No. 688,766. Patented Dec. 10, 1901.

L. WILLIAMS.

TOOL FOR CENTERING DRILLS.

(Application filed Sept. 7, 1901.)

(No Model.)

Fig. 1.

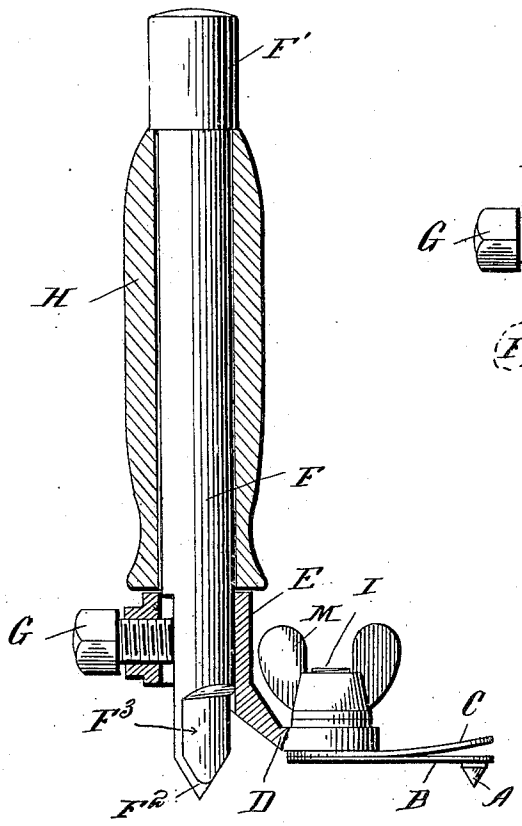


Fig. 2.

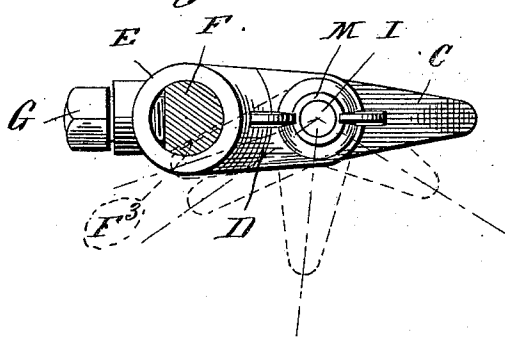
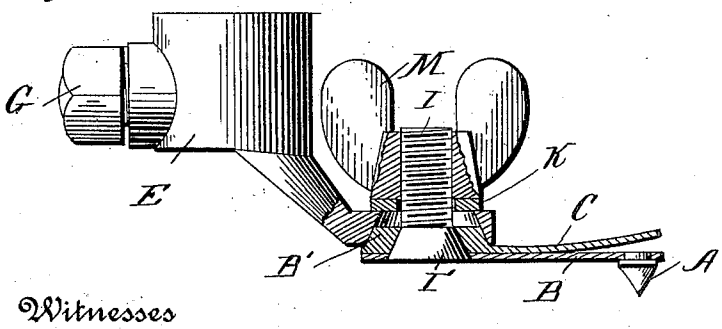


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

LEWIS WILLIAMS, OF JOHNSTOWN, PENNSYLVANIA.

TOOL FOR CENTERING DRILLS.

SPECIFICATION forming part of Letters Patent No. 688,766, dated December 10, 1901.

Application filed September 7, 1901. Serial No. 74,633. (No model.)

To all whom it may concern:

Be it known that I, LEWIS WILLIAMS, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Tools for Centering Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to tools for marking or dotting points in the circumference of circles to insure accuracy in drilling holes in metal.

It is usual to mark the center of a hole to be drilled with a center-punch and enter the point of the drill in the mark or indentation so made. Where accuracy is required, this is not sufficient. A common way of securing accuracy is to adjust a pair of compasses to the radius of the drill, then after the center is pricked on the metal to be drilled to mark a circle equal to the circumference of the drill around such center with the compasses. The metal is often chalked, so that the circle may be marked thereon. Then as this circle or ring mark is likely to be rubbed out a number of points are pricked with a punch in the metal along the circle, which marks remain until the drill is fully entered. Should the drill creep away from the center, owing to blow-holes or other inequality in the metal, it is drawn to the center by chipping away with a cold-chisel or other similar tool. The marking of the points around the scribed circle is a work of care and requires accuracy and fine workmanship. By means of my tool more accurate work can be done in much less time, and no special skill is required in the operation.

Figure 1 is a vertical section of my centering-tool, parts being in elevation. Fig. 2 is a partial plan and partial horizontal section. Fig. 3 is a detail section of the clamp-joint of the point-holding arms.

Let A indicate the point of the tool which is to be applied to the center of the hole, answering to one leg of a compass. This point A is preferably on a spring arm or bar B, and the bar B is by preference attached to a rigid bar C, which serves as a stop to limit the amount of yield of the spring-bar B. The rigid bar C is convenient, but not essential to the operation of the tool. The bar B is connected with an arm D by a pivot, and the arm and bar may be firmly clamped, so that the bar may be in line with arm D or at any angle thereto measured horizontally. A convenient clamp for this purpose will be hereinafter described. Arm D is shown to be bent; but this is merely for convenience of observation. The arm D is rigid with socket E, through which socket a center-punch F passes. Punch F may be flattened at one side, as shown, so that set-screw G will hold the punch firmly in its socket. The punch F can be taken out of this socket by loosening the set-screw for the purpose of sharpening the point F^2.

The center-punch F has a head F′, and a sleeve or handle H surrounds the body of the punch between the socket E and head F′. This handle may be of wood or any other light material and should turn freely on the punch.

The pivot on which bar B swings with reference to arm D is in the illustration a screw I. This screw I has a conical head I′, which head has a seat in a conical recess in bar B, the screw passing through a hole in the bar concentric with this recess.

The upper face of bar B has a frusto-conical boss B′, which surrounds the hole in said bar, and the lower face of arm D has a conical recess to receive this boss and is perforated at the center of this recess. The screw I passes through this perforation. A washer K on top of bar D forms a binder against which the thumb-nut M on screw I has its bearing. Nut M can be tightened so as to bind the arm D and bar B together with great firmness, the frusto-conical form of the engaging parts securing a much stronger frictional contact than if flat surfaces were used.

As arm B and bar D have their centers on screw I as a pivot, the points A and F^2 can be brought to any distance from each other within the limits of adjustment, and when brought to such distance that the points are as far apart as the radius of the drill to be used the point A can be applied to the prick on the work denoting the center, and the center-punch F can then be swung around on the point A as a center, and by tapping on head F′ with a hammer the circle can be marked with as many pricked points or indentations as desirable. The marking is thus effected

with convenience and accuracy. The bar B will yield and permit the depression of punch F and will also serve as a spring to lift the punch. The handle H being swiveled on the punch permits the tool to swing easily about the center A without binding in the hand. To permit a closer adjustment, a side of punch F may be flattened, as at F^3, so that arm B can swing in nearer to the center of the punch F.

I have described the tool in the simplest and best form now known to me; but many modifications in construction can be made without departing from the principles of my invention. I have constructed a tool for a like purpose having different adjustments; but prior to my invention I am not aware of any similar tool having been used for the purpose of defining the circumference of a hole to be drilled.

What I claim is—

1. A marking-tool for laying out points on a circle as described, consisting essentially of a centering-point, and a center-punch supported on an arm in adjustable relation to said centering-point.

2. The tool described, consisting essentially of a centering-point carried by a bar, and a spring-supported center-punch carried by a handle and in adjustable relation to said point.

3. A tool for the purpose described, consisting essentially of a centering-point, a spring-supported center-punch in adjustable relation thereto, and a handle supported so as to rotate on said punch.

4. In combination, in a tool as described, the centering-point and a bar connected thereto, the punch-socket having an arm pivoted to said bar, clamping mechanism to hold said arm and bar in adjusted relation, and a center-punch carried by said socket, substantially as described.

5. In combination, the center-punch and sleeve rotating therein, the punch-socket having a rigid arm connected thereto, the spring-bar pivoted to said arm, a centering-point on said bar, and a stop-plate to check the resilience of the spring-bar.

6. In combination, the punch-holding socket having a rigid arm, the punch carried thereby and flattened at one side, and the point-carrying bar pivoted to swing against the flattened side of the punch, substantially as described.

7. In a tool as described, the handle, a center-punch forming the axis of said handle and revoluble relatively thereto, a socket secured to the punch by a set-screw and having a rigid arm, a bar pivoted to said arm and carrying a centering-point, and clamping means to hold said bar and arm in adjusted relation, all combined.

8. In a tool as described, the punch having a head, a socket removably secured to the body of the punch, and a swiveled handle interposed, a rigid arm on the socket, and a bar provided with a centering-point held to said arm by a clamping-pivot, all combined.

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

LEWIS WILLIAMS.

Witnesses:
W. A. BARTLETT,
E. N. WATERS.