March 25, 1952 C. O. KAMP 2,590,325

ROTARY GRINDING TABLE

Filed Oct. 8, 1948 2 SHEETS—SHEET 1

FIG. 1.

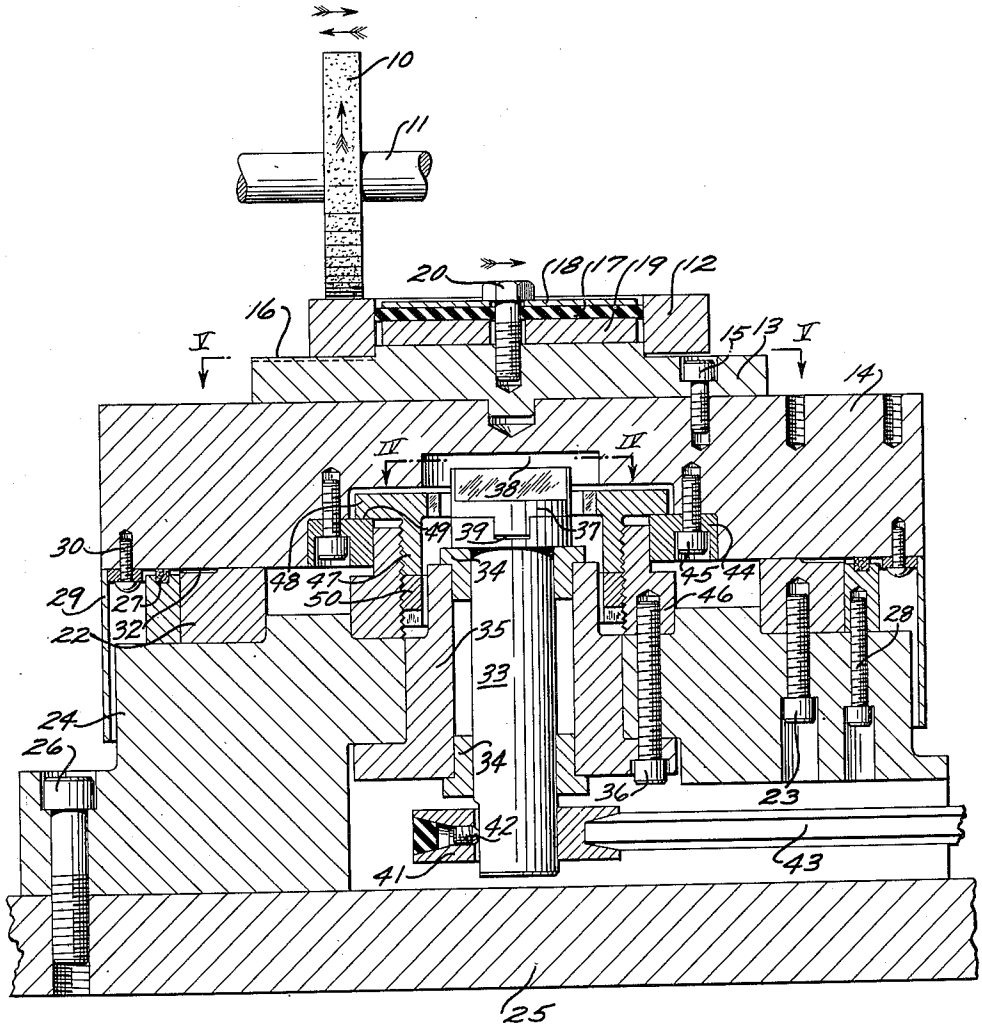
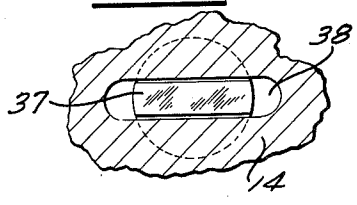


FIG. 4.



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FIG. 2.

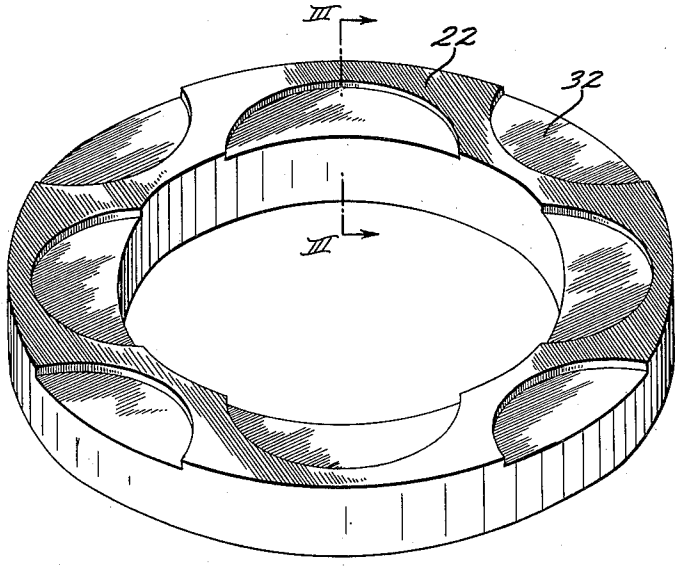
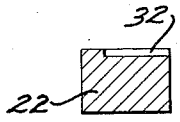


FIG. 3.



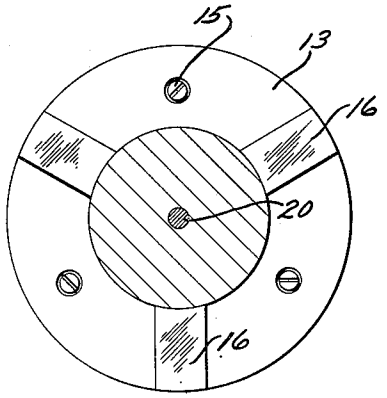


FIG. 5.

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ROTARY GRINDING TABLE

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Application October 8, 1948, Serial No. 53,419

2 Claims. (Cl. 308—135)

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This invention relates to rotating tables in general and more particularly to a rotating work supporting table of the type commonly employed with a grinding wheel.

In precision grinding, it is common practice to support the part to be ground on a table adapted to be rotated relative to a grinding wheel, thus enabling the entire surface of the part to be evenly ground. In such work, the flatness of the finished surface is dependent to a great extent on how nearly the work table rotates in a single plane. In the past, due to the manner of supporting the work table and to the accumulation of bearing clearances, some wobbling of the table has been encountered. This wobbling or rotation of the table in more than one plane results in a surface having high and low spots which, although not visible to the naked eye, are readily observed when using precision instruments.

It is, therefore, an object of this invention to provide a means for supporting a rotating table in such a manner that a minimum of wobble is encountered, thereby making it possible to grind parts to unusually close limits. It is a further object of this device to provide a rotating table which is supported in such a manner that the table rotates about its axis with a minimum of deviation even though the axis of rotation is tilted from a vertical position. Other objects and advantages of this invention will be made apparent in the following specification wherein reference is made to the accompanying drawings.

In the drawings:

Fig. 1 is a vertical sectional view through a grinding table embodying the present invention;

Fig. 2 is a perspective view of one of the main supporting bearings;

Fig. 3 is a sectional view taken along the line III—III of Fig. 2;

Fig. 4 is a fragmentary sectional view taken along line IV—IV of Fig. 1; and

Fig. 5 is a fragmentary sectional view in reduced scale taken along line V—V of Fig. 1.

Fig. 1 illustrates the mechanism in its association with a conventional type grinding wheel 10 carried on and rotated by a shaft 11 which may be driven by any suitable means (not shown). The grinding wheel is adapted to be lowered into contact with work to be ground, illustrated at 12 as an annular washer carried on an adapter plate 13 rigidly secured to a rotating work table 14 by means of cap screws 15. As

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is also illustrated in Fig. 5, the adapter plate 13 is provided with three radially spaced raised areas 16 forming the support for the work which is resiliently secured to the adapter plate by means of a rubber disc 17. The rubber disc 17 is adapted to be compressed between a pair of metal plates 18 and 19 by means of a cap screw 20 extending through the plates and having a threaded engagement with the adapter plate 13. This compression of the rubber disc enlarges it until it attains gripping contact with the inner surface of the work. This manner of fixing the work to the adapter plate permits it to be held securely with a minimum of distortion during grinding.

The table 14 is carried for rotation on an annular bearing 22 secured as by cap screws 23 to a body member 24 which in turn is secured to a base plate 25 by means of screws 26. Entrance of foreign material to the bearing between the table 14 and body member 24 is prevented by a seal 27 secured to the body member by means of cap screws 28. A skirt-like baffle 29 is secured to the table 14 by means of screws 30 and depends downwardly beyond the top of the body 24 to prevent any large article from entering between the table and body. The bearing 22 is of the self oiling type of which there are several commercial forms usually made from an oil impregnated material requiring less clearance that other types of bearings in which lubrication must be introduced. As can best be seen in Figs. 2 and 3, the bearing surface is provided with a plurality of radially spaced semi-circular reliefs 32 entering alternately from the inner and outer periphery of the bearing. Each of the reliefs extends across more than half of the bearing face so that there is no continuous circle of bearing surface and no point on the table can travel for any appreciable distance without crossing one of the reliefs. The edges of the reliefs serve to wipe off any foreign material or excess oil carried by the table, thus reducing wear on the bearing and preventing raising or lowering of the table due to the building of a film on the bearing surface.

The table 14 is driven by a shaft 33 supported for rotation in a pair of spaced bearings 34 carried in a sleeve 35 secured to the body 24 by means of cap screws 36. A universal coupling 37 is disposed between the end of the shaft and the table, one end of which is received within a slot 38 provided in the table and the other end in a slot 39 in the end of the shaft. This arrangement is provided to prevent any misalign-

ment or eccentric motion of the shaft **33** from being transmitted to the table. A pulley **41** is rigidly secured to the lower end of the shaft by means of a screw **42** and is adapted to be driven from a suitable power source (not shown) by means of a belt **43**.

Rotation of the table about a fixed vertical axis is insured by means of a bearing **44** secured to the table by cap screws **45** and preferably also of the self oiling type. The bearing **44** embraces the outer periphery of a sleeve **46** extending upwardly from and secured to the body **24** by means of the cap screws **36**. The inner circumference of the sleeve **46** is threaded for the reception of a thrust bearing **47** having an outwardly extending flange **48** adapted to abut the uppermost face **49** of the bearing **44**. The bearing **47** positively limits the vertical movement of the table relative to the body and may be adjusted to any degree of clearance. The bearing **47** is retained in its adjusted position by means of a lock nut **50** also having a threaded engagement with the sleeve **46**.

With this arrangement of bearings, it is possible to tilt the entire mechanism relative to the grinding wheel without causing misalignment of the work if it is desired to grind inclined or tapered faces on the work.

I claim:

1. The combination of a bearing and a rotatable work support for a precision grinding machine or the like comprising an annulus of bearing material having a flat bearing surface in supporting contact with the work support, said bearing surface being cut away from its opposite edges at alternately spaced positions to avoid a continuous bearing circle and to provide edges intercepting the continuity of the bearing surface to prevent accumulation on the surface of foreign materials.

2. The combination of a bearing and a horizontal rotary work table for precision grinding or the like comprising a substantially annular solid bearing member underlying and in supporting contact with the table, the bearing surface of said member being irregularly defined at its inner and outer edges to avoid a continuous circular contact without interruption of the supporting surface.

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