Jan. 5, 1943. D. BRAXTON 2,307,385

LINERS FOR POLISHING WHEELS, GRINDSTONES AND THE LIKE

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Fig. 1.

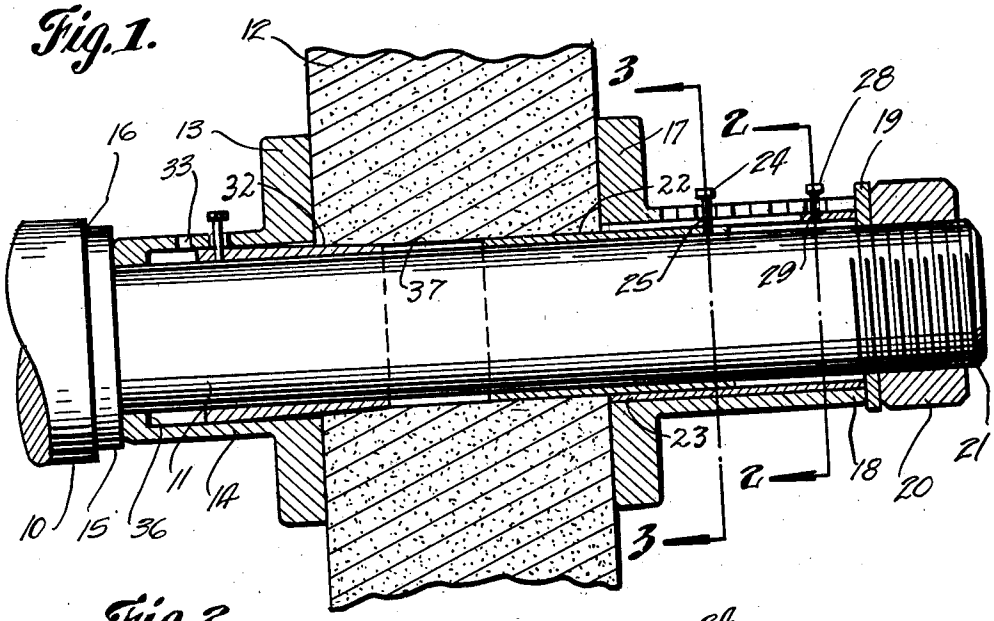


Fig. 2.

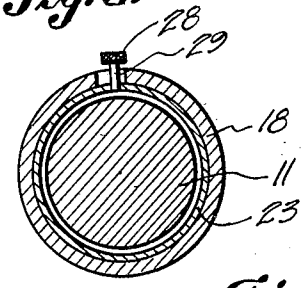


Fig. 3.

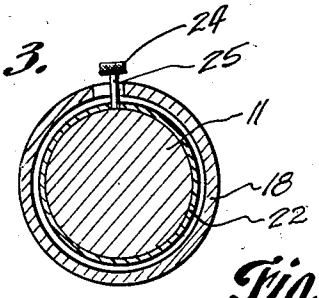


Fig. 5.

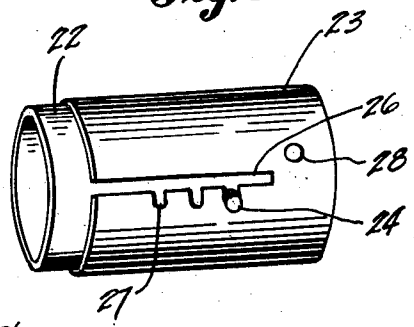
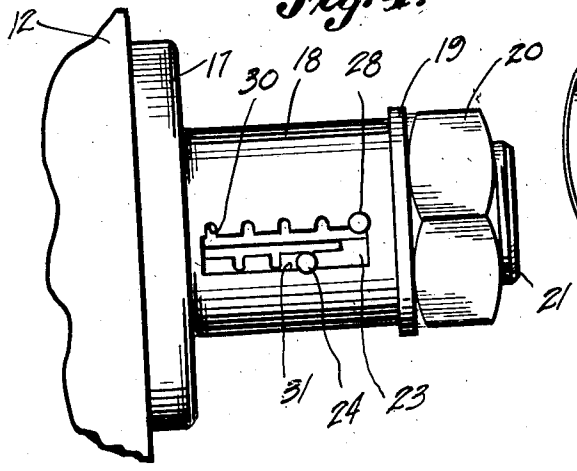


Fig. 4.



INVENTOR.
DANIEL BRAXTON
BY Louis Chayka

UNITED STATES PATENT OFFICE

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LINER FOR POLISHING WHEELS, GRINDSTONES, AND THE LIKE

Daniel Braxton, River Rouge, Mich.

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4 Claims. (Cl. 51—168)

It is a known fact that the polishing wheels as now used have to be dismounted and discarded long before their useful life has been terminated, mainly because of the wear along the inner surface of what is known as the eye of the wheel. Because of the wear, there occurs a radial shift with respect to the shaft on which a particular wheel is mounted. When this happens, the rotation of the polishing wheel becomes eccentric. This means that in the course of one complete rotation of the wheel, considered in relation to the object to be polished, the pressure of the peripheral surface of the wheel varies from a minimum on one side of the wheel to a maximum at the diametrically opposite point of said wheel. The point of maximum pressure may cause what is known as a burn on the surface of the metal to be polished. It is in order to avoid this that the wheel had to be discarded. Keeping this situation in mind, I have provided liners or metal bushes, which may be inserted into the eye of the polishing wheel to compensate for the wear of the wheel where same is seated upon its supporting shaft.

Another purpose of my invention is to provide liners of simple construction and yet efficient and fully useful particularly with respect to said polishing wheels, in order that the useful life of such wheels may be extended.

My further purpose is to provide a liner which may be used on present equipment without in any respect changing its design or the mode of its operation.

I shall now describe my improvement in detail, referring to the accompanying drawing, in which:

Fig. 1 is a side elevation of the shaft on which the polishing wheel is mounted, with a longitudinal sectional view of my liners.

Fig. 2 is a sectional view taken on line B—B of Fig. 1.

Fig. 3 is a sectional view taken on line A—A of Fig. 1.

Fig. 4 is a side elevation of the end assembly shown in Fig. 1.

Fig. 5 is a perspective view of my liners forming a part of the assembly shown in Fig. 4.

Similar numerals refer to similar parts throughout the several views.

The shaft on which the polishing wheel is mounted is indicated by numeral 10. The shaft is to be driven by a motor, which is not shown. The outer part 11 of the shaft is of reduced diameter, so that a shoulder 16 is formed at the point of the reduction. It is on this part 11 of the shaft that the polishing wheel 12 is mounted between two flanges 13 and 17. Flange 13 is integrally connected to a sleeve 14 and bears against washer 15 disposed between said sleeve and shoulder 16. The flange 17 is integrally connected with sleeve 18. The end 21 of shaft 10 is threaded. A nut 20 seated on said end serves to tighten the contact between flanges 13 and 17 and the wheel 12 so that the wheel is held between the flanges by friction. Numeral 19 indicates a washer. A similar washer 15 adjoins shoulder 16.

I wish to mention here that according to present practice the polishing wheel is held in place by an arrangement substantially as above set forth, including two flanges, adjoining sleeves and a tightening nut at the end of the shaft on which the wheel is mounted.

Retaining the main features of such an assembly, I have introduced into sleeve 18 lining tubes or liners 22 and 23, one of them being concentrically seated within the other. Liner 22 embraces closely shaft 11. It is made of metal in the form of a cylinder, its wall being approximately $\frac{1}{32}$ of an inch thick, though it must be understood that this thickness is not critical and that it may vary according to the needs of each particular case. A knob 24, mounted on a pin 25 extending radially from the wall of the liner, serves as a means by which the liner may be manipulated, as hereinafter described.

The other liner 23 is slidably seated over the liner 22. The wall of liner 23 is, however, provided with a slot 26 extending in the direction of its longitudinal axis. A number of spaced deep notches 27 are cut in one edge of slot 26 to accommodate pin 25 projecting from the wall of liner 22. It will be seen that the outer liner 23 carries its own knob mounted on pin 29. It is in this respective relation to each other as shown in Fig. 5, that is, one liner being within the other, that they are disposed on shaft 11 as shown in Fig. 1, between said shaft and the inner wall of sleeve 18. Sleeve 18 contains a substantially rectangular opening 31 in its wall, said opening extending in the direction of the longitudinal axis of the sleeve as shown in Fig. 4. Notches 30 are cut in one longitudinal side of the opening, said notches being intended to accommodate pin 29 topped with knob 28. The opening is wide enough to afford access to the outer liner 23, the notches 27 cut therein, and knob 24 controlling position of liner 22 with respect to liner 23. Both pins 25 and 29 are long enough to allow knobs 24 and 28 to be located outside the outer surface of sleeve 18, as shown in Fig. 1.

Now I shall describe sleeve 14. The sleeve itself is somewhat shorter than sleeve 18 but is provided with a slot and notches 33, of the same shape as notches 30 in Fig. 4. At the end further remote from flange 13, sleeve 14 forms an inner shoulder 36 closely fitting over the surface of shaft 11. Disposed within sleeve 14 is only one liner 32, although it will be understood that two liners, exactly like the liners shown within sleeve 18 may also be employed within said sleeve. The single liner 32 has a wall of tapering thickness, that is, tapering towards the edge which is intended to be inserted into the eye of wheel 12.

I shall now describe the operation of my liners:

Normally, both liners 22 and 23 are disposed entirely within the confines of sleeve 18. Similarly liner 32 is disposed entirely within the confines of sleeve 14. To prevent any dislocation of the liners longituinally with respect to shaft 11, they are secured in their place by means of said pins 25, 29 and 34 respectively. When it becomes necessary to make use of the liners, first liner 22 is turned on shaft 11 in clockwise direction, sufficiently to disengage pin 25 out of notch 27. This may be done by means of knob 25. Thereupon, by means of the same knob, liner 22 is thrust in the direction of the wheel 12 so that it enters into the eye of the wheel into space marked 37 between shaft 11 and the inner surface of said eye. This is shown in Fig. 1, which disloses liner 22 partly within said eye. Once the liner has been sufficiently inserterd into the eye, it is secured in its position against a longitudinal shift with respect to shaft 11, by means of pin 25, as the latter may be guided manually by means of knob 25 into a proper notch 27, closer to wheel 12 than the one in which said pin was originally disposed.

At the other side of the wheel, by similar procedure, liner 32 may be thrust into the eye of wheel 12 as far as it will proceed, this being determined by the extent of the wear within the eye and the taper of the liner. In Fig. 2 liner 32 is shown partly inserted into the eye of wheel 12. Subsequently, when need arises, the other liner 23 in sleeve 18 may be disengaged from its locked position within sleeve 18, by disengaging pin 29 from notch 30 and by thrusting liner 23, by means of knob 28, into the the eye of wheel 12 and over the outer surface of liner 22.

Having thus described my invention, what I wish to claim is the following:

1. An improvement of the kind described, comprising in combination a shaft, a wheel mounted thereon, circular flanges bearing against the wheel from the opposite sides, sleeves seated on said shaft integrally connected to said flanges, cylindrical liners within said sleeves, means to move said liners longtiudinally with respect to the shaft into the eye of the wheel and threaded means at one end of the shaft bearing indirectly against one of said flanges to clamp the wheel between both said flanges.

2. An improvement of the kind described, comprising in combination a polishing wheel, a shaft supporting the same, a sleeve on said shaft and adjoining said wheel, two concentric liners on said shaft but within the sleeve, means to shift each liner separately into the eye of the wheel, and means to lock each sleeve against longitudinal movement with respect to the shaft.

3. An improvement of the kind described, comprising in combination a polishing wheel, a shaft supporting the same, a sleeve adjoining said wheel and provided with a longitudinal slot with cross-notches therein, two liners concentrically seated upon said shaft, but within the sleeve, the outer liner being also provided with a longitudinal slot and cross-notches therein, a radially extending pin from the outer liner to lock same against longitudinal movement by being inserted in a selected notch in the sleeve, a radially extending pin from the inner liner to lock same against longitudinal movement by being inserted in a selected notch in the outer liner, said pins serving as means to manually insert each liner into the eye of the polishing wheel, a circular flange on each side of the wheel, each flange being integrally connected to the liner on its side, and threaded means at one end of the shaft to bear through intermediate means against one of said flanges, to clamp the wheel between both said flanges.

4. An improvement of the kind described, comprising in combination, a polishing wheel, a shaft supporting the same and provided with a shoulder, two flanges co-axially seated on said shaft to clamp the wheel from opposite sides, sleeves seated on said shaft and integrally connected to said flanges, at least one sleeve being provided with a longitudinal slot with cross notches therein, a cylindrical liner on said shaft but within the last named sleeve, a pin on said liner fitting into one of said notches and serving to move the liner longitudinally with respect of the slot into the eye of the wheel, and threaded means at one end of the shaft, bearing through intermediate means against the nearer flange to clamp the wheel between both flanges and to clamp the wheel, the flanges and the liners in their relative positions against said shoulder.

DANIEL BRAXTON.