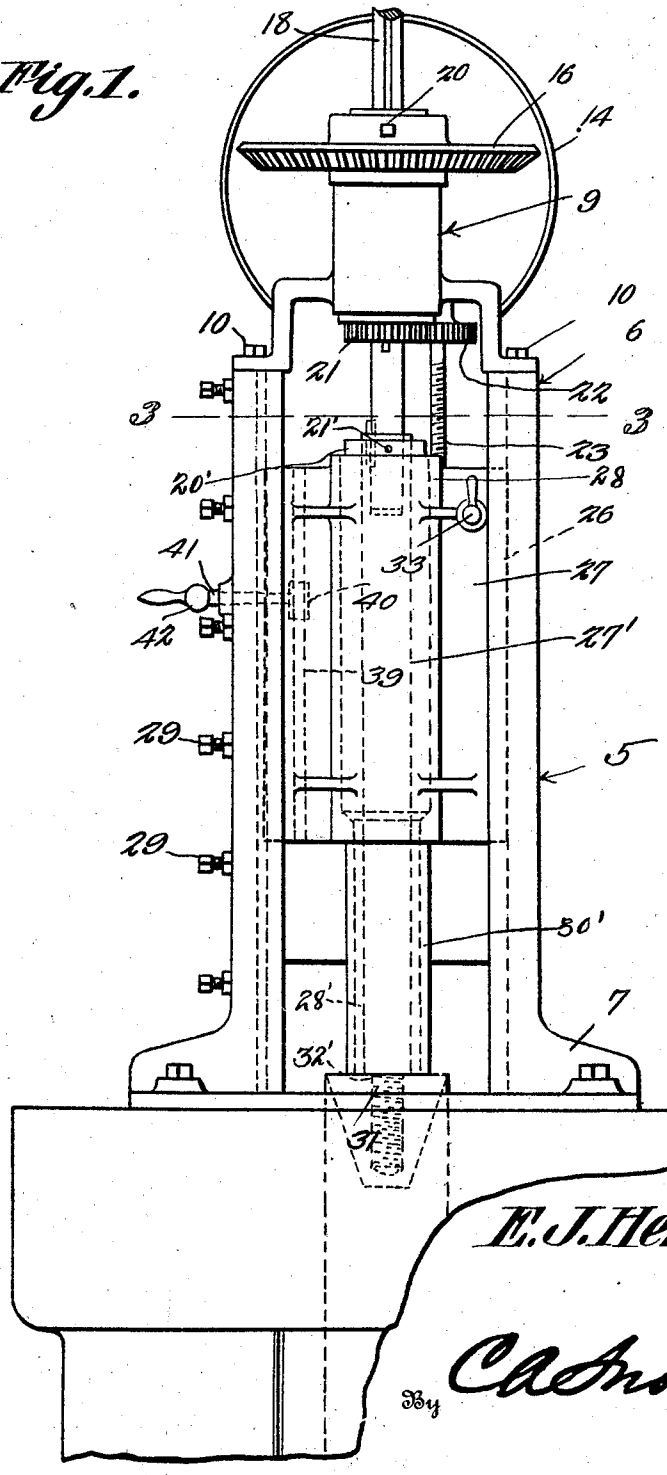
Dec. 28, 1926. 1,612,018

E. J. HERCHERT

BORING MACHINE

Filed Oct. 9, 1923 3 Sheets-Sheet 1

Fig. 1.



E. J. Herchert
Inventor,

By C. A. Snow & Co.
Attorneys.

Dec. 28, 1926. 1,612,018

E. J. HERCHERT

BORING MACHINE

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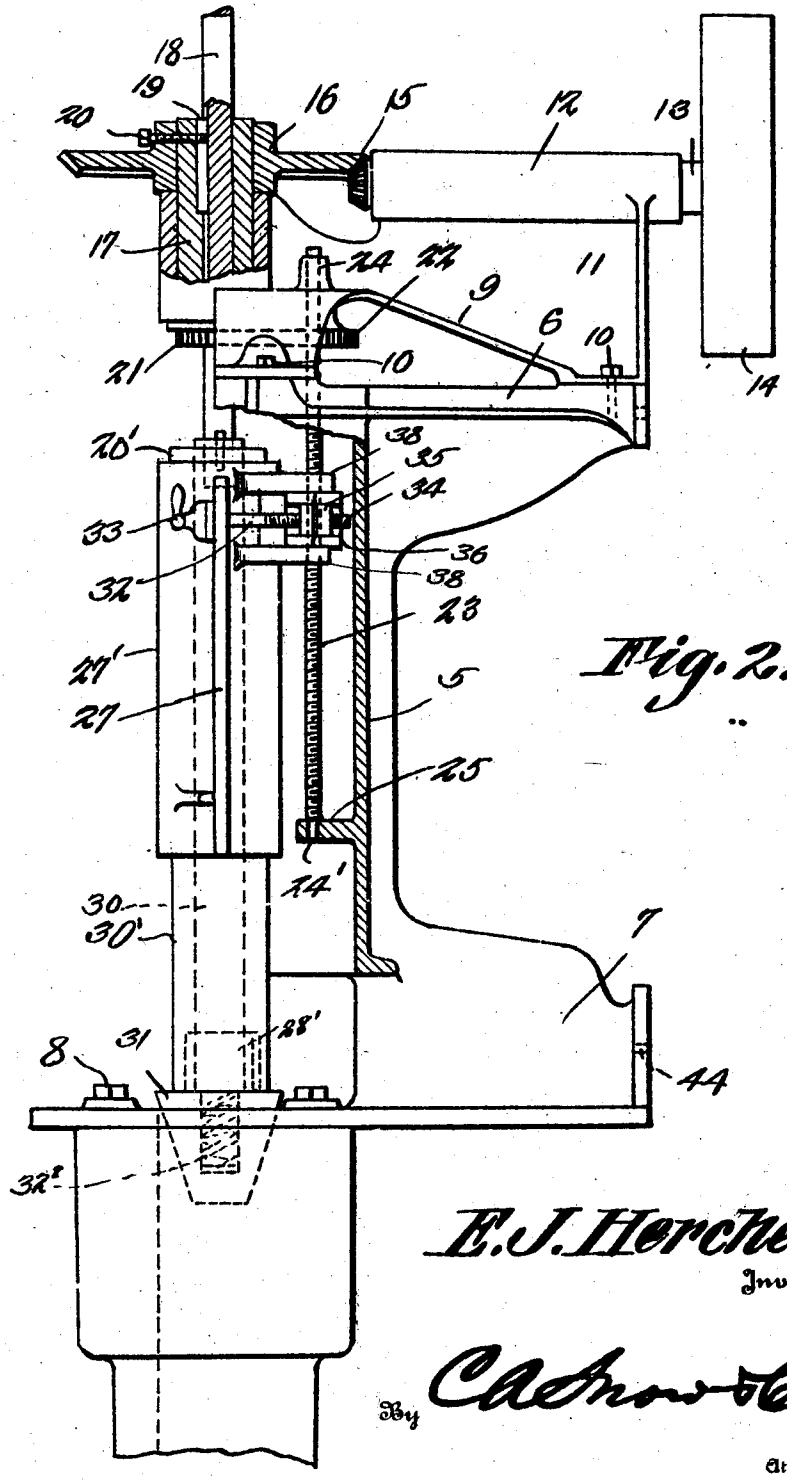


Fig. 2.

E. J. Herchert
Inventor,

By Cachow & Co.
Attorneys.

Dec. 28, 1926.

E. J. HERCHERT

1,612,018

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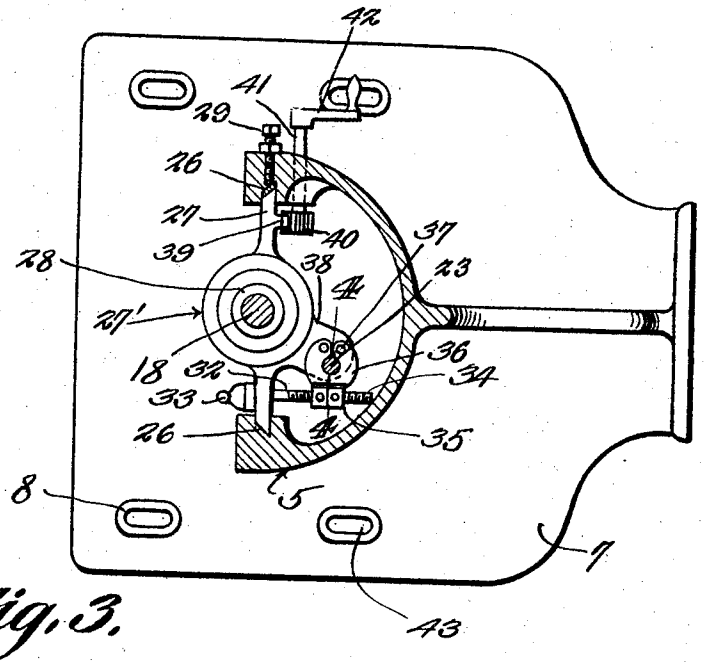


Fig. 3.

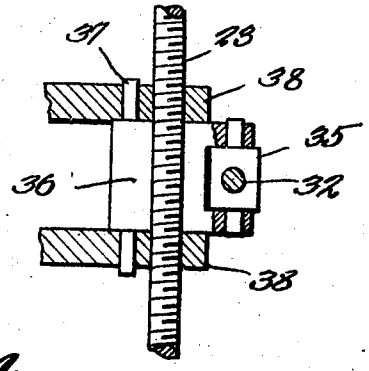


Fig. 4.

E. J. Herchert

Inventor,

By Cashow & Co.

Attorneys.

Patented Dec. 28, 1926. 1,612,018

UNITED STATES PATENT OFFICE.

EDWIN J. HERCHERT, OF GUTTENBERG, IOWA.

BORING MACHINE.

Application filed October 9, 1923. Serial No. 667,539.

This invention relates to a machine especially designed for reboring cylinders of engines, the primary object of the invention being to provide a device of this character which may be accurately centered over the cylinder under operation to insure a true boring thereof.

Another object of the invention is to provide a machine of this character which will automatically feed the boring head through the cylinder under operation to the end that every portion of the wall of the cylinder will be engaged by the boring head.

Another object of the invention is to provide means for releasing the feed screw to permit the boring head to be readily removed from the cylinder under operation.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a front elevational view disclosing the machine as positioned on a cylinder block.

Figure 2 is a side elevational view of the same.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Figure 4 is a sectional view taken on line 4—4 of Figure 3.

Referring to the drawings in detail, the machine includes a frame indicated generally by the reference character 5 which frame is formed with a head 6 and a base 7.

The base 7 is formed with suitable bolt openings to receive the bolts 8 whereby the machine may be readily and easily secured to a cylinder block in a manner to prevent movement of the machine while the same is in operation and insure an accurate operation of the boring head.

The reference character 9 designates a removable supporting member which is bolted to the head 6 of the frame by means of bolts 10. Extending upwardly from the removable supporting member is a flange 11 which is formed with a tubular bearing 12 in which the operating shaft 13 is mounted, the shaft 13 carrying the pulley 14 at one end thereof, which pulley may receive motion from a suitable power device not shown through a belt or other suitable medium.

The tubular bearing 17 is connected to the shaft 18 through the medium of the key 19 which is held in a groove formed in the shaft 18 as by means of the set screw 20 that extends into a suitable opening in the key 19, so that rotary movement of the beveled gear 16 will result in a relative rotary movement of the shaft 18 and at the same time allow the shaft 18 to move vertically to accomplish the purpose of the invention.

The refernce character 21 designates a pinion which is carried at the lower end of the tubular bearing 17 which pinion meshes with the pinion 22 that is mounted in suitable bearings in the member 9.

Operated by the pinion 22 is a feed screw 23 that has its upper end mounted in the bearing 24 while the lower end thereof is mounted to operate in the bearing 24′ of the arm 25.

The frame 5 is curved in a manner as shown by Figure 2 of the drawing, and is provided with longitudinal grooves 26, which grooves accommodate the ribs 27, which construction provides a guide for the bearing support 27′ that is tubular in formation to receive the bearings 28 and 28′.

Adjusting screws 29 extend along the body portion of the frame and engage the outer edge of the ribs 27 at one side of the bearing support 27′ whereby the bearing support 27′ may be restricted in its movements to insure against the support and boring member being fed too rapidly through the cylinder under operation. As shown the shaft 18 at the lower end, is tapered in the upper end of the bar or shaft 30 which receives the boring head at the lower end. A thrust collar 20′ is fitted on the bar 30 and held thereon by means of a pin 21′ driven through collar 20′, bar 30 and shaft 18. The bearing support 27′ receives the bearings 28 and 28′, that carry the bar or shaft 30 and permit the shaft to rotate therein. The lower portion of the bearing support 27′ is reduced to receive a sleeve 30′ and is further reduced at its lower end to receive the interchangeable cone 31 which engages the sleeve 30′, at 31^2 which cone permits the accurate setting of the machine to the cylinder walls. After the machine is secured to the cylinder under operation, the bearing support is moved back by means of the crank 42. By

imparting motion to the shaft 18, the bar 30 is rotated, whereby power is transmitted to the boring head not shown.

Formed in the rib at one side of the bearing support, is an opening to accommodate the screw 32 which is provided with an operating handle 33 at one end thereof, the inner end being oppositely threaded as at 34 to cooperate with oppositely threaded openings in the extensions 35 of the sectional nut 36, the sectional nut being pivotally supported at 37, between the ears 38. Thus it will be seen that upon movement of the screw 34, the sections of the nut may be moved into and out of cooperation with the threads of the feed screw 23, so that rotary movement may or may not be imparted to the bearing support, at the will of the operator.

On the opposite rib 27 is a rack bar 39 which cooperates with the pinion 40 mounted on the inner end of the shaft 41, there being provided an operating handle 42 on the outer end of the shaft 41, imparting rotary movement to the pinion 40, which in turn, through the rack bar 39 moves the bearing support vertically. It is to be understood that after the boring head has accomplished its purpose, the sectional nut 36 is moved to disengage the feed screw, whereupon the bearing support, together with the boring head is withdrawn from the cylinder by rotation of the shaft 41.

In order that the frame of the machine may be properly positioned, elongated openings 43 are provided in the base 7 which elongated openings accommodate the bolts 8 and permit of slight adjustment of the frame 5 with respect to the cylinder block on which the same is positioned, to insure a true centering of the boring head within the cylinder.

It might be further stated that due to the construction of the frame, the device may be secured to the supporting table by means of bolts passed through the openings 44 formed in the head 6 and base 7 and the device used as an attachment on a lathe.

What is claimed is:—

In a cylinder boring machine, a frame constructed for mounting on a cylinder block, a bearing support movable longitudinally of the frame, ribs on the bearing support, a bearing member mounted on the support, a boring bar carried by the bearing member, a feed screw mounted on the frame, arms extending laterally from the bearing member and having openings to accommodate the feed screw, a sectional nut disposed between the arms and operating over the feed screw to raise and lower the boring member, said sectional nut including pivoted members having extensions formed with openings, said openings being threaded in opposite directions, a screw extending transversely through one of the ribs of the bearing support and having oppositely threaded portions fitted in the oppositely threaded openings of the sectional nut, said screw adapted to move the section of the nut into and out of engagement with the feed screw to control the movement of the bearing member, and means for rotating the boring bar.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

EDWIN J. HERCHERT.