(No Model.)

G. I. ALDEN & M. P. HIGGINS.

MOUNTING EMERY OR OTHER ABRASIVE WHEELS.

No. 566,883. Patented Sept. 1, 1896.

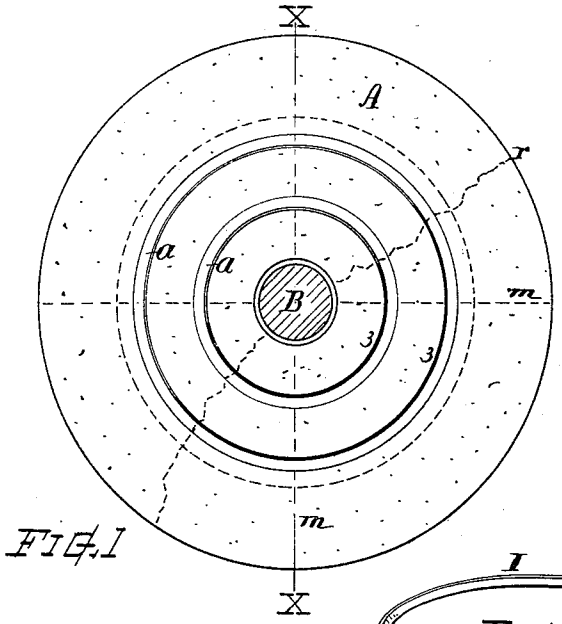

FIG. 1

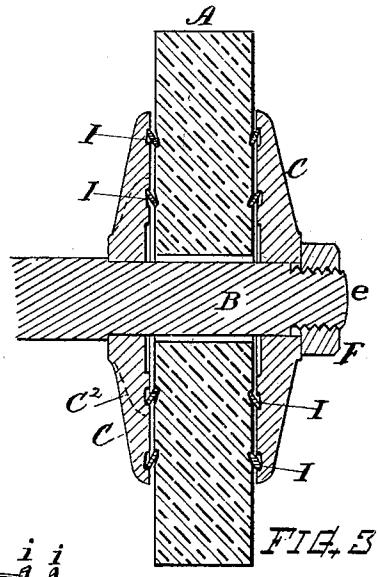

FIG. 3

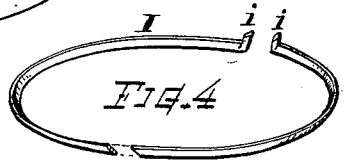

FIG. 4

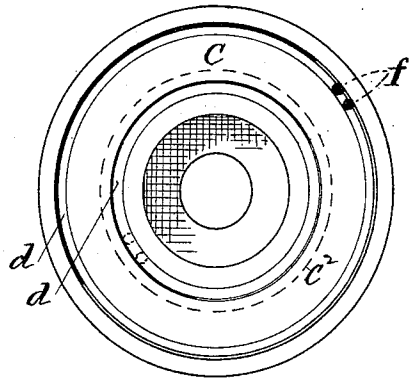

FIG. 2

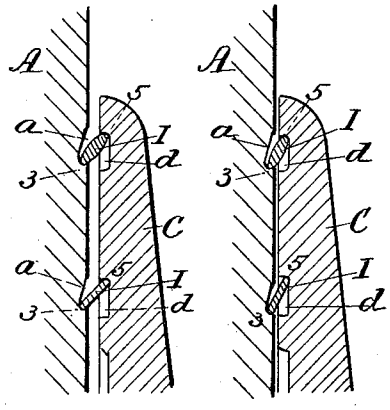

FIG. 5

FIG. 6

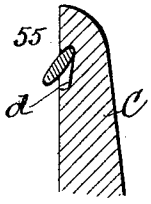

FIG. 7

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE I. ALDEN AND MILTON P. HIGGINS, OF WORCESTER, MASSACHUSETTS.

MOUNTING EMERY OR OTHER ABRASIVE WHEELS.

SPECIFICATION forming part of Letters Patent No. 566,883, dated September 1, 1896.

Application filed January 2, 1894. Serial No. 495,285. (No model.)

To all whom it may concern:

Be it known that we, GEORGE I. ALDEN and MILTON P. HIGGINS, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Mounting Emery and other Abrasive Wheels, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of our invention is to provide a practically efficient means for mounting emery-wheels and other wheels used for grinding, polishing, or abrasive purposes, whereby in case the wheel is in separable sections the parts will be held securely in place when the wheel is in use.

This object we attain by the wheel-mount constructed as illustrated, the same comprising a confining-ring of inclined oblong cross-section or flat metal strip disposed between the grooved surfaces of the wheel and its supporting-collar in diagonal position, with its edges respectively engaging the outer shoulder of a collar-groove and inner shoulder of a wheel-groove for affording an interlocking grip that acts with inwardly-bearing pressure between the wheel and the collar.

In the drawings, Figure 1 is a side view of the grinding-wheel. Fig. 2 is a side view of the supporting-collar, showing its inner face. Fig. 3 is a central section at line X X, showing the wheel and collars as mounted upon the arbor for use. Fig. 4 is a perspective view of the confining-ring made with offset ends. Figs. 5 and 6 are detail sections on a radial line through one side of the wheel and collar, drawn to somewhat larger scale, and in similar views showing our confining-ring of oval or flat section wire disposed oblique to the plane of the wheel and collar-faces and illustrating the action of the device by compression; and Fig. 7 is a section view showing the collar-groove as undercut or made with an overhanging edge.

Our invention is more especially applicable to that class of wheels known as "solid wheels" composed of emery, corundum, or other grinding or polishing material, in which the entire mass of the wheel is of the same composition, burned, vitrified, or otherwise solidified or integrated.

The wheel A is provided with one or more shallow annular grooves *a* in its side surfaces concentric with the axis of the wheel, and each presenting an outwardly-faced shoulder 3. The grooves are at such distance from the axis as may be required in the various sizes of wheels. The wheel A is mounted upon the rotatable spindle, arbor, or shaft B between the collars or supporting-plates C C. These collars are preferably of larger diameter than those usually employed to simply hold a wheel upon the arbor. Each collar has upon its inner face one or more annular grooves *d*, presenting in cross-section an inwardly-faced shoulder 5, concentric with the center of the collar. The grooves in the collars and in the wheel to be mounted therein are of the same or nearly the same diameter of circle, so that the grooves *a* of the wheel will oppositely match the grooves *d* in the face of the collar. A ring I, of suitable diameter for interlocking and pressure contact with the opposite shoulders, is employed in the respective grooves between the collars C and the wheel A at either side. This ring I, which is preferably open at its side, is made of spring-wire or a metal strip having an oblong, flat, or oval cross-section, and is formed with the longest axis of the cross-section disposed oblique to the plane of the face of the collar and inwardly inclined from the collar to the wheel. (See Fig. 5.)

The wheel is mounted on the arbor between the two collars with the rings I in the spaces formed by the grooves. The collars are retained and forced together by means of a shoulder on the arbor and the nut F screwed upon the threaded end *e* of the arbor. When the collars are forced toward each other, the oblique section is caused to assume a different degree of obliquity relative to the plane of its circle, and the yielding of the metal of the ring I tends to give an inward action within the groove of the wheel and outward pressure against the shoulder or outer edge 5 of the groove in the collar, which latter prevents

expansion, so that there is a force exerted to press the part of the wheel inside the ring toward the axial center, thereby insuring a firm bearing against the shoulder or inner edge 3 of the wheel-groove for rigidly holding the parts of the wheel if cracked or in sectors and firmly pressing the same toward the wheel center.

The principle is obviously the same at each of the collars, the devices being oppositely effective to hold the wheel as a whole by means of the inclined sections or rings which interlock or project into the grooves in both the wheel and the collar as diagonal braces across the intervening space. An emery-wheel formed in a number of sectors, as indicated by dotted lines *m*, Fig. 1, or a solid wheel that may become cracked, (see dotted lines *r*,) can be operated with our improved mounting.

In some instances it is desirable to have the rings held in the grooves in the collar, so that they will not readily drop out or escape from the collar when it is taken off the arbor. For this the outer edge of the groove is made to slightly overhang, as at 55, Fig. 7, and the outer edge of the oblique sectional ring is sprung into the groove, so that the resilience of the ring toward diametric expansion of the circle will serve to retain its edge under the lip 55 and confine the ring within the groove.

In some instances the collar can be, as in Fig. 2, provided with holes *f* in the line of and transverse to the circle of the groove *d*, and one or both ends of the ring-section bent outward, as indicated at *i*, Fig. 4, to be inserted in said holes, thereby retaining the ring in place and also serving to prevent rotation of the ring or collar independent of each other when in use.

When the periphery of the wheel is worn away nearly to its outer groove, collars and rings of smaller diameter (see dotted line C^2) can be substituted for the larger collar and ring, and the wheel then further reduced in use.

As grooved collars and rings of a different kind have been heretofore described in a foreign patent for the mounting of emery-wheels, it will be understood that we do not herein broadly claim such elements irrespective of the construction and arrangement specified.

What we claim as of our invention, and desire to secure by Letters Patent, is—

1. The metal ring or interlocking strip formed with an oblong cross-section disposed oblique to the plane of its circle; in combination, with an emery or other abrasive wheel having in its side an annular groove that presents a circular outwardly-facing shoulder, the collar grooved to oppositely match with said wheel, or presenting a circular inwardly-facing shoulder; said ring-section occupying a diagonal relation between the shoulders in the adjacent sides of said collar and wheel; and means for supporting and pressing said collar to the wheel, substantially as set forth.

2. The combination with a wheel composed of emery, or other grinding or abrasive material, having an annular groove or offset in the side thereof, and the collar provided with an oppositely-corresponding groove, of a resilient metal ring, the substance of which is shaped oblong in cross-section, and having its cross-section diagonally disposed between said wheel and collar, one edge of said ring resting or bearing against the inner edge of the groove or offset in the wheel, and its other edge against the outer edge of the groove in said collar, and means for forcing the collar toward the wheel, as set forth.

3. In combination with an emery-wheel having an annular groove in its side; the annular grooved supporting-collar having its groove-face provided with holes or recesses *f* in and transverse to the circle of the groove *d*, and the confining ring or strip I formed and adapted for seating in said grooves as described, and provided with offset ends or projections *i* that engage in said recesses and render said ring non-rotatable in relation to said collar, as set forth.

Witness our hands this 26th day of December, A. D. 1893.

GEORGE I. ALDEN.
MILTON P. HIGGINS.

Witnesses:
CHAS. H. BURLEIGH,
GEORGE KINGSTON.