(No Model.)

L. R. NOURSE.

GRINDING OR POLISHING WHEEL.

No. 358,472. Patented Mar. 1, 1887.

Fig. 1.

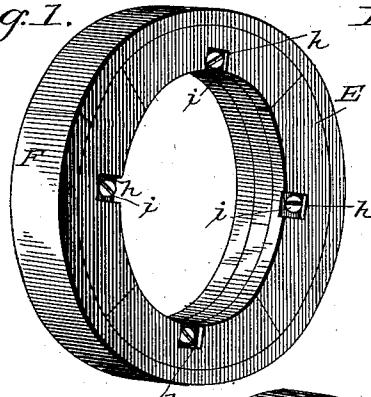


Fig. 2.

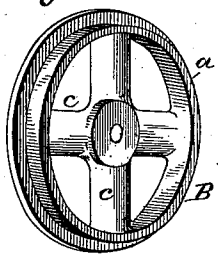


Fig. 3.

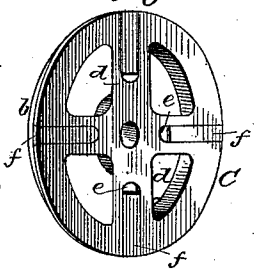


Fig. 4.

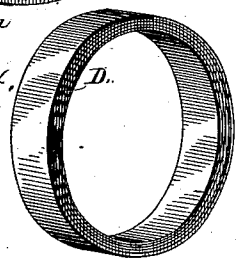


Fig. 5.

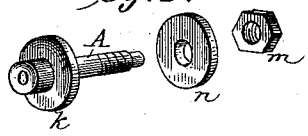


Fig. 6.

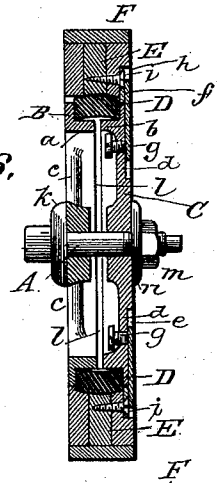


Fig. 8.

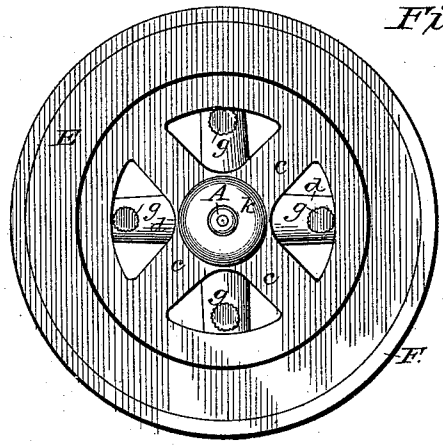
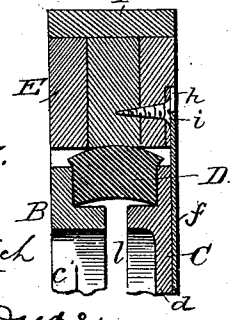


Fig. 9.



Fig. 7.



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UNITED STATES PATENT OFFICE.

LUCIAN R. NOURSE, OF CHICAGO, ILLINOIS.

GRINDING OR POLISHING WHEEL.

SPECIFICATION forming part of Letters Patent No. 358,472, dated March 1, 1887.

Application filed May 22, 1886. Serial No. 203,025. (No model.)

To all whom it may concern:

Be it known that I, LUCIAN R. NOURSE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grinding or Polishing Wheels; and I 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.

The invention relates to grinding and polishing wheels, and has for its object the construction of a device that can be readily adjusted, perfectly balanced, and securely held in position with the smallest number of adjusting means.

The invention will be hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective of the inelastic ring surrounded by a flexible band. Fig. 2 is a like view of one section of the hub, showing the interior thereof; Fig. 3, a like view of the opposite section of the hub, showing the exterior. Fig. 4 is a perspective of the expanding ring; Fig. 5, a perspective in detail of the shaft, the washer, and the clamping-nut. Fig. 6 is a vertical section. Fig. 7 is a similar view on an enlarged scale; Fig. 8, a side view, and Fig. 9 a plan view, of part of one of the sections of the hub, showing one of the slots to receive the adjustable slides.

Reference being had to the drawings and the letters marked thereon, A represents a shaft or spindle, on which is mounted a metallic hub made in two sections, B C, each of which is provided with a right-angled rabbet, *a b*, on its periphery, which form a concentric chamber for the reception of a ring, D, of elastic material—such as rubber. The ring D is a little thicker and wider than the depth and width of the chamber formed in the periphery of the hub-sections.

E represents a ring of wood, vulcanized rubber, or other suitable inelastic material, upon the periphery of which is secured a band, F, of flexible material—such as leather—the circumference of which is coated with emery or other suitable grinding or polishing material.

The hub-sections are provided with arms *c d*, respectively. The arms *d* of the section C have dovetailed slots *e* formed in them, in which adjustable slides *f* operate, and are secured in any desired position by the set-screws *g*, which are attached on the inside of said arms *d*, project through the same, and bear upon the inner surfaces of the slides.

In one face of the ring E are formed recesses *h*, which correspond in width with the slides *f*, and each recess is provided with an adjusting-screw, *i*. The inner surface of the ring E is plain or smooth, and passes over the outer surface or periphery of the elastic ring D when being placed in position to form a grinding or polishing wheel.

In putting the two sections B C of the hub together the arms and spaces are made to alternate, as shown in Fig. 3, to afford ready access to the set-screws *g*, which bear upon the slides *f*.

In constructing a wheel according to my invention the section B of the hub is placed in position on the shaft A, with its outer surface bearing against the collar *k*. The ring D is then placed in the rabbet *a*, when the section C of the hub is brought up into position, the ring D filling the rabbet *b* therein. The ring D being a little wider than the width of the chamber formed by the rabbets *a b*, a space, *l*, is left between the sections B C, as shown in Fig. 2, and admits of the ring D being compressed by the nut *m*, resting on the washer *n*. The ring E, bearing the band F, is now put in position around the ring D, and the nut *m* slightly screwed down to expand the ring D circumferentially and secure the ring E to the hub of the structure. The shaft is now revolved to see if the wheel runs true laterally. If not, the outer ring, E, is adjusted by slacking the nut *m* and adjusting the screws *i*, as they may require, and extending the corresponding slide or slides, *f*, to rest upon said screws, which will change the lateral position of the ring E with relation to the hub and enable the operator to adjust it to a plane at right angles to the shaft. The nut *m* is then tightened and the ring D expanded by lateral compression within the chamber formed in the sections B C of the hub, and the ring E securely held in place.

By compressing the elastic ring D laterally it assumes a concavo-convex form in cross-

section, as shown in Fig. 2, the convex surface resting against the inner plain surface of the ring F, and the elastic ring forms a yielding cushion to any irregularities in the periphery of the wheel as it is brought in contact with a surface being ground or polished, thereby requiring no soft leather, as is usually made necessary to accommodate any unevenness or irregularities in the surface or circumference of the ordinary abrading-wheel.

The wheel having been once balanced and properly set with reference to the shaft, it requires no further attention, and may have its working-surfaces renewed several times without interfering with the balancing of the wheel.

After the wheel has been properly set on the shaft the position of the slides *f* is marked on the ring E, and the slides withdrawn from the recesses *h* moved back in their slots *e* and secured by the set-screws *g*, in which position the slides are out of the way of the ring E when it is desired to remove it. When it becomes necessary to remove the ring E or renew the band F, or to substitute a new ring, it is only necessary to slacken the nut *m*, which will release the elastic ring D and permit the removal of said ring E. To replace it in proper working position, the slides *f* are moved out to the lines marked on the ring, (which will again set it at right angles to the shaft,) when the nut *m* is drawn up and the elastic ring D expanded, as in the first instance.

When a flat-faced wheel is used, it can be set sufficiently correct by the eye without the use of the slides. By my construction the outer ring carrying the abrading-surface is held by expansion of the elastic ring D, which at the same time serves as a cushion for the working-surface of the wheel, and the securing and releasing of the ring carrying the abrading-surface is accomplished by the manipulation of the nut *m* only on the shaft of the wheel, whereas heretofore it has been necessary to remove the nut and collar from the shaft before the polishing-wheel could be removed, thus effecting a saving of time and wear of the parts.

Having thus fully described my invention, what I claim is—

1. A grinding or polishing wheel having a hub made in separable sections, in combination with a ring of wood or other inelastic material having a plain or smooth inner surface, an outer flexible band provided with an abrading-surface, an elastic annulus interposed between the hub and the said ring, and a shaft and clamping-nut, substantially as described.

2. A grinding or polishing wheel having a sectional hub, in combination with an inelastic ring carrying a band provided with an abrading-surface, an elastic annulus between said hub and ring, a shaft and clamping-nut, and means, substantially as described, for adjusting the ring laterally upon the hub and with reference to the shaft, as and for the purpose set forth.

3. A grinding or polishing wheel having a sectional hub with a concentric chamber formed in its periphery, in combination with an outer inelastic ring having a plain or smooth inner surface and an outer abrading-surface, an elastic ring slightly larger than said chamber, interposed between said hub and outer ring, and a screw and nut for compressing the elastic ring laterally and expanding it circumferentially, substantially as described.

4. A grinding or polishing wheel having a hub made in separable sections, each having a right-angled rabbet in its periphery forming a concentric chamber, an elastic ring of slightly greater width and depth than said chamber, an inelastic ring, a flexible band provided with an abrading-surface, and a clamping device for compressing the elastic ring, expanding the same circumferentially, and securing the polishing-ring to the hub, substantially as described.

5. A grinding or polishing wheel having a hub provided with radially-adjustable slides, an outer ring having an abrading-surface and provided with adjusting-screws in one face thereof, in combination with an elastic cushion between the hub and the outer ring, substantially as described.

6. A grinding or polishing-wheel having a sectional hub provided with arms in which radial slots are formed, in combination with slides fitted to said slots, an outer ring having an abrading-surface and recesses provided with adjusting-screws, an interposed elastic body between the hub and the ring, and a screw and nut for expanding said body, whereby the ring is secured to the hub, substantially as described.

7. A wheel composed of two laterally-adjustable hub-sections, an outer ring of wood or other inelastic material having a smooth inner surface and an outer abrading-surface, an elastic annulus interposed between said sections and ring, and a clamping device for compressing said annulus, and expanding it between the ring and hub-sections, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LUCIAN R. NOURSE.

Witnesses:
CHAS. B. CASTLE,
JOHN G. SHULER.