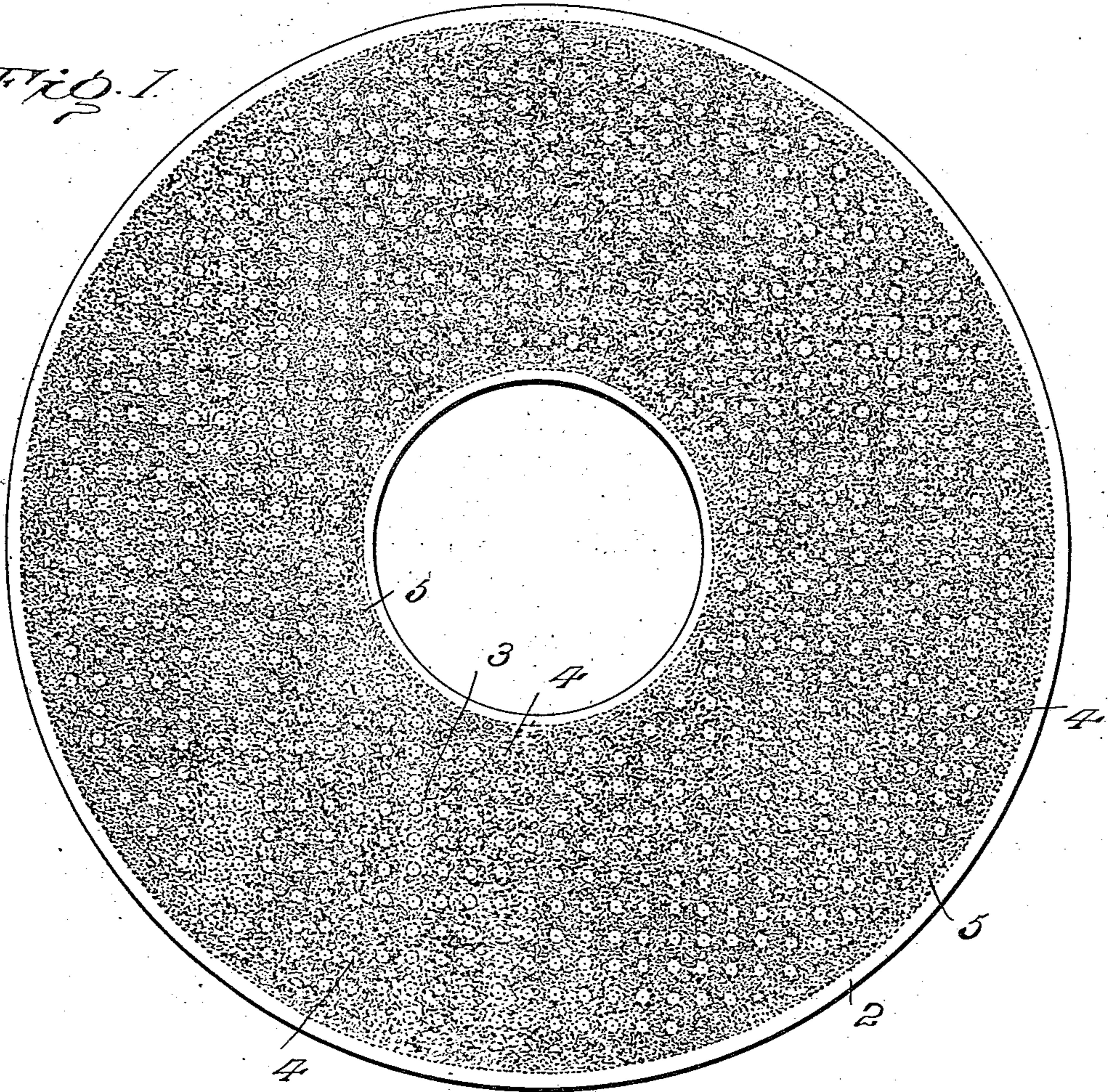


Fig. 2

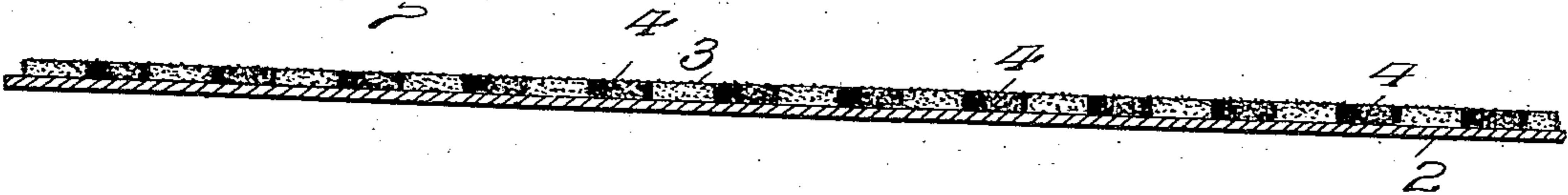
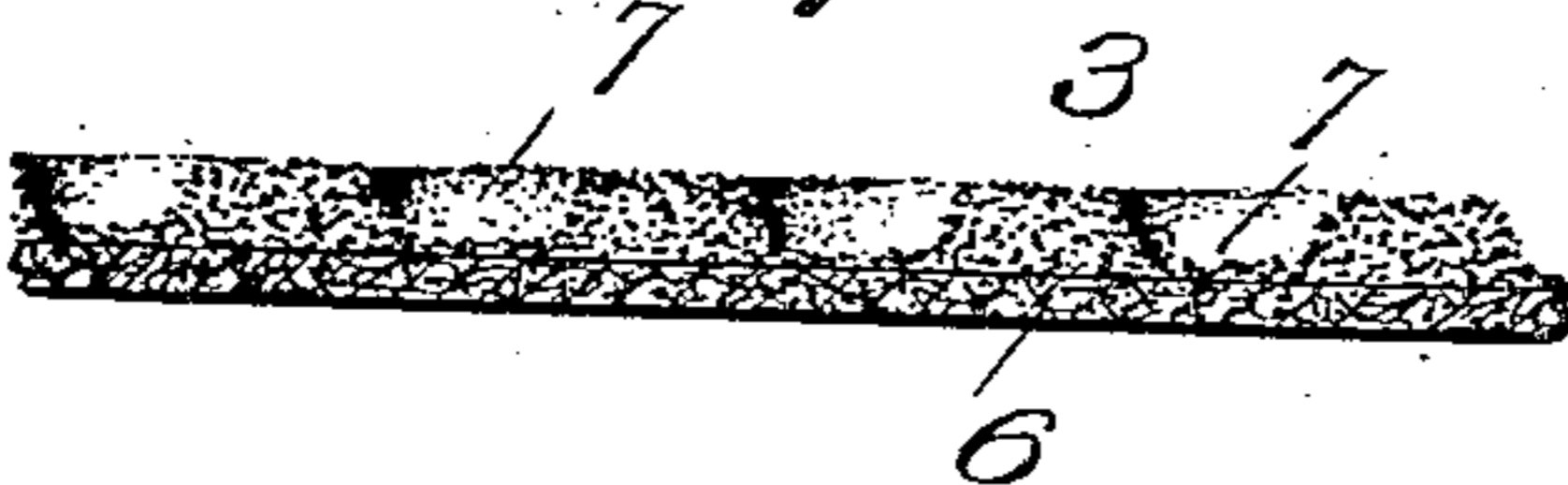


Fig. 3



Witnesses

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GEORGE GORTON, OF RACINE, WISCONSIN.

CLEARANCE-SPACE GRINDING-DISK.

No. 816,461.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE GORTON, a citizen of the United States, residing at Racine, Racine county, Wisconsin, have invented certain new and useful Improvements in Clearance-Space Grinding-Disks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in abrading-sheets, and more particularly to grinding-disks.

15 An object of the invention is to increase the efficiency and durability of clearance-space abrading-sheets, and consequently to attain increased economy in the use of such sheets.

20 The invention consists in certain novel features in construction or arrangement of parts or details, as more fully set forth and described hereinafter.

Referring to the accompanying drawings, 25 which show for purposes of explanation what I now consider the preferred form from among others within the spirit or scope of my invention, Figure 1 is a plan view of a grinding-disk or abrading-sheet constructed in accordance with my invention. Fig. 2 is a cross-sectional view, on an enlarged scale. Fig. 3 is a section on an exaggerated scale, showing a different formation of abrading-surface.

35 In the drawings, 2 is a sheet of paper, fabric, or other suitable, usually flexible, material. One face of this sheet is usually plain or not covered with abrading material, whereby said plain face of the sheet can be glued or otherwise secured to the rotary head or disk of a grinding or other machine, although said abrading-sheets can be secured on cylinders or buffing-wheels or can be employed in the form of endless traveling bands or otherwise, 45 as may be desired. The opposite face of the sheet is provided with the abrading-face, which is formed thereon by applying liquid glue or other adhesive to the sheet and then sprinkling or otherwise depositing the desired quantity of grit on the deposit of glue, so that the grit is, in effect, taken up by the adhesive, which on hardening forms a binder for the grit and secures the abrading-surface to the sheet. Any suitable grade of grit can 55 be used in any desired quantity to form the

abrading-surface the desired thickness. The abrading-surface of each disk or sheet is usually of approximately the same thickness throughout—that is, the working face of the abrading-surface of the grinding-disk is preferably flat and in one plane. The abrading material or surface 3 of the disk practically forms one or a single sheet or surface. In other words, it is not broken up into separate portions or areas, but clearance is provided 60 for by a great plurality of isolated suitably-distributed small blank or uncovered or non-working spots or recesses 4, which can be formed in the abrading-surface by any suitable means or by a suitable step or steps in the process of manufacturing the grinding-disks. 65 The single or continuous abrading-surface is inactive, so far as grinding or working is concerned, at the several clearance-spots 4, whether said spots be entirely blank, of grit, 75 or whether the floors of said spots are entirely below the working face of the abrading-surface. In other words, working abrading-material faces are lacking at these isolated spots, and hence said spots provide for 80 clearance as the refuse and grit worn from the work being ground and from the abrading-surface find ready escape into said spots. Each clearance-spot can be of any suitable shape or form, although I prefer spots of the 85 general outline shown and that all the spots of a sheet be similar in form and dimensions, although I do not wish to so limit my invention. The clearance-spots can be arranged or distributed in any suitable manner, and I 90 do not wish to limit myself to a uniform or even distribution thereof in the single continuous abrading-material surface, which is unbroken except for said spots, as said surface is not by said spots divided into areas or 95 working portions. I usually arrange the spots equally spaced apart and distributed throughout the single sheet or layer of abrading material, and hence I usually lay out the spots in parallel equally-spaced rows intersected at right angles by parallel equally-spaced rows. 100

When the grinding-disks are in the form of circular sheets with a central perforation, as shown, I usually form the annular abrading-surface with annular outer and inner narrow portions or margins 5, which are not formed with the clearance-spots. This peculiar formation with the narrow annular non-clearance inner and outer edge portions adds to the 105 110

durability of the edge portions or margins of the abrading-surface; but I do not wish to limit other features of my invention thereto.

I show in an exaggerated manner in Fig. 3 a sheet 6, which can be formed of cloth or fabric having the continuous working abrading-material sheet or surface 3, with clearance-spots or non-working blanks 7, forming recesses into which the refuse can escape, thereby providing for clearance. The sheet 6 has thin non-working layers of grit forming the depressed floors of these spots, so that the spots 7 are, in effect, formed by small concavities or refuse-receiving recesses.

I have found by experience that materially-increased efficiency and durability in clearance-space abrading-surfaces is attained by employing practically a single or continuous sheet or one layer of abrading material, as distinguished from separated or distinct sheets, layers, or areas of abrading material or working faces and by forming isolated clearance-spots or non-working blanks in this practically continuous layer or sheet of abrading material. The spots provide for such free and rapid clearance as may be necessary, and yet the abrading-surface is not materially weakened or reduced by the spots, as the abrading surface is bound together throughout into one sheet or layer and comprises a maximum quantity of abrading-grit. I find that my improved abrading-surface possesses qualities of great endurance and also attains a very high efficiency, thereby effecting increased economy in the use of clearance-space grinding-disks.

Divided and blank clearance-space abrading-surfaces are, broadly, very old in various

arts and, broadly considered, have been well known to those skilled in the art for many years; but it is the object of my invention to produce a grinding-disk of high efficiency and durability and capable of being produced at a low cost, whereby clearance-space grinding-disks can be generally used in practice on an economical basis.

It is evident that various modifications might be resorted to without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact construction shown.

Having thus described my invention, what I claim is—

1. A grinding-sheet having a working abrading-surface secured on a face thereof and consisting of a layer of adhesive and grit formed with a multiplicity of isolated non-working clearance-spots distributed throughout said surface, each surrounded by said abrading-surface, whereby all portions of said layer are bound or connected together, substantially as described.

2. A grinding-sheet consisting of a flexible sheet having a layer 3 of abrading material secured on a face thereof and formed with a multiplicity of isolated blank clearance-spots 4, distributed throughout said layer between the margins thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE GORTON.

Witnesses:

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MATTIE E. PALMER.