(No Model.)

J. D. WATSON & J. A. WILCOX.

APPARATUS FOR BORING CYLINDERS.

No. 349,963. Patented Sept. 28, 1886.

Fig. 1

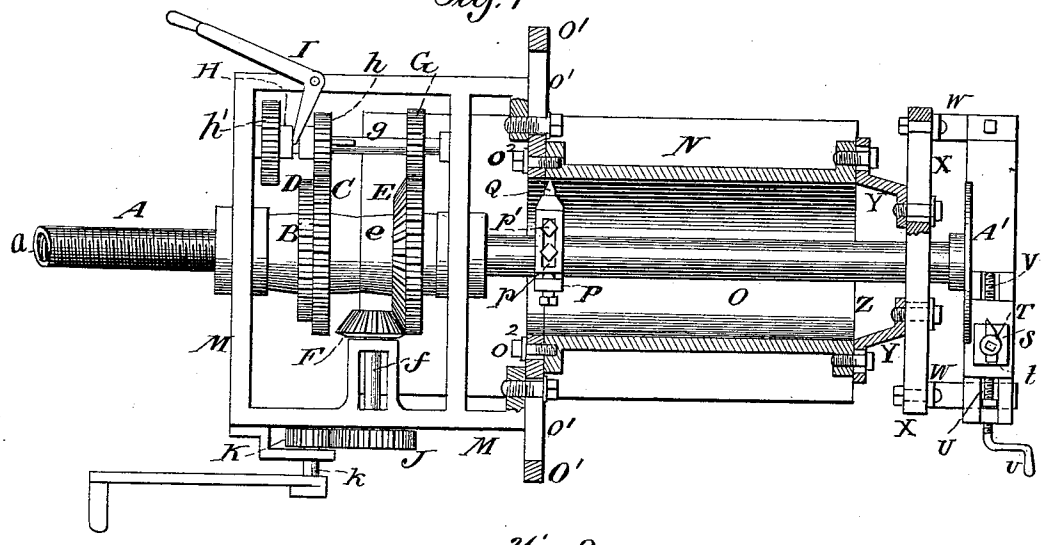


Fig. 2.

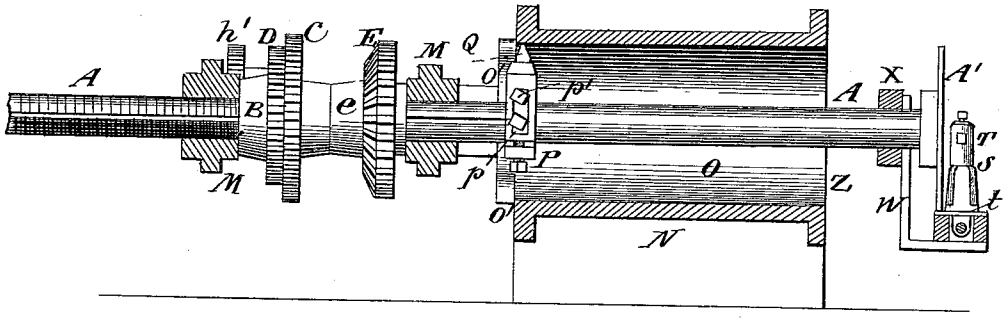
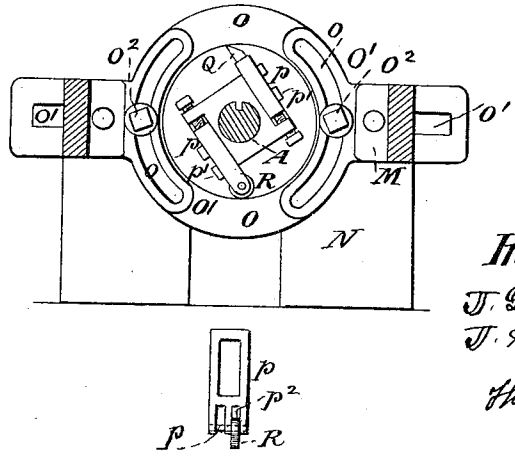


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN DELANY WATSON AND JASPER ALONZO WILCOX, OF WYATT, W. VA.

APPARATUS FOR BORING CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 349,963, dated September 28, 1886.

Application filed May 28, 1886. Serial No. 203,531. (No model.)

To all whom it may concern:

Be it known that we, JOHN DELANY WATSON and JASPER ALONZO WILCOX, citizens of the United States, residing at Wyatt, in the county of Harrison and State of West Virginia, have invented certain new and useful Improvements in Apparatus for Boring Engine-Cylinders and Turning Piston-Rods and Packing-Rings; and we do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

Figure 1 of the drawings is a plan view; Fig. 2, a longitudinal median vertical section; and Fig. 3 is a vertical cross-section and detail view.

In the drawings, A represents a feed-screw, on which turns the internally-threaded hub B, rotated by either one of the two diametrically-unequal wheels C D.

E is a bevel and spur wheel loose upon a sleeve, *e*, the bevel-teeth meshing with the bevel-pinion F, and the spurs with the pinion G on shaft *g*, and rotating the same by being keyed thereto. On this shaft, and rotating therewith but sliding thereon, is arranged the sleeve H, carrying the two unequal pinions *h h'*—the one to gear with wheel C, and the other larger pinion, *h'*, with the spur-wheel D.

I is an ordinary clutch-lever, or rather an elbow-lever, whose prongs enter a groove of the sleeve H and serve to bring either one of the pinions *h h'* into gear with its spur-wheel. The bevel-pinion F is on a shaft, *f*, and carries the outer end pinion, J, which gears with the smaller pinion, K, on the shaft *k*. This may be turned by a hand-crank, so as to operate the whole train of mechanism which feeds the screw A; or, where greater speed is wished, the hand-crank may be applied to the shaft *f*. This mechanism, as well as the feed-screw, is supported in a suitable frame, M, having curved slots *o o* in arms O', so that the frame M may be held at varying heights to suit the axes of different cylinders. In a suitable bed or block, N, may be supported a cylinder, O, which is to be bored. On the screw A is properly secured the tool-head P, having the two slotted slides *p p*, clamped and held at any desired adjustment by the screws *p'*. One of these slides carries the bit Q, while the other carries the roller R, the two pieces Q and R being diagonally opposite to each other. The roller or wheel R has for its purpose to steady the bar while boring and to smooth the sharp edges left by the bit. The wheel-slide has two slots, p^2 p^2, so that the wheel may follow the bit in either direction. The boring-bar is fed forward by the mechanism to carry the tool-head along as the cylinder is being bored until it has traveled the desired distance. Then the tool and wheel are reversed, so as to work in the reverse directions, thus losing no time at all. When a cylinder is too long to be reached by the feed-screw bar A and an extension which may be screwed into the internally-threaded end *a*, the tool-head may be loosened from the bar when the cutting has ceased and the bar brought back, so as to leave the tool-head where the boring stopped. When the bar is as far back as it will go, the head is made fast on the bar and enabled to proceed with the boring. In this way a cylinder of five or six feet long can be bored by the same bar and extension. The most important advantage is in the crosscutting, which makes much smoother work. This is accomplished by first boring through the cylinder with the crank on the shaft *k* turned toward the cylinder, and on the return having on the shaft *f*, but turning in the same direction.

A' is a face-plate on the end of bar A, and to this are attached the packing-rings for piston-heads, so that they may be turned by a lathe-tool, S, on the post T, whose base *t* is fed along in the groove of seat U by the swiveled screw V, having the hand-crank *v*. The rings are held to the face-plate by S-shaped hooks or bolts with taps or nuts on one end. The piston-rod is attached to the face-plate by a clamp and bolts, while the lathe is suspended by the two L-shaped rests W W from the slotted bar X, held by brackets Y Y to the end rim, Z, of the cylinder A.

Having thus described our invention, what we claim as new, and desire to protect by Letters Patent, is—

1. In an apparatus for boring engine-cylinders, the combination of the threaded feed-bar A, the internally-threaded hub B, carrying the spur-wheels C D, the bevel and spur wheel E, the pinions F G, the shaft *g*, the sleeve H, carrying unequal pinions *h h'*, the shaft *f*, carrying end pinion, J, and the smaller pinion on the shaft *k*, whereby the boring-tool may be fed through the cylinder, in the manner described.

2. The combination, with the feed-bar A, of the tool-head P, the slotted slides *p p*, the wheel or roller R, and the bit Q, the said wheel and bit being changeable to opposite directions, as and for the purpose set forth.

3. The combination, with the feed-bar A, of the terminal face-plate A', to hold the piston-rod or packing-ring, and a lathe, arranged substantially as and for the purpose specified.

4. The combination, with the feed-screw A, of a frame-support, M, having the curved slots *o o* in its arms O', and the screws O^2 O^2, whereby the feed-screw may be centered to cylinders of different diameter, as and for the purpose specified.

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

JOHN DELANY WATSON.
JASPER ALONZO WILCOX.

Witnesses:
C. A. PRICHARD, Sr.,
J. B. MILES.