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ABRASIVE WHEEL WITH FLEXIBLE RESILIENT RIM

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*Fig. 1*

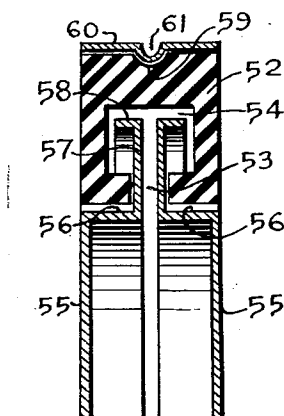
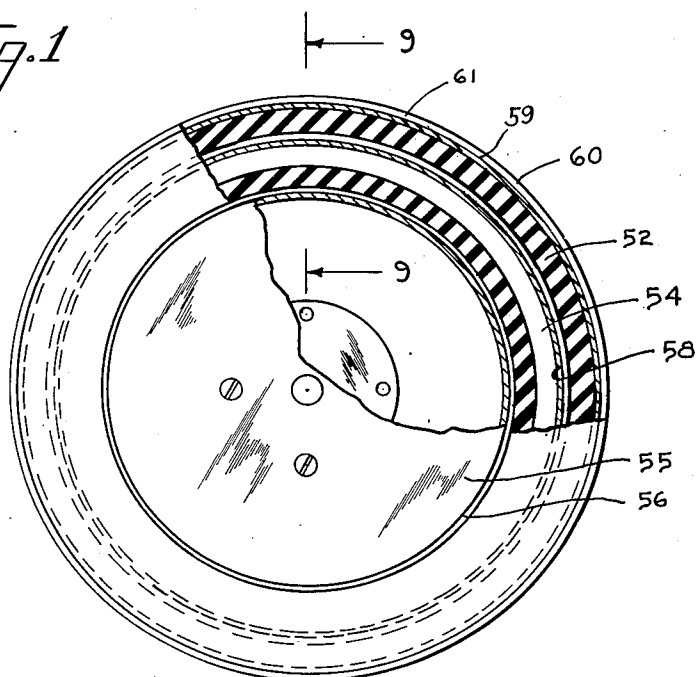


*Fig. 2*

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## UNITED STATES PATENT OFFICE

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ABRASIVE WHEEL WITH FLEXIBLE  
RESILIENT RIM

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5 Claims. (Cl. 51—191)

1

2

This invention relates to abrasive wheels and has particular reference to an abrasive wheel having an abrasive rim so constructed and arranged as to permit it to adjust its surface at the place of contact to the contour of the surface of the material being finished.

The invention has for an object the provision of an abrasive wheel having a resilient tread forming the rim thereof which is flexibly mounted to permit it to expand when centrifugal effect forces it outward to an extended position from which position any part of it may be depressed or flattened, thus adjusting its abrasive surface to the contour of the work at the place of contact to produce a flat grinding or finishing action.

The invention has for a further object the provision of a separable flexible abrasive belt adjustably secured upon the periphery of the tread permitting the said belt to expand and contract as changes occur in the tread during operation.

A further object of the invention is the provision of an annular tread of resilient composition having recesses loosely engaged by peripheral flanges on the casing, thus flexibly anchoring the tread in position and permitting it to move freely in every direction.

A further object of the invention is to provide a peripheral groove formed into the tread and serving to seat a corresponding rib impressed into a separable abrasive belt for its entire length, the said rib being held firmly in the groove of the tread during rotation when centrifugal force expands the tread with resultant pressure of the tread against the inner surface of the flexible abrasive belt.

A further object of the invention is to dispense with the separable abrasive belt for certain kinds of work and instead to incorporate into the tread composition suitable abrasive or polishing powder material whereupon the tread itself becomes the abrasive means and requiring replacement when worn out.

With the foregoing and other objects in view reference is now made to the following specifications and accompanying drawings in which the preferred embodiment of the invention is illustrated.

In the drawings:

Fig. 1 is a side view of an abrasive wheel constructed in accordance with the invention and illustrating the same with parts broken away to show the underlying construction.

Fig. 2 is an enlarged sectional view taken approximately on line 2—2 of Fig. 1.

Referring to the drawings by characters of reference, the abrasive wheel includes a flexible resilient annular tread 52 which is formed with a vertical slot opening 53 running from the bottom thereof and communicating with an enlarged central cavity 54 of rectangular formation in cross section and extending continuously within the tread. The tread 52 is secured upon oppositely disposed circular side plates 55 formed to provide outwardly extending flanges therefor as shown, the side plates 55 having inwardly offset peripheral walls 56 formed with outwardly extending flanges 57 defining peripheral rims 58 which engage loosely in cavity 54 of the tread 52 through the slot opening 53 thereof. This construction serves to position the tread upon the casing and allowing freedom of independent movement for the tread 52 which is thus permitted to fling outwardly on its anchorages during rotation from which extended position it may be depressed or flattened at any part thereof allowing it to adjust to the contour of the surface of the work in contact therewith. In this type of construction the tread 52 may be attached to the casing or removed therefrom without dismantling the casing. This form is intended for use with a separable abrasive belt referred to hereafter or for certain kinds of work the tread 52 itself is impregnated with suitable abrasive or polishing material thus becoming the abrasive medium and not requiring an abrasive belt.

As illustrated in the drawings, the tread 52 is formed with a shallow centrally arranged recess or depression 59 in the periphery thereof which extends continuously about the tread. An abrasive belt 60 formed with a centrally depressed portion 61 extending continuously about the belt is adapted to engage in the recess or depression 59 in the tread 52 for retaining the belt on the tread and preventing sidewise movement thereof.

What is claimed is:

1. In an abrasive wheel, a circular casing, a separable elastic annular tread having inner and outer concentric peripheries and a slot extending continuously about the inner periphery and opening into an enlarged interior cavity extending continuously about the tread intermediate the inner and outer peripheries thereof, said casing engaging through said slot and having oppositely disposed outwardly projecting lips at the outer peripheral edge thereof loosely engaging in said cavity for supporting the tread on said casing so as to permit independent movement of the

3

tread with reference to said casing, and an abrasive medium carried by the outer periphery of said tread.

2. In an abrasive wheel, a circular housing including opposite side plates having outwardly projected lips extending continuously about the periphery thereof, an elastic separable annular tread having inner and outer concentric peripheries and a slot extending continuously about the inner periphery and opening into an enlarged interior cavity extending continuously about the tread intermediate the inner and outer peripheries thereof, said casing engaging through said slot with the said lips loosely engaging in said cavity for supporting the tread on said casing so as to permit independent movement of the tread by centrifugal force during rotation thereof to effect a flinging of the loosely mounted tread outwardly to an extended position in which it may be depressed at any portion thereof to allow its periphery to adjust to the contour of work placed thereagainst at the point of contact.

3. In an abrasive wheel, a circular casing including opposite side plates disposed in spaced relation having inwardly offset peripheral walls formed with outwardly extending flanges having laterally projecting lips at the outer peripheries of the flanges thereof, an elastic separable annular tread having inner and outer peripheries and a slot extending continuously about the inner periphery and opening into an enlarged interior cavity extending continuously about the tread intermediate the inner and outer peripheries thereof, said casing engaging through said slot with the said lips loosely engaging in said cavity for supporting the tread on said casing so as to permit independent movement of the tread by centrifugal force during rotation thereof to effect a flinging of the loosely mounted tread outwardly to an extended position in which it may be depressed at any portion thereof to allow its periphery to adjust to the contour of work placed thereagainst at the point of contact.

4. In an abrasive wheel, a circular casing including opposite side plates disposed in spaced relation having inwardly offset peripheral walls formed with outwardly extending flanges having laterally projecting lips at the outer peripheries of the flanges thereof, an elastic separable annular tread having inner and outer peripheries and a slot extending continuously about the inner periphery and opening into an enlarged interior cavity extending continuously about the tread intermediate the inner and outer peripheries there-

4

of, said casing engaging through said slot with the said lips loosely engaging in said cavity for supporting the tread on said casing so as to permit independent movement of the tread by centrifugal force during rotation thereof to effect a flinging of the loosely mounted tread outwardly to an extended position in which it may be depressed at any portion thereof to allow its periphery to adjust to the contour of work placed thereagainst at the point of contact, said annular tread having a groove in the outer periphery thereof and an abrasive belt engaging about the outer periphery of said annular tread and having a depressed portion conforming to the formation of said groove and adapted to engage therein for securing said belt upon the tread.

5. In an abrasive wheel, a circular casing, a separable elastic annular tread having inner and outer concentric peripheries and a slot extending continuously about the inner periphery and opening into an enlarged interior cavity extending continuously about the tread intermediate the inner and outer peripheries thereof, said casing engaging through said slot and having oppositely disposed outwardly projecting lips at the outer peripheral edge thereof loosely engaging in said cavity for supporting the tread on said casing so as to permit independent movement of the tread with reference to said casing, and an abrasive belt engaging about the outer periphery of said annular tread, and said tread and belt being formed with interengageable peripheral groove and bead for preventing sidewise movement of the belt with reference to the tread.

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