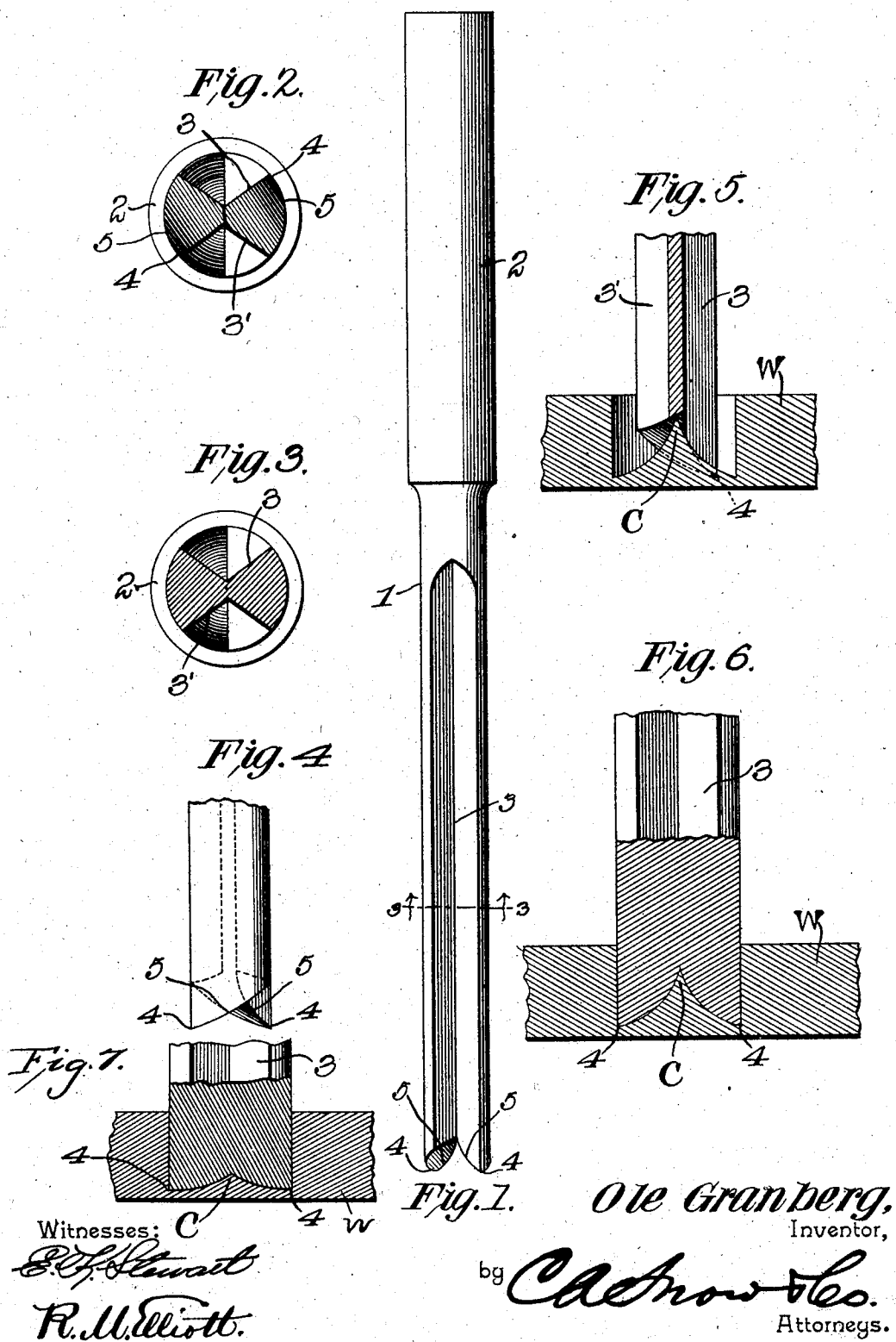


No. 796,321.

PATENTED AUG. 1, 1905.

O. GRANBERG.
METAL DRILL.

APPLICATION FILED SEPT. 30, 1904.



UNITED STATES PATENT OFFICE.

OLE GRANBERG, OF BLAIR, WISCONSIN.

METAL-DRILL.

No. 796,321.

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed September 30, 1904. Serial No. 226,709.

To all whom it may concern:

Be it known that I, OLE GRANBERG, a citizen of the United States, residing at Blair, in the county of Trempealeau and State of Wisconsin, have invented a new and useful Metal-Drill, of which the following is a specification.

This invention relates to metal-drills.

The object of the invention is in a ready, thoroughly-feasible, and practical manner to reduce the pressure necessary to cause the drill to enter the work; to expedite cutting; to render unnecessary the removal of all of the metal in order to drill a complete hole; to prevent the drill from setting or locking, which frequently happens when the drill-point pierces the metal and often results in the twisting or breaking of the drill; to render it possible to drill a hole with practically a flat bottom, and generally to improve and simplify the construction of the entering end of a drill.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction of a drill, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there are illustrated two forms of embodiment of the invention, each capable of carrying the same into practical operation, it being understood that changes may be resorted to without departing from the spirit thereof.

In the drawings, Figure 1 is a view in elevation of a drill constructed in accordance with the present invention. Fig. 2 is a view looking at the entering end of the drill. Fig. 3 is a view in transverse section, taken on the line 3-3, Fig. 1, and looking in the direction of the arrow thereon. Fig. 4 is a detail view in elevation, taken at right angles to Fig. 1. Fig. 5 is a vertical sectional view showing the manner in which the drill enters. Fig. 6 is a similar view taken at right angles to Fig. 5. Fig. 7 is a sectional detail view showing a slightly-modified form of drill.

Referring to the drawings, 1 designates the drill, which is of the same diameter throughout its length and is provided in this instance with a cylindrical head 2, to be engaged by a chuck or drill-stock, although, if preferred, it may terminate in a square end to engage a bit-stock, and as this latter construction is common and forms no part of the present in-

vention detailed illustration thereof is omitted.

The drill is provided on opposite sides with approximately V-shaped chip-grooves 3 and 3'. As herein shown, the grooves are straight; but it is to be understood that they may be slightly twisted and still be within the scope of the invention.

The gist of the present invention resides in the manner in which the entering end of the drill is constructed to facilitate cutting and to reduce the pressure requisite to cause drilling to a minimum. As is well known, in the ordinary form of drills the entering end is pointed or cone-shaped, and owing to the fact that the center of the drill has the least speed a great pressure is required, especially with large drills, to cause it to enter the work. In the present invention the entering-point is dispensed with and the terminals 4 of the cutting-lips 5 are caused to enter the work, and as these terminals are disposed at the periphery of the drill-shank, and thus at the point of highest speed, it will be seen that the cutting of the work will be facilitated and that the pressure requisite to cause the drill to enter the work will be reduced to a minimum. The cutting-lips 5 are herein shown as disposed upon curved lines; but it is to be understood that they may be made on straight lines and still be within the scope of the invention.

As above stated, it is an object of the invention to avoid cutting all of the metal away in order to complete a hole or opening in a piece of work, and as will be seen by reference to Figs. 5 and 6, by having the cutting-lips diverge from the center of the drill outward and on oppositely-inclined angles there will be a cone portion C left in the work W when the drilling is completed, thereby effecting a saving in the time that would be required to cut away this cone portion. As all workmen know, with the ordinary form of twist-drills unless the angles of the entering-point be exact when the drill punctures the metal it will frequently lock or set, and unless great care be observed the drill will be broken. This is due to the fact that the thin wall left in the work, which gradually increases from the point of the drill outward, yields and causes the lip to take a bigger bite than it can cut, and the above trouble ensues. With the present invention the cutting is completed at the periphery of the drill, and if the terminals of the cutting-lips be in exact alinement

will puncture the work simultaneously, and by reason of the pressure exerted upon the cone the latter will be forced away from the drill as soon as severed.

Another feature of advantage present in the drill of this invention is that the same care is not required in sharpening it as with an ordinary twist-drill, and, further, it may be used more roughly, and greater pressure may be applied to it without danger of breakage than with the twist-drills ordinarily in use or other drills having cone-shaped or angular entering-points.

To adapt the drill for cutting holes with approximately flat bottoms, and which is a desideratum, especially when the hole is to be internally threaded, the form of drill shown in Fig. 7 will be employed, the only difference between this and the form shown in Figs. 1 to 6 being that the angle of divergence of the cutting-lips 6 is reduced. This will be thoroughly effective for the purpose designed, and the change of pitch of the cutting-lip will merely cause the drill to cut slower.

Having thus described the invention, what is claimed is—

1. A drill of the same diameter throughout, and having cutting-lips that diverge on curved lines from the center of the drill to its periphery, the terminals of the cutting-lips constituting entering-points and forming sharp angles in conjunction with the sides of the drill.

2. A drill having one end provided with an approximately V-shaped recess and having chip-grooves on its opposite sides and intersecting the apex of the recess, the walls of the recess forming cutting-lips that are disposed on curved lines and terminate in entering-points at the periphery of the drill and on diagonally opposite corners thereof.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

OLE GRANBERG.

Witnesses:

H. THORRGARD,
HANNAH TORBLAA.