Sept. 6, 1927. 1,641,791

F. J. TONE

GRINDING WHEEL AND HOLDER THEREFOR

Filed June 23. 1925

Fig. 1.

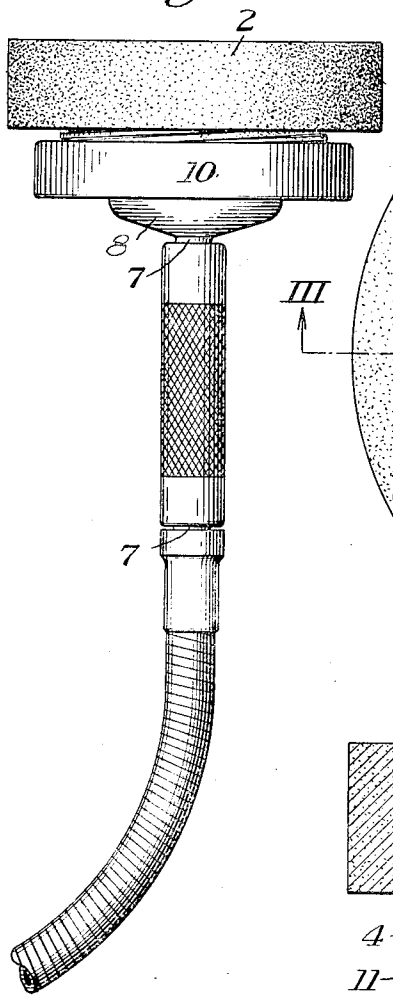


Fig. 2.

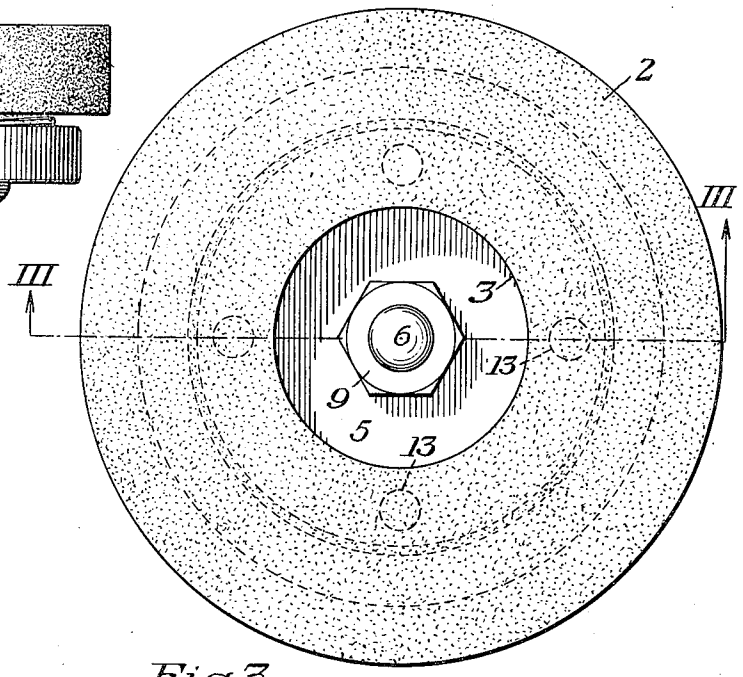


Fig. 3.

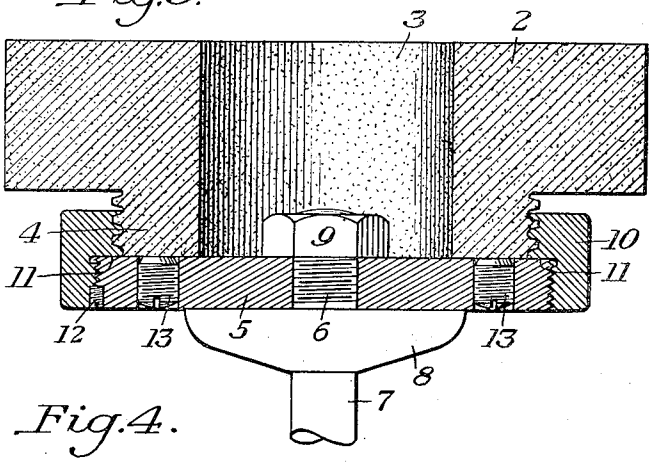
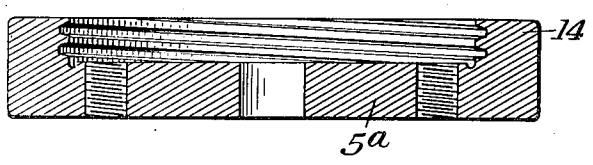


Fig. 4.



INVENTOR

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By Byrnes, Stebbins, Carmalee

His Attys

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UNITED STATES PATENT OFFICE.

FRANK J. TONE, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO THE CARBORUNDUM COMPANY, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF PENNSYLVANIA.

GRINDING WHEEL AND HOLDER THEREFOR.

Application filed June 23, 1925. Serial No. 39,103.

For grinding certain classes of work, such as the inside surfaces of bath tubs to prepare them for enameling, and similar castings, for example, the grinding wheel is mounted on the end of a flexible operating shaft, in order to enable the operator to move the wheel from point to point, and both the face and the edge of the grinding wheel are used as grinding surfaces. This work is very hard on the grinding wheel and causes it to wear away rapidly, necessitating frequent replacement of wheels. Heretofore such wheels have been formed cup-shaped and the operating shaft extended through the bottom of the cup and the wheel secured thereto by means of a nut engaging the threaded end of the shaft inside the hollow cup. With this method of mounting it was impossible to wear down the wheel lower than the nut, so that the stub to be thrown away constituted a considerable portion of the wheel. Also, there was considerable danger to the operator by reason of the liability of the rapidly rotating wheel cracking and then flying to pieces, as this method of mounting did not afford any support for the cracked wheel tending to prevent it from flying to pieces.

By the present invention I have provided an improved form of grinding wheel and mounting therefor designed to overcome the above objectionable features inherent in the old method of mounting grinding wheels of this character.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of a grinding wheel and grinding wheel holder mounted on the end of a flexible operating shaft and embodying a preferred form of my invention;

Figure 2 is a plan view of the grinding wheel and its holder;

Figure 3 is a section on the line III—III of Figure 2; and

Figure 4 is a sectional view, showing a modified form of holder embodying my invention.

Referring to the construction shown in Figures 1 to 3, inclusive, the grinding wheel 2 has a central bore 3 and a reduced hub portion 4 projecting from one end face thereof and exteriorly screw-threaded.

The holder comprises a plate 5 having a central hole therein to receive the screw-threaded end 6 of the operating shaft 7, said plate being adapted to be clamped between an enlarged portion 8 of the shaft and a nut 9 mounted on said screw-threaded end 6. The plate 5 has a screw-threaded periphery adapted to receive a screw-threaded ring 10. The upper portion of this ring is of reduced internal diameter, thereby providing a shoulder 11 between the two portions of the ring adapted to engage the upper face of the plate 5. The upper portion of the ring is screw-threaded for engagement with the threads of the hub portion of the wheel. When the ring 10 is screwed on the plate 5 so as to bring the shoulder 11 into engagement with the face of the plate, the parts are held against relative turning by one or more locking screws 12. Set screws 13 are mounted in screw-threaded openings in the plate 5. When the grinding wheel 2 has been screwed into the ring 10 so as to bring the end face of the hub portion 4 into engagement with the face of the plate 5, the set screws 13 are adapted to be tightened up so as to create sufficient friction between the threads of the hub portion 4 and the threads of the ring 10 and between the end face of the hub portion 4 and the ends of the set screws to prevent relative turning of the wheel and holders when the wheel is being operated.

In the construction shown in Figure 4, the plate 5^a is provided with an integral screw-threaded flange 14 instead of with a separate ring member.

It will be seen that by the present invention I have provided a construction wherein the grinding wheel is adapted to be worn down almost, if not quite, to its hub portion, which constitutes a relatively small portion of the wheel. Moreover, the hub portion is surrounded by the holder so that the holder will tend to hold the wheel together in case it cracks in service, thereby lessening the danger of the wheel exploding. However, I make no claim broadly to these features, as they constitute the invention of Hobart

C. Beach, and are claimed in his copending application Serial No. 39,011 filed of even date herewith. The term "grinding wheel" as herein used means a wheel formed of bonded abrasive grains.

I claim:

1. In a grinding wheel, a disk composed of bonded abrasive grains having a reduced hub portion on one face, said hub being externally threaded, and a metal holder screwed onto said externally threaded hub portion.

2. In a grinding wheel assembly, a disk composed of bonded abrasive grains having a reduced integral hub portion on one face thereof, said hub portion being externally threaded, and a metal holder having an internally threaded flange fitting around and screwed onto the reduced hub portion.

3. In a grinding wheel assembly, a disk composed of bonded abrasive grains having an integral reduced hub portion on one face thereof, said hub being externally threaded, a metal holder having an internally threaded flange fitting around and screwed onto the reduced hub portion and having a central disc portion, and a driving hub connected with the said disc portion.

4. In a grinding wheel assembly, a grinding disk composed of bonded abrasive grains having an integral hub portion on one face thereof, said hub portion being externally threaded, a metal holder having a central portion and an interiorly threaded flange, said flange being screwed onto the said reduced hub portion, and a set screw in the central portion adapted to press against the end of the reduced hub portion.

In testimony whereof I have hereunto set my hand.

FRANK J. TONE.