

May 16, 1961

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2,983,940

POLISHING, GRINDING OR GLAZING WHEEL

Filed March 24, 1958

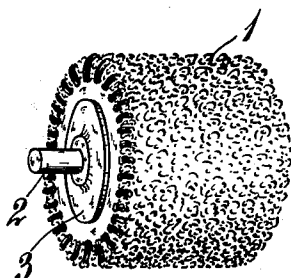


Fig. 1.

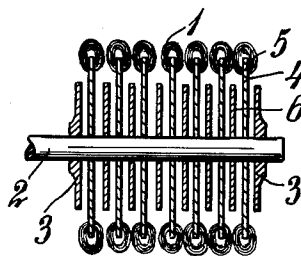


Fig. 2.

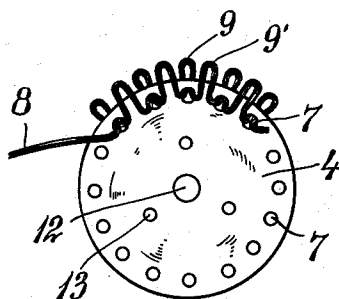


Fig. 3.

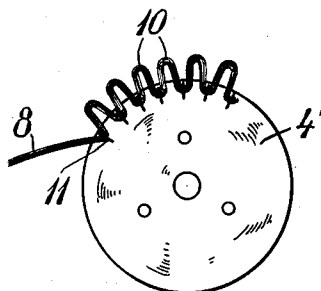


Fig. 4.

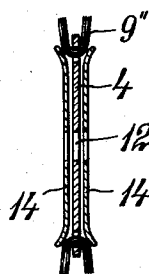


Fig. 5.

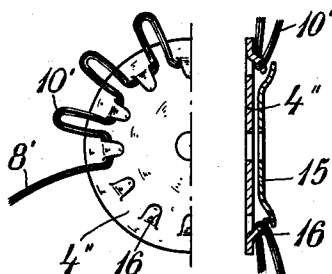


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2,983,940

POLISHING, GRINDING OR GLAZING WHEEL

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Filed Mar. 24, 1958, Ser. No. 723,294

9 Claims. (Cl. 15—181)

The present invention relates to a polishing or grinding wheel of the type where a cylindrical or disc-shaped body is provided for being secured to a rotatable shaft, the cylindrical surface of said body providing support for convenient polishing or grinding material, for instance steel wool.

In the prior art, steel wool or the like material has had extensive use for grinding or polishing of metal, wood, or other materials. Such grinding or polishing work conventionally is carried out manually, the steel wool being used in loose bunches. Further it has been proposed to secure agglomerations of polishing or grinding filaments to the circumference of disc elements, which are then assembled to form a polishing or grinding drum. Polishing segments made from textile material have also been proposed for the building-up of such polishing members. In the practice of the prior art it was very difficult to secure polishing or grinding material in such a way that it may be easily replaced when worn down, without at the same time affecting its performance during the polishing or grinding work. The base, to which the polishing or grinding material is secured, must not protrude through the material, to prevent damage to the polished or ground object. This however is not avoided by devices of prior art after a certain wear and tear. It has also been proposed previously to polish or grind profiled bodies, for which it is difficult to arrange the filaments in the desired direction in relation to the polishing or grinding. In such an instance displacement of the filaments must be avoided, so that the steel wool does not get lumpy or is not in other ways displaced in the surface of the polishing or grinding disc or wheel.

The invention has for its object to provide a polishing or grinding wheel, which is not encumbered with drawbacks of the prior art.

Another object of the invention is to provide a polishing or grinding wheel which is simple and cheap to produce and easy to adapt in desired width and diameter and further may be used worn down considerably more than previously has been possible, whereby it is also economical in use.

An object of the invention is to employ for mechanical grinding and similar operations steel wool, given the form of a braided, woven, or twisted band, placed around the circumference of a rotating cylinder or other suitable support. Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown as follows:

Fig. 1 is a perspective view of a polishing or grinding wheel according to the invention.

Fig. 2 shows the device according to Fig. 1, in cross-section.

Fig. 3 is an elevation of a single disc element, bights of a band of desired material, for instance steel wool, partly being applied.

Fig. 4 is a modification of Fig. 3.

Fig. 5 shows a single element in cross section and arranged according to a further modification.

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Fig. 6 shows a further modification of the single elements of the polishing or grinding wheel partly in elevation and partly in section.

The idea, on which the present invention is based, is the arrangement of single elements each consisting of a circular disc made from pasteboard, plastic, or similar cheap material. Each disc is provided along the edge with means for securing substantially radially extending bights of a filament band or the like of the material to be used, for instance steel wool. Simple and cheap single elements are provided thereby, for instance in the form of a pasteboard disc having a steel wool braided circumference. Due to the fact that the bights or loops of steel wool are secured substantially radially they will have a favourable direction in relation to the polishing or grinding work, and as they protrude relatively far from the edge of the pasteboard disc, they may be worn down until the edge of the disc is visible, at which time substantially all the steel wool secured to the disc will be consumed in the polishing or grinding work. Such a single element also may be used alone, in which case it can be secured to a rotating shaft supported by compressing discs or the like. The single elements are, however, preferably intended to be used as a part of an assembled or built-up polishing drum or wheel, the desired number of such elements being placed side by side, if desired, with liner discs placed therebetween and secured to a common shaft. By combining a convenient number of elements, a polishing or grinding drum of a desired length is obtained. By producing the single elements in several standard dimensions as to diameter, the diameter of the wheel or drum may be varied relatively easily by replacing the worn out elements by new elements, having the desired dimension.

In Figs. 1 and 2 such an assembled polishing or grinding wheel or drum 1 is shown secured to a shaft 2 and held together axially by means of a pair of compressing discs 3, which can be pressed toward each other and secured by conventional means such as, for instance, nuts. In Fig. 2 is shown an assembly of seven single elements 4, the circumference of which is provided with steel wool 5, liner discs 6 and compressing discs 3, 3', forming a polishing or grinding wheel or drum 1.

Fig. 3 shows an example of the method of securing the polishing or grinding material to the edge of a single element. The element 4 is provided with a series of holes 7. A continuously extending band 8 of polishing or grinding material, as for instance steel wool filaments, is secured along the edge of the disc 4, by interlacing the bights 9, 9' of the band 8 through the holes 7, alternately from each side so that the bights 9 extend between two adjoining holes on one side and the bights similarly on the other side in the way clearly shown in the figure. By such a method the band 8 is fastened to the circumference of the disc 4 and reliably secured in a very simple way.

Fig. 4 shows a somewhat modified embodiment of the invention, where the disc 4 is made from a material such as pasteboard or plastic, so that the band 8' can be arranged in bights 10 secured to the disc 4 by means of stapling 11.

In Fig. 5 is shown a disc 4 similar to that of Fig. 3 but provided with side covering discs 14, 14'. These covering discs have peripheral parts with the object to keep the steel wool 9' in place in relation to the holes after the outer bights of the filament band are worn away, so that they will protrude radially as brushes 9'', as seen in the drawing.

Fig. 6 shows the disc 4'' provided with pressed-out parts or hooks 16, around the outer edge of the disc 4'', for the fastening of the bights 10' of the band 8'. The disc 4'' is shown provided with side covering discs 15 preferable for this type of attachment of the band.

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The concave peripheral flanges of the covering discs according to Figs. 5 and 6 are shown largely exaggerated, said discs in practice being substantially flat. When applying the covering discs and securing these, for instance by glueing the steel wool bights resp. the pressed-out parts 16, are pressed in, so that the assembled unit has only a small axial extension.

A number of polishing or grinding elements having different diameters may be assembled in order to provide for different desired profiles of the assembled polishing or grinding drum or wheel. Thus grinding or polishing surfaces of convex and/or concave shapes may be obtained to produce wavy surfaces. Such assembled polishing or grinding drums or wheels can be used for instance for grinding or polishing of irregularly shaped surfaces of portions of furniture.

For claim purposes, the "polishing, grinding and glazing," each involving the idea of a frictional contact for relative degrees of abrading, will be defined as "abrading."

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the examples of the invention herein chosen for the purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention set forth in the appended claims.

What I claim is:

1. In an abrading wheel, a circular disc, a single continuous band of metallic wool filaments, and means securing said band to the peripheral surface of said disc to form a continuous series of loops, each said loop extending radially outwardly of the circumferential edge of said disc.

2. In an abrading wheel, a circular disc, a single continuous band of metallic wool fibers secured to said disc at equally-spaced points adjacent and about the periphery thereof, said band between contiguous points being in the form of a loop extending radially outwardly of the circumferential edge of said disc.

3. An abrading unit adapted for mounting upon a rotatable shaft comprising a circular disc, a single continuous band of steel wool fibers, and means securing said band to said disc at a plurality of equally-spaced points adjacent and extending completely about the periphery of said disc, said band between each pair of contiguous points being looped radially outwardly of the circumferential edge of said disc, whereby to present a continuous series of abrading loops extending completely about the periphery of said disc.

4. An abrading unit for mounting on a rotatable shaft comprising a disc, and a single continuous band of steel wool filaments secured to said disc at a plurality of closely-spaced points about and adjacent the periphery thereof, said band between each contiguous pair of points being formed as a loop extending radially outwardly beyond the circumferential edge of said disc.

5. An abrading unit for mounting on a rotatable shaft comprising a disc having a plurality of uniformly-spaced

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holes therethrough adjacent its peripheral edge, and a single continuous length of steel wool fibers in the form of a series of loops, each alternate loop extending from one side of said disc through a respective one of contiguous pairs of said holes, all said loops extending radially beyond the circumferential edge of said disc.

6. An abrading unit comprising a flat circular disc for mounting upon a rotatable shaft, and a continuous band of metallic wool filaments, said band being stapled to the peripheral edge of said disc at a plurality of uniformly spaced points about the entire circumference thereof, said band between each pair of contiguous points being formed as a loop extending radially outwardly beyond the circumferential edge of said disc to define a substantially continuous abrading element thereabout.

7. An abrading cylinder comprising a shaft, a plurality of units threaded on said shaft in stacked relation, each said unit comprising a flat circular main disc, and a single length of metallic wool filaments secured to said main disc at a plurality of closely-spaced points extending about and adjacent the periphery thereof, said length of metallic wool filament between consecutive points being looped to extend radially outwardly of the circumferential edge of its main disc, a plurality of spacer discs each threaded on said shaft between a contiguous pair of main discs and having its circumferential edge radially inwardly of said points, and means compressing all said discs together on said shaft.

8. In an abrading unit, a flat circular disc adapted for mounting on a rotatable shaft said disc having a plurality of closely-spaced hooks adjacent and about its peripheral edge, and a single continuous band of metallic wool fibers secured to each said hook, said band being looped radially outwardly of the circumferential edge of said disc between each two contiguous hooks.

9. In an abrading unit, a flat circular disc, the material of said disc being struck outwardly at a plurality of equally-spaced points about and adjacent the periphery thereof to form a series of radially-inwardly-directed hooks, and a single continuous length of steel wool fibers threaded beneath each said hook, said length of steel wool fibers between contiguous hooks being looped to extend radially outwardly beyond the circumferential edge of said disc.

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