C. VAN HAAGEN.

Boring and Turning Metal.

No. 108,306. Patented Oct. 11, 1870.

Fig. 3.

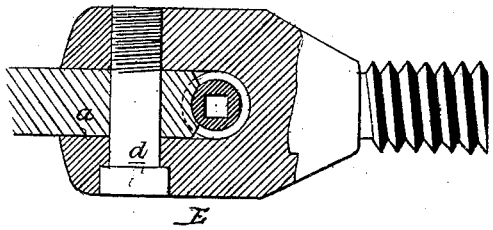


Fig. 1.

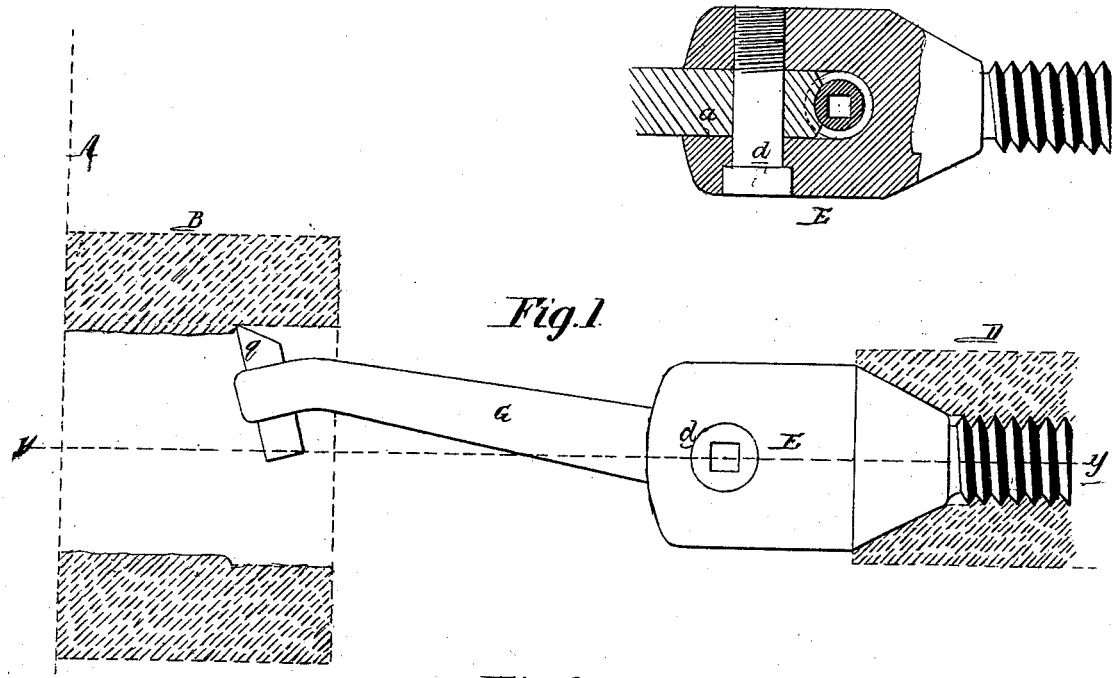
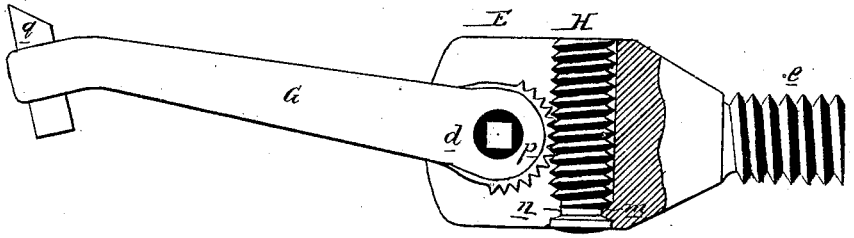


Fig. 2.



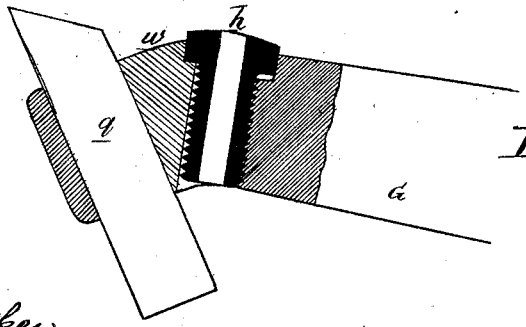


Fig. 4.

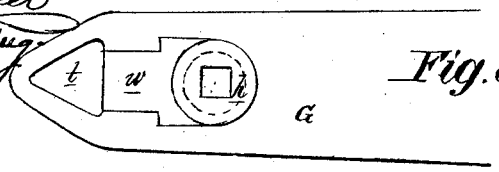


Fig. 5.

Witnesses
John Parker
Jno. B. Harding

C. Van Haagen
by his Attys
Howson & Son

United States Patent Office.

CLAUS VAN HAAGEN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND ANTHONY VAN HAAGEN, OF SAME PLACE.

Letters Patent No. 108,306, dated October 11, 1870.

IMPROVEMENT IN TURNING AND BORING MECHANISMS.

The Schedule referred to in these Letters Patent and making part of the same.

I, CLAUS VAN HAAGEN, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain Improved Turning and Boring Mechanism, of which the following is a specification.

My invention consists of mechanism, too fully described hereafter to need preliminary explanation, for boring and turning metals, the objects of my invention being the ready adjustability of the cutting-tool to bore holes and turn objects of different sizes, general simplicity as regards construction, facility in detaching and readjusting the several parts, and ready means of securing and adjusting the cutting-tool.

Description of the Accompanying Drawing.

Figure 1 is a side view, representing my improved turning and boring mechanism;

Figures 2 and 3 sectional views of the turning or boring-tool; and

Figures 4 and 5 views representing modifications of the tool.

General Description.

The dotted line A represents the face-plate of a turning-lathe, and

B, the object to be bored, the said object being secured to the face-plate by any suitable appliances.

D represents, in the present instance, a spindle, which can be fed forward, but cannot revolve, such, for instance, as the spindle of the back head-stock of a lathe, and the tool, which I will now proceed to describe, is secured to the said spindle D.

The tool consists of a hub, E, provided with a screw, *e*, or having some other suitable provision for the ready and secure attachment of the hub to and its detachment from the spindle D.

This hub has a transverse slot, *a*, between which is fitted the inner end of an arm, G, and through the latter, as well as through the hub, passes a pin, *d*, the latter having at one end a head, *d'*, sunk into the hub on one side of its slot, and at the opposite end a screw, adapted to a threaded hole in the hub, at the opposite side of the slot, so that, on tightening the pin, which, in the present instance, may be accomplished by a square instrument, adapted to a square hole in the head, it will have a tendency to draw the two halves of the hub toward each other, and, as these possess a slight elasticity, to firmly grip the arm G.

It should be understood, however, that this arm is very accurately fitted to the slot of the hub, and does not rely for retention in its position on the grip it receives from the action of the screw-pin, the latter merely serving as a medium for tightening a joint already fitted accurately.

A screw or worm, H, fits snugly, but so as to turn freely in the end of the slot of the hub E, and is prevented from moving longitudinally therein by a projection, *m*, on the end of the slot, fitting accurately in a groove, *n*, in the worm, the thread of which is adapted to the teeth of a segment, *p*, of a worm-wheel formed on the arm G, and arranged concentrically with the pin *d*, on which the arm turns, so that, on turning the worm, which, in the present instance, may be done by a square tool, adapted to a square hole in the end of the worm, the arm may be turned to any desired position.

The arm G carries, near its end, a suitable cutter for boring; in the present instance, the cutter is illustrated as taking a cut in the inside of the object B, the latter revolving with the face-plate A of the lathe, while the spindle D, and, consequently, the cutter, is fed forward, as described.

After one cut has been completed, the spindle D is drawn back with its arm, and the latter so adjusted, by turning the worm H, that the cutter will project further from the center *y y* of the rotation of the object, preparatory to making a second cut.

I have described the object as rotating, while the cutter can have no other movement than that of a longitudinal feed, but it will be evident that the spindle D, with its arm, may revolve in fixed bearings, while the object to be bored or turned may be fixed to a plate, which can have none other than a to-and-fro sliding movement.

It will be observed that the worm H is confined transversely between the segment *p* on the arm G and the bottom or end of the slot in the hub E, while longitudinally it is retained by the simple projection *m* at the end of the slot. These I consider important features of my invention, as they permit the ready fitting together of the parts and the ready detachment of the same from the hub; for instance, after withdrawing the pin *d*, the arm G can at once be withdrawn from the hub, and the worm H will be at liberty.

Another important feature of my invention is the manner of securing the cutting-tool to the end of the arm, as shown in figs. 4 and 5. In the present instance, the cutter is of triangular sectional form, and its angular edge fits into an angular recess, *t*, in the end of the arm, and against a flat side of the cutter bears a wedge, *w*, fitted snugly, but so as to slide freely in the arm, and acted on by the head of a set-screw, *h*.

While the thread of this screw engages in a corresponding thread in the arm, they have no control over the wedge; on tightening the screw therefor, the wedge will be forced against the cutter *g*, and will firmly secure the same in the position to which it may have been adjusted, all of which will be clearly understood by reference to fig. 4.

One of the important advantages of my invention is this, that the arm G may be so arranged that, after serving to cut the sides of a hole in an object it may be adjusted to turn the metal surrounding the hole, without removing the object from the face-plate; for instance, the tool may be used for boring the eye of a pulley, and then for turning the hub, and this without any other adjustment than that accomplished by turning the worm H. In such a case, the exact concentricity of the exterior of the hub of the pulley with the eye is insured.

If desired, the object to be turned or bored may be secured to an entirely fixed plate, and the revolving spindle D to a slide, which can be moved in two directions, like the slides of a slide-rest.

Claim.

The arm G, and its toothed segment *p*, the pin *d*, and worm H, all combined and adapted to the slotted hub E, substantially as set forth.

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

CLAUS VAN HAAGEN.

Witnesess:
JNO. B. HARDING,
FRANK B. RICHARDS.