May 15, 1956 S. G. BRADY 2,745,229

LIQUID COOLED GRINDER WHEEL

Filed Jan. 24, 1955

FIG.2.

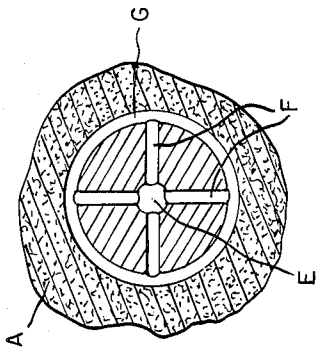
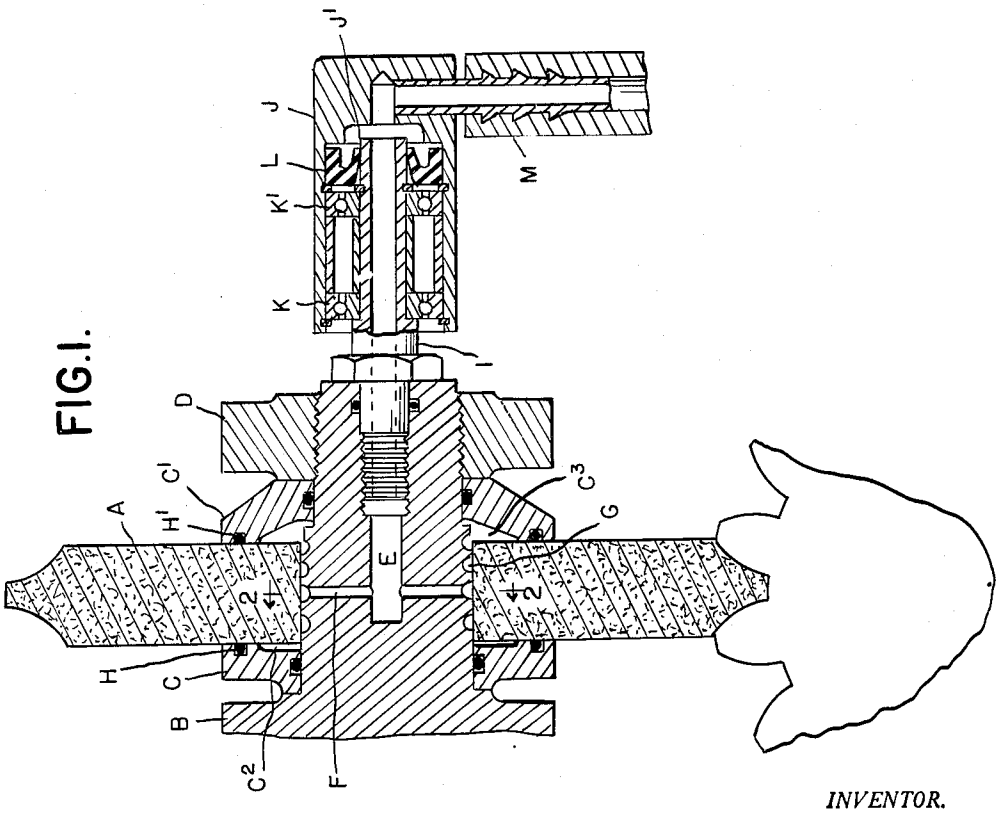


FIG.1.



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LIQUID COOLED GRINDER WHEEL

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2 Claims. (Cl. 51—267)

The invention relates to grinder wheels of that type in which a coolant liquid is fed through the pores of the wheel body to the peripheral grinding surface thereof. Heretofore grinder wheels of this character have been made in which the coolant liquid, such as water, is fed to the wheel radially outward from its attachment to the rotary spindle. The water entering the pores of the structure at such point will be fed outward by centrifugal action which is relied upon to discharge it on the grinding surface. However, there is no force other than capillarity for causing the water to enter into the body and consequently the amount that is fed to the grinding surface may be inadequate to produce sufficient cooling.

It is the object of my invention to obtain a construction in which a greatly increased volume of liquid is introduced into the body of the grinder wheel and under pressure which supplements centrifugal force in feeding it outward to the grinding surface. To this end the invention consists in the construction as hereinafter set forth.

In the accompanying drawings:

Fig. 1 is an axial cross section through the grinder wheel and its spindle to which my improved means for introducing the coolant water is attached.

Fig. 2 is a cross section on line 2—2, Fig. 1.

The grinder wheel A is of a character which, as above stated, is sufficiently porous to receive within its body the coolant liquid. This wheel is mounted upon a spindle B and is secured thereto by clamping plates C and C', a nut D having a threaded engagement with a portion of the spindle, the parts as thus far described being of any suitable construction. To introduce the coolant liquid into the body of the wheel I form the spindle with a central chamber E therein which is connected by radially extending ports F with a helical groove G in the portion of its outer surface which is engaged by the wheel A. The clamping plates C and C' are recessed at C^2, C^3 to

form chambers which are connected to the helical groove G. These chambers are sealed against escape of liquid therefrom other than through said porous wheel by sealing rings H and H', the former between the chambers and the periphery of the plates and the latter between said plates and the spindle. At the outer end of the spindle there is attached by screw threaded engagement therewith a hollow extension member I. This is surrounded by a non-revoluble member J with ball bearings K and K' therebetween. Packing material L will prevent passage of any liquid therebetween. The outer end portion of the member J has a chamber J' therein which is in communication with the hollow member I. A conduit M connected to the member J and in communication with the chamber J' therein will supply water or other coolant liquid at any desired pressure to the chamber E. From this chamber it passes through the radial channels F to the helical groove G from which it will pass in opposite directions to the chambers C^2 and C^3. These overlap portions of the side surface of the wheel and the helical groove is adjacent to the surface of the wheel contacting with the spindle. Thus, the pressure will force liquid into the body of the wheel at a relatively high rate sufficient to insure proper cooling of the grinding surface.

What I claim as my invention is:

1. A liquid cooled grinding wheel comprising a grinder body sufficiently porous for passage of liquid therethrough, a hollow rotary spindle on which said body is mounted having a helical channel in the portion of its surface surrounded by said body with radial ports connecting the space within the spindle and said channel, clamping plates on opposite sides of said body dished to form chambers in communication with said channel, sealing means between said body and plates at the periphery of said chambers and also between said plates and spindle and a connection at the outer end of said spindle for the introduction of cooling liquid under pressure.

2. A construction as in claim 1 in which said connection includes a small diameter tubular extension of said rotary spindle, a non-rotating sleeve surrounding said extension connected to the source of fluid under pressure, an antifriction bearing between said extension and sleeve, and sealing means for preventing leakage of fluid through said bearing.

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