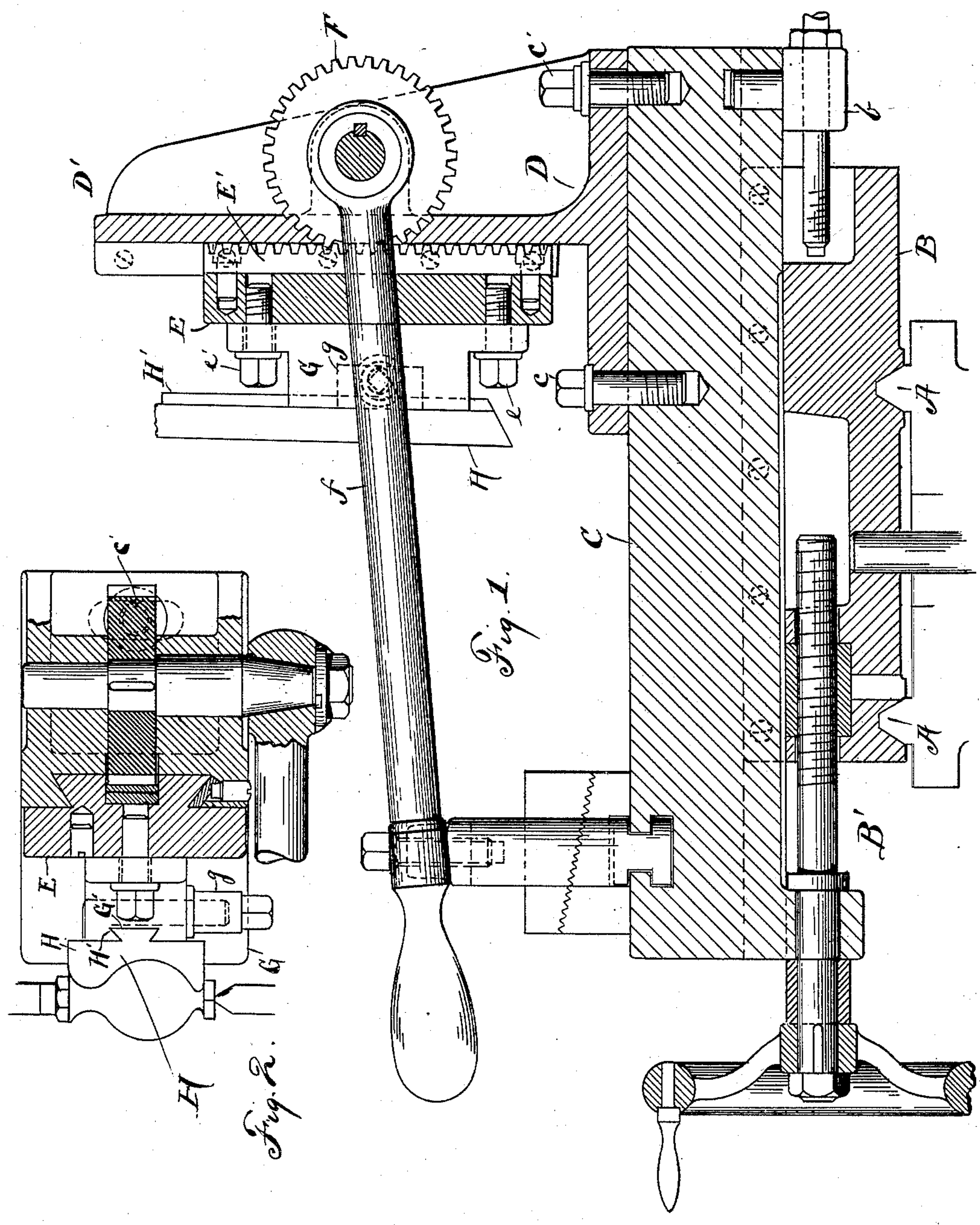
(No Model.)

G. C. BARDONS.

MACHINE FOR TURNING IRREGULAR SHAPES.

No. 475,917. Patented May 31, 1892.



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GEORGE C. BARDONS, OF CLEVELAND, OHIO.

MACHINE FOR TURNING IRREGULAR SHAPES.

SPECIFICATION forming part of Letters Patent No. 475,917, dated May 31, 1892.

Application filed May 14, 1891. Serial No. 392,785. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BARDONS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Turning Irregular Shapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in machines for turning irregular shapes—that is to say, for turning round articles of varying diameter—such, for instance, as handles and certain classes of cocks, &c. Heretofore this class of machine or lathe has usually been provided with a tool-holder mounted on the cross-slide of the lathe, the face of the tool being shaped to correspond with the contour of the finished work, the end of the tool having a cutting-edge adapted to tangentially engage the under side of the revolving blank or work. The cross-slide was provided with, usually, four upwardly-projecting adjusting-screws, known as "jack-screws," and with usually two binding-screws for holding the tool-holder upon the adjusting-screws, and by patient and careful manipulation of these six screws the tool-holder could be adjusted up or down, according to the size of the work, and could be tilted lengthwise or sidewise to give the desired clearance, and by such means the tool could be eventually set as desired. There were serious objections to such construction. For instance, the tool and tool-holder when mounted on the cross-slide in the manner aforesaid reduced the swing or capacity of the lathe to such an extent that what is known as a "sixteen-inch lathe" would swing a blank only about two and a quarter inches in diameter, whereas the same lathe divested of such tool-holder and attachment would swing above the cross-slide a piece of work, say, six or seven inches in diameter. It frequently happens that by reason of an imperfect blank the cut of the tool does not finish the work perfectly; but if another light cut would be taken the work would be perfect. With the construction aforesaid such second cut could not be taken without readjusting the tool-holder, and this would likely require more time than the blank was worth.

In view of the foregoing I have devised the improved construction illustrated in the accompanying drawings.

Figure 1 is a side elevation, partly in section, of the saddle and cross-slide bearing my improved attachment. Fig. 2 is a plan of a portion of the device.

A A represent the ways of the lathe-bed, and B the saddle operative thereon, the upper section of the saddle furnishing the ways for the primary or cross slide C, a screw B′ being provided for operating the cross-slide, and the latter being usually provided with an adjustable stop of some kind—for instance, as shown at *b*—to limit the forward movement of the cross-slide. The parts thus far described and the cutting-tool hereinafter mentioned may be of ordinary construction, as heretofore.

D is a knee or bracket mounted on and adjustably secured or swiveled to slide C by means of screws *c* and *c′*, the former serving as the axis or fulcrum of the bracket and the latter extending through a lateral slot or elongated hole in the bracket, as shown at *b′*, whereby when the screw is loosened the bracket may be turned laterally a limited distance, for instance, in giving clearance to the respective edges of the cutting-tool or for other purposes. The upright arm D′ of the bracket is preferably, but not necessarily, vertical—that is to say, at right angles or perpendicular to slide C. Member D′ could incline more or less rearward or forward if there were found any good reason for making the bracket other than right-angular, as shown. Member D′ furnishes the ways for a secondary slide E. For light and medium work slide E may be provided with a rack E′, engaged by a pinion F, the latter being operatively connected with a hand-lever *f* for operating slide E up and down for feeding the tool. To the face of slide E is adjustably secured the tool-holder G, preferably in much the same manner as the bracket is swiveled to slide C—that is to say, screw *e* serves as a fulcrum on which to swing the tool-holder and screw *e′* operates in a transverse slot of the tool-holder, whereby with these screws loosened the tool-holder may be more or less tilted laterally.

H represents the tool, having a tongue H′ on the rearward face or back, this tongue hav-

ing undercut edges adapted to operate in a corresponding groove G′ of the tool-holder, forming a dovetail with suitable appliance—for instance, as shown at *g*—for clamping the tool. As shown in Fig. 2, the face of the tool is shaped to correspond with the desired work, the end of the tool being undercut to give a cutting-edge and being cut at an angle, so as to give a shearing cut rather than scrape the work. For heavy work a screw may be substituted for the rack and pinion. The tool being in place, by manipulating screw B′ the tool is moved more or less forward, according to the size of the work, whereupon by depressing the tool-holder the tool is made to tangentially engage the rear side of the revolving work. If it is found that one cut would be too heavy, the tool is backed off a trifle by reversing screw B′, and two or more cuts may be made, according to circumstances, and consequently if what was supposed to be the finishing cut does not quite finish the work another light cut may be taken by first manipulating screw B′. It is evident, therefore, that with my improved construction any work that the tool is adapted to perform may be done without readjusting the tool, and that, too, regardless of the size of the blank or the size of the finished work, and, second, that the lathe will swing any work that will clear the primary slide C.

By turning bracket D on its axis in the one direction or the other the one end of the cutting-edge of the tool is advanced toward the work and the other end is of course drawn back from the work. Hence by shifting this knee, which can be done in a moment, the work may be turned larger or smaller at the one end, thus giving the desired taper or outline to the work.

In conclusion it may be stated that while my machine is particularly adapted for working upon metal it is evident that it could be employed on some hard woods.

What I claim is—

1. The combination, with a primary or cross slide and a bracket or knee mounted thereon, of a secondary slide mounted on and movable up and down the bracket, said secondary slide provided with rack-teeth, a pinion adapted to operate said slide by its engagement with the rack-teeth, and an operating-lever, substantially as set forth.

2. In a machine of the class indicated, the combination, with a primary or cross slide bearing a bracket, of a secondary slide mounted on and movable up and down the bracket, such secondary slide bearing a tool-holder, the tool-holder and bracket being adjustable on their respective seats, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 21st day of April, 1891.

GEORGE C. BARDONS.

Witnesses:
C. H. DORER,
WARD HOOVER.