Dec. 25, 1951 O. J. CARPENTER 2,579,727

METHOD OF MAKING AN ABRASIVE COATED WHEEL

Filed Dec. 9, 1949

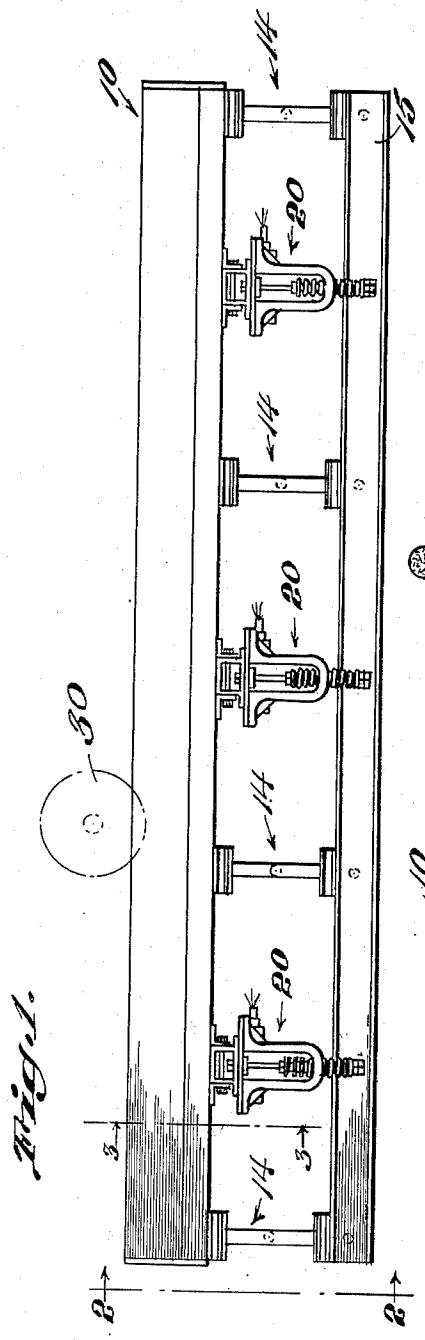


Fig. 1.

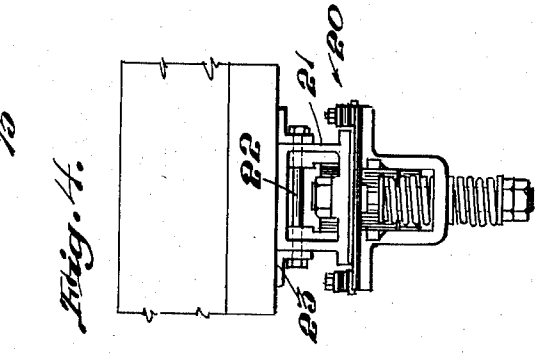


Fig. 4.

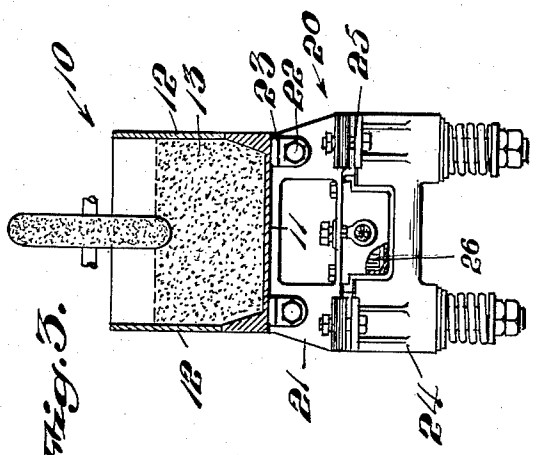


Fig. 3.

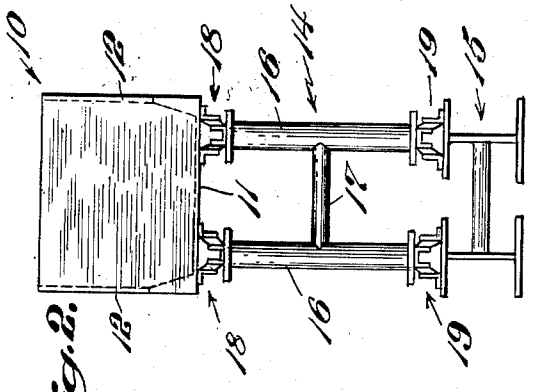


Fig. 2.

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Patented Dec. 25, 1951

2,579,727

# UNITED STATES PATENT OFFICE

2,579,727

## METHOD OF MAKING AN ABRASIVE COATED WHEEL

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Application December 9, 1949, Serial No. 132,026

2 Claims. (Cl. 117—20)

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This invention relates to a set up abrasive polishing wheel of the type in which an adhesive is applied to the face of the wheel and then the wheel with the adhesive is rolled in a bed of abrasive grains carried in a trough for causing the abrasive to be applied to the wheel.

If the abrasive grains have a smooth surface characteristic so that a wheel pressed into the bed of grains will penetrate readily by pushing the abrasive grains aside or out of place, it is usually said that the bed has high penetrability. If, on the other hand, the abrasive grains have a surface characteristic which is somewhat rough, which may be produced by etching or coating, and the grains offer a high frictional resistance to displacement when a wheel is placed upon a bed of these grains, the bed is said to have low penetrability.

Abrasive grain manufacturers make abrasive grains with several variations of surface characteristics so as to obtain different properties of bed penetration for the set up wheels, it being recognized that some polishing jobs and setting up facilities require deeper penetration than others.

It sometimes occurs that the user of set up wheels or grains therefor would prefer to have a different penetration than the surface characteristic of the grain will permit and yet would like to have that particular grain for the set up wheel. Also, it is not practical to have all degrees of penetration by control of the surface characteristic of the grain. Further, the user of the abrasive grain for the purpose of having different penetrations must carry a rather large stock of different surface characteristic abrasive grains on hand in order that different degrees of penetration may be provided for. Another result in the use of a trough of abrasive grains for the set up wheel is that the grains become pushed aside and work toward the ends of the trough and must be raked over for leveling from time to time.

One of the objects of this invention is to provide for the degree of penetration desired by the use of a single surface characteristic abrasive grain.

Another object of this invention is to make it unnecessary for the user to carry several varieties of abrasive grains in stock in order that he may have different penetrations of bed in making a set up wheel.

Another object of this invention is to provide an arrangement so that the user may utilize any low penetrability abrasive grain that he may desire and yet obtain the penetration of the bed which he desires in rolling the wheel in the trough of abrasive grains.

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Another object of this invention is to provide a simple and efficient means of leveling or maintaining the surface of the grains level in the trough without the necessity of raking the same.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a side elevation of an apparatus showing a trough with vibrating units attached thereto in which a set up wheel shown in dot and dash lines is indicated;

Figure 2 is an end view of the trough on line 2—2 of Figure 1;

Figure 3 is a sectional view of the trough showing the vibrator mechanism as attached to the trough and indicating an abrasive set up wheel in position in the trough; and

Figure 4 is a fragmental view looking at the mechanism of Figure 3 and shown at right angles thereto.

In proceeding with this invention I mount the trough in which the abrasive grains are placed for rolling the set up wheel therein on cushions, thus resiliently supporting the same above a fixed support and then provide one or more vibrating units along the trough which may be more or less vigorously operated to vary the amplitude of the vibrations of the bed of abrasive grains and as it is found that the penetration of the bed will vary with the amplitude of the vibrations, the penetration may be controlled. Frequency may also have some effect upon the varying of the penetrability. The units which are used are electrical magnetic units, usually available on the market.

With reference to the drawings, 10 designates a trough of rather elongated form having a bottom wall 11 and opposite side walls 12 for containing abrasive grains designated 13. Supports designated generally 14 are provided at the ends of the trough and also when needed at points intermediate the ends of the trough, as shown in Figure 1, which support the trough 10 above a rigid base 15.

Each of these supports 14 comprises a pair of rigid legs 16 tied together by a strut 17 rigidly connected thereto and forming a generally H-shaped structure. Resilient elastic rubber or synthetic rubber or spring cushions 18 are provided at the upper ends of the legs 16 between the legs and the trough, while similar cushions 19 are

provided at the lower end of the legs between the base 15 and the legs 16. Vibrating units designated 20 are positioned along the trough between the supports 14. Each of these vibrating units 20 comprises a part 21 fixedly attached such as by bolts 22 to a bracket 23 on the under side of the bottom wall 11 of the trough 10, while there is a second part 24 held in spaced relation to this first part and between which springs 25 extend to space the parts 21 and 24.

An electric coil 26 is provided which when energized will present a magnetic attraction to draw the two parts 21 and 24 toward each other, the energization being such that an attraction and repulsion is provided in accordance with controls illustrated in Patents No. 1,637,717 and No. 1,909,737, the arrangement being such that the amplitude will be varied in accordance with the voltage which is applied to the coil 26. The greater the voltage, the larger the amplitude of the vibration although the frequency may be maintained the same. By this arrangement the amplitude may be varied as desired to control the vibrations which are given to the trough 10; thus, should a wheel 30 with adhesive on its edge be rolled in the trough, it will pick up abrasive from the trough and the amount that the wheel will penetrate into the bed of abrasives 13 in the trough will depend upon the vigor of the vibration which is given to the trough.

It will, of course, be apparent that other forms of vibration may be given to the trough by any mechanical or electrical apparatus which is designed for the purpose of giving vibrations to an apparatus or box of substantial weight or size.

The vibrations also serve to maintain the grains in the trough in a level condition and thus avoid



the necessity of raking the grains into position. The vibration of the trough pushes the abrasive grains into the adhesive more effectively and requires less skill and effort on the part of the set up man. The use of this invention produces a higher density in the abrasive coating and consequently more production per wheel.

I claim:

1. The method of making a set up abrasive wheel which comprises rolling an adhesive coated wheel in a trough containing a layer of abrasive grains of substantial depth and during said rolling, causing penetration of the wheel into the layer of the grains by vibrating the trough at a preselected amplitude whereby the wheel is coated to the depth of penetration.

2. The method of making a set up abrasive wheel as set forth in claim 1 wherein the amplitude of the vibration is sufficient to level the grains in the trough after the wheel is removed therefrom.

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