(No Model.)

R. L. BARCLAY.

MACHINE FOR MAKING DRILLS.

No. 508,161. Patented Nov. 7, 1893.

Fig. 2.

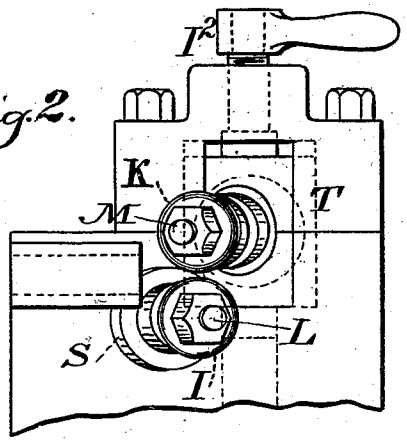


Fig. 3.

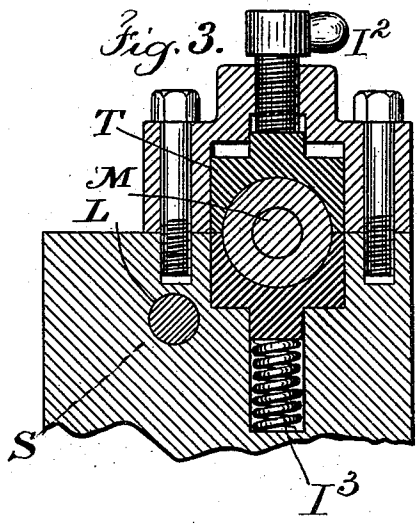
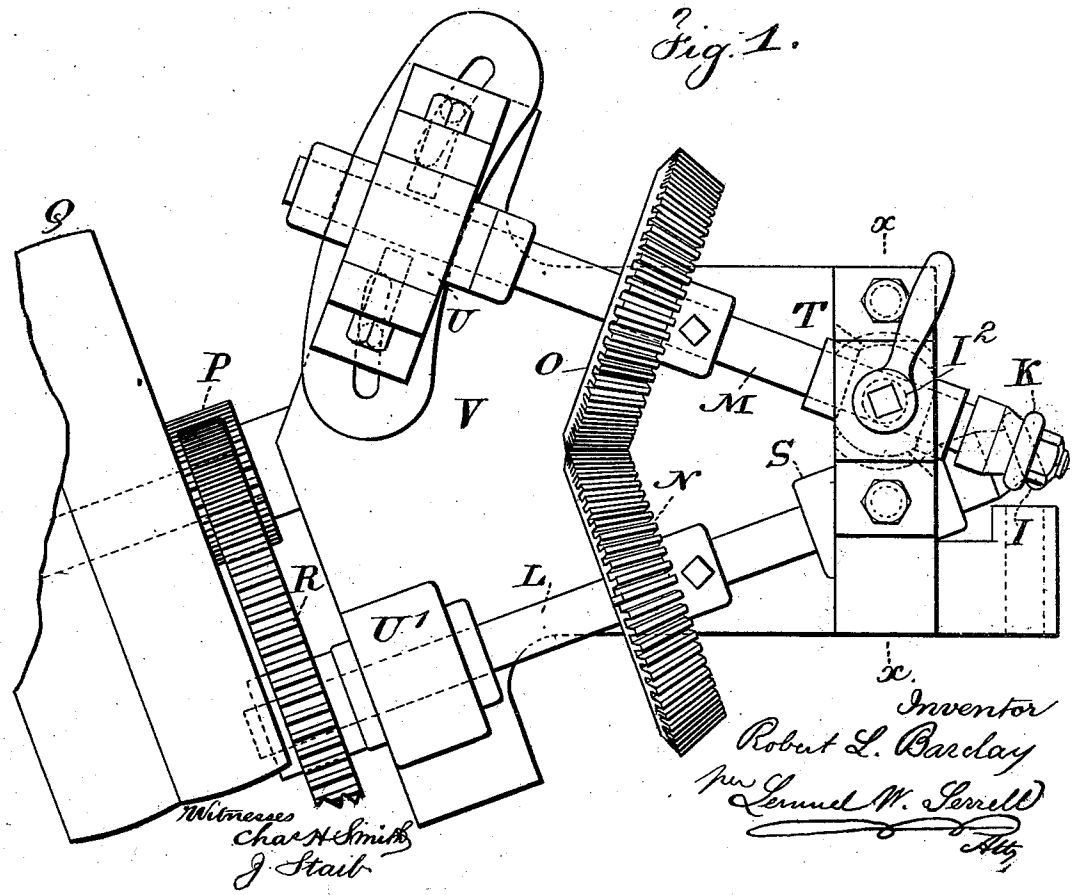


Fig. 1.



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MACHINE FOR MAKING DRILLS.

SPECIFICATION forming part of Letters Patent No. 508,161, dated November 7, 1893.

Application filed October 10, 1892. Serial No. 448,422. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. BARCLAY, a citizen of the United States, residing at Plattekill, in the county of Ulster and State of New York, have invented an Improvement in Machinery for Making Twist-Drills, of which the following is a specification.

In the manufacture of twist drills it is advantageous to be able to change the angle between the axes of the twisting rolls so as to vary the inclination of the twist, and it is also important to be able to change the rolls with facility for different sizes of ribs upon the rolls, and it is also necessary to move one roll in relation to the other to allow for different sizes of twist drills and to give facility for the insertion of the drill blank in commencing the twisting operation.

My present invention relates to a mechanism for accomplishing the before mentioned objects, and the said invention consists in the combination of devices hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of the twisting mechanism. Fig. 2 is an elevation at the end of the rolls, and Fig. 3 is a section at the line *x*, *x*, of Fig. 1.

The shafts L and M are adapted to receive at their ends the rolls I and K, which rolls can be slipped on and off the projecting ends of such shafts and secured in position by nuts. This allows for changing the rolls according to the sizes of the drills and the sizes of the ribs upon the rolls that enter the grooves in the drill blank to twist the same as the blank is rolled through between such rolls I and K. The shafts L and M are supported in suitable journal boxes or bearings, the bearing U′ being by preference stationary and so also is the bearing S, the shaft L being supported by these two bearings, and upon the shaft L is a gear wheel R receiving its motion from a pinion P and band wheel Q. The shaft M is supported in a bearing T near one end and a bearing U near the other end, and this bearing U is connected with and supported upon the bed of the machine, there being segmental slots receiving screw bolts by which the bearing U is firmly held in position, but it can be adjusted so that the angle between the shafts M and L can be changed as desired for varying the angle of the twist upon the drill blank; and in order to allow of this movement, the bearing T near the end of the shaft M is provided with upper and lower pivots upon which such bearing T can swing as the shaft M is changed in its angle to the shaft L, and the upper and lower pivots of the bearing T are shown in Fig. 3, one of the pivots passing downwardly into the bed plate of the machine and the other pivot passing upwardly and held by a bridge-piece that is bolted to the bed of the machine. It will now be apparent that the rolls I and K can be changed conveniently in consequence of the shafts L and M projecting at their ends beyond the respective bearings, and this gives great facility for introducing the blank to be twisted in forming the drill and also great facility in changing the rolls as required from time to time, and the adjustment of the bearing U gives facility for changing the angle of the rib upon the roller K in its relation to the rib upon the roller I. The bevel gear wheels N O upon the respective shafts L and M give rotation to the shaft M from the shaft L, and such gears are movable endwise on the respective shafts to allow for the movement of the shaft M and for properly bringing the teeth of the gears in mesh with each other.

In order to adapt this machine to different sizes of twist drills, the roller K requires to be raised and lowered in relation to the roller L, and this is accomplished by a spring I^3 below the lower pivot of the swinging bearing T, and a screw I^2 passing through the bridge and acting upon the upper pivot of said bearing T. By slackening the screw I^2 the spring I^3 lifts the bearing T, shaft M and roll K, and by turning down the screw I^2 the roll K is caused to approach toward the roll I. This not only allows for adjusting the rolls for different sizes of twist drills but also allows for raising the roll K to give space for the insertion of the heated twist drill blank, so that by screwing down the roll K the necessary pressure is given upon the heated twist drill blank, and when the rolls are rotated, the blank is rolled through between them and twisted with a regular and uniform twist, so that the blank when delivered is ready to be straightened, ground and finished in any usual manner.

I remark that it is advantageous to forge

the twist drill blank with longitudinal grooves at opposite sides and terminating at a slight inclination at the ends of the grooves near the shank, so that the heated twist drill blank can be grasped between the rollers I and K at the slightly inclined ends of the grooves, and the twisting operation will be effected as the drill blank is rolled along and rotated by the action of the rolls I and K, the shank end of the roll being at the advancing end.

If desired, the bearing U′ may be constructed similarly to the bearing U; and it is advantageous to support the journal box in the bearing U upon pivot screws, as shown, to prevent the shaft M binding in such bearing U as the bearing T is raised or lowered by the action of the spring I^3 and screw I^2.

I claim as my invention—

1. The shafts L M, one above the other and at an inclination, in combination with the gearing for connecting the shafts, the stationary bearings for the shaft L, the bearing U for one end of the shaft M, adjustable to vary the angle between the shafts, the bearing T near the other end of such shaft, the spring I^3 to raise such bearing, and the screw I^2 to press the same downwardly, and the convex ribbed rolls I and K upon the projecting ends of the shafts L and M respectively, whereby the action of the rolls upon the twist drill blank may be varied, substantially as set forth.

2. The combination with the roll I, and its shaft L, and means for rotating the same and the bearings for the shaft, of the roller K, and its shaft M, the bearing U, and means for adjusting the same to vary the angle between the shafts L, and M, and the bearing T, having top and bottom pivots on which it may turn as the shaft M, is adjusted, and means for raising and lowering such bearing T, to regulate the proximity of the rolls, substantially as specified.

3. The combination with the roll I, and its shaft L, and means for rotating the same and the bearings for the shaft, of the roller K, and its shaft M, the bearing U and means for adjusting the same to vary the angle between the shafts L, and M, and the bearing T, having top and bottom pivots on which it may turn as the shaft M, is adjusted substantially as specified.

Signed by me this 27th day of September, 1892.

ROBERT L. BARCLAY.

Witnesses:
GEO. T. PINCKNEY,
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