G. HART.

Grinding and Polishing Wheel.

No. 215,351. Patented May 13, 1879.

Fig. 1.

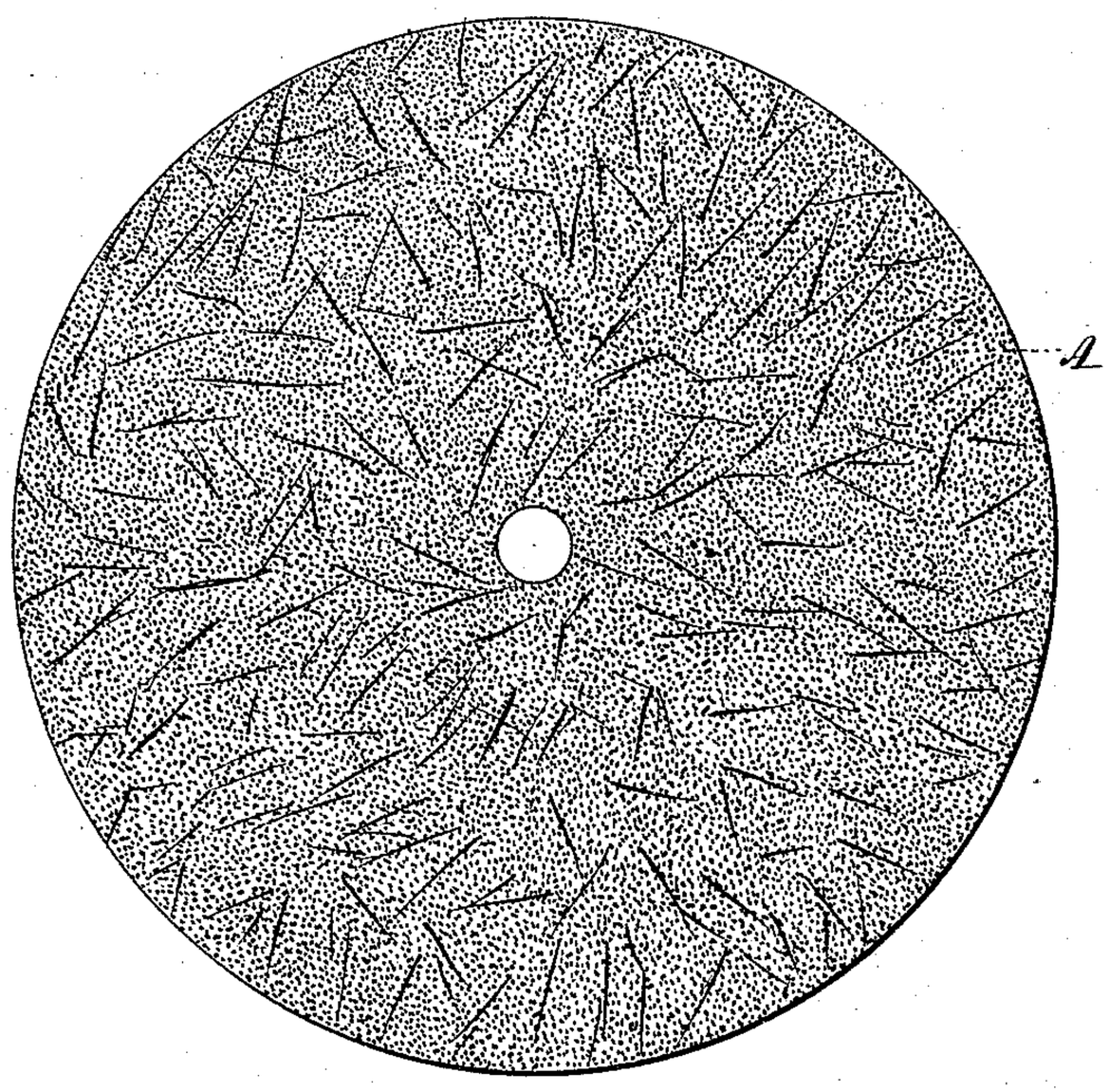
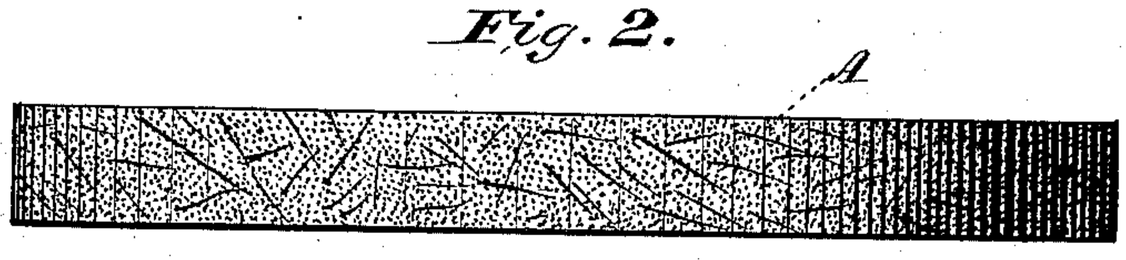


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

GILBERT HART, OF DETROIT, MICHIGAN.

IMPROVEMENT IN GRINDING AND POLISHING WHEELS.

Specification forming part of Letters Patent No. **215,351**, dated May 13, 1879; application filed October 31, 1878.

To all whom it may concern:

Be it known that I, GILBERT HART, of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Grinding and Polishing Wheels, of which the following is a specification.

The object of this invention is to strengthen emery, corundum, or other composition grinding and polishing wheels against centrifugal strain during high speed of rotation.

It is known to persons who use grinding and polishing wheels that in order to obtain the best effect therefrom they should be run at a high rate of speed; and it is also known that when thus used these wheels, as heretofore made, even when used with great care and skill, are liable to break and fly off with great violence in fragments from their axles unless the wheels are braced in some manner against the great centrifugal strain to which they are subjected. This bracing has heretofore been done by embedding in the wheel metallic bars, plates, or a wire web, and this manner of bracing has proven very satisfactory, as the bars, plates, or wires are only required to have small transverse dimensions, and may always extend from center to periphery of the wheels, wearing away evenly with said periphery, and not interfering with the efficiency of its working-surface. It, however, necessitates considerable care in the manufacture of wheels, as in the molding a portion of the composition of which a wheel is to be formed must be first placed in the mold, the bars, plates, or wire web cut to the proper size and partially embedded therein, properly arranged, and then the other portion of the composition is placed or poured upon the bars, plates, or wires, sinking between them and becoming incorporated with the composition first put into the mold. These metallic braces are also good conductors of heat, and are liable to conduct the heat occasioned by friction to the center and intermediate portions of the wheel, causing an expansion, which has a tendency to split the wheel. The contraction of such braces after the expansion occasioned by the heat from use also occasions a temporary unevenness of the working-surface of the wheel when first again used, as will be readily understood.

My invention consists in a grinding or polishing wheel containing an emery or corundum composition and asbestus mixed together, and molded to the desired dimensions and configuration of its working-surfaces.

The fibers of asbestus serve admirably as a binding medium for the composition of which the wheel may be formed, so as to brace it against centrifugal strain when in use. It is a very poor conductor of heat, and therefore communicates none of the heat resulting from the friction of use toward the center of the wheel. Its expansion and contraction under variations of temperature are practically inappreciable, so that the evenness of the grinding or polishing surface of the wheel is not affected thereby, and it wears away evenly with the composition of which the main part of the wheel is formed.

My improved wheel is molded in the same manner as the ordinary emery or corundum wheel, the composition being prepared in the ordinary way, and the asbestus is then mixed thoroughly therewith, in the proportion of about one part in bulk of asbestus to four parts of the composition with which it is mixed. The wheels thus made may be used as are ordinary grinding and polishing wheels.

In Figure 1 of the accompanying drawings is shown a grinding and polishing wheel constructed according to my invention, the letter A indicating the wheel, formed of a composition of emery or corundum, or other suitable material or materials having mixed therewith fibrous asbestus, which is designated by fragmentary lines. Fig. 2 represents an edge view of the wheel.

I am aware that asbestus has been used as a binding element in fire-proof coatings and artificial stone, as shown in the patents to Antonio Pelletier, granted February 18, 1868, and numbered 74,587, and May 5, 1868, and numbered 77,705; but it is obvious that such artificial stones are not adapted for use in grinding and polishing wheels, as they are themselves susceptible of receiving a high polish.

My invention consists not in the simple use of asbestus as a binding element of artificial

stone, but in the application of the discovery that this substance will act as a binding ingredient for a composition in which emery or corundum is the preponderating element, and which is adapted for use in grinding and polishing wheels, and that the abrading qualities of the composition are not injuriously affected by the addition of such binding ingredient.

What I claim is—

A grinding or polishing wheel containing an emery or corundum composition and asbestus mixed together and molded substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

GILBERT HART.

Witnesses:

JAS. A. JONES,

PHI. ROOS.