Feb. 4, 1941. T. CALCAGNI 2,230,639

CYLINDER REBORER

Filed Jan. 3, 1940 3 Sheets-Sheet 1

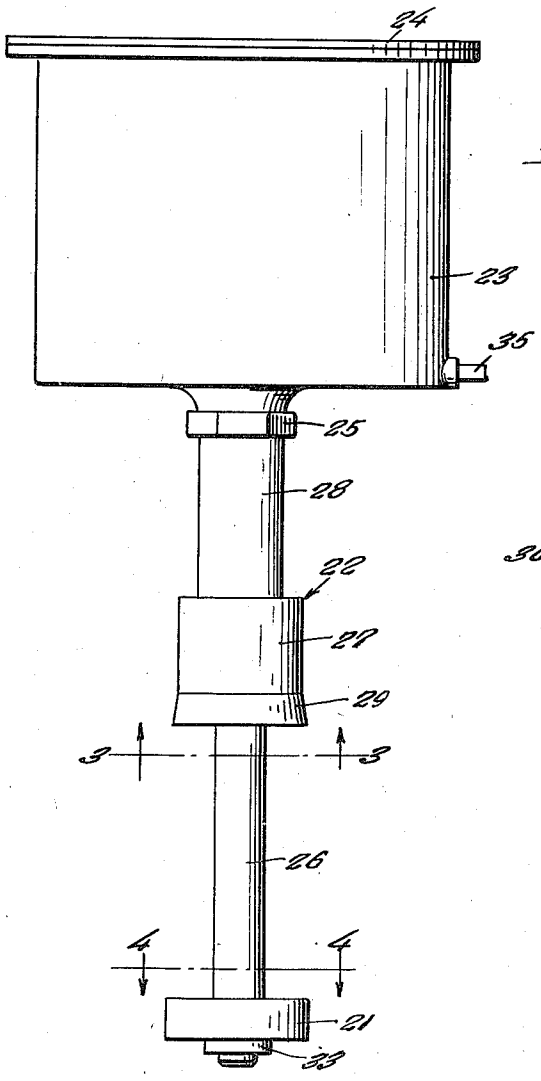


Fig. 1.

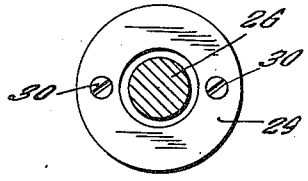


Fig. 3.

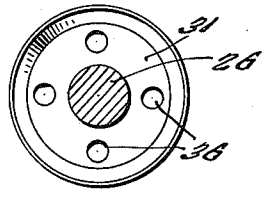


Fig. 4.

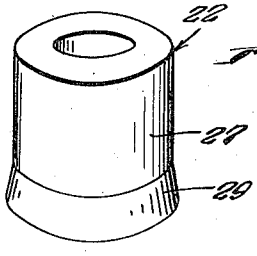


Fig. 5.

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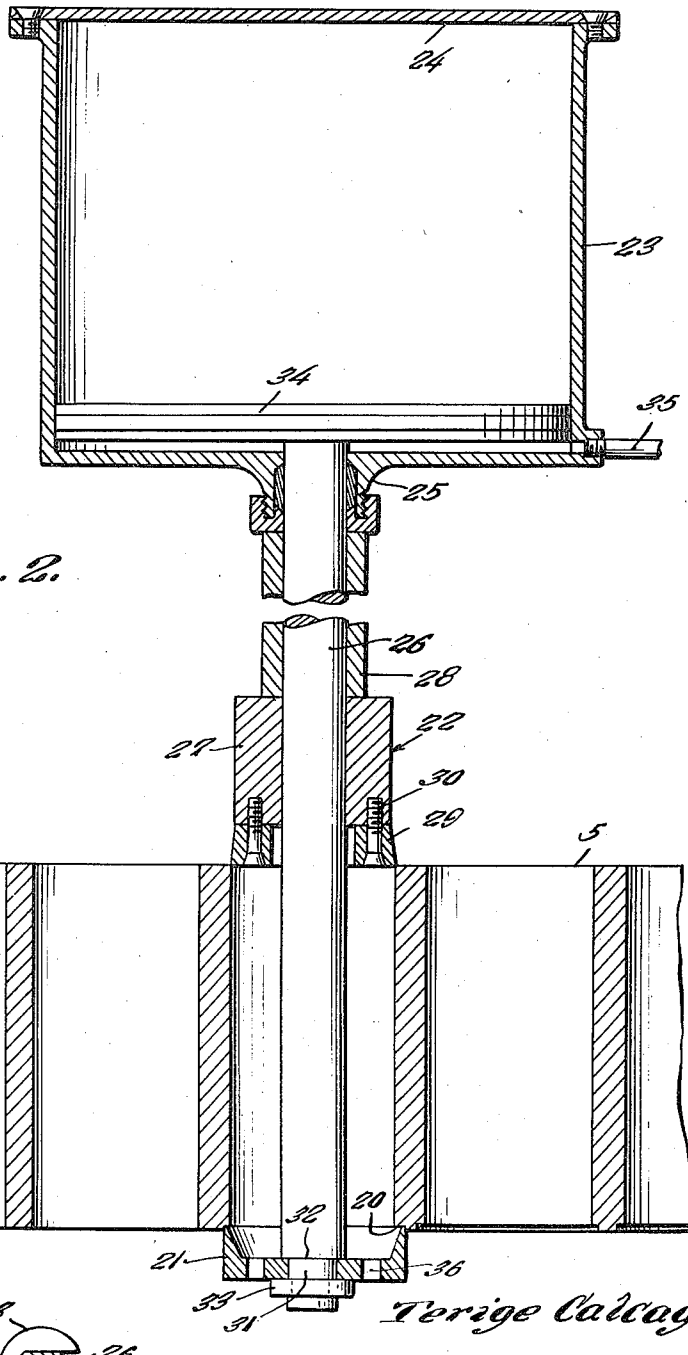


Fig. 2.

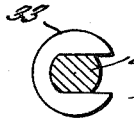


Fig. 6

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CYLINDER REBORER

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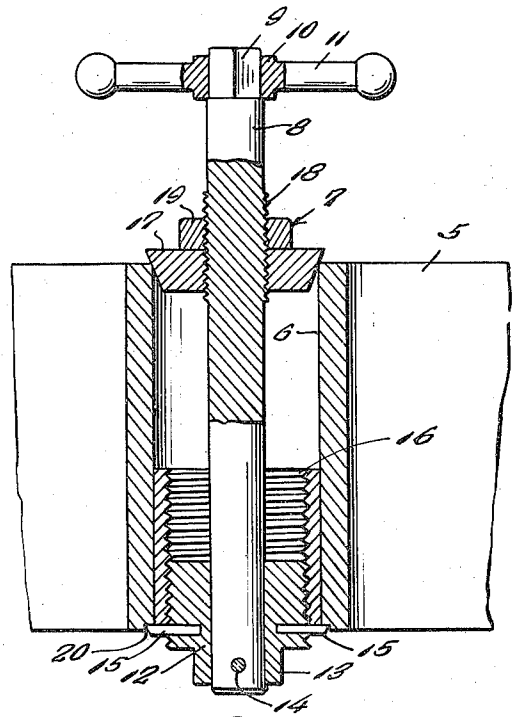


Fig. 7.

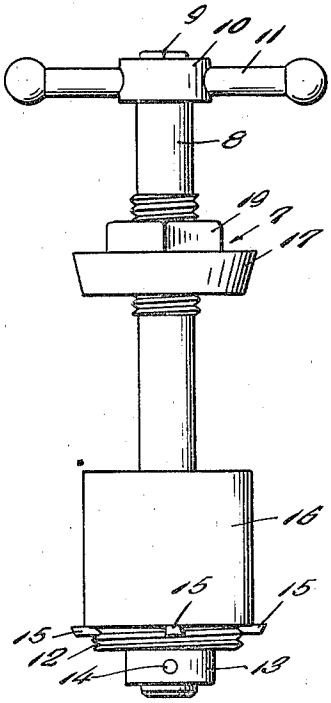


Fig. 8.

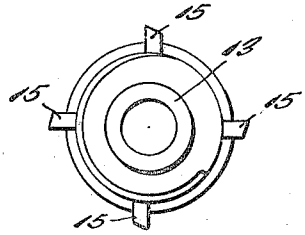


Fig. 9.

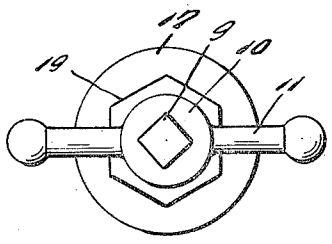


Fig. 10.

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Patented Feb. 4, 1941 2,230,639

UNITED STATES PATENT OFFICE

2,230,639

CYLINDER REBORER

Terige Calcagni, Yonkers, N. Y.

Application January 3, 1940, Serial No. 312,265

2 Claims. (Cl. 77—32)

This invention relates to new and useful improvements in reborers for the cylinders of various types of engines.

The principal object of the present invention is to provide a boring implement which in operation will act to bore a cylinder accurately and without any physical effort on the part of the attendant.

Another important object of the invention is to provide a boring apparatus which includes means for preliminarily scoring the cylinder bore to define a centering indentation for the cutting tool.

Other objects and advantages of the invention will become apparent to the reader of the following specification.

In the drawings:

Figure 1 represents a side elevational view of the boring implement.

Figure 2 is a vertical sectional view through the implement.

Figure 3 is a horizontal sectional view on a line 3—3 of Figure 1.

Figure 4 is a horizontal sectional view on a line 4—4 of Figure 1.

Figure 5 is a perspective view of the cutter unit.

Figure 6 is a sectional view disclosing the slotted washer for retaining the plunger to the plunger rod.

Figure 7 is a fragmentary detailed sectional view showing the seat forming tool.

Figure 8 is a side elevational view of the tool disclosed in Figure 7.

Figure 9 is an elevational view of the cutting end of the tool shown in Figure 8.

Figure 10 is an end elevational view showing the handle end of the tool shown in Figure 8.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the implement shown in Figures 7 and 8 is first used. As shown in Figure 7, numeral 5 denotes the cylinder block in which is the cylinder bore 6. Numeral 7 generally refers to the seat forming implement.

The implement 7 consists of the elongated shaft 8 having the polygonal portion 9 at its upper end disposed into the polygonal opening of the hub 10 of the handle structure 11. The lower end of this shaft 8 is disposed into the bore of the plug 12 which is externally threaded and which is provided with a depending reduced portion 13 diametrically bored to receive the cross pin 14, this pin also passing through the lower end of the shaft 8 to secure the shaft 8 to the said plug 12. The lower portion of the plug 12 is provided with sockets to receive the cutters 15 which have their cutting ends projecting outwardly in the manner substantially shown in Figure 9. Numeral 16 denotes an internally threaded sleeve which is preferably split or capable of expansion when the plug 12 is inserted. As the plug 12 is screwed into the sleeve 16 the sleeve expands against the wall of the bore and acts as an anchor.

Numeral 17 denotes a beveled collar having a threaded bore for receiving the threaded portion 18 of the shaft 8 and has beveled collars adapted to set into the upper end of the bore 6. A cam nut 19 is provided on the threaded portion 18 to fix the location of the collar 17. The collar 17 seats in the upper end of the bore 6 as shown in Figure 7, and as the shaft 8 is rotated, the cutters 15 will cut into the lower end of the cylinder as at 20 and form a seat as shown in Figure 6, into which the cup 21 of the implement generally referred to by numeral 22 can seat.

The implement 22 consists of the air cylinder 23 having the air-tight top closure plate 24 and the packing gland 25 in the bottom thereof through which the plunger rod 26 is slidable. Numeral 27 denotes the cylindrical tool holder between which and the packing gland 25, the sleeve 28 is interposed. The annular cutting tool 29 is secured to the lower end of the tool holder 27 by machine screws 30.

The lower end of the plunger rod 26 is reduced as at 31 to define a shoulder 32 bearing against the cup 21. The lower portion of the reduced portion 31 of the plunger rod 26 is grooved to accommodate the slotted washer 33.

At the upper end of the plunger rod 26 is the plunger 34 and communicating with the lowermost portion of the air pipe 23 is the air supply line 35.

As shown in Figure 2, the cup 21 has its upstanding edge portion nesting in the seat 20. As air is introduced into the cylinder 23, the plunger 34 and rod 26 are actuated, driving the cutter downwardly in the cylinder to perform the boring operation.

As can be seen in Figures 2 and 4, the cup 21 has openings 36 therein for the purpose of permitting particles of borings to drop therethrough, and of course, to also allow circulation of air.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

Having described the invention, what is claimed as new is:

1. A cylinder boring implement comprising an air cylinder, a plunger operative in the cylinder, a rod extending from the plunger and exteriorly of the cylinder, a block on the plunger rod, a cutter carried by the block, a centering cup on the outer end of the plunger rod, and a sleeve interposed between the block and the air cylinder.

2. A cylinder boring implement comprising an air cylinder, a packing gland in the bottom of the cylinder, a piston operative in the cylinder, a rod extending from the piston and through the packing gland, a body on the rod, a cutter carried by the body, a centering cup, the outer end of the rod being provided with a reduced extension defining a shoulder, said cup having an opening for receiving the reduced extension and being adapted to be disposed against the shoulder, removable retaining means on the reduced portion of the rod for holding the cup against the shoulder, said cup having material passing openings therein.

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