A. STORM & E. C. O'HAIR.

BORING MACHINE.

APPLICATION FILED JAN. 5, 1915.

**1,146,665.** Patented July 13, 1915.

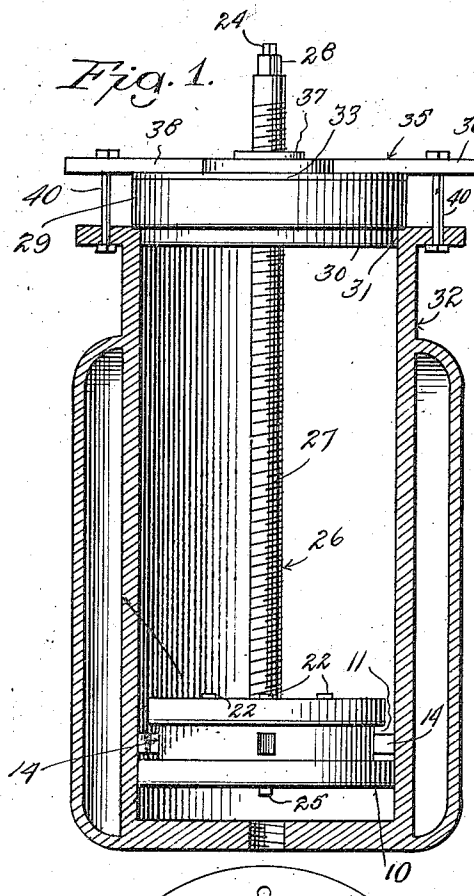


Fig. 1.

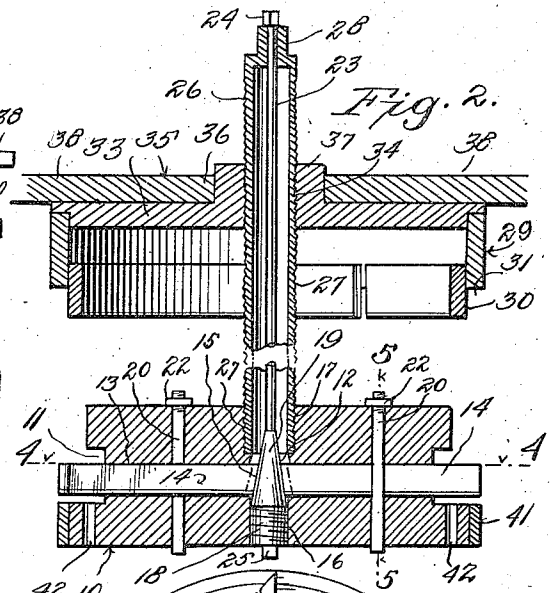


Fig. 2.

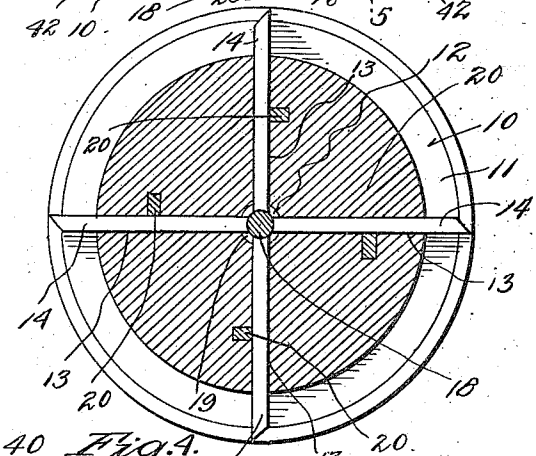


Fig. 4.

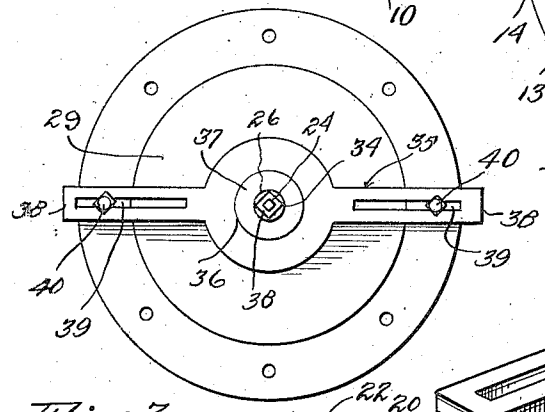


Fig. 3.

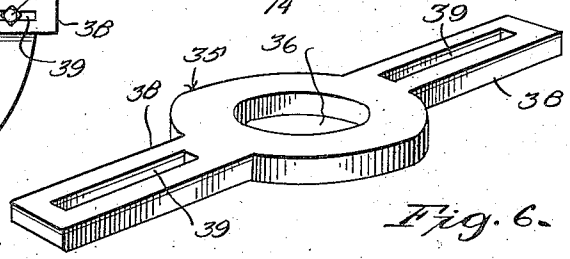


Fig. 6.

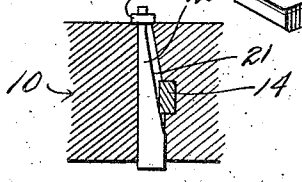


Fig. 5.

Witnesses

MacCartee

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# UNITED STATES PATENT OFFICE.

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## BORING-MACHINE.

1,146,665. Specification of Letters Patent. Patented July 13, 1915.

Application filed January 5, 1915. Serial No. 626.

*To all whom it may concern:*

Be it known that we, ADOLPH STORM and EDWARD C. O'HAIR, citizens of the United States, residing at Thompson, in the county of Winnebago, State of Iowa, have invented certain new and useful Improvements in Boring-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to boring machines and particularly to a type adapted for use in reboring the cylinders of explosive engines.

The object of the invention resides in the provision of a device of the character named embodying an improved construction whereby the reboring of cylinders may be accomplished in an efficient, easy and quick manner.

A further object of the invention resides in the provision of a device of this character which can be used in connection with cylinders of different diameters, and which can be manufactured at a comparatively small cost.

With the above and other objects in view the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully described and particularly pointed out in the appended claims.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters of reference denote corresponding parts in the several views, and in which—

Figure 1 is a vertical section through the cylinder of an explosive engine showing the invention applied; Fig. 2, a vertical section through the invention; Fig. 3, a plan view of what is shown in Fig. 1; Fig. 4, a section on the line 4—4 of Fig. 2; Fig. 5, a section on the line 5—5 of Fig. 4, and Fig. 6, a perspective view of the feed plate holder.

Referring to the drawings the invention is shown as comprising a circular head 10 having a circumscribing groove 11 formed in its periphery, the head being wider on one side of said groove than on the other. The head 10 is provided with a central longitudinal passage 12 and a plurality of radial passages 13 communicating at their inner ends with the passage 12. The outer ends of these passages 13 open through the bottom of the groove 11. Slidably adjustable in each passage 13 is a cutter 14 the inner end of which is beveled as at 15. The passage 12 on one side of the passages 13 is threaded as at 16 and also threaded on the other side of said passages 13 as at 17. Engaged with the threads 16 is a cutter adjusting head 18 having a tapered portion 19 adapted for coöperation with the beveled ends 15 of the cutters 14 and whereby longitudinal adjustment of the head 18 in one direction will force said cutters outwardly in respective passages 13 and thus feed the cutters to the works. The cutters 14 are locked in any desired adjustment by means of locking bolts 20 extending longitudinally through the head 10 and having inclined portions 21 engageable with respective cutters 14 to clamp same against movement, said bolts being forced to clamping position by means of nuts 22 threaded thereon. The tapered portion 19 of the head 18 is extended in the form of a stem 23 terminating in a squared portion 24 whereby the stem and head may be rotated through the medium of a suitable tool to effect desired adjustment of the cutters. The head 18 is also provided on the end thereof remote from the stem 23 with a squared extension 25 so that the adjustment of the head may be effected with a suitable tool from either end. The stem 23 is surrounded by a tubular bar 26, the entire exterior of which that is disposed without the limits of the head 10 being provided with exterior threads 27 of the right hand type. The end of the bar 26 remote from the head 10 is provided with a squared portion 28 whereby said bar may be readily rotated through the medium of a wrench or other tool.

The invention further embodies an annular feed plate rest 29 adapted to engage one end of the cylinder 32 as shown in Fig. 1. The inner face of the rest 29 is engaged by a split ring 30 disposed within the cylinder 32 and serving to hold the rest 29 against lateral movement with respect to the cylinder. Supported upon the feed plate rest 29 is a feed plate 33, the periphery of which is detachably interlocked with the rest 29 as shown. The feed plate 33 is provided centrally with a threaded passage 34 through which the bar 26 extends, the threads 27 operatively engaging the threads of the passage 34. The feed plate 33 is held against movement away from the rest 29 by means

of a holder plate 35 having a central opening 36 which engages over a boss 37 on the feed plate 33. The holder plate 35 is provided with oppositely disposed arms 38 having slots 39 therein through which are adapted to be engaged bolts 40 passed through the securing bolt openings at the base of the cylinder. In this manner the entire device will be securely clamped to the cylinder during the operation of boring.

The diameter of the head 10 may be varied to adapt same to bores of different diameters by the use of detachable rings 41 applied as shown in Fig. 2. The head 10 is provided with longitudinal passages 42 through which the chips in the operation of boring are adapted to escape.

In operation the device is inserted in the cylinder as shown in Fig. 1, the cutters having been previously adjusted. However the cutters may be adjusted after the device is applied. To then effect the operation of boring it is only necessary to rotate the bar 26 to the right and during this operation the threads 27 and the threads of the passage 34 will serve to progressively feed the head 10 and the cutters 14 toward the closed end of the cylinder.

What is claimed is:—

1. In a boring machine of the class described, the combination of a head, radial cutters adjustably mounted in the head, a feed bar secured to the head for rotating the latter, a feed plate provided with means for securing same to one end of a cylinder to be bored and having operative connection to the feed bar whereby the rotation of said feed bar will move the head longitudinally.

2. In a boring machine of the class described, the combination of a head having a longitudinal passage therein and radial passages communicating with the longitudinal passage at their inner ends, a cutter mounted in each of said radial passages respectively, an adjusting head threaded in the longitudinal passage and having a tapered portion coöperating with the inner ends of the cutters whereby the rotation of the adjusting head in one direction will move said cutters longitudinally, means for locking the cutters against longitudinal movement, and means for rotating the first named head.

3. In a boring machine of the class described, the combination of a head, radial cutters adjustably mounted in the head, a feed bar secured to the head for rotating the latter and having exterior threads, and a feed plate provided with means for securing same to a cylinder to be bored, said feed plate having a threaded passage through which the feed bar extends, the threads on the feed bar operatively engaging the threads in said passage whereby the rotation of the feed bar in one direction will move the head toward the feed plate.

In testimony whereof, we affix our signatures in the presence of two witnesses.

ADOLPH STORM.
EDWARD C. O'HAIR.

Witnesses:
J. R. HUGHES,
ALBERT CHOLLITT.