

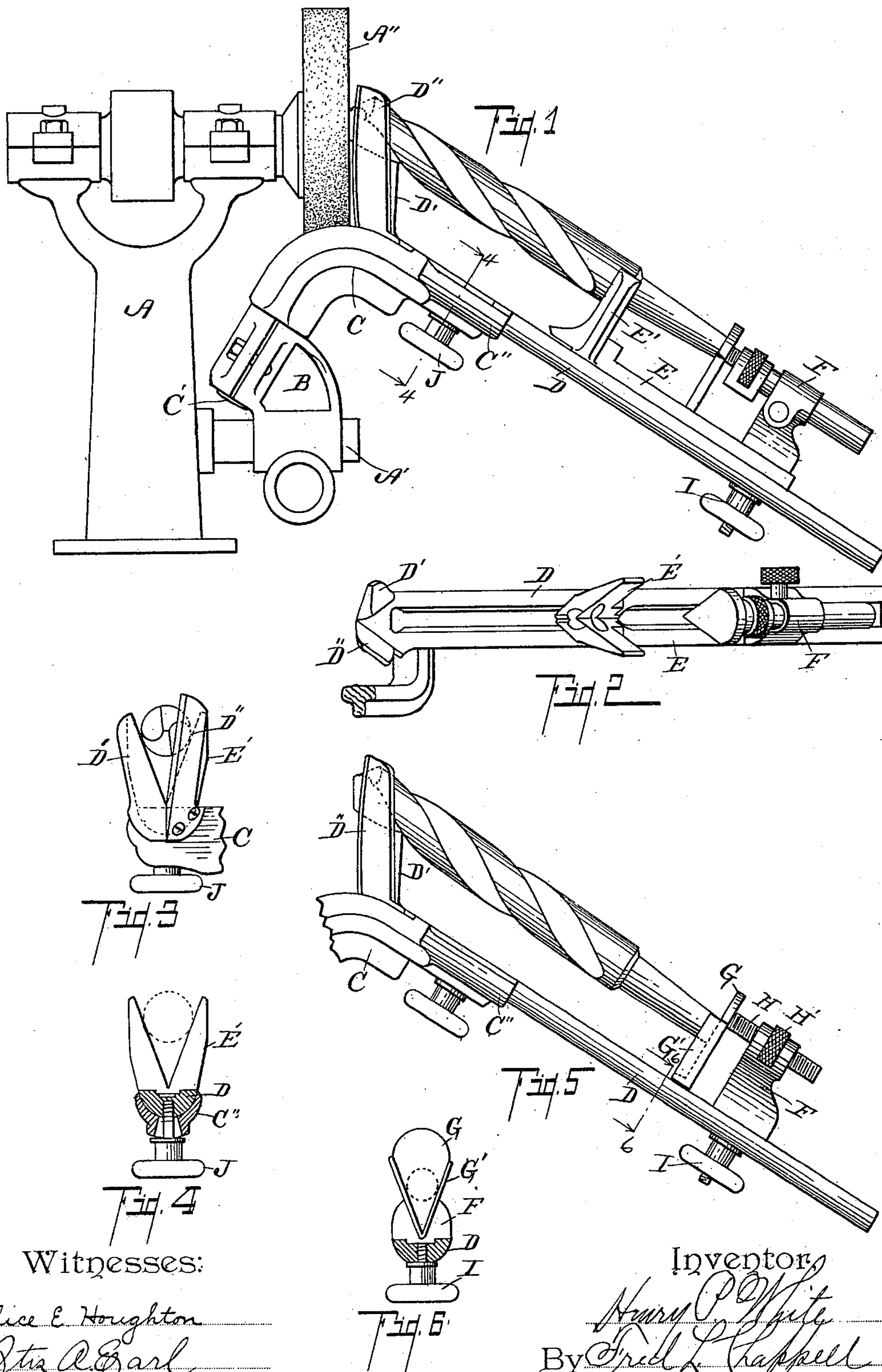
No. 684,890.

Patented Oct. 22, 1901.

H. P. WHITE.
DRILL GRINDER.

(Application filed Oct. 17, 1900.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY P. WHITE, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO THE WILMARTH & MORMAN COMPANY, OF KALAMAZOO AND GRAND RAPIDS, MICHIGAN.

DRILL-GRINDER.

SPECIFICATION forming part of Letters Patent No. 684,890, dated October 22, 1901.

Application filed October 17, 1900. Serial No. 33,340. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. WHITE, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Drill-Grinders, of which the following is a specification.

This invention relates to improvements in drill-grinders. It relates to an improved drill-holder especially adapted for use with certain features described in my Patent No. 643,703, issued February 20, 1900.

The objects of this invention are, first, to provide a simple and positive holder for the drill, and, second, to provide a holder in which the drill is easily accessible for manipulation by the user in connection with the principal advantages of my said former invention.

Further objects will definitely appear in the description to follow.

I accomplish these objects of my invention by the devices, means, and mechanism described in this specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a complete drill-grinder embodying my invention. Fig. 2 is a detail plan view of the drill-holder itself. Fig. 3 is a detail end view of the said drill-holder. Fig. 4 is a detail transverse sectional view of the drill-holder, taken on a line 4 4 of Fig. 1. Fig. 5 is a detail side elevation view of a modified form of the drill-holder; and Fig. 6 is a detail transverse sectional elevation of the same, taken on a line corresponding to line 6 6 of Fig. 5.

In the drawings all the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A is the main frame of the drill-grinder, carrying the grinding-wheel A' in the usual way. The frame is provided with the stud A', carrying the bracket B and the bracket C, having the inclined journal C' extending

into a bearing in the bracket B, these parts being of the same form and for the same purpose as the corresponding parts appearing in my said Letters Patent of February 20, 1900. Therefore I will not describe the same at length in this connection.

The bracket C is provided with a curved seat C'', in which the base of the drill-holder is adjustably secured by a hand-screw J, extending through the slot in the seat C'' into the base D, as clearly appears in Fig. 4. On the forward end of this base D is formed a V-shaped support consisting of the branches D' D''. The inner surface of the portion D' is in a plane parallel with the central longitudinal line of the base D and the inner surface of the branch D'', extending at an oblique angle of the same, and forms an acute angle with the center line of the said base. These parts extend obliquely upward from the front of the base D to bring them into close proximity with the face of the grinding-wheel A''. They engage the drill at or near the point, the outer surface rests against the branch D', and the edge of the branch D'' extends into the flute of the same and serves as a support for the web of the drill across the same just back of the cutting edge, so that the cutting edge of the drill is always brought to a correct line and positively held in position.

I provide a support for the shank end of the drill which holds the same substantially in a line parallel with the center line of the holder. This support is adjustable and is provided with suitable feed-screws, like the tail-block of a lathe or like the feed device on my said former patent. The upper surface of the support D is dressed into ways, and a block E, with V-shaped prongs E' thereon, rests upon these ways, the same containing a suitable slot for the passage of the adjustable screw I, so that it is adjustable independent of the tail-block F, although it is held by the same screw. The head of this tail-block F is made in form to correspond with the passage between the V-shaped prongs, so that the parts are adjustable to and from each other. It is the object of this adjustment to enable the V-shaped prongs E' to be advanced beyond the shank of taper-shank drills, and as the angle of the V-shaped part is made to

correspond with the angle between the branches D' D'' the drill is always supported at the proper angle, no matter what the size of the same may be. As these V-shaped supports are at a proper angle, they always adjust the drill at a proper position to secure the correct clearance and correct form for the cutting end of the drill, as is fully described and explained in my said former patent. To economize in the construction, however, and for drills of smaller sizes which do not have a taper shank, the modified structure appearing in Fig. 5 will be found to be most satisfactory. In this the principal adjustments of the tail-block are effected by the hand-wheel I and the final adjustment by the thumb-nut H' on screw H without any intermediate adjustment, as appears in Figs. 1 and 2. The head of this tail-block G is provided with a V-shaped flange G' to engage the tip end of the shank of the drill. This, however, will be found to work very well with taper-shank drills, it only making the angle of the points of such drills a little more acute, which is not considered objectionable, so long as correct curves are preserved on the surface. It is of considerable advantage to have drills thus held by the point and the tip of the shank, as any inaccuracies from any curvature of the drill are thus eliminated and the point is made true with the shank, the shank being of course the part from which the drill is driven. It is also of advantage to have the drill supported at each end, as it enables the user to grasp the drill in his fingers while it is in position, and thus enables it to be securely retained and readily withdrawn and put into position, which is quite important in the reversing of the drill to grind the sides evenly. I have shown a V-shaped support for the shank of the drill, but desire to state that any adjustment-support will be found satisfactory, the V-shaped support at that point having the advantage of avoiding any adjustments except for advancing the drill toward the grinding-surface. The branches D' D'' at the front of the drill-holder can of course be made integral with the base or can be made of separate pieces attached thereto, and, further, they might be made adjustable. I have shown them, however, in the form which I prefer and which has been demonstrated to be very practical and satisfactory.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a drill-grinder the combination of a suitable base; a grinding-wheel carried thereon; a stud on the base having a suitable adjustable bracket B which contains an oblique journal-bearing arranged back of the face of the grinding-wheel; a bracket C with an oblique journal to fit within the said journal-bearing and extended at the opposite end in front of the grinding-wheel at a suitable angle thereto and provided with a curved seat;

a drill-holder with a base D adapted to fit in the curved seat and be retained there adjustably by hand-screw J extending through a slot in said seat into said base; a V-shaped support consisting of the branches D', D'' at the front end of said holder, the inner surface of the branch D'' being in a plane at an oblique angle to the center line of said drill-holder and the inner surface of the branch D' being in a plane parallel to the center of the said holder; an adjustable tail-block on the said holder-base D consisting of the adjustable block E having the V-shaped supporting-prongs E' to embrace the shank of the drill; and the block F with adjustable head F' to fit said V-shaped support with feed-screw thereon, all coacting substantially as described, for the purpose specified.

2. In a drill-grinder, the combination of a suitable base; a grinding-wheel carried thereon; a stud on the base having a suitable adjustable bracket B which contains an oblique journal-bearing arranged back of the face of the grinding-wheel; a bracket C with an oblique journal to fit within the said journal-bearing and extended at the opposite end in front of the grinding-wheel at a suitable angle thereto; a drill-holder with a base D adjustably attached to said bracket; a V-shaped support consisting of the branches D', D'' at the front end of said holder, the inner surface of the branch D'' being in a plane at an oblique angle to the center line of said drill-holder and the inner surface of the branch D' being in a plane parallel to the center of the said holder; an adjustable support on the holder D for the shank end of the drill, for the purpose specified.

3. In a drill-grinder the combination of a suitable base; a grinding-wheel carried thereon; a drill-holder pivotally supported on said base, the said drill-holder being made up of the base or body portion with a V-shaped support at its forward end consisting of branches, the inner surface of one of which is in a plane parallel to the direction of the body of the said holder and the inner surface of the other of which is in a line at an oblique angle in the direction of the said body portion of said drill; an adjustable support for the shank end of said drill carried by the body of said holder, for the purpose specified.

4. In a drill-grinder the combination of a suitable base or frame with a grinding-wheel supported thereon; a pivoted drill-holder having an upwardly-extended V-shaped support at its forward end, one branch of the support being set at an angle to the direction of the holder so as to enter the flutes of the drill; and an adjustable support for the shank end of the drill, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

HENRY P. WHITE. [L. S.]

Witnesses:

D. E. WOOD,
OTIS A. EARL.