(No Model.)

T. A. TAYLOR.

INDICATOR FOR GRINDING DRILLS.

No. 464,290. Patented Dec. 1, 1891.

Fig. 1.

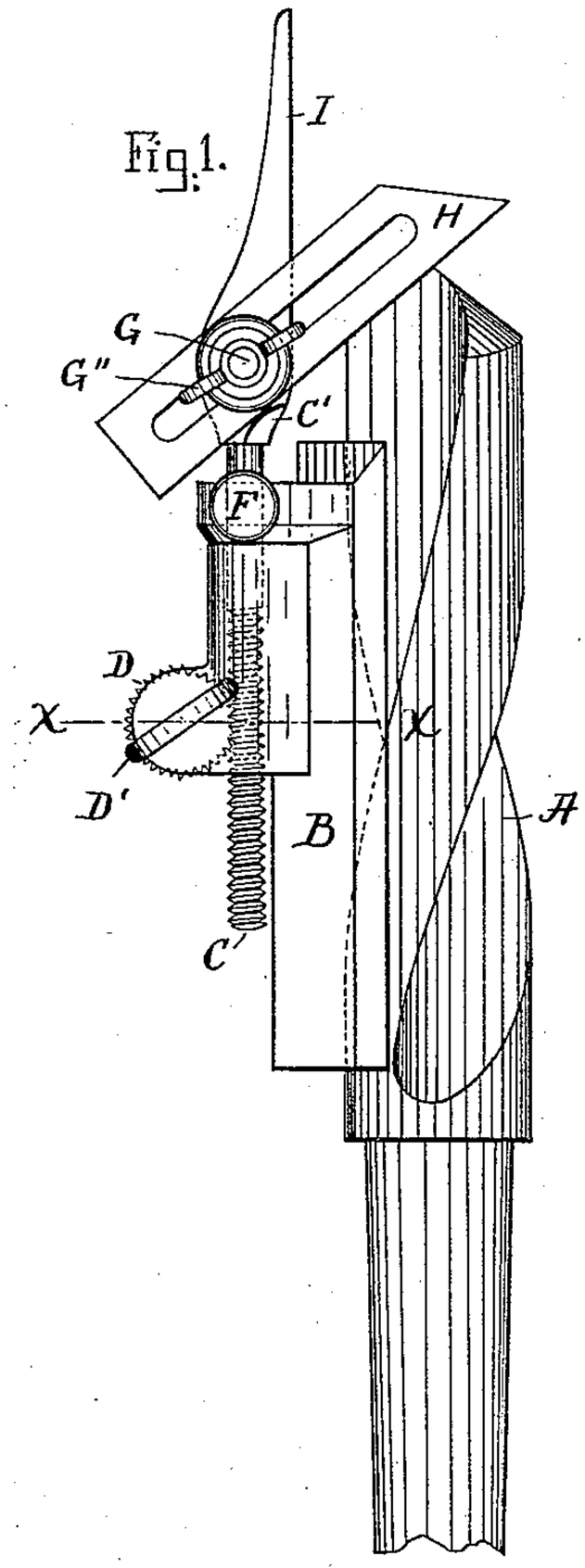


Fig. 2.

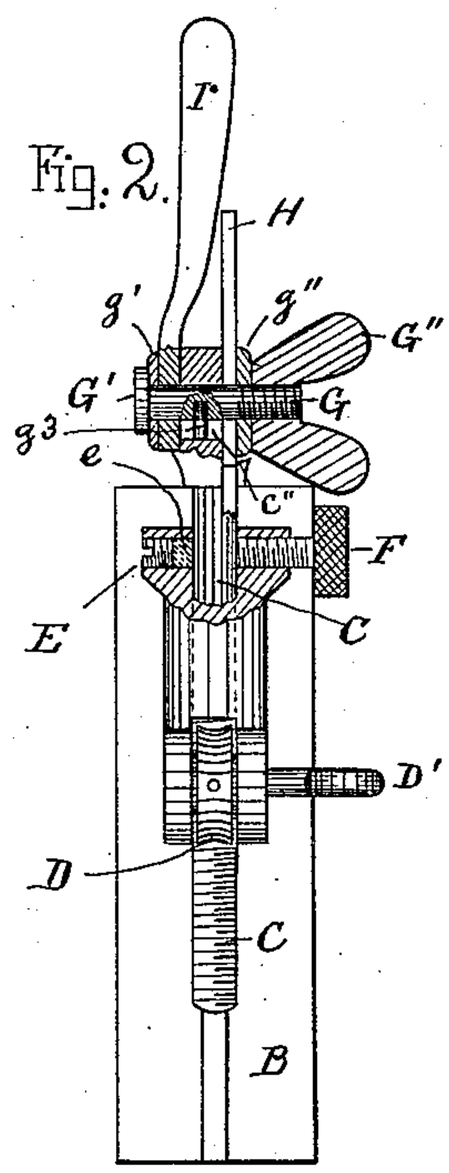


Fig. 3.

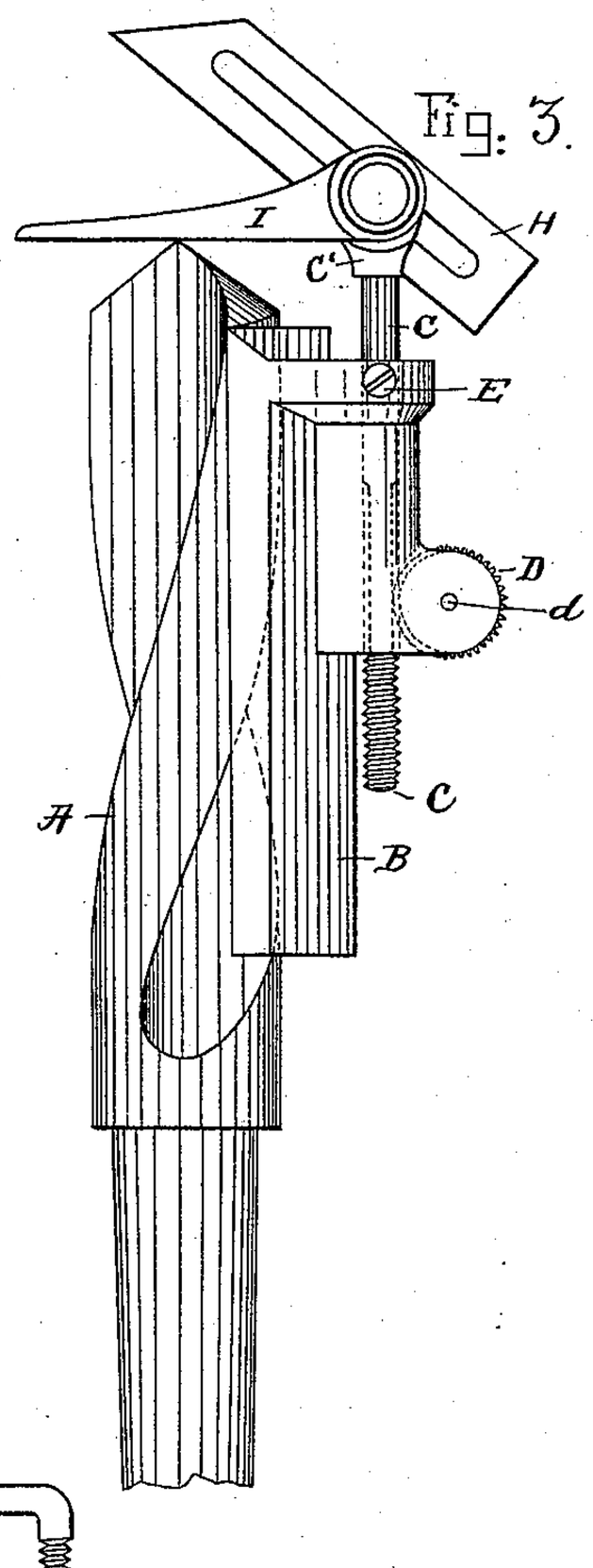


Fig. 4.

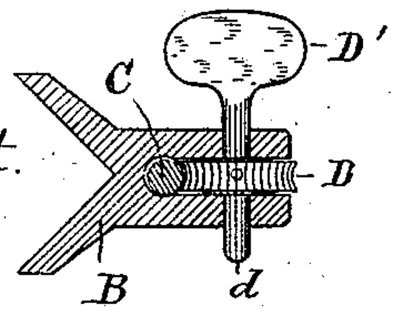
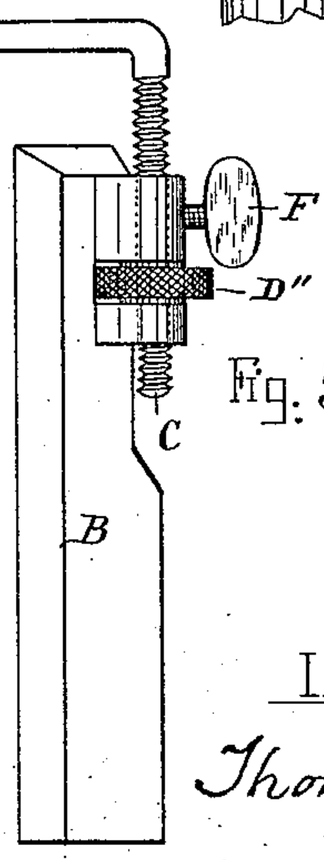


Fig. 5.



Witnesses.

Alice A. Perkins.

Laurits N. Möller.

Inventor

Thomas A. Taylor.

by Albert Andrén. atty

UNITED STATES PATENT OFFICE.

THOMAS A. TAYLOR, OF BEVERLY, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JAMES W. TAYLOR, OF SAME PLACE.

INDICATOR FOR GRINDING DRILLS.

SPECIFICATION forming part of Letters Patent No. 464,290, dated December 1, 1891.

Application filed June 11, 1891. Serial No. 395,861. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. TAYLOR, a citizen of Great Britain, and a resident of Beverly, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Indicators for Grinding Drills, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in indicators for grinding drills; and it has for its object to serve as a gage by means of which the operator can readily measure the angles of the cutting-edges of the drill from time to time while grinding it, so as to cause the opposite cutting-edges of a drill to be ground equally, both as to angles and clearance of the cutting-edges, and thus render the drill capable of doing a perfect work, as will hereinafter be more fully shown and described, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of the device, showing it as held in position against the side of a drill while gaging or trying the angle of the cutting-edge thereof. Fig. 2 represents a front view of the device, partly shown in section. Fig. 3 represents a side view as seen from the opposite side of Fig. 1, showing the adjustable lever in position for measuring the height from the apex of the drill to the lower part of the cutting-edge. Fig. 4 represents a cross-section on the line X X, shown in Fig. 1; and Fig. 5 represents a modification of my improved indicator.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A in Figs. 1 and 3 represents an ordinary Morse twist drill, for which my invention is especially adapted as a means for measuring the cutting-faces, their angles, and clearances from time to time during the grinding operation.

My invention consists of a V-shaped or longitudinally-grooved frame or holder B, adapted to fit against the side of the drill while measuring the cutting-edges, their angles, and clearances, as shown in the drawings.

In a longitudinal bearing in the frame B is adjustable a spindle C, which may be adjusted up and down by any suitable mechanism, and for this purpose I have shown in Figs. 1, 2, 3, and 4 the lower end of said spindle as being toothed or screw-threaded and adapted to be actuated by means of a pinion D, having its teeth meshing into those of the said spindle. The said pinion is secured to a pin *d*, journaled in bearings in the frame B and preferably provided with a thumb-piece or handle D′, by means of which it can readily be manipulated. In the modification in Fig. 5 I have shown for the same purpose a serrated nut D″, surrounding the screw-threaded spindle C, and by turning said nut the spindle can be raised or lowered. I desire to state that I do not wish to confine myself to any particular device or mechanism for adjusting the spindle C, as this may be done by any well-known mechanism or direct by hand without departing from the essence of my invention.

In practice I prefer to use in connection with the spindle C an adjustable friction device for steadying its motion in its bearing, and for this purpose I have shown in Fig. 2 a set-screw E, screwed through that portion of the frame B where the spindle C is journaled and having a friction-washer *e* or any suitable yielding medium interposed between said screw and the spindle C. By setting up the said screw E any desired frictional resistance may be given to the spindle C so as to steady its motion and prevent it from being accidentally moved out of position when not locked. F is a thumb-screw for securing the said spindle C to the frame B while taking measurements on the drill, as shown in Figs. 1, 2, and 5.

C′ is the upper end or head of the spindle C, through which passes a screw-bolt G, having preferably a head G′ in one end and a thumb-nut G″ in the other, as shown in Figs. 1, 2, and 3. *g′* and *g″* are washers preferably located on said bolt G. The bolt G is prevented from turning around in its bearing in the head C′, and this may be done in any well-known manner. In Fig. 2 I have shown for this purpose a projection g^3 on said bolt adapted to fit in a recess C″ in the head C′.

On the bolt G between the head C′ and nut G″ or washer *g″* is mounted a slotted plate

H, and on said bolt is pivoted between the opposite side of the head C′ and the bolt-head G′ or its washer *g′* a lever I, as fully shown in Figs. 1, 2, and 3, the object of which will hereinafter be more fully described.

For the purpose of grinding the cutting-edges of a drill to any desired angle or inclination the plate or bar H is adjasted relative to the grooved frame B in a corresponding position and secured thereto by means of the screw F. The grooved frame B is then placed on one side of the drill, as shown in Fig. 1, and moved downward thereon until the gage-plate H comes in contact with the with the cutting-edge of the drill, when it can easily be seen whether or not the inclination of the cutting-edge of the drill is like that of the gage-plate H, and if not the drill is ground and measured from time to time until the desired angle is obtained on both or all of the cutting-edges if the drill should have more than two. It is also very desirable in the grinding of drills that a proper clearance should be left back of each cutting-edge, and for the purpose of measuring such clearance the adjustable lever I is used, as shown in Fig. 3, it being swung to a horizontal, or nearly so, position, the upper edge of the grooved frame B being held opposite to the lower cutting-edge of the drill and the lever I moved until it touches the apex of the drill, when the operator can see at a glance by looking at the upper edge of the frame B whether or not a proper clearance is given back of the cutting-edge of the drill. If a proper clearance is not left, then the drill is ground and measured, as above, from time to time until the desired clearance is obtained. After the clearance is properly made relative to one of the cutting-edges the opposite one is measured and ground until both are equal. The lever I, when thus used, also serves, in connection with the frame B, to measure the height from the apex of the drill to the lower ends of the cutting-edges of the drill, by which it may readily be ascertained whether or not both cutting-edges of the drill are ground to the same angle.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

The herein-described indicator, consisting of a grooved frame adapted to fit against the side of the drill, a spindle or rack longitudinally adjustable thereon and having connected to its upper end in an adjustable manner a plate for measuring the angle of the cutting-edges, and a lever for measuring the height of inclination and clearance of the cutting-edges, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 9th day of June, A. D. 1891.

THOMAS A. TAYLOR.

Witnesses:
ALBAN ANDRÉN,
MABEL J. TAYLOR.