J. W. WILBRAHAM.

METAL BORING MACHINE.

No. 179,381. Patented June 27, 1876.

FIG. 1.

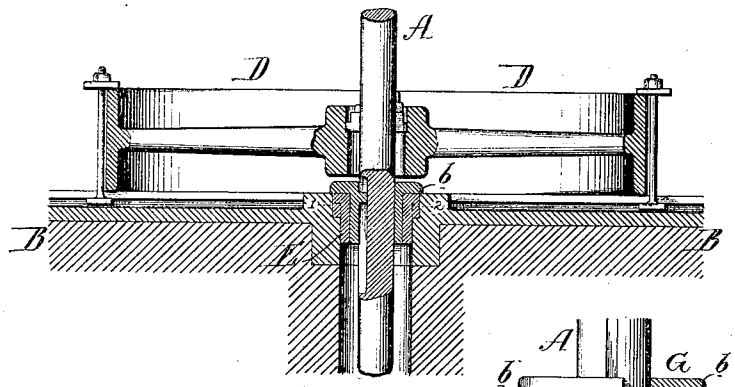


FIG. 2.

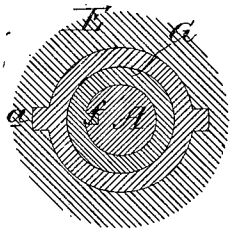


FIG. 4.

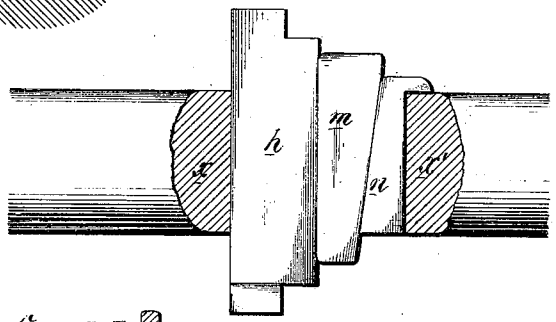


FIG. 3.

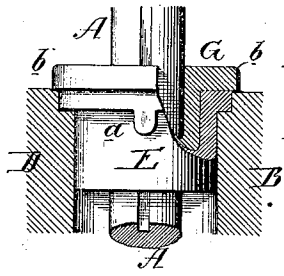
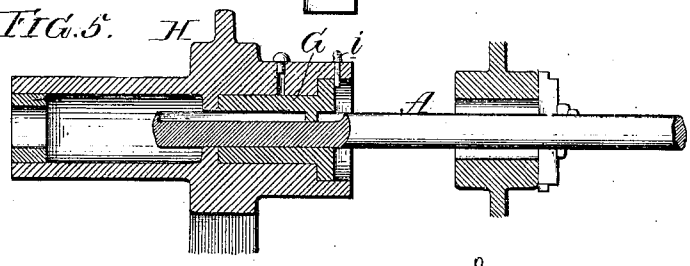


FIG. 5.



Witnesses, John K. Rupertus.
Thomas W. McIlvain

John W. Wilbraham
by his Attys
Munson and Son.

UNITED STATES PATENT OFFICE.

JOHN W. WILBRAHAM, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN METAL-BORING MACHINES.

Specification forming part of Letters Patent No. **179,381**, dated June 27, 1876; application filed December 4, 1874.

To all whom it may concern:

Be it known that I, JOHN W. WILBRAHAM, of Philadelphia, Pennsylvania, have invented certain Improvements in Boring and Drilling Machines, of which the following is a specification:

The objects of my invention are to combine with a metal-boring machine a durable supplementary bearing for that portion of the bar which projects beyond the cutter, and to so secure the cutter to a boring-bar, that after it has been used for facing one end or side of an object it can be readily reversed, so as to face the opposite end or side to a plane parallel with that first made by the cutter.

These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 represents my invention as applied to a vertical boring-machine; Fig. 2, a sectional plan on the line 1 2; Fig. 3, a vertical section of the bearing drawn to an enlarged scale; Fig. 4, an enlarged view of the boring-bar; and Fig. 5, an illustration of my invention as applied to a horizontal boring-machine.

In Figs. 1 and 2, A represents the boring-bar, which has the ordinary two bearings; and B, the base-plate of the boring-machine, to which plate is secured, in the present instance, the pulley D to be bored. To a central opening in the base-plate is snugly fitted a bush, E, which forms a supplementary bearing, and which is prevented from turning in the said opening by a pin or pins, *a*, and in the bush turns a sleeve, G, which is adapted to the boring-bar A, the bush having a projection or feather, *f*, which fits into a groove in the boring-bar, so that, while the latter can slide freely in the said sleeve, it cannot turn independently of the same. The sleeve, in fact, serves as a guide for the bar, and turns with the same; hence the only wear to which the bar is subjected is that which is caused by sliding in the sleeve, and this is of no moment compared with the wear to which the bar would be subjected if it was arranged to both turn and slide in one and the same bearing, as in ordinary boring-machines. In Fig. 5 my invention is shown as applied to a horizontal boring-machine, H, being part of the head-stock for guiding the bar and forming the supplementary bearing. In this case the above-mentioned sleeve G is arranged to revolve in a recess in the head-stock, and is retained therein by a pin, *i*, the sleeve revolving with the bar A. The main object of this portion of my invention is to obtain a durable bearing for that portion of the bar which projects beyond the cutter *h*. On referring to Fig. 4, which shows the boring-bar on an enlarged scale, it will be observed that the ends *x x'* of the slot in the bar for receiving the cutter *h*, are at right angles to the center line of the bar, and that a taper key, *m*, is driven between the said cutter *h*, which fits against one end of the slot, and a gib, *n*, which fits against the other end of the slot, a combination of cutter, gib, and wedge, which, viewed in connection with the ends *x x'* of the slots, possesses the important advantage that, when the cutter *h* has been used to face one end of the hub of a pulley—for instance, after the opening in the same has been bored—the cutter, wedge, and gib may be withdrawn, the cutter reversed and adjusted to the end *x'* of the slot, the gib being fitted to the end *x* of the same slot, and the wedge driven between them when the cutter is in a position to face the opposite end of the hub in a plane parallel to that of the end first faced.

I do not desire to claim, broadly, the combination of a boring-bar with a sleeve in which the said bar can slide, and which is turned by the bar; but

I claim as my invention—

1. In a metal-boring machine, the boring-bar A, its usual bearings, and a third or supplementary bearing for the sleeve G, revolved by the bar which can slide in the sleeve, in combination with a cutting-tool, *h*, secured to the bar between one of the usual bearings and the supplementary bearing, all as set forth.

2. The combination of a boring-bar, having a slot, the opposite ends of which are at right angles to the center line of a bar, with a cutter, *h*, wedge *m*, and gib *n*, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. WILBRAHAM.

Witnesses:

HUBERT HOWSON,

HARRY SMITH.