

April 13, 1926.

W. D. BARTLETT

1,580,945

TOOL DRESSER

Filed May 7, 1921

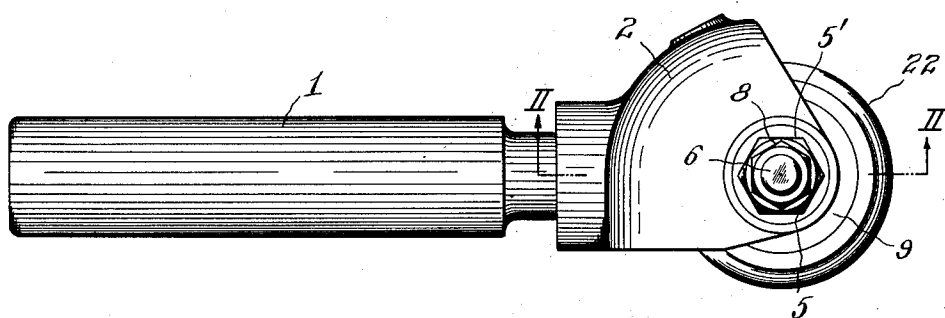


Fig. 1.

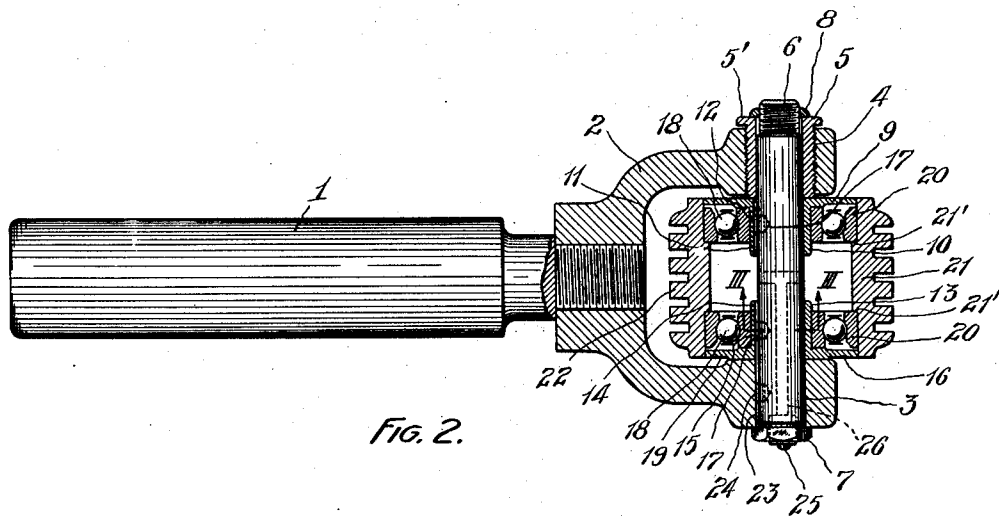


Fig. 2.

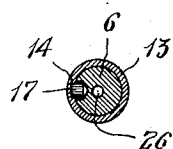


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM D. BARTLETT, OF CLEVELAND, OHIO, ASSIGNOR TO THE ROSS MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TOOL DRESSER.

Application filed May 7, 1921. Serial No. 467,687.

To all whom it may concern:

Be it known that I, WILLIAM D. BARTLETT, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented new and useful Improvements in Tool Dressers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to tools for dressing emery wheels, carborundum wheels and the like, the object being to construct a dressing tool of this class than can be quickly and accurately adjusted to take up the wear in the bearings occasioned by the use of the tool. The invention relates particularly to improvements in a tool constructed for the same purpose and shown, described and claimed in U. S. Letters Patent No. 1,343,876, issued June 15, 1920, to The Ross Manufacturing Company, Cleveland, Ohio.

The annexed drawing and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of the various mechanical forms in which the principle of the invention may be employed.

In said annexed drawing:

Figure 1 represents a side elevation of my improved tool dresser;

Figure 2 represents a plan section, taken in the plane indicated by the line II—II, Figure 1; and

Figure 3 represents a vertical section taken in the plane indicated by the line III—III, Figure 2.

In dressing emery wheels, carborundum wheels and the like by means of a tool such as is described in U. S. Letters Patent No. 1,256,167, issued February 12, 1918, to The Ross Manufacturing Co., Cleveland, Ohio, the severe strain thrown upon the tool causes the bearings to wear, resulting in the "chattering" of the tool and a consequent production of an uneven cutting face on the wheel to be dressed, which, as will be readily understood by those skilled in the art, is particularly undesirable. In order to overcome this defect, I have constructed a dressing tool having an accurate adjusting means by which the bearings upon which the cutting member rotates may be perfectly ad-

justed to compensate for the wear in the bearing surfaces.

Referring to the annexed drawing, in which similar ordinals refer to similar parts in the several views, the illustrated embodiment of my invention consists in a stem or bit 1, by means of which the tool is secured to a tool rest when in use, formed with a substantially U-shaped yoke 2 having a cylindrical aperture 3 formed laterally through one of its arms near the extremity thereof and a larger and threaded aperture 4 formed laterally through the other arm thereof. Said apertures 3 and 4 are in axial alinement. Co-operating with the threaded aperture 4 is an externally threaded sleeve 5 having a hexagonal head 5'. Intersecting the apertures 3 and 4 and supported by one of the arms of the yoke 2, and the sleeve 5, is a bolt member 6 forming a shaft for a rotatable dressing member hereinafter more fully mentioned. The bolt member 6 is held to position by means of a head 7 and the sleeve 5 is locked in position, after having been suitably adjusted, for the purpose and in the manner hereinafter fully described, by a lock-nut 8.

Forming a rest or stop for the inner face of the sleeve 5 is an annular flange 9 formed integral with a sleeve portion 10, which sleeve portion is designed to fit about the shaft 6, and has formed therein a key-way 11, a key 12 carried by the shaft 6 fitting within the said key-way 11, and securing the sleeve 10 against rotation upon the shaft 6. Spaced somewhat from the sleeve 10 is a second and similar sleeve 13 surrounding the shaft 6, having a key-way 14 adapted to receive a key 15 secured to the shaft 6, and also having a flange 16 fitting against the inner face of that arm of the yoke 2 which is formed with the aperture 3.

Upon each of the sleeves 10 and 13 is fitted an annular grooved ring 17 which rings form the inner race members of ball bearings, the balls 18 of which are retained by the usual cage members 19. The outer cone members 20 of the said ball bearings are longitudinally adjustable of the shaft 6 and arranged to engage opposite shoulders 21' of an inwardly extending head 21 formed upon the inner face of a hollow rotatable dressing member 22. The outer side of one of the race members 17 is arranged

to lie in contact with the inner face of the annular flange 16, while the outer face of the other race member 17 is arranged to lie in contact with the inner face of the annular flange 9. The sleeve 10 and hence the last-mentioned race member 17 are mounted in sliding relation to the shaft 6, while the sleeve 13 and, hence, the first-mentioned race member 17 is rigid relative to said shaft 6. As mentioned above, the outer face of the flange 9 forms a stop for the externally threaded sleeve 5.

The arm of the yoke 2 which is formed with the aperture 3 is also formed with a key-way 23, and a key 24 carried by the shaft 6 fits in said key-way 23 to prevent the turning of the shaft 6 relative to said arm. A lubricant valve is shown at 25, which communicates with the lubricant passage 26 formed longitudinally through a portion of the shaft 6, whence oil will be forced into the hollow space within the cylindrical cutting member 22. The oil will find its way from here into the ball bearings, thus applying lubricant to insure an easy operation of the dressing tool.

It is evident from the accompanying drawing and the foregoing description that, as the bearings are worn, the two sets of bearings can be adjusted relatively closer to each other by means of tightening up the externally threaded sleeve 5 the proper amount. The pressure of the inner face of the said sleeve 5 pushes the annular flange 9 and consequently the adjacent race-members 17 and 20 inwardly and the pressure upon the head 21 causes the other race member 20 to move outwardly, thus taking up the wear in the ball bearings. The comparative amounts of movement of the two race members 20 will depend upon the comparative amounts of wear upon the respective balls 18 of the two bearings.

What I claim is:

1. The combination of a rotatable member; a yoke shaped supporting device; a shaft for said member in the arms of said device; one of said arms being formed with an enlarged threaded aperture intersected by said shaft; an externally threaded sleeve surrounding the shaft and cooperating with the threads of said aperture, and a pair of ball bearings between the member and said shaft and including inner and outer race-members, the inner race member of one of said bearings, the outer race members of both of said bearings, and said rotatable member being longitudinally adjustable relatively to the shaft, said sleeve engaging the adjustable inner race member for crowding said longitudinally adjustable members together and adjusting both of said bearings by the adjustment of said sleeve.

2. The combination of a rotatable member; a yoke shaped supporting device; a

shaft for said member in the arms of said device, one of said arms being formed with an enlarged threaded aperture intersected by the shaft; an externally threaded sleeve surrounding the shaft and cooperating with the threads of said aperture; and a pair of ball bearings between the member and the shaft and including inner and outer race members, the inner face of said member being formed with shoulders against which the outer race members of said bearings are respectively fitted, the inner race member of one of said bearings, the outer race members of both of said bearings, and said rotatable member being longitudinally adjustable relatively to said shaft, said sleeve being arranged to advance the adjustable inner race member and advance the outer race members and said rotatable member relatively to the opposite inner race member.

3. The combination of a rotatable member; a shaft; a supporting housing, ball bearings interposed between said shaft and the outer ends of said rotatable member, each such bearing including an inwardly movable element with one of said elements held in place by the adjacent side of the supporting housing; and a sleeve mounted in the other side of said housing through which one end portion of said shaft extends and movable longitudinally of the latter; the inner end of said sleeve engaging the outer end of the adjacent movable element of the corresponding ball bearing to advance the latter and the opposite end movable element into the opposite ends of the rotatable member the other end of said shaft being provided with a head whereby said shaft is fixed in one direction of longitudinal movement.

4. The combination of a rotatable member; a shaft; a supporting housing including a yoke having two arms respectively adjacent to opposite ends of said rotatable member; a shaft; two ball bearings interposed between said shaft and the outer end of said rotatable member, each such bearing including an inwardly movable element whereby wear in said bearing may be compensated for; and a sleeve mounted in one of said yoke arms through which one end portion of said shaft extends and provided with threads whereby it may be adjusted longitudinally of said shaft; the inner end of said sleeve being arranged to advance the adjacent movable member of the corresponding ball bearing into the adjacent end of the rotatable member and move the latter over the opposite movable element to abut the same against the supporting housing; the other end of said shaft being provided with a head whereby said shaft is fixed in one direction of the shaft's axis; said sleeve and shaft being fixed relatively to each other in the other direction of the shaft's axis.

5. The combination of a rotatable member; a shaft; a supporting housing; ball bearings interposed between said shaft and the outer ends of said rotatable member, each such bearing including an inwardly movable element with one of said elements held in place by the adjacent side of the supporting housing; and a sleeve mounted in the other side of said housing through which one end portion of said shaft extends and movable longitudinally of the latter; the inner end of said sleeve and the outer end of the adjacent movable element of the corresponding ball bearing being operatively related whereby the movement of the former inwardly will be communicated to the latter and advance the movable elements into the opposite ends of the rotatable member; the other end of said shaft being provided with a head whereby said shaft is fixed in one direction of longitudinal movement.

6. The combination of a cylindrical abrading member provided with an axial bore; a yoke-shaped support; a shaft passing through said bore and the arms of said support and supporting said abrading member between the yoke's arms; ball-bearings interposed between the outer ends of said abrading member and said shaft and including inner and outer ball races and inter-

posed balls; one of the inner races being in fixed relation to one arm of said yoke-shaped support; and a threaded sleeve in the other arm of said support and adjustable longitudinally of said shaft; said sleeve being arranged to transmit its inward movement to the other inner ball race.

7. The combination of a cylindrical abrading member provided with an axial bore; a yoke-shaped support; a shaft passing through said bore and the arms of said support and supporting said abrading member between the yoke's arms; ball-bearings interposed between the outer ends of said abrading member and said shaft and including inner and outer ball races and interposed balls; dust-washers respectively bearing against the outer ends of the inner ball races; one of the said washers and its abutting dust-washer being held in fixed relation to the adjacent yoke arm; and a threaded sleeve in the other arm of said support and adjustable in the direction of the axis of said shaft, said sleeve being operatively related to the adjacent dust cap, whereby the inward movement will be transmitted thereto and to the corresponding inner ball race.

Signed by me, this 23rd day of March, 1921.

WILLIAM D. BARTLETT.