C. H. SANDFORD.

CYLINDER POLISHING TOOL.

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1,413,876. Patented Apr. 25, 1922.

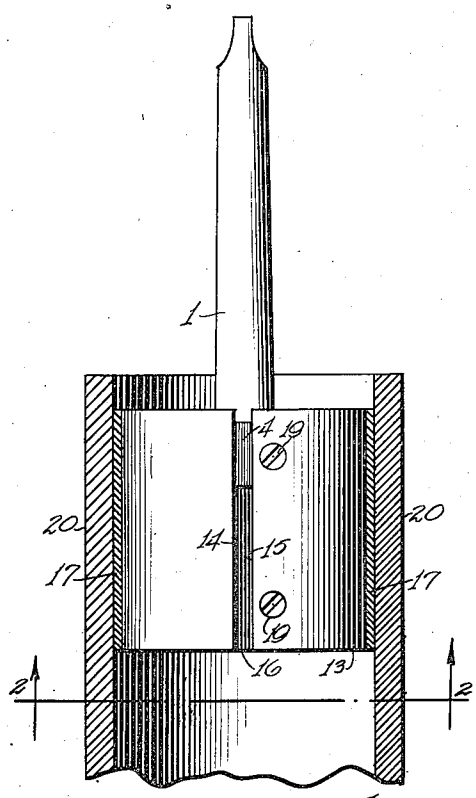


FIG. 1.

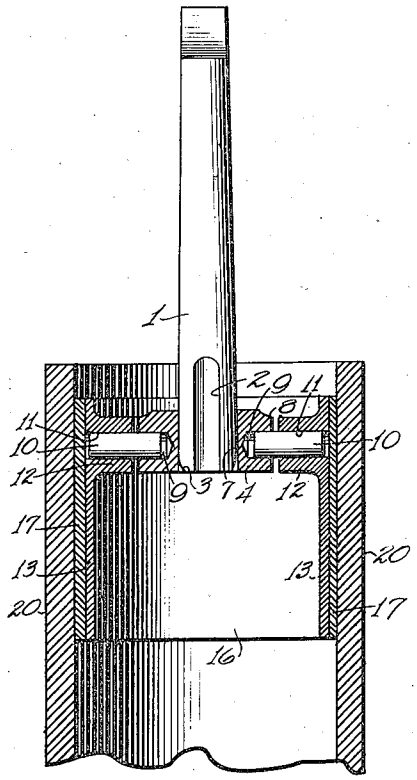


FIG. 4.

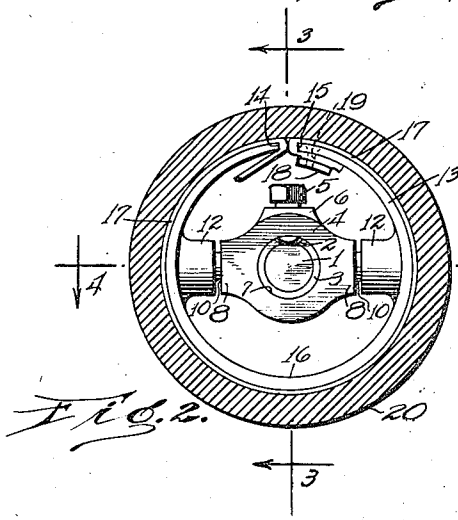


FIG. 2.

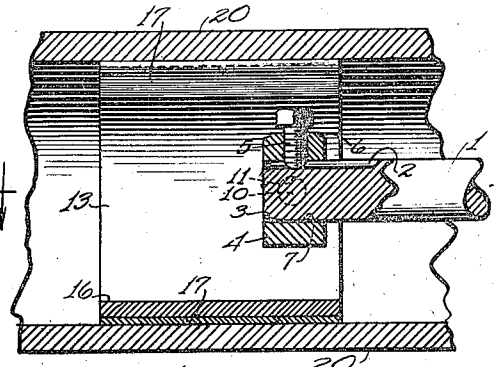


FIG. 3.

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CYLINDER-POLISHING TOOL.

1,413,876. Specification of Letters Patent. Patented Apr. 25, 1922.

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To all whom it may concern:

Be it known that I, CLAUDE H. SANDFORD, a citizen of the United States, and a resident of Fayetteville, in the county of Washington and State of Arkansas, have invented a new and useful Improvement in Cylinder-Polishing Tools, of which the following is a full, clear, and exact description.

My invention relates to improvements in cylinder polishing tools, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device of the character described in which an abrasive agent is maintained in operative contact with the inner wall of a cylindrical member.

A further object of my invention is to provide a device for polishing and grinding cylinders in which a rotatable substantially ring shaped member carrying an abradant on its outer wall is rotatably supported within a cylinder in constant engagement with the inner wall of the cylinder to occasion the abrading of the inner wall as required.

A further object of my invention is to provide a device of the type described in which the abrasive agent may be replaced at will.

A further object of my invention is to provide a device of the type described in which means is provided for successively rotatably supporting substantially ring shaped abradant carrying members of varying sizes.

A further object of my invention is to provide in a device of the type described an abradant carrying member having the form of an annulus slitted from end to end and tapering uniformly toward its transverse edges.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Fig. 1 is a central vertical section showing the use and application of the device,

Fig. 2 is a section along the line 2—2 of Fig. 1,

Fig. 3 is a section along the line 3—3 of Fig. 2,

Fig. 4 is a section along the line 4—4 of Fig. 2.

In carrying out my invention, I provide a spindle or shank 1 that is formed at one end thereof for engagement with a drill press or other driving device. The spindle 1 is fashioned with a longitudinally extending groove 2 adjacent its other end which is beveled at 3. A collar 4 is mounted on the grooved end portion of the spindle 1 and is maintained in adjusted position thereon by a set screw 5 having its shank projected through a threaded opening in an "embossed" portion 6 into the slot 2 and by the engagement of the beveled end portion 3 with a beveled annular shoulder 7 that extends inwardly from the inner wall of the collar 4 at its lower end.

The collar 4 is fashioned to provide diametrically opposed bosses 8—8 each provided with a radially extending recess or socket 9—9. Similar retaining pins 10—10 have their inner end portions disposed in the sockets 9—9 and their outer end portions projected into alined openings 11—11 in diametrically opposed bosses 12—12, that are integral with an abradant carrying member 13, and extend radially through the walls of the latter. The bosses 12—12 are positioned adjacent to one end of the abradant carrying member 13 which has the form of an annulus slitted transversely to provide the normally separated transversely extending edges 14 and 15. The abradant carrying member 13 varies in thickness and tapers uniformly in opposite directions from a point intermediate the bosses 12—12 indicated at 16 to the edges 14 and 15 so that the abradant carrying member is eccentrically disposed with respect to the axis of the spindle 1.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. A suitable abradant, such as an abrasive cloth 17 has an end portion thereof projected between the edges 14 and 15 to lie against the inner wall of the abradant carrying member along the edge 15 and is maintained in adjusted position by a clamping member 18 that is secured to the abradant carrying member by screws 19. The abrasive cloth 17 is then passed around the outer wall of the abradant carrying member and its other end portion

tucked within the latter between the contiguous portion of the abrasive cloth 17 and the edge 14, as clearly shown in Fig. 2.

The device is intended to be used in a machine such as a drill or a lathe and for the purpose of abrading the inner wall of a cylinder to remove tool marks therefrom or to polish the same. The spindle 1 bearing the abradant carrying member 13 is placed in operative engagement with a suitable driving machine (not shown) and relatively arranged with a cylinder 20, as illustrated. Rotation of the spindle 1 will occasion a like movement of the abradant carrying member 13 and the inner wall of the cylinder 20 may be ground to the extent required or polished as desired. In service, the abrasive cloth 17 is covered with a coat of cup grease or the like to insure a satisfactory continued grinding contact of the abrasive cloth with the wall of the cylinder until the former has become worn to such an extent as to be unserviceable. The device may be rendered suitable for use with cylinders of varying sizes by inserting a padding (not shown) between the abrasive sockets 13 and the abradant carrying member. It will be understood that the spindle 1 may be moved longitudinally during the operation of the device so that the inner wall of the cylinder 20 will be treated uniformly for its entire length. It is also to be understood that the abradant carrying member 13 is made of a material having inherent spring qualities and that the same will be slightly compressed when inserted within a cylinder so that the tendency of the edges 14 and 15 to spring apart maintains the abrasive cloth carried on the outer wall of the abradant carrying member in constant operative contact with the inner wall of a cylinder. As previously stated, in order to adapt the tool to cylinders having bores varying slightly in diameter or having oversized bores, or to increase the expansive pressure on the abrasive cloth, a padding member, such as sheets of paper having the required thickness may be placed around the abradant carrying member underneath the abradant cloth. In order to adapt the device to cylinders varying considerably in diameter, a separate abradant carrying member 13 may be provided for the cylinders of each size. These several abradant carrying members 13 will vary only in diameter and may be interchangeably embodied in the device.

Since the abradant carrying member varies in thickness from 16 to the edges 14 and 15, it is in effect an eccentric and on account of its spring qualities, a close pressure fit with the inner wall of a cylinder is insured. The abrasive cloth 17 is arranged relative to the abradant carrying member in the embodiment of the invention illustrated for rotation in a clockwise direction, but obviously may be relatively arranged for rotation in either direction.

I claim:

1. A device of the character described comprising a spindle adapted for operative connection with a driving mechanism, a collar mounted on said spindle to rotate therewith, an abradant carrying member removably mounted on said collar to rotate therewith, said abradant carrying member being formed of a material having inherent spring qualities and having the form of an open annulus tapering uniformly in opposite directions from a line intermediate its length to the opposite edges thereof, said edges being normally separated by the spring action of the annulus, a flexible abrasive member removably secured to said abradant carrying member to cover the outer wall thereof and held in constant operative contact with the inner wall of a cylinder by the spring annulus.

2. A device of the character described comprising a spindle adapted for operative connection with a driving mechanism, a collar mounted on said spindle and arranged to turn therewith, said collar having a pair of oppositely disposed bosses on the surface thereof, each of said bosses being provided with a radially extending socket therein, an abradant carrying member having the form of an annulus slitted from end to end, said abradant carrying member being provided with openings through the walls thereof in registration with the sockets in said bosses, and pins adapted to be removably disposed in said openings and to extend into said socket to occasion the mounting of said abradant carrying member on said collar.

3. A device of the character described comprising a spindle adapted for operative connection with a driving mechanism, a collar mounted on said spindle and arranged to turn therewith, said collar having a pair of oppositely disposed bosses on the surface thereof, each of said bosses being provided with a radially extending socket therein, an abradant carrying member being formed of a material having inherent spring qualities and having the form of an open annulus tapering uniformly in opposite directions from a line intermediate its circumference to the opposite edges thereof, said edges being normally separated by a spring action of the annulus, said abradant carrying member being provided with openings through the walls thereof in registration with the sockets in said bosses, and pins adapted to be removably disposed in said openings and to extend into said sockets to occasion the mounting of said abradant carrying member on said collar.

CLAUDE HERBERT SANDFORD.