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ENGINE CYLINDER BURNISHING TOOL.

APPLICATION FILED JUNE 14, 1920.

1,373,857. Patented Apr. 5, 1921.

Fig. 1

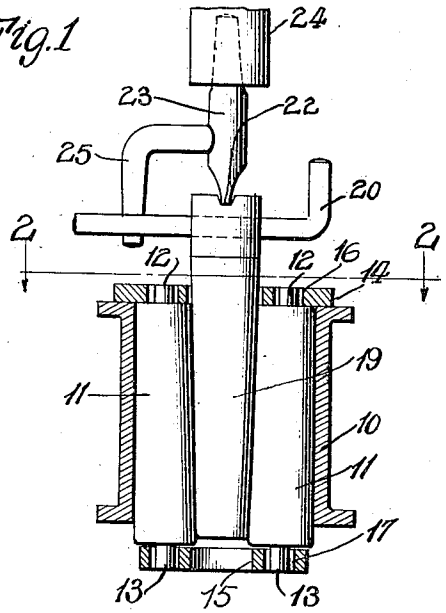


Fig. 3.

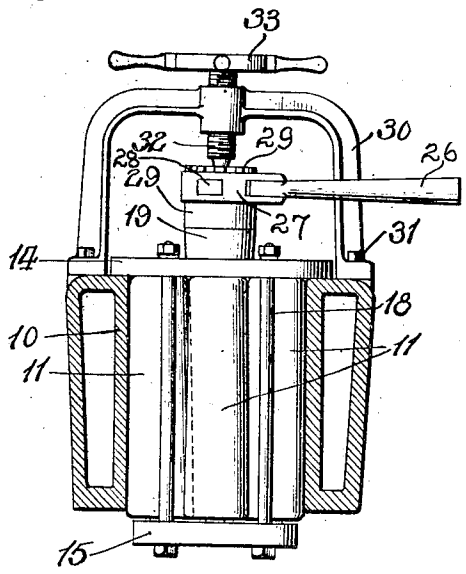
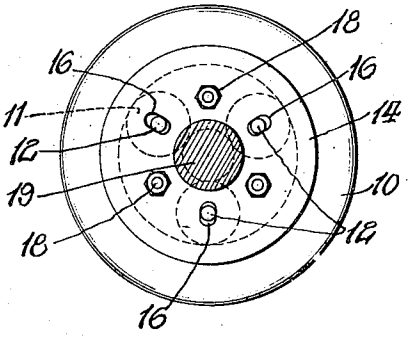


Fig. 2



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ENGINE-CYLINDER-BURNISHING TOOL.

1,373,857. Specification of Letters Patent. Patented Apr. 5, 1921.

Application filed June 14, 1920. Serial No. 388,869.

To all whom it may concern:

Be it known that I, POMPEIN BOSCH, a citizen, subject of the present Government of Roumania, residing at Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Engine-Cylinder-Burnishing Tools, of which the following is a specification.

This invention relates to improvements in engine cylinder burnishing tools, adapted for dressing or burnishing the internal bore of a cylinder, and one of the objects of the invention is to provide an improved, simple, durable, compact and inexpensive portable tool of this character which will be effective and efficient in operation and by the use of which the entire surface of the bore of a cylinder may be dressed or burnished at the same time.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawing illustrating this invention and in which:

Figure 1 is a view partly in side elevation and partly in section showing this improved tool in position in an engine cylinder.

Fig. 2 is a horizontal sectional view taken on line 2—2 Fig. 1.

Fig. 3 is a view similar to Fig. 1 of a modified form of the invention.

Referring more particularly to the drawing the numeral 10 designates an engine cylinder the bore of which it is desired to burnish or dress. The tool embodies a plurality of tapered rollers 11 each provided with trunnions 12 and 13 on opposite ends thereof. The rollers 11 are of a tapered configuration, the taper extending from one end of the roller to the other. These rollers are connected together by means of suitable annular elements or plates 14—15, the element 14 being provided with elongated, radially disposed slots 16 for receiving the trunnions 12 and the element 15 is provided with similar elongated, radially disposed slots 17 for receiving the trunnions 13.

The elements 14 and 15 are connected together in any suitable manner such as by means of tie rods or bolts 18.

The element 14 is of a diameter considerably greater than the internal diameter of the cylinder 10 while the element 15 is of a diameter somewhat smaller than the bore of the cylinder so that in placing the tool in position within the cylinder, the element 15 is dropped through the cylinder so as to permit the element 14 to engage and rest upon the top end of the cylinder for suspending the rollers 11 within the cylinder.

A tapering mandrel 19 coöperates with the rollers 11 and the taper of the mandrel is opposed to the taper of the rollers 11. This mandrel 19 may be of any desired length but is of a length considerably greater than the rollers 11 so that the mandrel may be forced between the rollers to separate them. As the rollers are separated, they will be forced outwardly against the wall of the cylinder. These rollers 11 and the mandrel 19 are constructed of hardened metal such as steel so that when the mandrel 19 is rotated the frictional engagement of the mandrel with the rollers 11 will rotate the latter about their axes and the rotation of the mandrel will also cause the rollers 11 to be rotated bodily in engagement with and about the cylinder wall for burnishing and dressing the wall.

Any suitable means may be provided for rotating the mandrel. In the form of the invention shown in Fig. 1 there is provided a handle 20 which is connected with the projecting end of the mandrel and the end of the mandrel may be provided with a recess 21 adapted to receive the extremity 22 of a dog 23 which latter is connected with the portion 24 of a drill press. The dog 23 is also provided with an arm 25 which engages the handle 20 so that as the drill press is operated the mandrel 19 will be rotated and at the same time the drill press will impart a longitudinal movement to the mandrel to force the same between the rollers 11. After the burnishing operation has been completed, the mandrel 19 may be withdrawn which will allow the rollers 11 to assume positions with respect to each other and the cylinder wall to permit the tool to be readily withdrawn from the cylinder.

In the form of the invention shown in Fig. 3 there is disclosed a means whereby the mandrel may be operated by hand and to that end there is provided a handle 26 having a ratchet structure 27 at one end thereof embodying a pawl 28 which is

adapted to engage a ratchet carried by the end 29 of the mandrel. A yoke 30 may be anchored by any suitable means such as bolts 31 to the end of the cylinder and this yoke extends over the end of the mandrel. An adjusting screw 32 is mounted in the yoke to engage the end of the mandrel and which adjusting screw is adapted to be rotated by means of a suitable hand wheel or handles 33.

With this construction it will be manifest that the operator may actuate the ratchet mechanism 27 by means of the handle 26, with one hand and with the other hand may adjust the screw 32 so as to force the mandrel between the rollers as the work proceeds.

While the preferred forms of the invention have herein been shown and described, it is to be understood that various changes may be made in the details of construction, in the combination and arrangement of the several parts, within the scope of the claims without departing from the spirit of this invention.

What is claimed as new is:

1. An engine cylinder burnishing tool embodying a plurality of rollers having journals at their ends, annular bearing elements at the ends of the rollers and having elongated slots forming bearings for said journals, means connecting the said elements for holding the rollers against displacement with respect thereto, one of said elements being of a diameter greater than the bore of the cylinder and adapted to rest upon the end of the cylinder for supporting the tool, a mandrel adapted to be inserted between the rollers to force the latter against the cylinder wall, and means for rotating the mandrel, the said rollers being rotated about their axes and also around the cylinder wall by frictional engagement with the mandrel.

2. An engine cylinder burnishing tool embodying a plurality of rollers having journals at their ends, annular bearing elements at the ends of the rollers and having elongated slots forming bearings for said journals, means connecting the said elements for holding the rollers against displacement with respect thereto, one of said elements being of a diameter greater than the bore of the cylinder and adapted to rest upon the end of the cylinder for supporting the tool, a mandrel adapted to be inserted between the rollers to force the latter against the cylinder wall, and means for rotating the mandrel, the said rollers being rotated about their axes and also around the cylinder wall by frictional engagement with the mandrel, the said rollers being tapered, and the said mandrel being also tapered, the taper of the mandrel being opposed to the taper of the rollers.

3. An engine cylinder burnishing tool embodying laterally spaced annular elements having radially disposed elongated bearing slots, a plurality of spaced tapered rollers arranged between said elements and having trunnions at their ends journaled in the said slots for free lateral movement with respect to the elements, tie rods connecting the elements, one of said elements being of a diameter less than the bore of the cylinder whereby said element may be passed through the cylinder, means supporting the rollers upon one end of the cylinder, and an oppositely tapered mandrel adapted to be forced between the rollers to separate them, said mandrel being adapted to be rotated to frictionally rotate the said rollers.

4. An engine cylinder burnishing tool embodying laterally spaced annular elements having radially disposed elongated bearing slots, a plurality of spaced tapered rollers arranged between said elements and having trunnions at their ends journaled in the said slots for free lateral movement with respect to the elements, tie rods connecting the elements, one of said elements being of a diameter less than the bore of the cylinder whereby said element may be passed through the cylinder, means supporting the rollers upon one end of the cylinder, an oppositely tapered mandrel, means for forcing said mandrel between the rollers to separate them, and means for rotating the mandrel to frictionally rotate the rollers about their respective axes.

5. An engine cylinder burnishing tool embodying laterally spaced annular elements having radially disposed elongated bearing slots, a plurality of spaced tapered rollers arranged between said elements and having trunnions at their ends journaled in the said slots for free lateral movement with respect to the elements, tie rods connecting the elements, one of said elements being of a diameter less than the bore of the cylinder whereby said element may be passed through the cylinder, means supporting the rollers upon one end of the cylinder, a mandrel having a taper opposite to the taper of the rollers, and being disposed between the rollers, means for rotating the mandrelen to frictionally drive the rollers about their axes, and means for imparting a shifting movement to the mandrel in a direction lengthwise of the rollers and while the mandrel is being rotated.

In testimony whereof I have signed my name to this specification on this 9th day of June, A. D. 1920.

POMPEIN BOSCH.