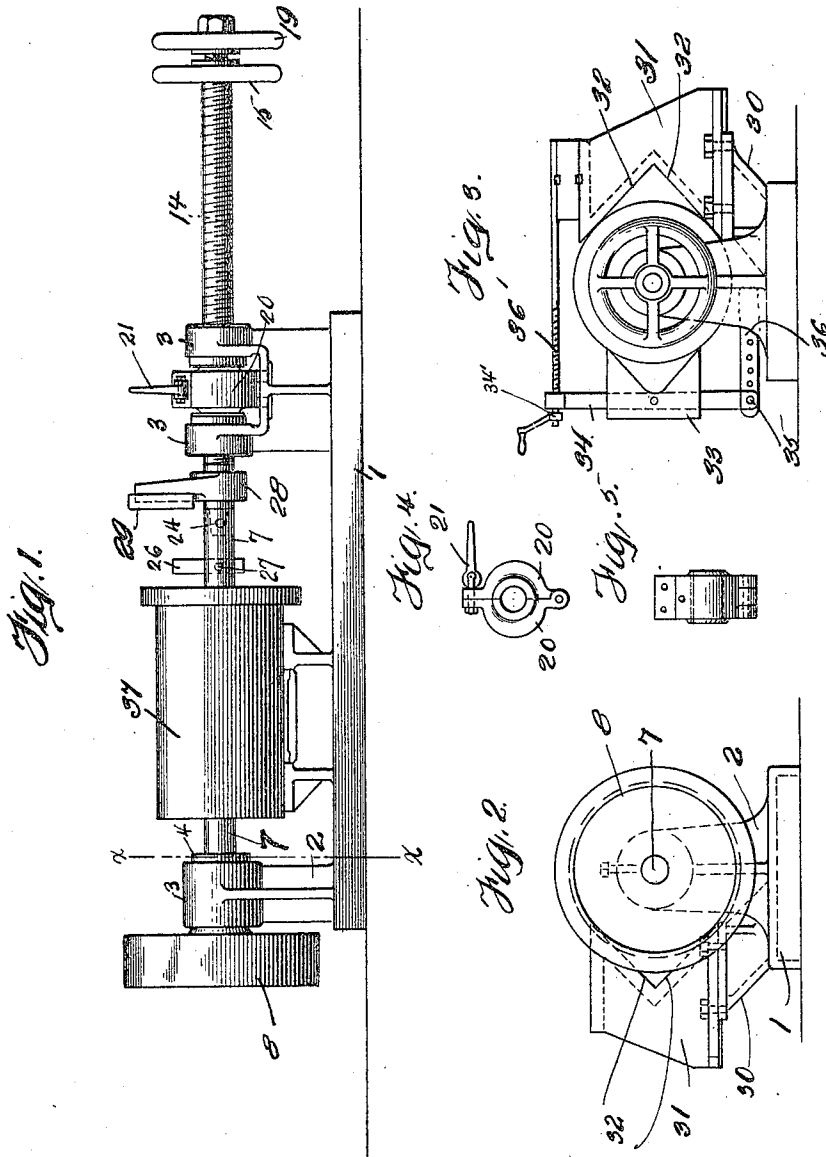


E. G. SCHILLO.
BORING MACHINE.
APPLICATION FILED MAY 11, 1907.

949,689.

Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.



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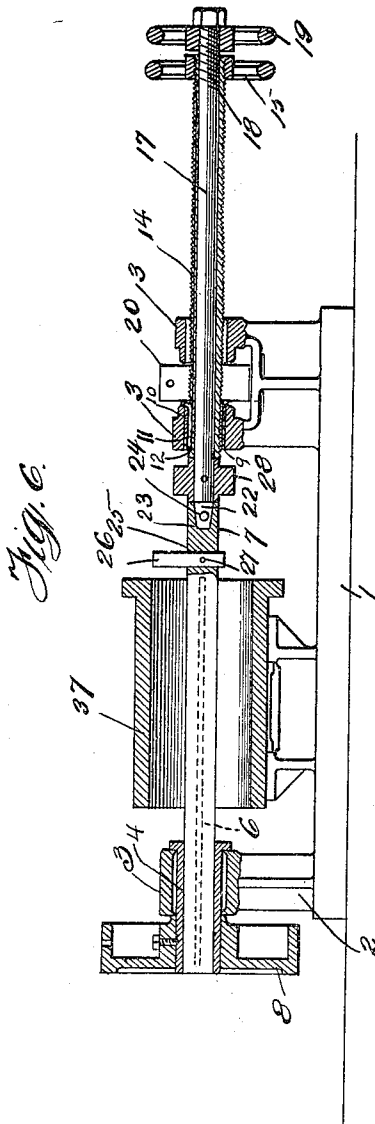


Fig. 8

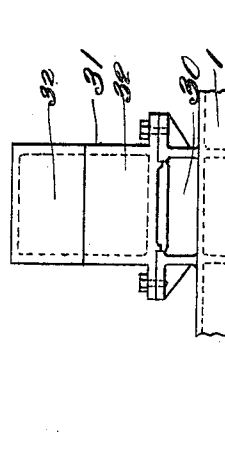
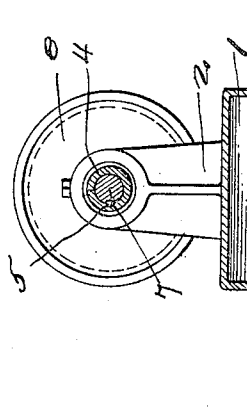


Fig. 7



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UNITED STATES PATENT OFFICE.

ERNEST G. SCHILLO, OF PITTSBURG, PENNSYLVANIA.

BORING-MACHINE.

949,689.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed May 11, 1907. Serial No. 373,119.

To all whom it may concern:

Be it known that I, ERNEST G. SCHILLO, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Boring-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in boring machines, and the invention relates more particularly to that type of machine for providing cylinders, bearings, and similar structures with smooth bores and facings.

The invention has for its object to provide a simple and inexpensive machine for economically and expeditiously providing a piece of work with an accurately formed bore.

My invention aims to provide a machine wherein a novel feeding device is employed for automatically trimming the inner sides of a cylinder or bearing, the feeding mechanism being easily and quickly thrown out of operation, when it is desired to remove the cutting medium from the interior of the cylinder or bearing. In this connection, I also employ novel means for temporarily holding a piece of work whereby it can be operated upon by my improved machine.

With the above and other objects in view which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be hereinafter more fully described, and then specifically pointed out in the appended claims.

Referring to the drawings forming a part of this specification, like numerals of reference designate corresponding parts throughout the several views, in which,

Figure 1 is an elevation of a machine embodying my invention. Fig. 2 is a view of one end of the machine, Fig. 3 is a view of the opposite end of the machine, Fig. 4 is an end view of a feed nut used in connection with the feeding mechanism of the machine, Fig. 5 is an elevation of the same, Fig. 6 is a longitudinal sectional view of the machine, Fig. 7 is a cross sectional view taken on the line $x-x$ of Fig. 1. Fig. 8 is an elevation of the adjustable gripping block employed for holding a piece of work.

To put my invention into practice, I provide a bed plate 1, which can be suitably

supported upon a stand (not shown) or elevated convenient to a workman operating the machine. The bed plate 1 is provided at one end with a bearing 3 and at its opposite end with bearings 3. In the bearing 2 is revolubly mounted a collar 4 having a longitudinally disposed key way formed therein for a key 5, said key engaging in a key way 6 formed longitudinally of a shaft 7. The collar 4 protrudes from the bearing 2 and upon said collar is suitably fixed a pulley 8, whereby the collar and the shaft 7 can be revolved, when said pulley is driven from a suitable source of energy.

In one of the bearings 3 is arranged a revoluble collar 9 having a key way 10 formed therein for a key 11, said key engaging in a longitudinally disposed key way 12 formed in a feed screw 14, provided upon its outer end with a wheel or handle 15. The screw 14 is provided with a bore 16 in which is mounted a connecting-rod 17. The rod 17 has one end projecting from one end of the screw 14, the said projecting end being screw-threaded as at 18. Upon the screw-threaded end of the rod 17 is mounted a clamping wheel 19 which is adapted to be moved into frictional engagement with the wheel 15 whereby the rod 17 will be coupled to the screw 14 and when the rod 17 is rotated in a manner as hereinafter set forth, the rod 17 will carry the screw 14 therewith. The adjusting of the wheel 19 to the position just referred to will also bind the screw 14 against the holder 28 which is fixed to the other end of the rod 17. By the foregoing arrangement, it is evident that upon the feeding movement of the screw 14 the rod 17 will be caused to be moved therewith while rotating, the rotative movement of the rod 17 being imparted to the screw 14 to cause it to feed.

Pivotally mounted between the bearings 3 is a two-part interiorly threaded feed-nut 20, the parts of said feed-nut being held in engagement with the screw 14 by an eccentrically mounted lever or cam 21. The two-part feed-nut when closed, is adapted to feed the screw 14 forward, and when open permit of the screw 14 and connecting-rod 17 being moved outwardly.

The end of the connecting-rod 17 is tapered, as at 22, to engage in a socket 23 formed in the end of the shaft 7, said connecting-rod being held in engagement with the shaft 7 by a key 24 passed through said

shaft and connecting-rod. The shaft 7 adjacent to the socket end thereof is provided with an opening 25 for a bit or tool 26, which is secured in said opening by key 27. The drill or bit 26 in some instances can be used as a key for connecting the rod 17 and the shaft 7.

In order that the end of a piece of work may be faced with my machine, I provide a holder 28, which can be placed fixed upon the end of the plunger 17, said holder being provided for a facing tool 29, the object of which will presently appear.

For supporting a piece of work to be operated upon by the bit or tool 26 and the facing tool, I provide the bed plate 1 intermediate the bearings 2 and 3 with a bracket 30 for an adjustable gripping block 31, which is formed with angular gripping faces 32. Disposed opposite to the gripping block 31 is a gripping block 33, which also has angular faces and is carried by a vertical arm 34, adjustably connected, as at 35, to a horizontal arm 36 carried by the bracket 30. The upper end of the vertical arm 34 is adjustably retained upon the end of a screw 36' carried by the upper end of the gripping block 31. The gripping blocks 31 and 33 are adapted to clamp a piece of work 37, such as a cylinder or bearing and hold the same whereby its interior can be trimmed and provided with a smooth and accurately formed bore. After the gripping block 33 has been brought into engagement with the piece of work 37, it is held in such position by a nut 34' on the rod 36.

In operation, I will assume that the piece of work 37 is to be bored or trimmed by the tool or bit 26, and that the two-part feed-nut 20 is in a closed position. As the pulley 8 is rotated, the shaft 7 being connected with the screw 14, is fed through the piece of work, the tool or bit 26 cutting a bore of the desired diameter, the diameter of the bore being determined by the radius or position of the tool or bit 26 in the shaft 7. After the tool or bit 26 has performed its work, the shaft 7 and the rod 17 are disconnected, the rod is retracted, and the shaft 7 moved outwardly through the bushing 4 so as to withdraw this shaft from the piece of work just operated upon. After the rod 17 and the shaft 7 have been thus moved, the nut 34' on the threaded rod 36' is unscrewed sufficiently to permit of the arm 34 carrying gripping block 33 to be swung outwardly far enough to allow the piece of work to be removed from the support 30. Where the piece of work is of considerable size, the arm 34 can be detached from the rod 36' and the gripping block 33 swung downwardly to permit of easy access being had to the piece of work. After another piece of work has been placed in position, the shaft 7 and the rod 17 are moved inwardly and connected to-

gether, this movement of the shaft 7 placing the same in position to receive a proper boring tool or bit for operating on the interior of the piece of work.

The facing tool 29 is used for trimming one end of the piece of work, and when the trimming has been accomplished, the facing tool can be removed, whereby the operation of trimming the interior of the piece of work can be continued.

The sliding movement of the shaft 7 and the screw 14 is permitted through the medium of the keys used in connection with the key ways of said shaft and screw, said shaft and screw being connected during the operation of the machine.

It is thought from the foregoing description taken in connection with the drawings that the construction and operation of my improved machine will be readily understood, without further description, and while I have herein described a preferred construction of the machine, it is obvious that such changes in the size, proportion and minor details as are permissible by the appended claims may be resorted to without departing from the spirit and scope of the invention.

What I claim and desire to secure by Letters Patent, is:—

1. A boring machine comprising a longitudinally movable and revoluble tool carrying shaft provided with an opening for the reception of a tool, a connecting rod extending in one end of and secured to said shaft and rotated thereby, a facing tool holder mounted upon one end of said rod in proximity to that end of the shaft which is connected to the rod, a longitudinally movable feed screw mounted upon said rod, said rod projecting from one end of the screw, means carried by the rod for clamping said screw against said holder whereby said screw will rotate in unison with the shaft and rod, and means for imparting a longitudinal movement to the screw to feed the shaft during the rotation of the latter.

2. A boring machine comprising a longitudinally movable and revoluble tool carrying shaft provided with an opening for the reception of a tool, a connecting rod extending in one end of and secured to said shaft and rotated thereby, a facing tool holder mounted upon one end of said rod in proximity to that end of the shaft which is connected to the rod, a longitudinally movable feed screw mounted upon said rod, said rod projecting from one end of the screw, means carried by the rod for clamping said screw against said holder whereby said screw will rotate in unison with the shaft and rod, and detachable means normally in engagement with said screw for imparting longitudinal movement to the screw to feed the shaft during the rotation thereof, said means

when disengaged from the screw permitting of the shaft rotating without longitudinally moving.

5 3. In a boring machine, a rotatable feed screw for longitudinally moving a tool carrying shaft, a sectional feed nut surrounding said screw and having the sections hinged together at one end, each of said sections provided with a flange, and a lever
10 connected to one of said flanges and provided with a cam face adapted to engage the

other of said flanges for clamping the sections of the nut together whereby the threads of the nut will engage the feed screw causing a longitudinal movement thereof 15 during the rotation of the screw.

In testimony whereof I affix my signature in the presence of two witnesses.

ERNEST G. SCHILLO.

Witnesses:

MAX H. SROLOVITZ,
A. HUPSCHMIDT.