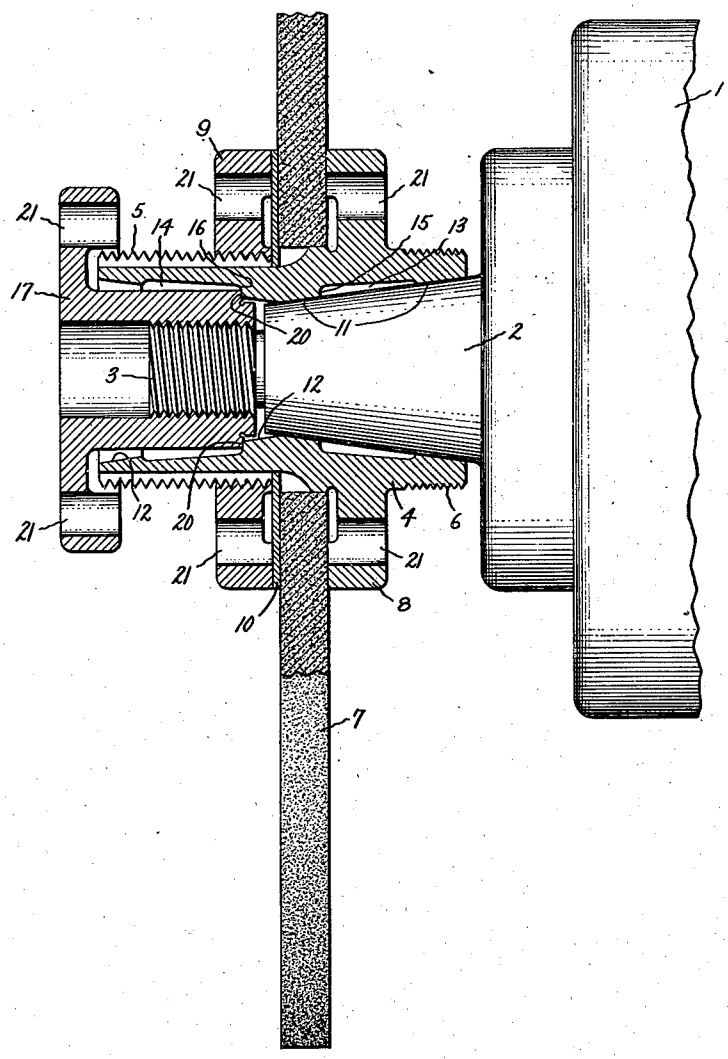
April 16, 1946. C. D. PAUL 2,398,664

ADAPTER FOR GRINDING WHEELS

Filed Sept. 29, 1943



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Patented Apr. 16, 1946 2,398,664

UNITED STATES PATENT OFFICE

2,398,664

ADAPTER FOR GRINDING WHEELS

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Application September 29, 1943, Serial No. 504,280

4 Claims. (Cl. 51—168)

The present invention is an adapter for grinding wheels. It is one of the objects of the invention to provide a simple, relatively inexpensive grinding wheel adapter which may be mounted on the driven spindle of commercial grinding machines. Another object of the invention is to provide a grinding wheel adapter which permits reversal of the grinding wheel without removal from the adapter. A further object of the invention is the provision of a compact grinding wheel adapter unit. A further object of the invention is the provision of a grinding wheel adapter in which the grinding wheel is so mounted and supported that it will run true at all times. Other objects will appear hereinafter.

The novel features which are characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, will best be understood from reference to the following specification when considered in connection with the accompanying drawing in which the single figure is a cross sectional view of a grinding wheel adapter embodying the features of the present invention.

Referring more particularly to the drawing, I have indicated at 1 a spindle housing provided with a tapered driven spindle 2 on which the adapter is mounted. The spindle 2 has an integral, reduced, threaded end portion 3. The grinding wheel adapter comprises a hollow cylindrical member 4 which has screw threaded end portions 5 and 6. Puller means, not shown, may be secured to the screw threaded portions 5 and 6 to facilitate removal of the adapter from the spindle 2. A grinding wheel 7 may be mounted on and secured on the adapter intermediate the ends thereof. An external integral flange 8 on the hollow member 4 engages the grinding wheel 7 and limits its longitudinal movement in one direction. A nut 9, which has the same external diameter as the flange 8, is mounted on the screw threaded portion 5. The grinding wheel 7 is rigidly clamped and held in position between the flange 8 and the nut 9. To prevent the nut 9 from being loosened when the direction of rotation is reversed, a steel lock washer 10 having two oppositely disposed projections which fit into opposite keyways on threaded portion 5 is interposed between the grinding wheel and the nut 9.

The interior of the cylindrical member 4 comprises two similar, oppositely disposed and abutting tapered bearing surfaces 11 and 12, each having the same taper as the spindle 2. Each bearing surface has a circumferential recess 13 or 14 which provides an internal circular shoulder 15 or 16 respectively which is perpendicular to the axis of the adapter and which in operation is positioned adjacent the outer end portion of the tapered spindle 2. A nut 17, engages the screw threaded portion 3 of the driven spindle 2. The nut 17 has a reduced inner end portion providing a circular shoulder 20 which is perpendicular to its axis and adapted to engage the shoulder 15 or 16 on the hollow member 4 and thereby hold the latter in position on the driven spindle 2. Since the nut 17 contacts the cylindrical member 4 only at a point very close to the outer end of the driven spindle rather than at the outer end of the hollow member 4, perfect alignment is obtained between the parts during operation and the grinding wheel 7 always runs true. Circular openings 21 on each of the nuts 17 and 9 and in the flange 8 permit easy adjustment of such parts.

When the grinding wheel becomes worn down on one side, the nut 17 is removed and the cylindrical member 4 and attached grinding wheel are pulled from the spindle 2 and reversed thereon in which position the tapered surface 12, rather than the surface 11, contacts the driven spindle 2. The shoulder 20 on the nut 17 will then engage the shoulder 15 to hold the adapter in its new position on the driven spindle. The nut 17 is made quite large so that it may be tightened or loosened easily by hand thereby eliminating the necessity for tapping the nut tight or loose with consequent injury to ball bearing type spindles.

Since the grinding wheel 7 may be reversed on the driven spindle without removing the wheel from the adapter, a saving of time is effected when such change is made. A further advantage of the present adapter is that when one side of the grinding wheel is worn, the other side may be employed without redressing the wheel. Since the grinding wheel is mounted at a point substantially equidistant from the ends of the cylindrical member 4, a compact structure is obtained. Furthermore, since the nut 17 is adapted to engage shoulder 15 or 16 at a point closely adjacent the tapered end of spindle 2, the grinding wheel will always be held on the spindle in such a manner that it will run dead true in either position of the wheel. On some machines where the driven spindle is double-ended the use of the present adapter effects considerable saving in finishing time since it is possible to use either end of the spindle and at the same time employ the grinding wheel either way to the best advantage.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A grinding wheel adapter comprising a reversible, hollow cylindrical member having oppositely disposed, tapered internal bearing surfaces, means for mounting a grinding wheel on said member at a point substantially equidistant from the ends thereof, means for rigidly holding said grinding wheel in position on said cylindrical member, a shoulder on the inner surface of said cylindrical member and intermediate the ends thereof, and means engaging said shoulder to hold said member in position on a driven spindle having the same taper as said surfaces.

2. A grinding wheel adapter comprising a hollow cylindrical member which may be mounted on a tapered driven spindle, said member having internal, similar, but oppositely disposed, abutting tapered bearing surfaces adapted to fit directly onto the tapered surface of said driven spindle, each of said internal tapered surfaces having a recessed portion providing a circular shoulder thereon, means for mounting a grinding wheel and securing it in position on said member, and means adapted to engage said circular shoulder to hold said adapter in position on said driven spindle.

3. A grinding wheel adapter comprising a hollow cylindrical member which may be secured in position on a tapered driven spindle, means for mounting a grinding wheel on said member, said member having similar internal, but oppositely disposed, tapered abutting bearing surfaces, each of said surfaces having a circumferential recess provided with a circular shoulder adjacent the point of intersection of said tapered bearing surfaces, and means adapted to engage said shoulders and said driven spindle.

4. A grinding wheel adapter comprising a hollow cylindrical member having oppositely disposed internal bearing surfaces, means for mounting a grinding wheel on said member, each of said internal bearing surfaces being adapted to cooperate with a similar bearing surface on a driven shaft, each of said bearing surfaces on said member having a recess therein providing a circular shoulder, and means engaging said shoulder and said driven shaft to maintain said adapter in position on said driven shaft.

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