

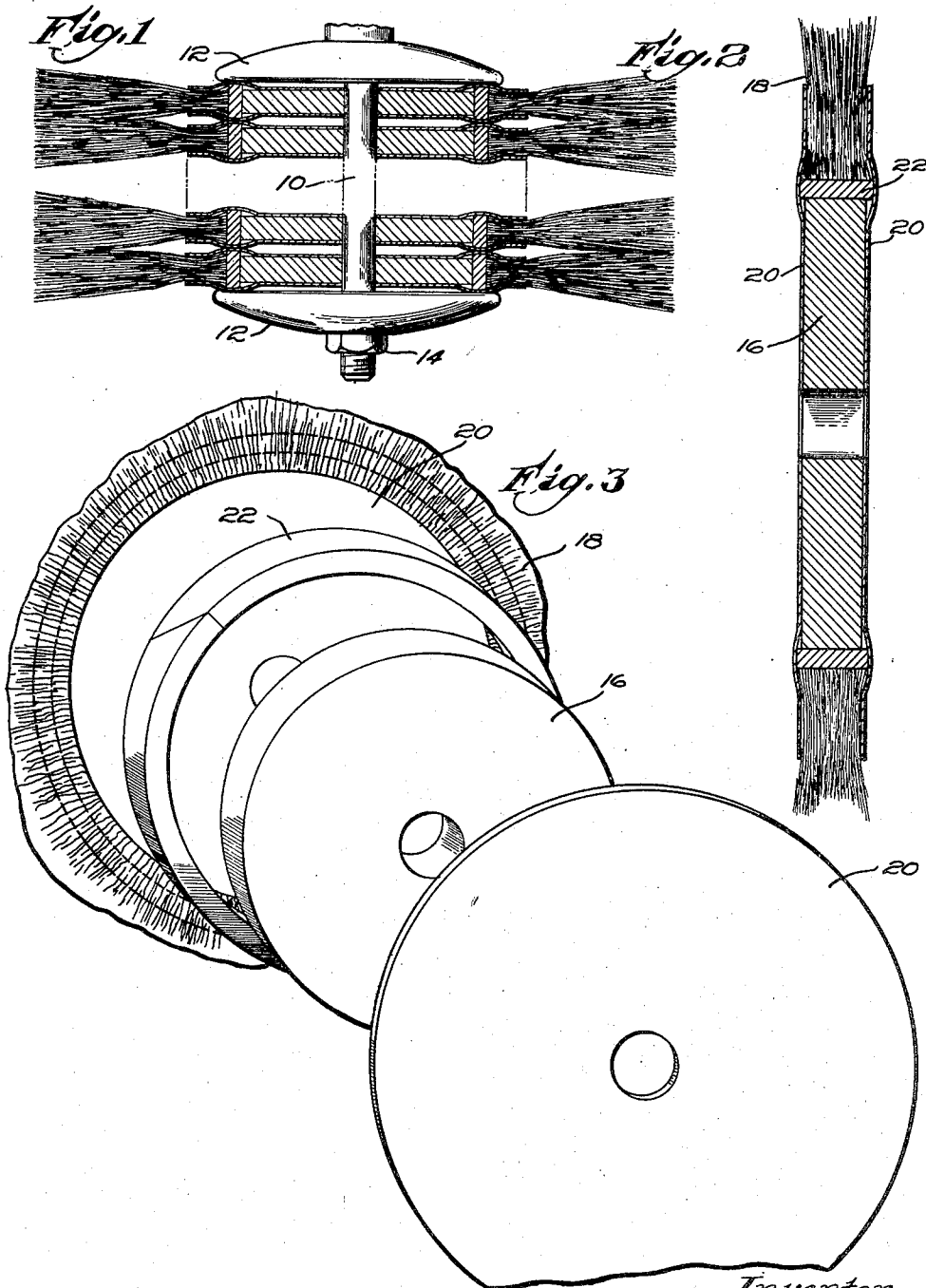
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BUFFING WHEEL OR WHEEL SECTION

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BUFFING WHEEL OR WHEEL SECTION

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5 Claims. (Cl. 51-193)

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This invention relates to a buffing wheel or wheel section of the type wherein the peripheral working face of the tool which in use engages the work consists of a plurality of plies of fabric with fibers presented endwise to the work, the plies constituting an annulus extending inwardly for a substantial radial depth and being supported at the inner circumference by a center or hub itself of comparatively great diameter as compared with the shaft on which the tool is mounted and which turns the latter. The object of the invention is to provide a construction wherein the density of the buffing material in the annular portion may be predetermined, and one which may be securely clamped even when a large number of sections are assembled on a shaft to form a wheel of considerable axial length.

The invention will be well understood by reference to the following description illustrative of the embodiment thereof shown by way of example in the accompanying drawings wherein—

Fig. 1 is a view, partly in plan and partly in section, of a wheel assembled from a number of wheel sections, the central portion of the wheel being omitted to indicate that the number of wheel sections used may vary. The sections themselves appear in diametrical section.

Fig. 2 is a central vertical section through one of the buffing sections; and

Fig. 3 is an exploded view showing the parts of one wheel section.

In both Figs. 2 and 3, to save space, the outer portion of the annulus of buffing material is broken away.

Fig. 1 shows a buffing wheel comprising a plurality of wheel sections received side by side on the shaft 10 between two clamping plates 12 which are pressed together by a nut 14 on the shaft. The sections shown resemble those hitherto known in that they comprise (1) a center or hub 16, geometrically a cylinder of low altitude, which is formed of chipboard or other relatively light, rather compressible material, and is pierced centrally to receive the shaft; (2) an abrading section constituting the outer portion of the wheel, which section may be built up in any suitable manner known in the art from sheet material set on edge, that is, with edge portions exposed to make contact with the work, this abrading section being in substance an annulus which peripherally encircles the hub to lie substantially coplanar therewith, and (3) side plates 20 (conveniently thin sheets of hard fiber) overlying the sides of the hub 16 and the inner portion of the annulus 18, and serving at least as a part of the

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means holding them together. In the example shown the side plates are connected to the center and to the annulus by suitable adhesive. Chipboard or like material is useful for the center 16 because it is cheap and light and because it presents a somewhat porous surface, to which the adhesive bonds well.

When a multiplicity of sections of this kind as hitherto known were assembled on a shaft and clamped adjacent the inner periphery of the buffing annulus, it has been found that after a period of use some of the sections tended to slip. Experiments have shown that after clamping at a predetermined pressure after mere standing the pressure will be found relaxed. It is conjectured that entrapped air may be initially compressed and only gradually escape, but whatever the reason, the fact is as stated.

In accordance with the invention I interpose between the hub 16 and the abrading section 18 a ring 22 of dense incompressible material (conveniently hard fiber) of small radial depth and of axial width approximating that of the section. The ring is here shown (see Fig. 3) as a split ring with beveled overlapping ends, although such construction is not essential. Adhesive may be applied to the ring to secure it to the hub, the buffing annulus and the side plates to aid in securing the first two parts together against radial separation. Herein the ring 22 is slightly greater in width than the hub 16 and may indent and form a radial interlock with the side plates as seen in Fig. 2.

In use the end plates or clamping plates 12 by which the wheel is mounted exert their pressure against ring 22 or a column of such rings with firm, unrelaxing pressure. An important advantage is that, even although such end plates 12 having flat inner surfaces are used, still, because of the relative compressibility of the hub 16, the desired grip at the inner periphery of the buffing annuli 18 is assured. In general the advantages arising from the use of chipboard or similar material for the hub are preserved.

An important advantage of the construction is that it permits the density of the buffing section to be predetermined and accurately controlled. The initial assemblage of cloth thicknesses is axially compressed and brought down at their inner periphery to a thickness determined by the width of the ring 22. The density of the outer or working periphery of the abrading wheel is not of course exactly equal since the wheel is not directly restrained at its ends adjacent the working face, but corresponds.

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Where reference is made to the hub member 16 as being of relatively light, soft and porous material (as exemplified by chipboard) the word "relative" may be taken as referring to the dense, substantially incompressible material of the ring 22, as exemplified by hard fiber.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, as is in fact clear in several matters from the description itself. Reference is to be had to the appended claims to indicate those principles of the invention exemplified by the particular embodiment described and which I desire to secure by Letters Patent.

I claim:

1. An abrasive wheel section for assembly on a shaft with other similar sections to be clamped therewith by end plates bearing against the sections in a zone remote from the shaft, said section comprising an internal hub member of relatively light, soft and porous material pierced to fit the shaft, an annulus of buffing material encircling the hub member and substantially coplanar therewith, side discs overlapping the sides of said hub member and of the annulus and adhesively secured thereto and a ring of dense substantially incompressible material interposed between said discs and between said hub member and said annulus to take the stress of the clamping plates.

2. An abrasive wheel section for assembly on a shaft with other similar sections to be clamped therewith by end plates bearing against the sections in a zone remote from the shaft, comprising a chip board center of substantial radial depth pierced to receive a shaft, a ring of hard dense fiber encircling the same, an annulus comprising a multiplicity of thicknesses of sheet material set on edge encircling the ring and side plates of fiber overlying the sides of the inner portion of the annulus and the sides of the center secured thereto and joining the same.

3. An abrasive wheel section for assembly on a shaft with other similar sections to be clamped therewith by end plates bearing against the sections in a zone remote from the shaft, comprising a center in the form of a cylinder of low altitude pierced axially to receive the shaft, said cylinder being axially compressible, a ring substantially incompressible in the axial direction encircling the periphery of the cylinder, and an annulus

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of abrading material encircling the ring comprising a multiplicity of thicknesses of sheet material set on edge and providing an axially compressible mass and means securing together cylinder, ring and annulus in substantially coplanar relation and against radial separation.

4. An abrasive wheel section for assembly on a shaft with other similar sections to be clamped therewith by end plates bearing against the sections in a zone remote from the shaft, comprising a center in the form of a cylinder of small altitude pierced axially to receive the shaft, said cylinder being axially compressible, a ring substantially incompressible in the axial direction encircling the periphery of the cylinder, and an annulus of abrading material encircling the ring comprising a multiplicity of thicknesses of sheet material set on edge and providing an axially compressible mass and side plates secured to the radial faces of the sections abutting the sides of the ring and overlying the inner portion of the annulus of abrading material and retaining it axially compressed to substantially the axial width of the ring.

5. An abrasive wheel section for assembly on a shaft with other similar sections to be clamped therewith by end plates bearing against the sections in a zone remote from the shaft, comprising a center in the form of a cylinder of small altitude pierced axially to receive the shaft, a ring substantially incompressible in the axial direction encircling the periphery of the cylinder, and an annulus of abrading material encircling the ring comprising a multiplicity of thicknesses of sheet material set on edge and providing an axially compressible mass and side plates secured to the radial faces of the sections abutting the sides of the ring and overlying the inner portion of the annulus of abrading material and retaining it axially compressed to substantially the axial width of the ring, the ring being of slightly greater axial width than the center and indenting the side plates to provide a radial interlock.

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