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J. H. BREISCH
GRINDING WHEEL

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2 Sheets-Sheet 1

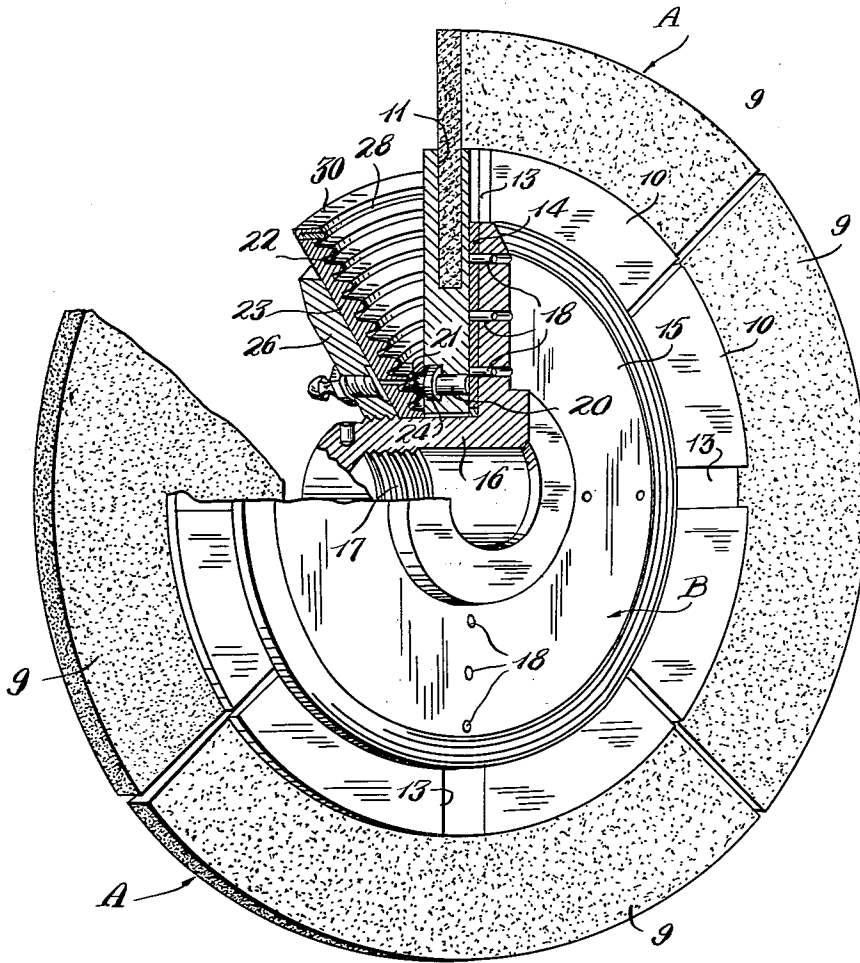


FIG. 1

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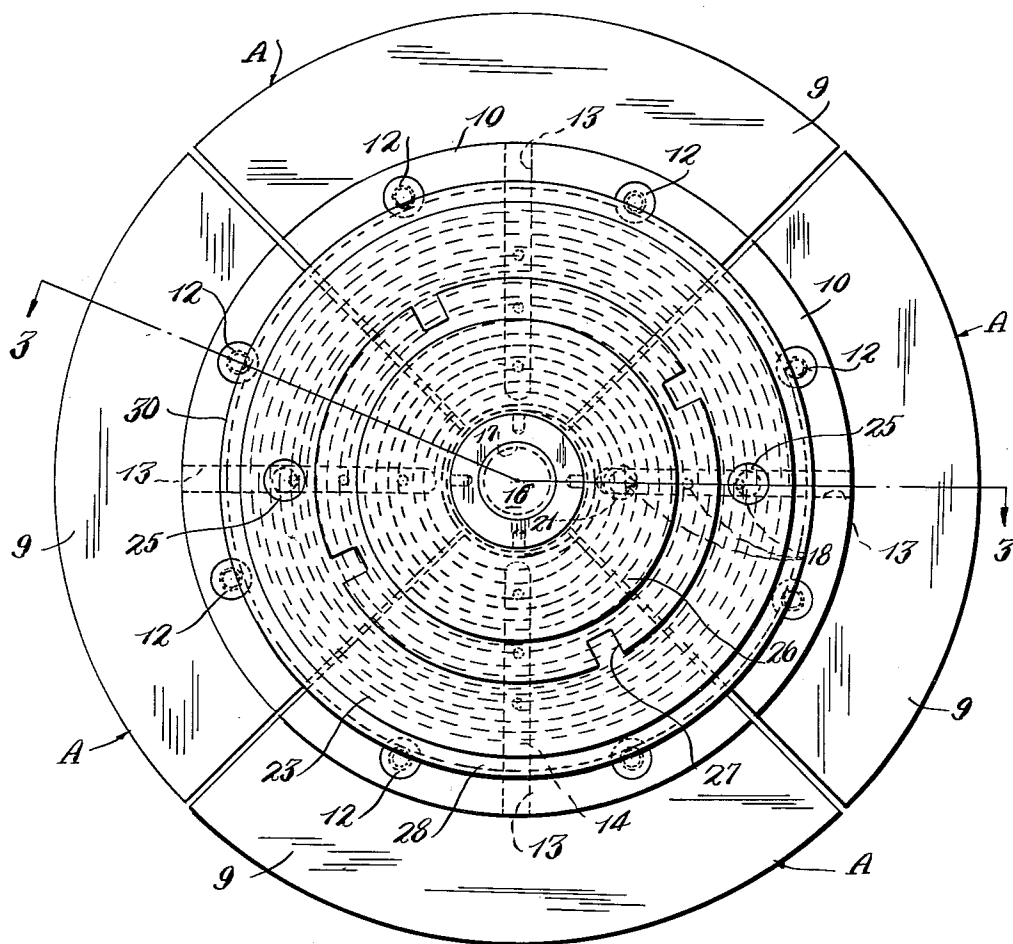


FIG. 2

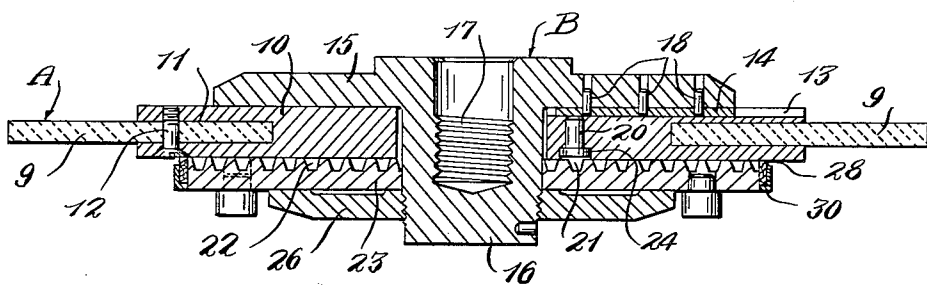


FIG. 3

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GRINDING WHEEL

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5 Claims. (Cl. 51—206.5)

The present invention relates to grinding wheels and, more particularly, to a disk-type, artificial abrasive grinding wheel comprising hub-like members for attaching it to the spindle of a grinding machine.

The principal object of the invention is the provision of a novel and improved, disk-type grinding wheel, the diameter of which can be maintained constant or substantially constant throughout its life.

Another object of the invention is the provision of a novel and improved, disk-type grinding wheel formed of a plurality of segment-like abrasive members arranged in a circle to provide a substantially continuous, peripheral cutting or working edge and so connected to a carrier member attachable to the spindle of a grinding machine that they can be moved or adjusted radially to vary the diameter of the wheel.

The invention resides in certain constructions and combinations and arrangements of parts and further objects and advantages thereof will be apparent to those skilled in the art to which the invention relates from the following description of the preferred embodiment described with reference to the accompanying drawings, in which

Fig. 1 is a perspective view of a grinding wheel embodying the present invention, with portions broken away to show the construction;

Fig. 2 is a rear, side elevational view of the grinding wheel shown in Fig. 1; and

Fig. 3 is a sectional view approximately on the line 3—3 of Fig. 2.

For purposes of illustration, the invention is herein shown and described as embodied in a disk-type grinding wheel comprising 4 similar segment-like units, designated generally by the reference character A, arranged to form an abrasive disk or wheel about 12" in diameter and about 1/2" thick. The segment-like units A are connected to a support or carrier, designated generally by the reference character B, in such a manner that they can be moved or adjusted radially of the axis of the wheel to vary the diameter thereof.

One of the important advantages of the present construction is the fact that the diameter of the wheel can be maintained constant or substantially constant during the life of the wheel by adjusting the segment-like units outwardly after the wheel has been reduced in diameter by wear and re-dressing the wheel to its original diameter. The invention, however, is not limited to maintaining the wheel at a constant diameter and contemplates adjusting the wheel so as to be of different diameters, if desired.

Reference to the drawings will show that each of the segment-like units A comprises an abrasive segment 9 having its inner end secured to a base member or holder 10, which member is, in turn, movably connected to the carrier B. As shown, the inner ends of the abrasive segment 9 extend into peripheral grooves 11 in the carrier members 10, which members are themselves segmental-like in shape and are made of some suitable material, preferably a ferrous metal. The inner ends of the abrasive segment 3 may be secured within the grooves 11 in

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any suitable manner as by being cemented therein or fastened thereto, as is the case in the embodiment shown, by studs 12 projecting from one side of the grooves 11 to the other and extending through the abrasive segments.

5 The preferred construction shown permits badly worn or broken abrasive segments 9 to be readily replaced.

The rear side of each of the segmental-like base members 10, as viewed in Fig. 1, is provided with a radial groove or slot 13 within which fits a key 14 carried by a face plate 15 having a hub 16 formed integral therewith, which hub is bored and tapped as at 17 for attachment to the spindle of a grinding machine. The construction just referred to prevents relative rotation between the segments A and the face plate 15 while permitting movement or adjustment of the segments radially thereof. In the embodiment shown the keys 14 are secured to the face plate 15 by dowel pins 18.

The segment-like units A, as shown, are moved or adjusted radially with respect to the face plate 15 and its hub 16 and held in any predetermined position to which they may be moved by pins 20 fixed in the base members 10 for the segments 9 and each comprising a tooth-like projection 21 interfitting in a spiral groove 22 formed in the near side of a scroll disk 23 supported for rotation about the hub 16 and located adjacent to the side of the base members 10 opposite the side thereof engaged by the face plate 15. As shown, the pins 20 are fixedly secured in suitable apertures in the base members 10 by a drive fit and each pin includes a collar 24 fitting into a counterbore in the base member for facilitating their attachment to the base member with their ends 21 projecting therefrom a predetermined distance.

The scroll member 23 may be rotated upon the hub 16 in any suitable manner. In the embodiment shown it is provided with two pins 25 located 180° apart and fixed thereto by having reduced ends driven or forced into apertures drilled in the back of the scroll plate; that is, the face thereof opposite to the face provided with the spiral groove 22. The pins 25 are located adjacent to the periphery of the scroll plate 23 so as not to interfere with a locking disk 26 hereinafter referred to. The pins 25 provide hand grasp means for manually rotating the scroll plate 23 to move or position the segment-like units A radially with respect to the carrier B. The segment-like units A may be locked in any desired position by the locking disk 26, previously referred to, which disk is threaded onto the end of the hub 16 projecting through the scroll plate 23. The locking disk 26 is provided with notches 27 in its periphery for reception of a spanner wrench for rotating the same. The spiral groove 22 shown is of the single lead type, thus providing a fine adjustment of the abrasive segments radially of the wheel. It is to be understood, however, that a multiple, lead type spiral groove may be employed if a more rapid or coarser adjustment is desired.

55 In order to prevent the entrance of dirt, etc. into the groove 22 of the scroll plate 23, a seal is provided therebetween and the base members 10 in the form of an annular, rubber-like belt or ring 28 having one edge clamped to the periphery of the scroll plate by a guard retainer 30 and the other edge engaging the base members 10.

While the preferred embodiment shown contemplates that the grinding machine to which the wheel illustrated is attached will be stopped during adjustment of the wheel from one diameter to another, it will be apparent that the wheel can be so constructed that it may be adjusted during operation of the machine.

70 From the foregoing description of the preferred embodiment of the invention, it will be apparent that the objects heretofore enumerated and others have been accomplished and that there has been provided a novel and improved grinding wheel, the diameter of which can be

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varied or maintained constant, as desired. While the preferred embodiment of the invention has been described with considerable detail, the invention is not limited to the particular construction shown and it is the intention to cover hereby all adaptations, modifications and uses thereof which come within the practice of those skilled in the art to which the invention relates.

Having thus described my invention, I claim:

1. An adjustable mechanism comprising a backing plate oppositely spaced from a scroll plate, supporting means rigidly connected to one of said plates and extending freely through an opening in the center of the other of said plates so that said plates may be rotated with relation to each other, at least one adjustable segment having at least a portion thereof closely received between said plates, co-operable means on said scroll plate and said portion of said adjustable segment for causing said adjustable segment to be displaced substantially radially from the center of said scroll plate upon relative rotation of said scroll plate about its center, clamping means secured to said supporting means so as to engage the outer surface of said other plate and clamp said adjustable segment between said plates, and said clamping means being manually releasable so that said scroll plate may be rotated to change its relative position with respect to said adjustable element.

2. An adjustable mechanism comprising a backing plate oppositely spaced from a scroll plate, supporting means rigidly connected to one of said plates and extending freely through an opening in the center of the other of said plates so that said plates may be rotated with relation to each other, at least one adjustable segment having at least a portion thereof closely received between said plates, co-operable means on said scroll plate and said adjustable segment for causing said adjustable segment to be displaced substantially radially from the center of said scroll plate upon relative rotation of said scroll plate about its center, clamping means secured to said supporting means so as to engage the outer surface of said other plate and clamp said adjustable segment between said plates, and said clamping means being manually releasable so that said scroll plate may be rotated to change its relative position with respect to said adjustable segment.

3. An adjustable mechanism comprising a backing plate oppositely spaced from a scroll plate, supporting means rigidly connected to one of said plates and extending freely through an opening in the center of the other of said plates so that said plates may be rotated with relation to each other, a plurality of adjustable segments spaced about said supporting means and each having at least a portion thereof closely received between said plates, each of said adjustable means having means engageable with means on the inner surface of said scroll plate for causing each of said adjustable segments to be displaced substantially radially the same amount from the center of said scroll plate upon relative rotation of said scroll plate about

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its center, clamping means secured to said supporting means so as to engage the outer surface of said other plate and clamp said adjustable segments between said plates, and said clamping means being manually releasable so that said scroll plate may be rotated to change its relative position with respect to said adjustable segments.

4. An adjustable mechanism comprising a backing plate oppositely spaced from a scroll plate, supporting means rigidly connected to one of said plates and extending freely through an opening in the center of the other of said plates so that said plates may be rotated with relation to each other, a plurality of adjustable segments spaced about said supporting means and each having at least a portion thereof closely received between said plates, each of said adjustable means having a pin member extending outwardly therefrom toward the inner surface of said scroll plate, said scroll plate having a spiral groove on its inner surface of a size and form so as to receive each of said pins therein for causing each of said adjustable segments to be displaced substantially radially the same amount from the center of said scroll plate upon relative rotation of said scroll plate about its center, clamping means secured to said supporting means so as to engage the outer surface of said other plate and clamp said adjustable segments between said plates, and said clamping means being manually releasable so that said scroll plate may be rotated to change its relative position with respect to said adjustable segments.

5. An adjustable mechanism comprising a backing plate oppositely spaced from a scroll plate, supporting means rigidly connected to one of said plates and extending freely through an opening in the other of said plates to form an axis so that said plates may be rotated with relation to each other about said axis, at least one adjustable segment having at least a portion thereof closely received between said plates, co-operable means of said scroll plate and said adjustable segment for causing said adjustable segment to be displaced substantially radially from said axis upon relative rotation of said scroll plate, clamping means secured to said supporting means to clamp said adjustable segment between said plates, and said clamping means being releasable so that said scroll plate may be rotated to change its relative position with respect to said adjustable element.

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