June 28, 1927.

1,633,958

R. W. SCHROTT

MEANS FOR GRINDING GEARS

Filed Nov. 5, 1923

Fig. 1.

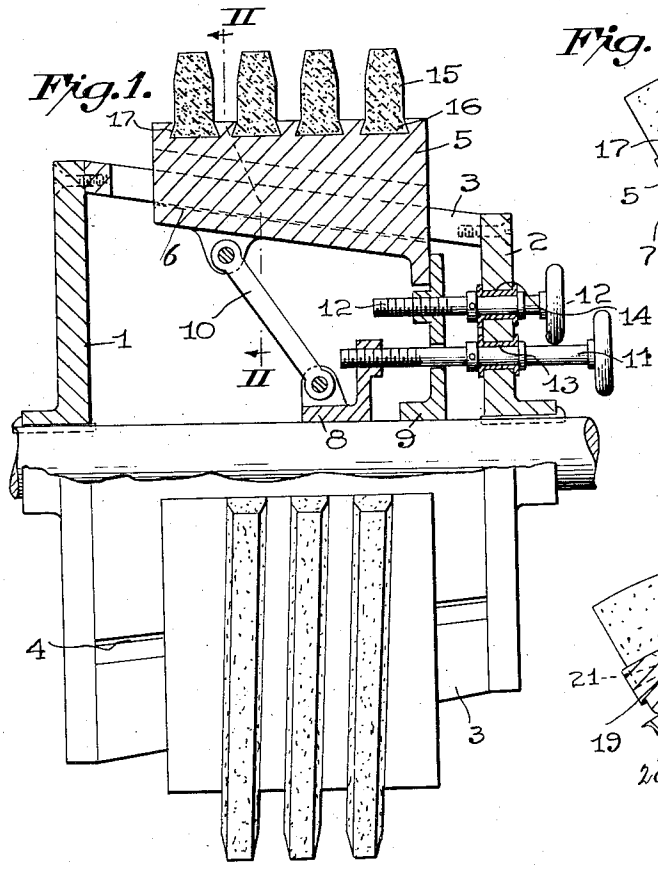


Fig. 2.

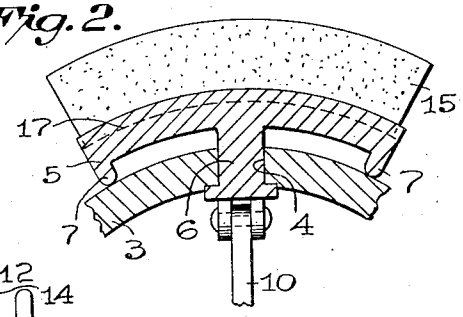


Fig. 3.

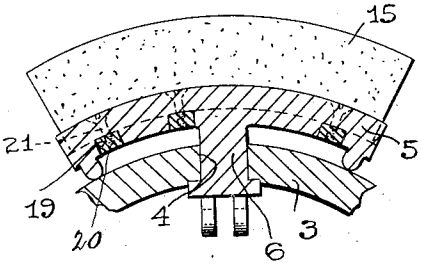


Fig. 4.

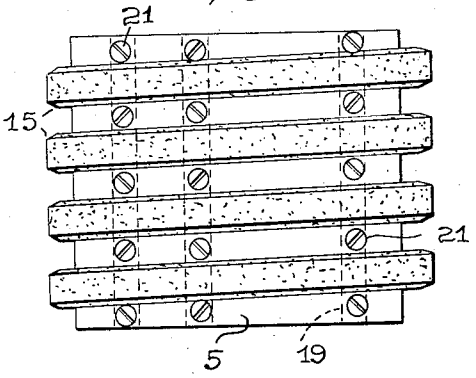


Fig 5.

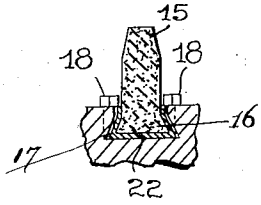
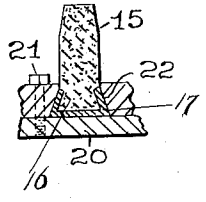


Fig. 6.



WITNESSES:

R. S. Harrison.

W. B. Jaspert.

INVENTOR

Robert W. Schrott

BY

Wesley G. Carr

ATTORNEY

Patented June 28, 1927. 1,633,958

UNITED STATES PATENT OFFICE.

ROBERT W. SCHROTT, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

MEANS FOR GRINDING GEARS.

Application filed November 5, 1923. Serial No. 672,700.

My invention relates to gear grinding means, more particularly to an abrasive element adapted to the grinding of gear teeth by a generating process.

It is among the objects of my invention to provide a grinding element which shall be of simple and inexpensive construction and in which the abrasive material shall be adjustable to compensate for wear and to the working diameter desired.

In a copending application of George M. Eaton, Serial No. 671,142, filed Oct. 27, 1923, for gear grinding device, and assigned to the Westinghouse Electric & Manufacturing Company, is described a grinding element comprising a hub member having abrasive insert portions or teeth members mounted thereon. This renders the construction of such grinding elements less expensive in that it is only necessary to provide a small amount of the expensive abrasive on the surface of an inexpensive spider of relatively large diameter.

It is the purpose of my present invention to modify the structure described therein in such manner as to render it capable of adjustment, which is necessary to compensate for the wear produced in operation.

With this object in view, I mount the abrasive members on movable inserts or blocks which are adjustable by means of screw and nut mechanisms and I further propose to employ novel means for securing the abrasive portions in their respective supports.

In the accompanying drawing constituting a part hereof and in which like reference characters designate like parts:

Fig. 1 is a view partially in elevation and partially in cross-section of a grinding element embodying the principles of my invention,

Fig. 2 is a cross-sectional view of a fragmentary portion of the element shown in Fig. 1, taken along the lines II—II thereof,

Fig. 3 is a similar cross-sectional view illustrating another means for securing the abrasive tooth segments,

Fig. 4 is an elevational view of the grinding element embodying the fastening means of Fig. 3, and

Figs. 5 and 6 are cross-sectional views illustrating means for securing the abrasive tooth elements.

Referring to Fig. 1, I employ a hub member comprising end plates 1 and 2 secured to a rim portion 3 provided with axial slots 4 which are adapted to receive movable blocks 5. The blocks have central tongues or projections extending through the slots 4 and are further provided with seating portions 7 on their respective ends. A pair of axially movable collars 8 and 9 are disposed intermediate the end plates 1 and 2, the collar 8 being connected by a plurality of links 10 to the tongue portions 6 of the movable blocks 5.

Links 10 are pivotally connected to the collar 8 and blocks 5 to permit relative movement thereof whereby, when the former is advanced axially towards the center of the hub, the links are straightened in a vertical direction causing the blocks 5 to move radially outward on the rim 3. The member 9 is adapted to engage one edge of the blocks 5 to maintain them in their proper alinement and the members 8 and 9 are in screw-threaded engagement with adjusting screws 11 and 12, respectively, which are journalled in openings 13 and 14 of the end plate 2.

The adjustment of the grinding element is briefly as follows: By adjusting the screw 11, the collars 8 and 9 are moved axially in either direction to raise or lower the blocks 5 in the slots 4 of the rim 3 and the screw 12 actuates the collar 9 to bring it in contact with the edges of the blocks 5 to insure proper alinement of the outer face carrying the abrasive tooth portion 15.

Such adjustment is desirable to take up the wear of the abrasive material in order that as the teeth are reduced in cross-section, the diameter of the grinding element may be increased to permit redressing the teeth to their proper contour and dimensions.

The abrasive tooth portions 15 may consist of segments having dove-tailed bases 16 adapted to fit in helical grooves 17 formed in the blocks 5 and the segments may be secured in the grooves by a plurality of set screws 18 as shown in Fig. 5.

In Figs. 3, 4 and 6 I have illustrated another means for securing the segments 15 which comprises providing slots 19 in the under side of the blocks 5. The slots 19 are parallel with the axis of the hub member and are adapted to receive strips 20 that are drawn against the base of the abrasive members 15 and secured by screws 21. This method of fastening the segments firmly

seats them in the grooves 17 and secures them in place.

As shown in Figs. 5 and 6, the lower portion of the abrasive material may be provided with sheet metal liners or clips 22 corresponding in shape to the grooves 17 and dove-tail portion 16 to withstand the pressure of the set screws 18 and to provide a more accurate fitting of the abrasive material in the grooves of the blocks.

It is evident from the foregoing description of my invention that grinding elements made in accordance therewith provide a strong durable structure for grinding gear wheels which by reason of the inserted teeth, is particularly applicable to the grinding of gear teeth of coarse pitch, although it may be modified for grinding gear teeth of relatively fine pitch.

Such a grinding device further facilitates the renewal of the abrasive material and permits quick and simple adjustment to take up the wear.

Although I have described a specific embodiment of my invention it will be obvious to those skilled in the art that various modifications may be made in the details of construction, the manner of securing the abrasive material and the size and proportion of the several co-operating parts without departing from the principles herein set forth.

I claim as my invention:—

1. An abrasive device comprising a slotted hub member, abrasive material secured in supports movably mounted in said slots and means for adjusting said abrasive material.

2. An abrasive device comprising a slotted hub member, movable blocks mounted in said slots, abrasive inserts secured in said blocks and means for adjusting said blocks radially.

3. An abrasive device comprising a slotted hub member, movable blocks mounted in said slots, abrasive inserts secured in said blocks and means for adjusting said blocks radially and axially.

4. An abrasive device comprising a cylindrical hub having angularly spaced axial slots, blocks movably mounted in said slots, a movable collar in said hub, links connecting said collar and said blocks and means for effecting axial movement of said collar.

5. An abrasive device comprising a hollow hub having angularly spaced axial slots in its outer periphery, blocks carrying abrasive tooth segments mounted in said slots, a collar disposed within the hub, links connecting said blocks and collar, another collar in co-operative engagement with said blocks and means for effecting relative adjustment of said blocks and collars.

6. An abrasive device comprising a hollow hub having angularly spaced axial slots in its outer periphery, blocks carrying abrasive tooth segments mounted in said slots, a collar disposed within the hub, links connecting said blocks and collar, another collar in co-operative engagement with said blocks and screw-threaded adjusting means for said collars.

7. An abrasive device comprising a sleeve member having end plates secured thereto and having slots in the outer periphery thereof, blocks provided with abrasive inserts disposed in said slots, a pair of movable collars, one being co-operatively engaged with said blocks by pivotally connecting links and the other engaging one of the end faces of said blocks, a plurality of screws journalled in one of the end plates each having an end in screw thread engagement with one of said collars and means for mounting said device for rotation.

In testimony whereof, I have hereunto subscribed my name this 29th day of October, 1923.

ROBERT W. SCHROTT.