

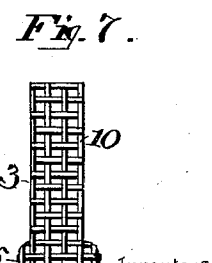
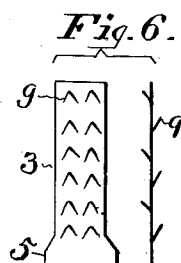
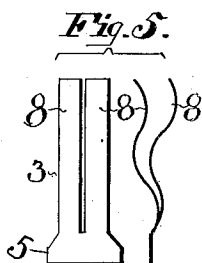
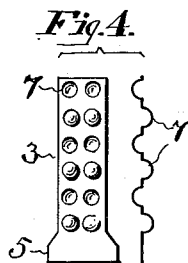
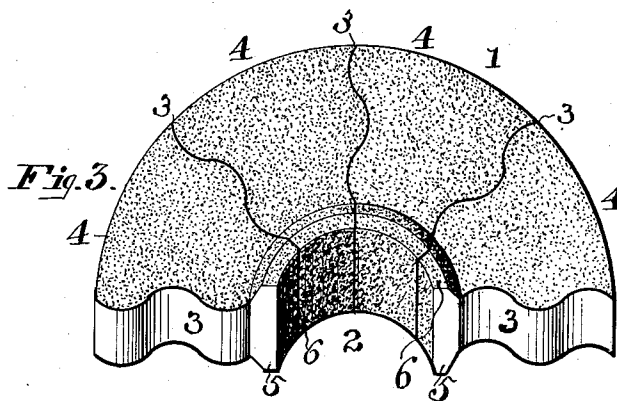
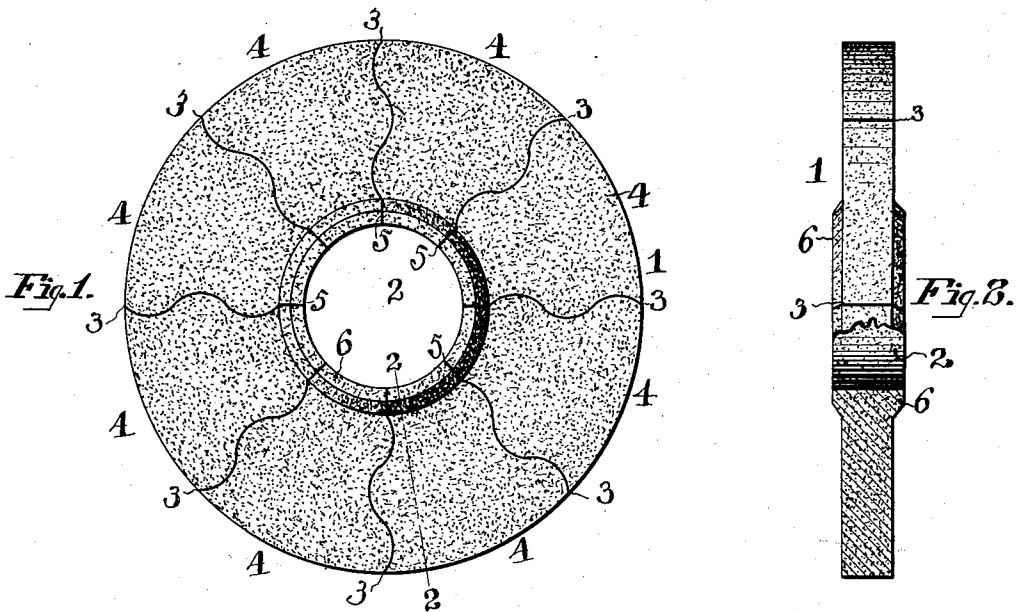
No. 845,511.

PATENTED FEB. 26, 1907.

A. E. BROWN & J. B. SHOE.

GRINDING WHEEL.

APPLICATION FILED MAR. 28, 1906.



Witnesses
John C. Ariles.
Howard K. Rudolph.

Arthur E. Brown
John B. Shoe
By Edward F. Simpson, Jr.
Attorney

UNITED STATES PATENT OFFICE.

ARTHUR E. BROWN AND JOHN B. SHOE, OF PHILADELPHIA,
PENNSYLVANIA.

GRINDING-WHEEL.

No. 845,511.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed March 28, 1906. Serial No. 308,449.

To all whom it may concern:

Be it known that we, ARTHUR E. BROWN and JOHN B. SHOE, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Grinding-Wheels; and we 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.

Our invention relates to an improvement in composition or other grinding and polishing wheels—such as emery, corundum, carborundum, &c.—the improvement being particularly applicable to wheels of large diameter, which are liable to break or separate when rotated at high speed.

The object of the invention is to render this liability of breakage impossible or at least reduce it to a minimum.

The invention consists of a grinding-wheel having radially-disposed strengthening-plates adapted to be connected to the support upon which the wheel is mounted and so formed as to have interlocking engagement with the sections or parts of the wheel. This will be more fully explained in the following specification with the aid of the accompanying drawings and pointed out at the conclusion of said specification.

In the accompanying drawings, Figure 1 is a view in side elevation of a grinding-wheel indicating the preferred embodiment of our invention. Fig. 2 is an edge view of the same, partly in section. Fig. 3 is a sectional perspective view. Figs. 4, 5, 6, and 7 are views representing modified forms of strengthening-plates.

Grinding-wheels of large diameter, as represented by the numeral 1, are usually provided with a relatively large central opening 2, adapting them to be mounted upon supporting devices. The strengthening-plates 3 of our improved wheel may be of any suitable number radially disposed and extending from or near the central opening 2 toward the periphery of the wheel and from side to side thereof, although it is not necessary that said plates extend to the peripheral or side surfaces. These plates 3 may be said to have the effect of dividing the wheel into segmental sections 4.

The improved wheel may be constructed in different ways, one method being to mold the wheel as a whole, in which case the strengthening-plates are placed in the mold and the wheel material poured around or between them. Another method is to mold or otherwise form the segmental sections 4 separately and subsequently group and unite them to form the wheel. Before the sections are united a strengthening-plate 3 is suitably secured, as with cement, to one side of each section, thus locating the plates between the sections.

To accomplish the purpose of our invention, the strengthening-plates 3 should be so constructed as to provide an interlocking connection between the sections 4 of which the wheel is composed and also between said plates and said sections. Furthermore, the plates must be provided with means for enabling them to be connected to the metal or wood hub, wheel, or other support upon which the grinding-wheel is to be mounted.

The preferred form of strengthening-plate 3 (indicated in Figs. 1, 2, and 3) is transversely curved, bent, or corrugated to provide the above-mentioned interlocking connection and at or near its lower or inner end is formed with lateral projections 5, adapted to extend beyond the opposite sides of the grinding-wheel to be engaged by a flanged ring or collar, such as is usually employed for securing grinding-wheels upon their supports. As the support and the ring or other means used for securing the grinding-wheel thereto form no part of our present invention, and as any suitable or well-known forms of such devices may be employed, they are not herein illustrated. In the particular form of means indicated for connecting the strengthening-plates to the support it is advisable that the grinding-wheel be formed on opposite sides with an annular shoulder 6 immediately surrounding the central opening 2. These shoulders should be substantially of the same shape and size as the lateral projections 5 of the plates which they serve to support and also afford a better connection between the grinding-wheel and its support, the flanged securing-rings of the latter of which embrace the shoulder 6 and the plate projections 5.

The centrifugal action or strain to which a rapidly-rotating grinding-wheel is subjected is in lines radiating from the center of the

wheel. Hence the tendency of the wheel is to separate or fly apart radially. In a wheel constructed according to our invention it will be impossible, owing to the interlocking connection between the sections, for one section or part to separate radially without crushing the adjoining sections or parts, and as the sections are further interlocked with the plates they cannot separate or move radially without pulling said plates with them. As the strengthening-plates are securely and directly connected to the support on which the grinding-wheel is mounted, no reasonable amount of rotative force or centrifugal action is liable to detach them, and consequently it will be practically impossible for the wheel to separate or break apart when rotated at the highest speed.

Other forms of plates providing for interlocking the wheel-sections are indicated in Figs. 4 to 7, inclusive. Fig. 4 represents a plate having cup-shaped projections 7 alternating on opposite sides; Fig. 5, a split plate the prongs 8 8 of which are corrugated and separated; Fig. 6, a plate having spurs 9 struck out on opposite sides, and Fig. 7 a plate of wire mesh 10. Still other forms of plates may be used; but these will serve to indicate the nature of said plates.

We have not deemed it necessary to illustrate and describe more than the one form of means for enabling the plates to be connected to the grinding-wheel support, as other forms of such means will readily suggest themselves.

The strengthening-plates may be made of a metal capable of being worn down with the wheel without interfering with the grinding quality of the same, or the outer edges of the plates may be ground or filed slightly below the periphery of the wheel and this operation repeated each time the wheel wears down to the outer ends of the plates. Wrought-iron, for example, admirably serves the purpose.

We claim as our invention—

1. A grinding-wheel of the character indi-

cated composed of segmental grinding-sections and having radially-disposed strengthening-plates between said sections, said plates being so formed as to interlock the adjoining sections with each other and with said plates, said plates also being provided with means for connecting them to the support upon which the grinding-wheel is to be mounted.

2. A grinding-wheel of the character indicated composed of segmental grinding-sections and having radially-disposed strengthening-plates between said sections, said plates being transversely bent or corrugated so as to interlock the adjoining sections with each other and with said plates, said plates also being provided with means for connecting them to the support upon which the grinding-wheel is to be mounted.

3. A grinding-wheel of the character indicated having radially-disposed strengthening-plates provided with a lateral projection or projections extending outside the wheel to be engaged by means for connecting said plates to the support upon which the grinding-wheel is to be mounted.

4. A grinding-wheel of the character indicated having a central opening and annular shoulders on opposite sides surrounding said opening, and also having radially-disposed strengthening-plates provided with lateral projections extending into said annular shoulders of the wheel.

5. A segmental section for grinding-wheels having its periphery curved in the arc of a circle, its sides flat, and its edges indented or corrugated to interlock with similar sections, one or both of said edges having a strengthening-plate attached thereto.

In testimony whereof we affix our signatures in presence of two witnesses.

ARTHUR E. BROWN.
JOHN B. SHOE.

Witnesses:

JOHN C. AVILES,
HOWARD K. RUDOLPH.