Dec. 21, 1937. S. RUSOFF 2,102,919

SEGMENTAL GRINDING WHEEL

Filed March 11, 1937

Fig. 1.

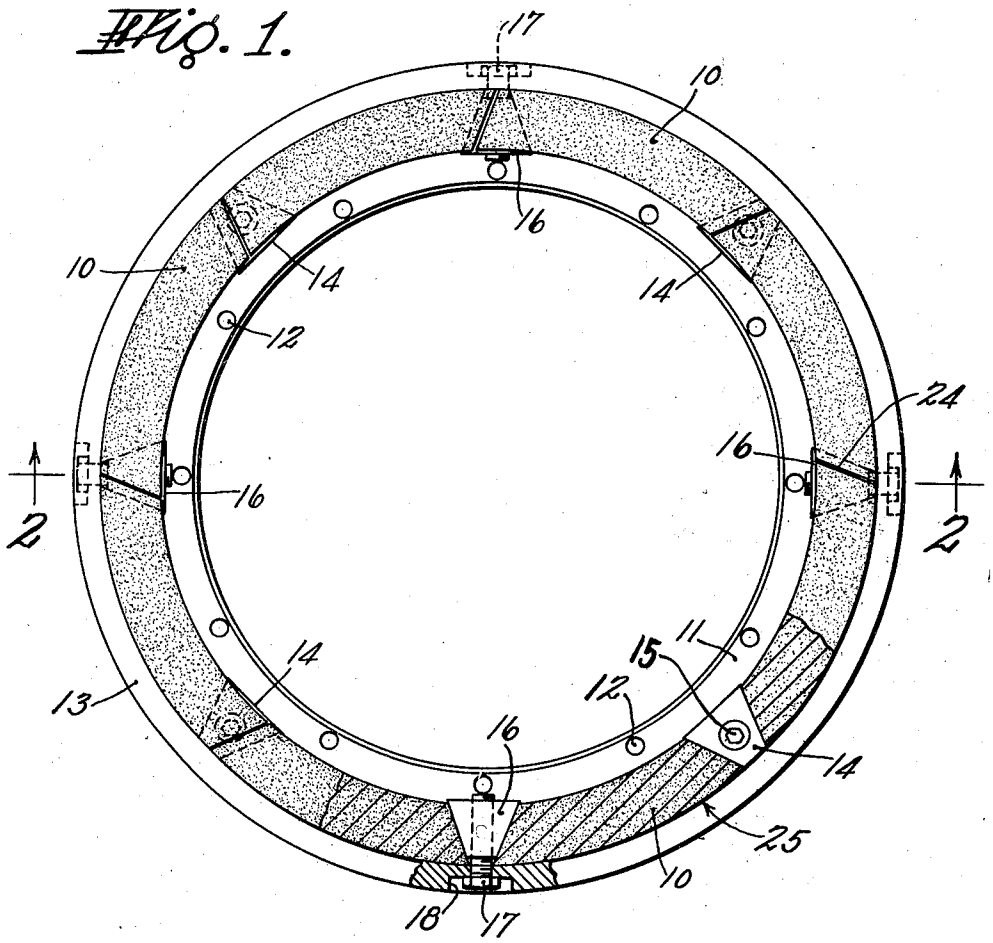


Fig. 2.

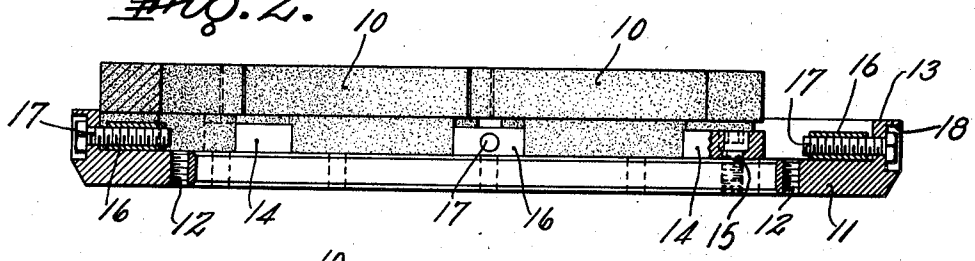
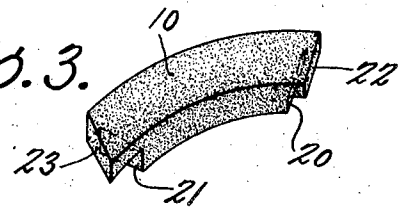


Fig. 3.



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SEGMENTAL GRINDING WHEEL

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3 Claims. (Cl. 51—209)

This invention relates to mountings for cup grinding wheels of the segmental type.

In prior mountings for grinding wheels of this character difficulty has been experienced in mounting the several grinding segments tightly without subjecting them to such strain as would result in cracking the segments either as they were being secured in position or as they were subjected to strain in use. A further difficulty has been the provision of adequate means for securing the segments in such a manner that they would not cause chatter or sudden impact strains as the grinding action shifted from one segment to the succeeding one. This latter difficulty has been particularly objectionable when the wheel was used for surface grinding a plurality of small work pieces held in place upon a magnetic chuck, as the transition from one segment to the next tended to shift the pieces on the chuck or even to dislodge them entirely from it.

One object of the present invention is to provide a mounting for grinding wheel segments by which the segments can be rapidly secured in position without exerting undue strain on them. A further object is to provide a mounting for grinding wheel segments in which the mating edges of adjacent segments will not be separated by any substantial gap and in which these mating edges can be non-radially disposed if desired. A further object is to provide a mounting for grinding wheel segments which can be utilized for segments of any desired thickness. A further object is to provide a mounting for grinding wheel segments having a minimum number of actuating devices for tightening the segments in place. Additional objects will appear from the following description and claims.

Referring to the drawing,

Fig. 1 is a plan view of a mounting with certain of the grinding wheel segments in place and certain of them partly broken away;

Fig. 2 is a section on line 2—2 of Fig. 1, with certain of the segments removed; and

Fig. 3 is a detail perspective view of one of the segments.

The mounting or chuck for the grinding wheel segments 10, which may be of any desired abrasive molded and finished in the form to be described, is based upon a ring 11 provided with holes 12 so that it may be secured to the rotating spindle of a grinding machine. This ring has an outer raised flange 13 which is of less height than that of the segments. Disposed at intervals around the ring adjacent this flange are a plurality of wedges 14, arranged with their sides converging towards the flange and secured in place as by bolts 15. Intermediate these fixed wedges 14 are wedges 16, also arranged with their sides converging towards the flange but movably mounted by means of countersunk bolts 17 threaded into the wedges and passing freely through holes in the flange. The holes are preferably countersunk as at 18 to avoid the presence of any projections upon the exterior surface of the ring.

The grinding segments 10 are formed with undercut ends, the recessed portions 20, 21 being inclined to conform to the shape of the wedges. The upper portions 22, 23 of the ends of the segments are preferably arranged at an angle so that the mating edges of adjacent segments will not be radial. This avoids any jar to the work pieces as the grinding operation proceeds from one segment to the next in spite of the small gap 24 which is left between these mating edges to accommodate manufacturing tolerances and the effect of temperature changes. When the segments are mounted in place their outer surfaces 25 rest against the flange 13 and the opposite recessed end surfaces 20, 21 of each lie respectively against a fixed wedge 14 and a movable wedge 16. When the movable wedges 16 are tightened the segments will be forced tightly against the fixed wedges and also against the flange, but without any strain which will tend to crack them. In this respect the tightening action is much superior to those prior forms in which a compressive force has been directed against the inner periphery of the segments. It will also be apparent that there are only half as many tightening devices as segments.

I claim:

1. A segmental grinding wheel comprising a supporting member, a plurality of arcuate grinding segments carried by the member, the segments having shouldered ends providing substantially abutting edges at their grinding surfaces and recessed end surfaces so shaped that the recessed end surfaces of adjacent segments converge away from the axis of rotation of the member, and means for securing said segments in place comprising means for restraining the segments at their outer peripheries and means for exerting an outward wedging action on said recessed converging end surfaces.

2. A segmental grinding wheel comprising a supporting member, a plurality of arcuate grinding segments carried by the member, the segments having shouldered ends providing sub-

stantially abutting non-radial edges at their grinding surfaces and recessed end surfaces so shaped that the recessed end surfaces of adjacent segments converge away from the axis of rotation of the member, and means for securing said segments in place comprising means for restraining the segments at their outer peripheries and means for exerting an outward wedging action on said recessed converging end surfaces only.

3. A segmental annular grinding wheel comprising a supporting disk, an external annular flange on the disk, a plurality of fixed wedges located at intervals around the disk and each converging towards the flange, a plurality of movable wedges located between the fixed wedges and each converging towards the flange, means for drawing said movable wedges towards the flange, and a plurality of arcuate grinding segments each located between one fixed and one movable wedge and having recessed end surfaces shaped to conform to the side surfaces of the wedges, the grinding portions of the segments overlapping the wedges and having substantially abutting edges.

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