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G. O. LEGGETT
FLEXIBLE ABRASIVE WHEEL

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Fig. 1.

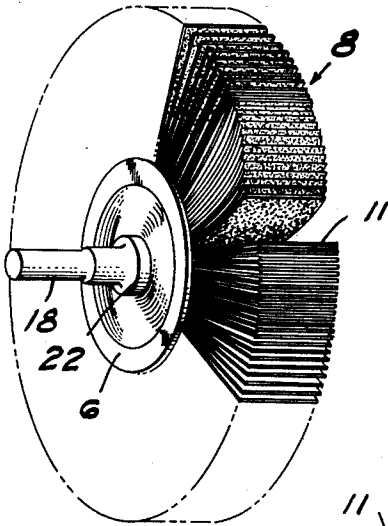


Fig. 2.

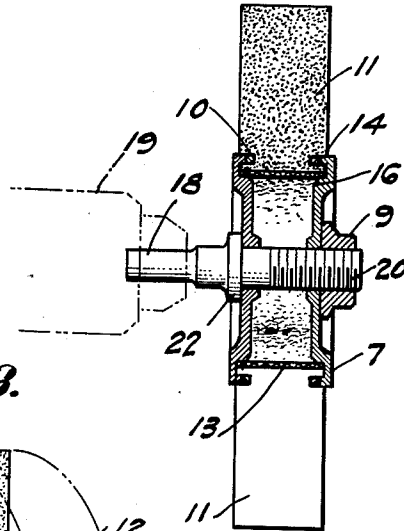


Fig. 3.

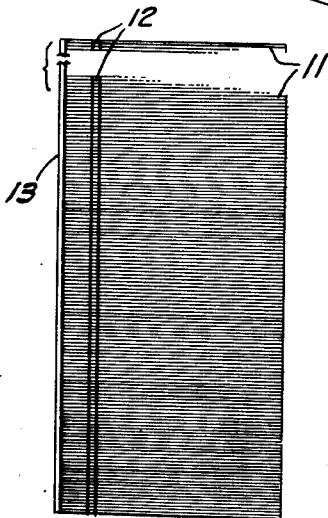
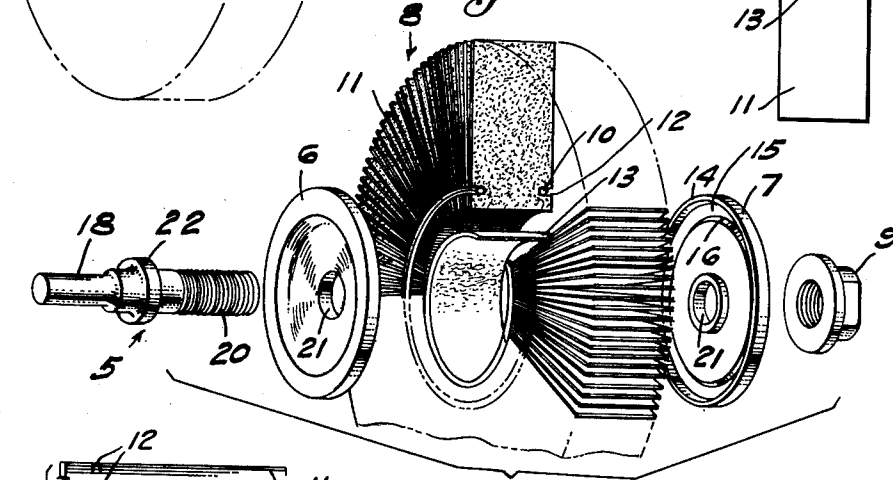


Fig. 4.

Guy O. LEGGETT,
INVENTOR.

BY

G. L. Barton
ATTORNEY

UNITED STATES PATENT OFFICE

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FLEXIBLE ABRASIVE WHEEL

Guy O. Leggett, Los Angeles, Calif., assignor to
Merit Products, Inc., Culver City, Calif.

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2 Claims. (Cl. 51—193.5)

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My invention relates to flexible abrasive wheels and particularly to new and useful improvements in the abrasive replacement element of the wheel separately considered as a new article of manufacture.

The main object of the invention is to improve upon the combination whereby the parts can be more easily assembled and wherein one of the parts when the device is disassembled provides a replacement per se of the abrasive unit which may be sold separately in the trade.

Another object of the invention is to provide as an amplification of the main object and a modified new article of manufacture, a pack of superimposed abrasive flaps which are bound together along their mounted ends by a flexible fabric strip so that when the free ends of the flaps are spread apart sufficiently to bring the outer faces of the end flaps of the pack together to form the flap wheel, the binding rings to hold them in this spread apart condition may be applied on the job and the replacement made ready for use without the added expense of the binding rings.

A further object resides in the particular construction and improved arrangement of the abrasive flaps and in the manner in which they are held as a unit on the rotatable arbor.

An important feature of the invention resides in its refined simplicity and resultant reduction in cost.

Other objects, advantages and features of invention will hereinafter appear.

Referring to the accompanying drawing wherein is shown a preferred embodiment of the invention illustrative of its application and use,

Fig. 1 is a perspective view of the improved flexible abrasive wheel. A portion of the abrasive flaps in this view are collapsed to illustrate how and to what extent their abrasive ends overlap and become effective for use. Other flaps are shown in their normal position in full lines while the remainder of the unit is shown in phantom lines.

Fig. 2 is a vertical midsection with the mounting means in elevation and the attaching means in phantom.

Fig. 3 is a perspective view of the parts exploded, the replacement element per se being indicated both by full and phantom lines.

Fig. 4 is a side elevation showing the abrasive flaps in pack formation, the topmost flaps together with their fabric binder being broken away to contract the view.

Referring in detail to the drawing and in particular to Fig. 3 wherein the parts are shown in

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an extended relation, numerals 5 indicates the arbor, 6 and 7 the side plates, 8 the abrasive unit per se and 9 the securing nut screwable onto said arbor to complete a hub structure for holding the parts in their assembled relation. The numeral 10 indicates the binding rings for maintaining the abrasive flaps 11 in their circularly formed position incident to the application of the side plates. It is to be understood that said flaps 11 are to be cut from standard, abrasively coated sheet material.

In Fig. 4 the abrasive flaps 11 of Fig. 3 are shown in their superposed relation. There is cut into each side edge of each flap adjacent its mounted end a rectangularly shaped recess 12. A fabric strip of flexible sheet material 13 binds the inner edges of the flaps together in pack formation. When the rectangularly shaped superposed flaps are circumferentially spread apart in a circular wheel forming relation as shown in Fig. 3 and the outer faces of the top and bottom flaps are brought into contiguity, the binding rings 10 are then applied in the circular groove formed by the spread apart relation of the recesses 12 and the abrasive unit is ready for assembly between the side plates 6 and 7 or for sale as replacement use as desired. Owing to said binding rings 10 being fitted in the bottom portions of the recesses or grooves 12, inwardly spaced from the grooves' mouths, said rings remain in place while the pack is being handled.

Each of said side plates is provided with a rightangularly directed peripheral keeper projection shown as an annular flange 14 adapted to occupy the space in said slots unoccupied by said rings and the inner edges of said keeper flanges in the operative position of the parts as shown in Fig. 2 abut said binding rings. Said side plates have their central areas spaciouly offset in a direction in which said keeper flanges extend to provide an annular recess 15 between the rim of the offset portion and keeper flanges. Said rim provides a peripheral shoulder 16 around the termination of the offset. The inner adhered corners of the flaps 11 occupy said recess and abut against said rim shoulder.

The arbor 5 is provided for maintaining the aforementioned parts in their assembled relation. Said arbor has a spindle 18 at one end connectable with a means 19 for rotating it. The opposite end of the arbor is threaded as indicated by the numeral 20 to have screwed thereonto the nut 9 after the threaded end of the arbor has been extended through the axially aligned bores 21 in each side plate.

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A shoulder 22 extends around the arbor intermediate its spindle and threaded end and abuts the outer face of one side plate while the securing nut abuts the outer face of the other side plate.

In assembling the device, a pack of sheets having a groove in each side edge adjacent one end is provided as shown in Fig. 4. These may be sold separately to the buyer as replacement units or rings 10 may be added to each replacement unit to comprise the abrasive wheel assembly 8 shown in Fig. 3.

When the pack shown in Fig. 4 is circumferentially extended and the rings 10 applied in the grooves provided by the recesses 12, the side plates 6 and 7 are put in place with the keeper flanges occupying the unoccupied spaces of the binding rings 10 as shown in Fig. 2. The arbor 5 is then extended through the bores 21 of the side plates and screwing down the nut 9 against one side plate with the shoulder 22 bearing against the other side plate places the device in readiness to have the spindle 18 inserted into the means 19 whereby the same may be rotated.

When an object is to be polished or treated by the abrasive flaps upon application thereto of the object the flaps assume a collapsed condition as shown in Fig. 1 exposing in sequence abrasive end portions which do the polishing. The edges wear down until a replacement is necessary. This invention provides for supplying such replacement

I claim.

1. A flexible abrasive wheel comprising an annular pack of superimposed flaps having face portions coated with abrasive material, a strip of sheet material adhered to and binding said flaps together at their ends where said flaps border the space at the center of the annular pack, there being two oppositely disposed grooves in the side edges of said flaps circumjacent to said binding strip, a ring occupying the bottom portion of each of said grooves and inwardly spaced from the mouth of the groove, a hub structure comprising two concentric circular side plates, each of said

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side plates having a laterally directed peripheral flange, said flanges occupying the mouth portions of said grooves and abutting said rings, said side plates also each having circumjacent to its periphery an annular shoulder which internally abuts the adjacent side edge portion of the aforesaid binding strip, and clamping means extending through said hub structure to draw said plates toward each other thus firmly maintaining said flanges in abutting relations to said rings.

2. As an article of manufacture, a pack of superimposed, rectangularly shaped flaps having face portions coated with abrasive material and having in each of their long edges adjacent one end oppositely disposed recesses which aline and form a groove from end to end of the pack across opposite faces thereof, a fabric strip of flexible material binding said flaps together at that end of them which is adjacent said grooves to form a flexible abrasive wheel when said flaps are circumferentially extended to bring the outer face of one end flap into a flatwise abutting relation with the outer face of the other end flap, when said end flaps are thus abutted in the wheel forming position of the flaps said grooves being positioned to receive binding rings to maintain said flaps in their circumferentially extended relation.

GUY O. LEGGETT.

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