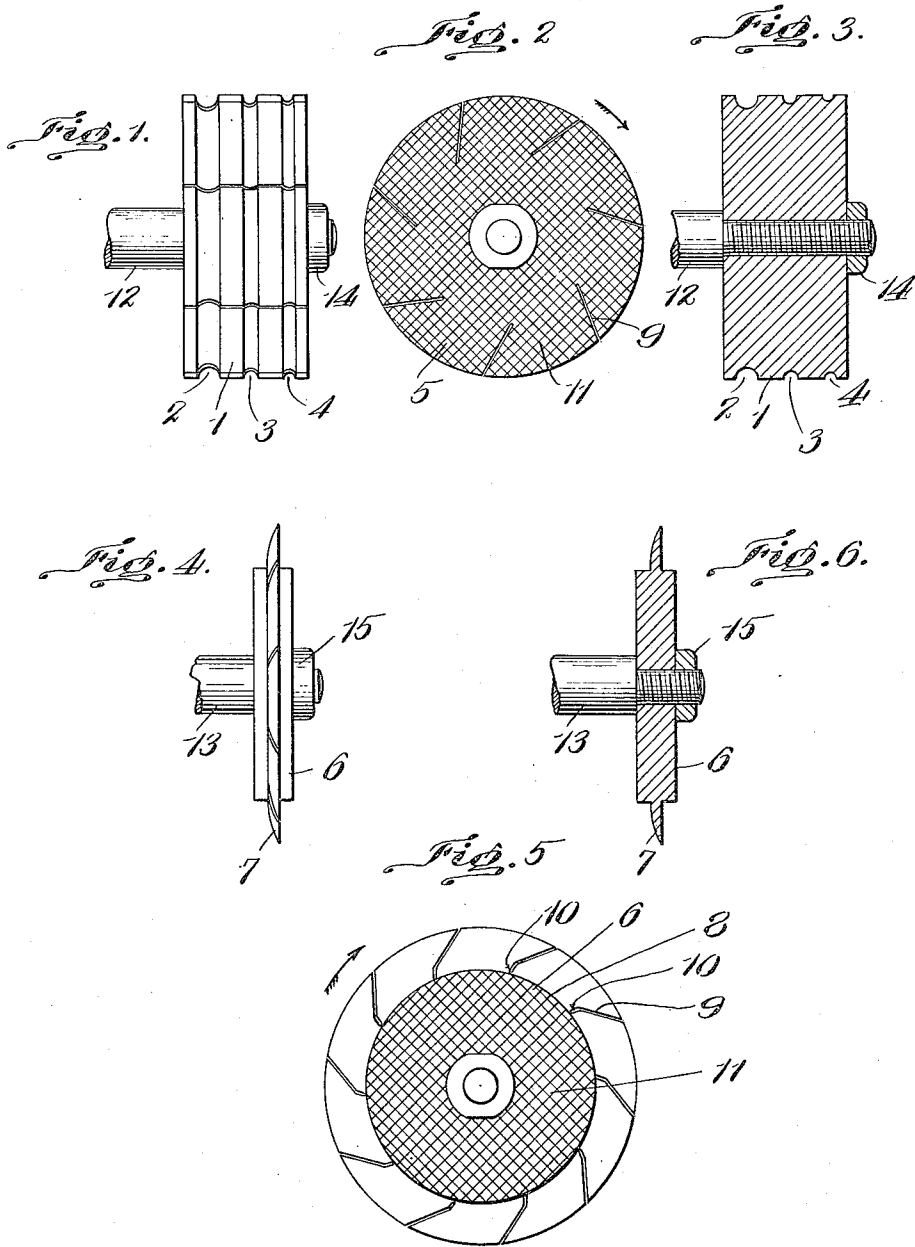


W. H. FORD.
JEWELER'S POLISHING WHEEL.
APPLICATION FILED JAN. 29, 1913.

1,150,024.

Patented Aug. 17, 1915.



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Edward Maxwell
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UNITED STATES PATENT OFFICE.

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JEWELER'S POLISHING-WHEEL.

1,150,024.

Specification of Letters Patent.

Patented Aug. 17, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM H. FORD, a citizen of the United States, and resident of Lowell, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Jewelers' Polishing-Wheels, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In the manufacture of jewelry there are many places where the ordinary grinding and polishing wheel is difficult to operate. For instance, between the clamps of a stone setting (*e. g.* Belcher or Tiffany), and accordingly it has been common to provide a thin disk of wood, run at high speed and keep rubbing over its surface emery, tripoli, rotten stone, etc. But the wood is frail, tends to splinter, will not endure much pressure, quickly wears out, and fails to retain the powdered mineral. I have found that indurated fiber of the kind commonly known on the market as vulcanized fiber, is not only durable and moldable, but possesses just that degree of flexibility and toughness which permits it to endure hard pressure and rough usage at high speed, without danger of breaking, and it has no tendency to splinter, will maintain a fine edge or other sharp configuration, is capable of being molded with the utmost nicety and accuracy of pattern and finish, does not tend to fly in pieces or to burst under the high speed desired (for instance, four thousand revolutions per minute), does not become destructively heated, and is admirably adapted to carrying and retaining in its surface the powdered abradant.

Further features and advantages of my invention will be pointed out in the course of the following description.

In the drawings I have shown a plurality of preferred embodiments of my invention, Figure 1 showing one form of ring polisher in edge elevation, and Figs. 2 and 3 showing the same in side elevation and vertical cross section; and Figs. 4-6 are similar views of a different form of the invention, showing a more delicate embodiment of the polishing wheel.

The first important feature of my invention to which I direct attention is the material of which the wheel is composed, viz., fiber of the kind commonly known on the

market as vulcanized or indurated fiber. This fiber is capable of being molded to any desired shape of wheel, as, for instance, a wheel 1 containing grooves 2, 3, and 4 of different sizes for polishing different portions of a ring or of other jewelry, and having one or both sides provided with a surface 5.

In Figs. 4 and 5 I have shown a form of wheel having a relatively thick central supporting body 6, and a thin central radial rib or finlike flange 7, one or both sides of the body 6 having a knurled surface 8, the same as the surface 5. After long experimentation I have found that nearly all of the difficulties of the ordinary wooden abrading wheel as used by jewelers are obviated by using a molded wheel (or other form of rotary polishing or grinding tool) made of this fiber. It is homogeneous and tough and smooth, and yet is capable of receiving into its fiber or smooth surface enough of the emery powder to become transformed thereby into a superior polishing or abrading surface. It has no tendency to fracture, splinter or crack, and it does not burst or lose its shape under exceedingly high speed. It is not compressible, and yet is sufficiently flexible or yielding so as not to break or chip under ordinarily rough usage, and it will maintain a sharp edge such as that of the fin 7 for an exceedingly long time. In fact, under ordinary usage, such as practised commonly by jewelers, I have found this abrading wheel to be practically indestructible. Moreover it has just the right grain for carrying along the desired film or surface of abrading or polishing powder, whose grains embed themselves tenaciously in its surface.

The second feature of my invention which I consider of marked importance resides in providing recesses, preferably in the form of kerfs or saw cuts 9 for retaining a supply of the abrading or polishing powder, such as emery, tripoli, etc. These kerfs are very fine, so as not to interfere themselves with the polishing or grinding, and are packed full of the emery, for instance, and give up this emery or other powder very slowly, but yet sufficiently to maintain the desired fine abrading surface at the edge of the wheel, or over the surface engaged by the work. As shown in Figs. 2 and 5, these pockets or kerfs 9 extend tangentially of

the center, and the wheel is to be rotated in the direction of the arrow, as I have found that by this means by far the best results are secured. In the case of such a wheel as that shown in Figs. 4 and 5, which is run at an exceedingly high speed, it is desirable to form angular inner ends in the saw kerfs, or at least to make the kerfs curved or bent more or less, so as thereby to tend to retain the powder more securely. Preferably the sides of the wheels are knurled, as indicated at 11, so as to hold abradant therein, in case the sides of the wheels are to be used for polishing or grinding purposes. The curves of this knurled surface are quite shallow, as distinguished from the depth of the recesses 9.

In use the wheel is placed on a shaft 12 or 13, and secured as by a nut 14 or 15, and then rotated at the desired high speed required for the work. Let it be supposed that powdered tripoli has been packed into the recesses 9 and 10 and smeared in a thin film over the polished surface of the wheel, the work is held against the grooves 2, 3, and 4 or against the side or edge of the fin or flange 7, or against the knurled side or other surface and quickly brought to the desired finish. The remarkable feature is that the wheel does not wear out and does not lose its shape, but instead thereof it keeps its sharply molded shape and transmits just that amount of polishing or abrading material over its surface and from the recesses 9 that seems to be required for the given work.

I believe that I am the first to have discovered that indurated fiber possesses the qualities required for a high speed rotary polishing wheel, and is capable of solving the difficulties which have always heretofore attended this art, and which the trade has for many years tried in vain to solve. As to the tangential saw kerfs, I have found that if they are made radial and even if the wheel is rotated in the opposite direction, they will

deliver the emery but imperfectly, and therefore, while I claim specifically the preferred form, I do not intend to be restricted thereto in all my claims.

The arrangement of the saw kerfs in a fiber wheel causes these kerfs to spring open during the working action, and, therefore, to feed the polishing material automatically to the work, dependent upon the speed of the wheel and pressure of the work there-against.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A jeweler's abrading or polishing wheel having a grooved work-engaging surface formed of molded indurated fiber having a plurality of kerfs opening into the work-engaging surface, said kerfs being filled with abrading or polishing material and adapted to have the outer ends of said kerfs opened by the action of the work there-against, whereby the abrading or polishing material is automatically fed to said surface.

2. An abrading or polishing wheel having a grooved work receiving surface composed of molded indurated fiber, and containing recesses opening at the work receiving surface and extending tangentially of the center for carrying the abrading or polishing powder, said recesses being constructed and arranged to spring open by the action of the work upon the wheel.

3. An abrading or polishing wheel having its work receiving surface composed of molded indurated fiber, and containing recesses opening at the work receiving surface for carrying the abrading or polishing powder, and a knurled side.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM H. FORD.

Witnesses:

EDWARD MAXWELL,
JAMES R. HODDER.