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APPARATUS FOR MANUFACTURING RIGID GRINDING BODIES OF EMERY, CARBORUNDUM, OR THE LIKE

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Fig.2.

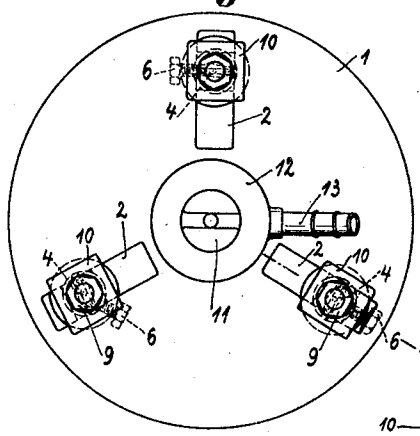
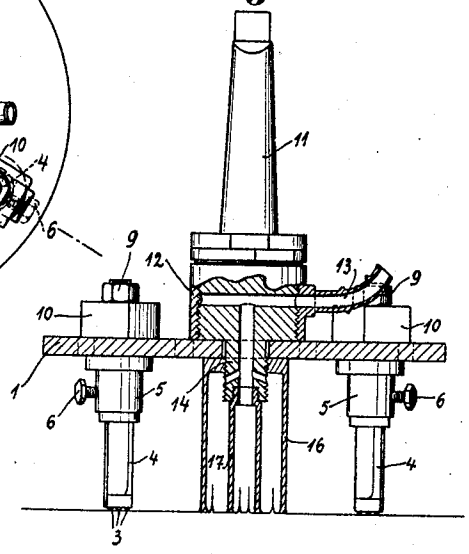


Fig.1.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR MANUFACTURING RIGID GRINDING BODIES OF EMERY, CARBORUNDUM, OR THE LIKE

Application filed December 22, 1927, Serial No. 241,944, and in Germany November 9, 1927.

This invention relates to the manufacture of rigid grinding bodies out of emery, carborundum or other powdery or granular material by boring or cutting such bodies out of a large solid piece of the ready-made hard grinding block by the aid of one or more concentric tubular borers set with diamonds, thereby producing solid or annular grinding disks down to the smallest size and thickness to a nicety with regard to given dimensions.

Though by the aid of such removable hollow cylinders of diamond crowns surrounding one another it is possible to produce grinding disks of various size in one or more operations, yet the number of grinding disks of different size is limited by the number of the tubular borers at disposal. If in a shop the demand of grinding disks is small, and moreover if the sizes of disks to be produced change very frequently, it may happen under circumstances that the said method will not be a satisfactory financial success. The object of the present invention is to do away with this drawback by expanding the range within which the methods known heretofore can be carried out. This is secured by making use of a tool comprising one or more rotating cutters set with diamonds and eventually arranged in a plurality of rows, the distance of the cutters from the axis of rotation being made adjustable. By the term "diamond" also all such compositions are intended to be implied which have a sufficient degree of hardness adapting them to working on the grinding material. As a device for carrying out this improved method a disk may be employed, which carries knives or cutters set with diamonds or the like, and guided radially adjustable in slots of the disk, and which is provided with means for fastening it to a rotatable or fixed part of a boring machine, a lathe or the like. If attached to a fixed part of the machine the work piece must be applied to the rotatable part. In this case eventually the center of the disk on the side carrying the knives may be provided with means for attaching either a guide plug, a solid borer or one or more concentric tubular borers. As a means for fastening the disk to the machine a conus or the like known per se may be used, which is provided with central cooling means and is so constructed that tubular or solid borers may be connected therewith, the disk being itself detachably mounted on said disk.

In the drawing a construction is shown for carrying out the invention.

Fig. 1 is a side view of the apparatus, partly in section, for illustrating the manner of mounting tubular borers, and

Fig. 2 a plan of an apparatus for carrying out the improved method.

In the construction shown a disk 1 is provided with radial slots 2, in which cutters 4 set with diamonds 3 or the like are slidably arranged to enable the distance of the cutter from the axis of rotation of the disk to be adjusted at will. Instead of making use of three cutters, as shown, of course only one or more cutters may be used. The same when two or more disks are to be cut out simultaneously a plurality of concentric rows of rotating cutters may be provided. The knife 4 may be locked to the plate or disk 1 by set screws, which are screwed into the cutter holders 5 to firmly engage the shaft of the cutters. Each cutter holder 5 projects into the disk 2 with a square portion 7, the prolongation of which square portion 7 is a reduced cylindrical portion 8 having screw threads for a nut 9 adapted to hold a cup 10 embracing the square portion 7 down on the disk 1.

The attachment of the plate to a fixed or rotatable part of the boring machine or lathe is effected by a conus 11, which, if desired, may be replaced by a cylindrical spindle or by a screw spindle or the like. As is known per se this conus may be provided with passages 12, 13 for allowing a cooling medium to be introduced. A reduced part 14 of the conus is threaded and a nut 15 screwed thereon. If beside the cutters 4 hollow borers are intended to be used these may partly be screwed on to the reduced threaded part 14 such as the tubular borers 16, or they may be screwed into this said part 14 provided with inner thread, such as the tubular borer 17. The latter may, if desired, be replaced by a solid borer or by a guide plug,

which eventually may project into a hole provided on the work piece for guiding the motor disk 1.

Any desired number of guide slots 2 may be provided and also a similar number of cutters. The cutter carriers 5 may be adjusted either towards the central axis of the disk 1 or away from the central axis.

I claim:

1. Apparatus for grinding out circular or annular disks from rigid bodies, comprising a plate, a cutter extending from said plate, means for adjusting said cutter radially of said plate, a carrier for said plate having a part constructed to be received by a chuck, a reduced part projecting through an aperture in said plate forming a shoulder, and a tool constructed as a nut, cooperating with said reduced part below said plate for securing said plate to said carrier.

2. Apparatus as claimed in claim 1, the carrier being formed with a water conduit opening through said reduced part.

3. Apparatus as claimed in claim 1, the tool acting as a nut for said plate being hollow and another tool within said hollow tool secured to said reduced part.

In testimony whereof I have signed my name to this specification.

HEINRICH EDUARD ERNST WINTER.