G. HART.

Emery Wheel.

No. 201,778. Patented March 26, 1878.

Fig. 1.

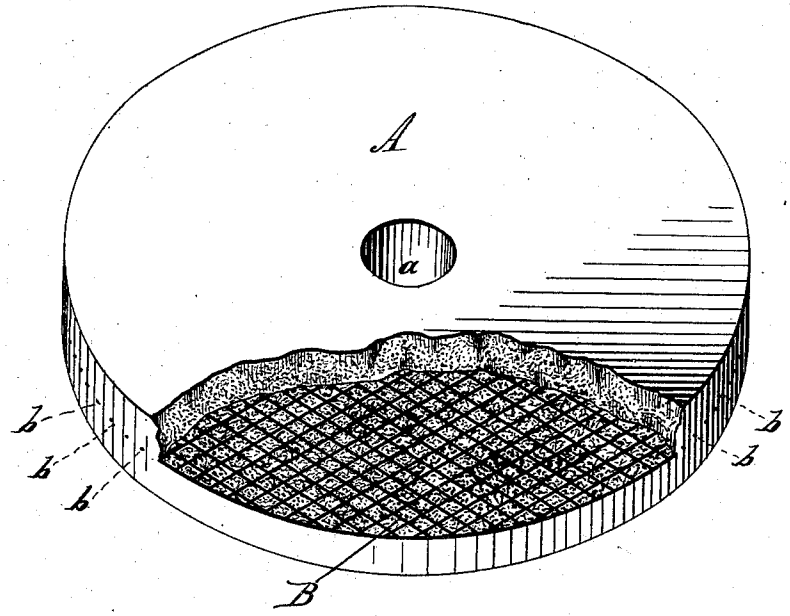


Fig. 2.

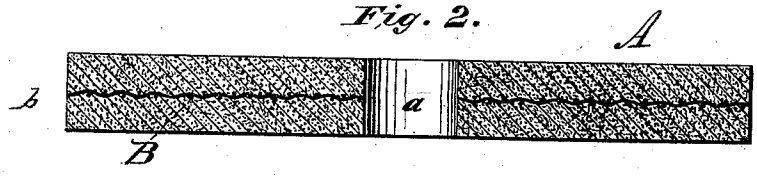


Fig. 3.

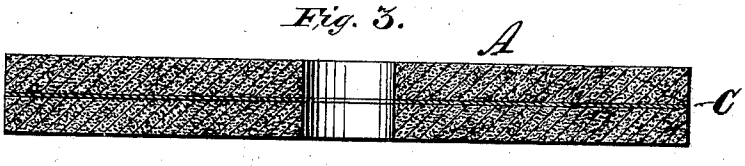
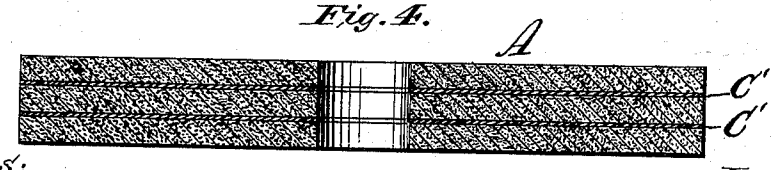


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

GILBERT HART, OF DETROIT, MICHIGAN.

IMPROVEMENT IN EMERY-WHEELS.

Specification forming part of Letters Patent No. **201,778**, dated March 26, 1878; application filed March 5, 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 Emery or Corundum 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 well known to all users of this class of grinding and polishing wheels that, in order to work them with the best effect and greatest economy, they must be run at high speed; and, when thus used, they are, even when great care and skill are exercised, more or less liable to break and fly off from their axes, and, with careless use, are extremely dangerous, as when a breakage occurs the fragments of the wheel are scattered with great violence, frequently fatally wounding the operator and others in the vicinity, and destroying property.

In the accompanying drawings, Figure 1 is a perspective view of an emery-wheel constructed according to my invention, a portion of the emery composition being broken away to show the metal re-enforce. Fig. 2 is a diametric section of the same. Figs. 3 and 4 modifications of my invention.

The letter A designates a wheel, molded of a composition containing emery-powder or similar substance, and B is a disk of wire-web embedded within said wheel. Said web-disk extends in all directions from the center hole *a* toward the outer periphery of the wheel, and the ends of the separate wires forming said web are flush with said periphery, as shown at *b*.

Experience has shown that these wires do not interfere at all with the even cut or effective working of the grinding or polishing surface of the wheel when flush with the periphery thereof, as the metal wears away when the wheel is in use as rapidly as, or even more rapidly than, the main body or composition of which the wheel is formed.

Any kind of metal web may be used which is as easily, or more easily, worn away by friction than the body of the wheel; but I prefer that made of brass or copper wire.

Instead of the woven-wire web shown in Fig. 1, a flat metal disk, C, as shown in the modification, Fig. 3, or two disks, C′, Fig. 4, may be used; or radial bars may be arranged in the composition of which the wheel is formed.

When flat metal plates are used, I prefer to form said plates with a considerable number of perforations, in which the composition of the wheel will extend, and thus a firmer tie is secured than if the said plates were continuous and smooth.

In molding the wheels according to my present invention, I use substantially the ordinary method and apparatus, except that when the mold is partially filled with the composition, I introduce the metal brace or braces, pressing them into the plastic substance and fill the mold, so that said braces will be embedded, and, when the composition has thoroughly set, it clings closely to said braces.

Having now described my invention, I claim—

1. An emery, corundum, or other composition wheel, having embedded therein and extending from center to circumference thereof a brace or braces formed of a substance as easily, or more easily, worn away by friction than the body of the wheel, whereby the composition of which such wheel is formed is braced against the centrifugal strain resulting from a rapid rotation, and an even wear of the periphery of said wheel secured, substantially as set forth.

2. An emery, corundum, or other composition grinding or polishing wheel, having embedded therein a concentric, reticulated, or foraminous metal disk or disks, equally subject to wear by friction as the body of the wheel, whereby said wheel is re-enforced in all directions, 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:

BRADFORD SMITH,

FRANKLIN E. BROWN.