

No. 781,876.

PATENTED FEB. 7, 1905.

F. N. GARDNER.
ABRADING DISK.

APPLICATION FILED NOV. 30, 1900.

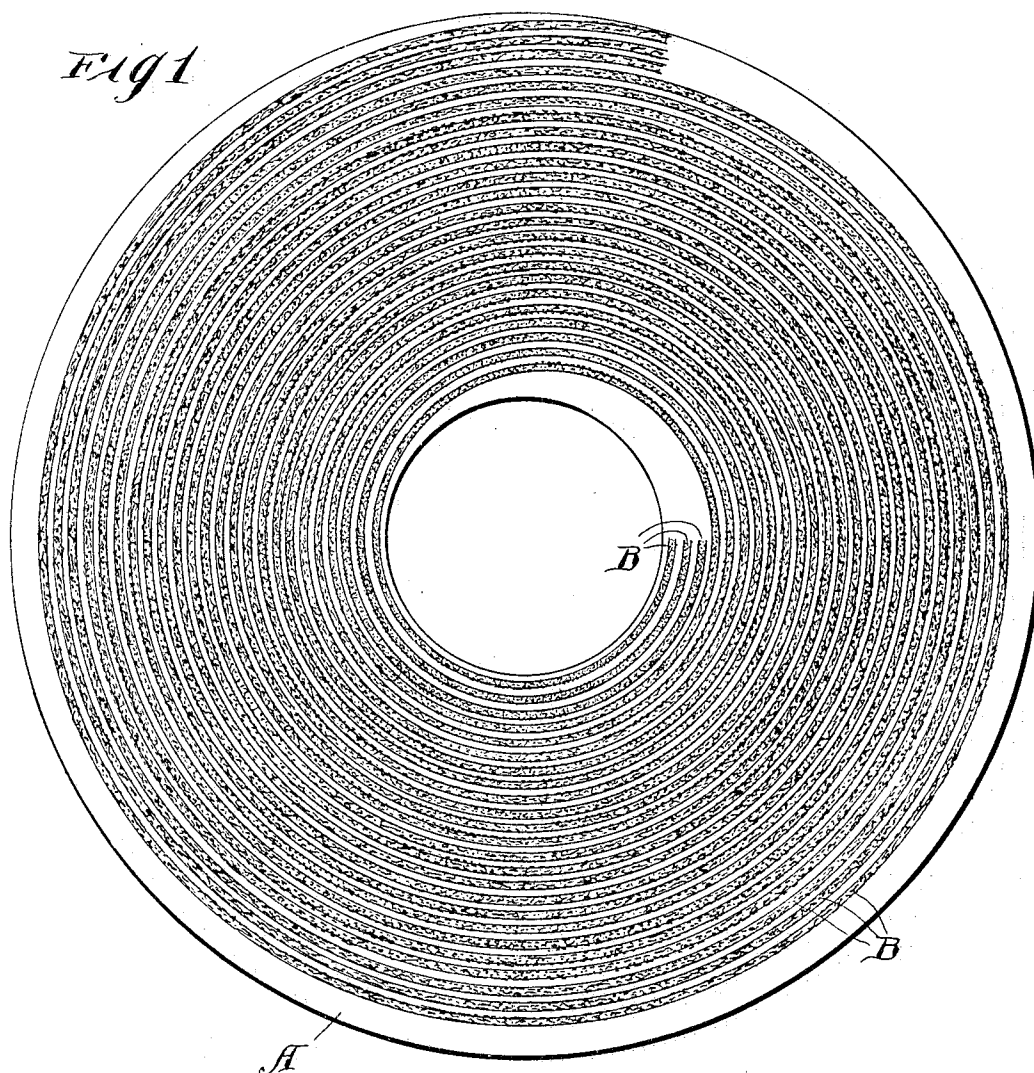
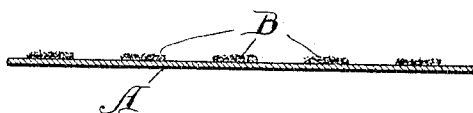


Fig 2



Witnesses:-
Charles H. Crawford
William H. Hall,

Inventors:-
Frederick N. Gardner
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UNITED STATES PATENT OFFICE.

FREDERICK N. GARDNER, OF BELOIT, WISCONSIN, ASSIGNOR TO CHARLES H. BESLY, OF CHICAGO, ILLINOIS.

ABRADING-DISK.

SPECIFICATION forming part of Letters Patent No. 781,876, dated February 7, 1905.

Application filed November 30, 1900. Serial No. 38,149.

To all whom it may concern:

Be it known that I, FREDERICK N. GARDNER, of Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Abrading-Disks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel article in the nature of a grinding-disk consisting of a sheet of paper, cloth, or like material provided with an abrading-surface formed by an adherent coating of emery or corundum or the like.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

A grinding or abrading disk embodying my invention consists of a sheet or disk of paper, cloth, or other thin and flexible material, on one face of which is applied abrading material, such as emery or pulverized corundum, in the form of uniformly-disposed strips or areas separated by intervening strips or spaces in which the abrading material is absent and are therefore depressed below the level of the grinding-face of the abrading parts or areas, such depressed strips or spaces forming clearance-grooves which are spirally arranged and are therefore disposed on the disk in lines extending in angular relation to concentric lines of the disk, so that they will cross or have angular relation to the paths of the abrasive particles across the work and will not, therefore, form ridges thereon, as would be the case if the abrasive surfaces and intervening spaces were concentric with the center of the disk. Said clearance-grooves greatly facilitate the process of grinding, because relieving the abrasive parts or areas of detached particles of metal, which in a disk having a continuous abrasive surface would accumulate thereon and by filling the interstices between the emery or corundum particles tend to make the abrasive surface smooth and interfere with the grinding or abrading action. The pulverized corundum or emery is secured or

made to adhere to the disk by means of glue or like adhesive substances, as in the case of emery cloth or paper as heretofore made.

A grinding-disk made as described is intended to be rotated in contact with the articles to be ground or polished, said disk for this purpose being usually secured by glue, cement, or otherwise to the face of a flat circular plate of metal, which is driven or rotated by suitably-applied power.

Figure 1 is a face view of a paper grinding-disk made in accordance with my invention. Fig. 2 is an enlarged sectional detail view thereof.

As shown in said drawings, A indicates a disk of paper or like material, and B B abrading surfaces or areas having the form of stripes or strips arranged in spiral lines or convolutions with narrow spaces between them. Said abrasive strips or areas are formed by emery, pulverized corundum, or other abrasive material held in place upon the paper by glue or like adhesive material. The paper disk illustrated is one which would be made by applying three lines or strips of glue to the paper at one time, such lines or strips being equally separated from each other and the three strips composing each group being separated by the same spaces from each other as the distance between strips of the group, so that all of the spiral strips or convolutions are equally spaced. The paper disk illustrated is one such as would be made by providing a glue-discharging nozzle having three exit-apertures and by revolving or turning the paper disk upon its own center while moving the nozzle gradually outward or inward from the center to the circumference, or vice versa, thereby obtaining a thin-layer deposit of glue along the line traversed by each of the apertures of the nozzle during the turning of the disk. A similar result would of course be obtained by holding the disk stationary and drawing or carrying the nozzle around the same while moving it gradually inward and outward, so as to make spiral coils or convolutions. After the glue is thus applied the abrasive material is sprinkled or otherwise applied, with the result that when

the glue dries or hardens the abrasive surfaces thereby formed are elevated above the intervening unoccupied surfaces of the paper, and such unoccupied surfaces form, in effect, clearance grooves or depressions.

- 5 The paper disk with abrading material applied thereto in the manner described has an important advantage over the abrasive paper disks heretofore made, which have a uniform
10 or continuous coating of abrading material over the entire surface thereof, in having uniformly spaced or disposed clearance-grooves to receive the particles of abrading material, it being found, as before stated, that an abrading or grinding disk provided with such clearance-grooves is much more effective in its operation than one without such grooves.

I claim as my invention—

1. An abrasive or grinding disk consisting
20 of a sheet provided with adherent abrasive material arranged in uniformly-disposed areas, with intervening uncovered areas forming clearance-spaces.

2. An abrasive or grinding disk consisting
25 of a sheet provided with adherent abrasive material arranged in spiral lines or strips separated by spiral intervening grooves or spaces.

3. An abrading-sheet having projections of abrading material closely arranged over the surface thereof and forming the intervening
30 blank or uncovered clearance-spaces, practically isolating said projections, substantially as described.

4. As an article of manufacture, an abrading-sheet having the abrading-material grit cemented to a face thereof and partially covering said face forming a divided abrading-surface with intervening clearance depressions, substantially as described.

5. As an article of manufacture, a flat flexible abrading-sheet, the abrading-surface thereof being formed by abrading material applied to one flat face thereof and divided into working faces by blank or uncovered portions of said face of the sheet forming the clearance-spaces, for the purposes, substantially as described.

6. As an article of manufacture, a flexible abrading-sheet having its abrading-surface made up of a series of separate closely-arranged working portions of abrading material with intervening blank, uncovered or clearance spaces, each working portion of the surface having a clearance-space behind it in the direction of working movement of said surface, substantially as described.

7. As an article of manufacture, an abrading-sheet having its working face provided with projecting abrading-material ribs or ridges glued or cemented thereto and intervening blanks or uncovered clearance-spaces, substantially as described.

8. As an article of manufacture, a flexible sheet having its abrading-surface made up of ribs or ridges of abrading material separated by uncovered intervening clearance-spaces, the ridges and clearance-spaces being at an angle to the direction of motion of the said surface when in operation, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 7th day of November, A. D. 1900.

FREDERICK N. GARDNER.

Witnesses:

MARIE L. PRICE,

C. CLARENCE POOLE.