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ABRASIVE WHEEL

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FIG. 1.

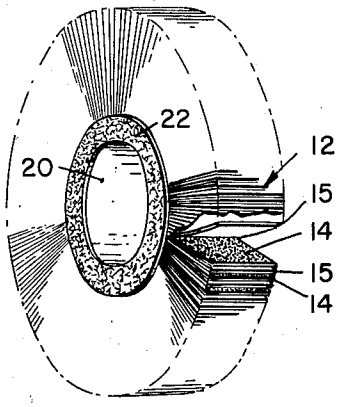


FIG. 3.

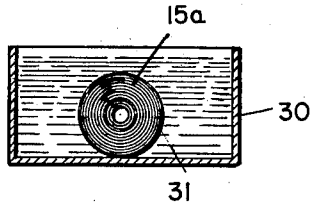
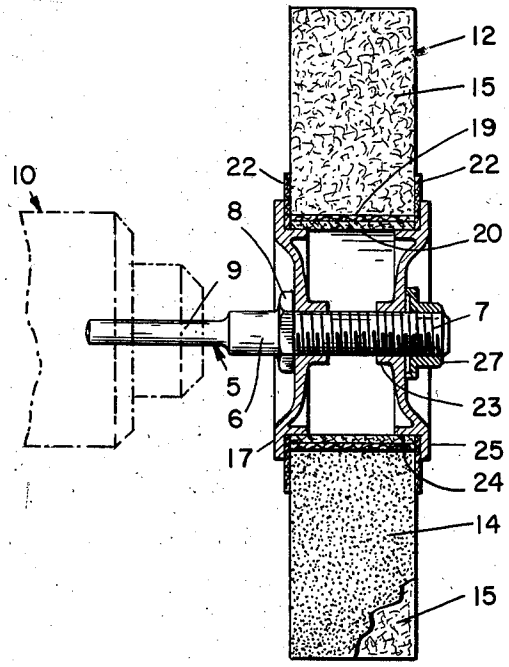


FIG. 2.



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ABRASIVE WHEEL

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5 Claims. (Cl. 51—193.5)

This invention relates to an abrasive wheel for grinding, polishing and buffing purposes.

It has been customary in the past when using abrasive or grinding wheels to apply a grease or lubricant to the wheel in order to lubricate the abrasive action. This is particularly common when the wheel is used for buffing and polishing purposes. This grease is customarily applied by holding a solidified grease stick against the wheel so that a quantity of grease is picked up by the wheel as it rotates. This action must be repeated frequently during use of the wheel.

Such method of lubricating the abrasive action is undesirable and ineffective because it is time-consuming, because it wastes grease, and because the exact amount of needed lubrication is seldom, if ever, achieved. Another difficulty is that the grease is likely to fill the space between the abrasive particles, thus clogging the cutting action.

It is an object of my invention to overcome these and other difficulties of present constructions and practices by providing an abrasive wheel in which the proper amount of lubrication is automatically supplied to the wheel and to the work surface during the entire useful life of the wheel.

It is a further object of my invention to provide such an abrasive wheel in which the lubricating material does not clog or fill the abrasive grit and does not interfere with the cutting action.

In essence, my invention contemplates an abrasive wheel comprising an annular pack of flaps, some of which are provided with an abrasive surface and some of which are non-abrasive and are impregnated with grease or other suitable lubricating material. The abrasive flaps are preferably alternated with the grease impregnated flaps to provide a uniformity of cutting and lubricating action. The pack comprises a replacement unit which is capable of easy handling, easy mounting for high speed rotation, and easy and rapid replacement when worn.

Since the lubricating material is built into the wheel, the user need not spend his time applying a grease stick to the wheel. There is no waste of lubricating material. The result is an abrasive wheel which saves time and money and which buffs and polishes faster and cleaner than any device which is now on the market.

It is also contemplated that the flaps forming my wheel may carry both abrasive and lubricating material.

My invention also comprises such other objects, advantages and capabilities as will later more fully appear and which are inherently possessed by my invention.

While I have shown in the accompanying drawings a preferred embodiment of my invention, it should be understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawings, Fig. 1 is a perspective view of my abrasive wheel. Some of the flaps are shown diverging from each other more than normally to illustrate the alternation of abrasive and grease impregnated flaps. The remainder of the wheel is shown in phantom lines to simplify illustration;

Fig. 2 is a vertical mid-section of the complete wheel assembly, with a portion of the bottom abrasive leaf broken away to show the grease impregnated leaf therebeneath;

Fig. 3 is a sectional view of a vat containing grease and showing the immersion of a roll of tape therein for the purpose of impregnating the tape with grease.

A preferred embodiment which has been selected to illustrate my invention is adapted for high speed rotational mounting on an arbor **5**, which comprises a cylindrical body portion **6** having a screwthreaded portion **7**. A flange **8** is removably mounted on the end of the screwthreaded portion **7**. The arbor **5** has a shank **9** which is adapted to be connected to a suitable source of high speed rotation **10**, which may comprise a motor driven chuck.

The abrasive wheel **12** of my invention is formed from a plurality of rectangular flaps. Some of the flaps **14** are cut from a length of abrasive material such as paper or cloth which is coated on one side with a plurality of grains of suitable abrasive material. The remaining flaps **15** are preferably formed of paper which has been impregnated or coated with grease or other suitable lubricating material. The abrasive flaps **14** are preferably alternated with the grease impregnated flaps **15** in order to provide uniformity of cutting and lubricating action.

The inner ends of the flaps **14** and **15** are adhered to a fabric strip **19**, which is in turn adhered to a central circular core **20**, which is formed of cardboard or other suitable material. A pair of circular side strips **22** are adhered to the sides of the wheel **12**, with their inner edges overlying the ends of the cardboard core **20**. The side strips **22** are adhered to the sides of the inner ends of the flaps **14** and **15** in order to form the wheel **12** into a compact unit which is capable of easy handling.

In mounting the wheel **12** for high speed rotation, the arbor **5** extends axially through the center of the cardboard core **20**. A pair of mounting discs **17** is provided, such discs preferably being formed of metal. The discs **17** are provided with central apertures which fit closely but slidably around the screwthreaded portion **7** of the arbor **5**. Each disc **17** is provided with an annular flange **23** which projects inwardly adjacent to the screwthreaded portion **7**.

The peripheral portion of each of the discs **17** is provided with an internal annular shoulder **24** and radially therebeyond with an annular flange **25**. The shoulders **24** fit within the interior of the cardboard core **20**, while the flanges **25** overlie the side strips **22**. The shoulders **24** and flanges **25** define a pair of right angles which fit around the rightangular corners of the wheel **12**.

A clamping nut **27** is screwthreadedly mounted on the end of the screwthreaded portion **7** of arbor **5**. The discs **17** are thus held between the nut **27** and the flange **8**.

It will be noted that the wheel **12** comprises a complete unit which is capable of easy handling, shipment and storage. When one wheel **12** becomes worn, it is easily removed and replaced with a new wheel **12**.

In use, as the wheel **12** rotates, the abrasive flaps **14** are brushed against the work surface alternately with the grease impregnated flaps **15**. The result is that the abrasive material is presented to the work substantially simultaneously with the lubricating material in order to provide a perfectly lubricated cutting action.

In this manner, the precise amount of lubrication required is available throughout the entire life of the wheel **12** and without the application of a grease stick or other lubricant to the wheel or work surface.

While any suitable method may be used for impregnating the paper with grease, it has been found that the following method is satisfactory. A vat **30** is filled with a quantity of grease **31** of the type customarily used in grease sticks which are used for lubricating grinding operations as previously described above. Such grease customarily comprises animal tallow and a hardening agent such as stearic acid. The grease, which is solidified at room temperature, is heated to a temperature slightly short of boiling, at which temperature it is liquified. A roll **15***a* of paper is then immersed in the grease **31** for a few minutes until it has become impregnated with the grease. The grease impregnated leaves **15** are then formed by cutting a plurality of strips from the end of the roll **15***a*.

Instead of providing alternating flaps of grease impregnated paper as described, it is also possible to impregnate the material from thich the abrasive leaves **14** are formed, so that the leaves **14** carry both abrasive and lubricating material. In such case, the abrasive material may be impregnated with grease in the manner described above. The grease may also be applied to the opposite side of the leaf from the abrasive grains by spraying or other suitable method of impregnation or coating.

I claim:

1. An abrasive wheel comprising an annular pack of substantially rectangular juxtaposed flaps, the inner edges of said flaps being adhered to a central circular core, alternate flaps of said pack each having a face coated with an abrasive material, and the intervening flaps each being formed from paper impregnated with lubricating material, whereby said lubricating material is applied to a work surface substantially simultaneously with said abrasive material as said wheel is used.

2. An abrasive wheel comprising an annular pack of juxtaposed flaps, and means maintaining said flaps circularly disposed around a central circular space, alternate

flaps of said pack each having a face coated with an abrasive material, and the intervening flaps each having a face coated with lubricating material, whereby said lubricating material is applied to a work surface substantially simultaneously with said abrasive material as said wheel is used.

3. An abrasive wheel comprising an annular pack of juxtaposed flaps, and means maintaining said flaps circularly disposed around a central circular space, said pack comprising a series of circumferentially spaced apart flaps having face portions coated with an abrasive material, the remaining flaps of the pack having face portions coated with lubricating material.

4. An abrasive wheel comprising an annular pack of juxtaposed flaps, and means maintaining said flaps circularly disposed around a central circular space, said flaps carrying abrasive and lubricating material, whereby said lubricating material is applied to a work surface substantially simultaneously with said abrasive material as said wheel is used.

5. An abrasive wheel comprising an annular pack of juxtaposed flaps, and means maintaining said flaps circularly disposed around a central circular space, at least some of the flaps of said pack having portions coated with an abrasive material, and at least some of the flaps of said pack having portions coated with a lubricating material, whereby said lubricating material is applied to a work surface substantially simultaneously with said abrasive material as said wheel is used.

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