

(No Model.)

2 Sheets—Sheet 2.

H. DRYSDALE.
TURRET LATHE.

No. 493,019.

Patented Mar. 7, 1893.

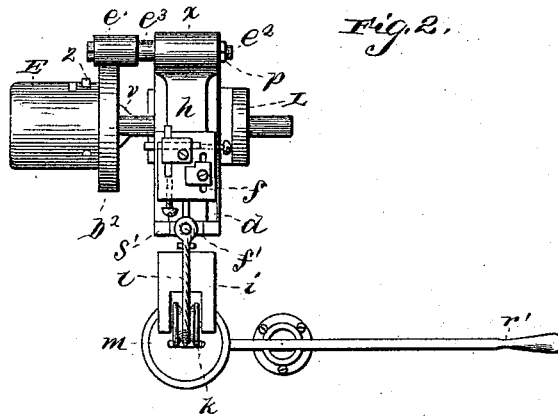


Fig. 2.

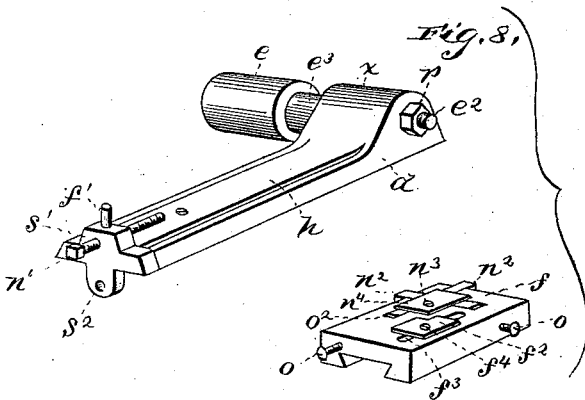


Fig. 8.

Fig. 7.

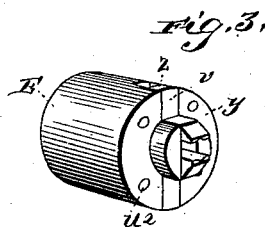
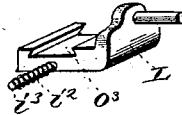


Fig. 3.

Fig. 4.

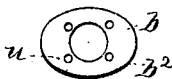


Fig. 5.

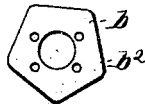
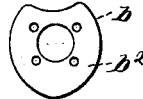


Fig. 6.



Witnesses:
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UNITED STATES PATENT OFFICE.

HUGH DRYSDALE, OF CLEVELAND, OHIO.

TURRET-LATHE.

SPECIFICATION forming part of Letters Patent No. 493,019, dated March 7, 1893.

Application filed October 23, 1890. Serial No. 369,148. (No model.)

To all whom it may concern:

Be it known that I, HUGH DRYSDALE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Cam-Turning Attachment to Turret-Lathes, of which the following is a specification.

My invention relates to improvements in turret-lathes, in which a revolving spindle carrying a chuck, holding the work operates in conjunction with a transverse cut-off carriage, and a rotating turret, supplied with cutting tools; and the object of my improvement is, to provide certain attachments to the spindle and framework of a metal turning turret-lathe, by means of which cams; elliptical, polygonal, heart-shaped and other analogous forms of irregular shape, may be readily turned in such lathe. I attain this object by the mechanism set forth in the accompanying drawings, in which—

Figure 1 is a longitudinal perspective view of the entire machine. Fig. 2 is a plan view of the parts comprising the invention. Fig. 3 is a longitudinal perspective view of the vise-jawed chuck adapted to my improvement. Figs. 4, 5, and 6 are plan views of a former or pattern. Fig. 7 is a longitudinal perspective view of a tool-body. Fig. 8 is a detailed view in perspective of the slide-carriage, and tool-block detached.

Similar letters refer to similar parts throughout the several views.

The main frame B, its legs A, A, head-stock C, cone and spindle O, vise-jawed chuck E, transverse elevation block F, and cut-off carriage and tool-body rest G, a slide-carriage elevation block H, hand-wheel I, slide-carriage J, turret K, and tool-body L constitute a turret-lathe. In the head-stock C, revolves the cone and spindle O, carrying a vise-jawed chuck E, the face and jaws of which are shouldered as at γ , (see Fig. 3,) and is supplied with a correspondingly recessed disk b , secured by screws u , through said disk into the screw holes u^2 , in the body of said chuck E in a manner not to interfere with the opening and closing of the vise-jaws v , by the operation of the screw z . Said disk b , secured to the chuck E as described, is revolved with the spindle O and has cut or ground in its circumference a form or face b^2 , (see Figs. 4, 5, and 6,) 50

that is a pattern of a cam, elliptical, (see Fig. 4,) polygonal, (see Fig. 5,) heart-shaped, (see Fig. 6,) or other analogous forms of irregular shape; each distinct form of irregular shape, is cut or ground upon a separate disk, adaptable to said shouldered chuck, and is used individually and serves as a pattern or shape of the work to be turned, and also serves as an actuating cam, that makes contact connection of said face b^2 , with an antifriction roller e , engaging a slide-carriage d . On the tool-body L in the turret K, is provided a slide-carriage d , transversely mounted in dovetailed slide-ways o^3 , and has arranged on its top a fixed dovetailed guide-way h , which serves to guide a correspondingly recessed base-plate of the tool-block f , a view in perspective of said slide-carriage d , and tool-block f , detached from each other is shown in Fig. 8. On the inner end of said slide-carriage d , is provided an upright extension s' , having fixed in its top a pin or stud f' , that engages the cable l , suspending a weight m , over a grooved pulley k loose in the bracket i , that is secured to the main-frame B by screws u' .

To the side of the tool-body L, (see Fig. 7,) is permanently secured a laterally-projecting rod v^3 , that extends through a hole in the downward extension s^2 of the slide-carriage d , and is encircled with a spiral spring v^2 , between said downward extension s^2 and side of tool-body L, referred to hereinafter. On the opposite end of said slide-carriage d is provided an upright extension x , having a laterally-projecting stud e^2 , which is secured by a shoulder-extension e^3 , and draw-nut p , in said extension x carrying an anti-friction roller e , that forms the contact-connection of said slide-carriage d , to the pattern and cam-face b^2 aforementioned. The revolving of said pattern and cam b by the spindle O, moves transversely said slide-carriage d through a space on the tool-body L equal to the cam-development given to the pattern-face b^2 . Which slide carriage is drawn back in the opposite direction by the suspended weight m , and the tension of the spiral spring v^2 , previously referred to. Said mentioned weight m and spiral-spring v^2 can be used individually, to operate transversely said slide-carriage d , in the direction opposite to that caused by the rotation of the pattern and cam b , aforementioned. 100

Thus is the slide-carriage d transversely reciprocated on the tool-body L, which is moved lengthwise of the machine on the rest G, in conjunction with said transverse reciprocation by the hand-wheel I, which governs the extent in length, of the forms of irregular shape to be turned. The tool-block f , aforementioned is shown in perspective view in Fig. 8, and has a transversely arranged groove o^2 in its top, a knife n^2 in said groove, with a screw o in said block to adjust forward, said knife, in said groove, as it is worn or ground away. The knife has a cutting-edge on its projecting end, with which to turn the cam, of an elliptical, polygonal, or heart-shape, or other faces of irregular shape, corresponding to the pattern-face b^2 . A similar groove, knife, and adjusting screw are longitudinally arranged on said tool-block f , the knife having a cutting-edge on its projecting end, with which to turn cam-hollows, collars, &c., similar in shape to the pattern-face b^2 , the knives to be used individually are secured in their respective groove o^2 by means of a cap-piece n^1 , and set-screw n^3 . Said tool-block f has a slot f^3 vertically through its body, a cap-piece f^2 extending over the sides of said slot, a screw f^1 projecting through said cap and slot, into a correspondingly threaded hole in the slide-way h , which firmly retains said tool-block f , to the slide-carriage d when in use. The tool-block f is moved, to or from the bar-metal, on the slide-way h , by releasing the screw f^1 and operating the screw n^1 that is threaded through the upright extension s' and engages said tool-block on said slide-way h to the extent of the slot f^3 when not in use. Said tool-block is made movable on said slide-way, as described, so that forms or hollows, in shape similar to the pattern-face b^2 , can be turned of various diameters, by the same or a different pattern-face b^2 , by moving said block to or from the bar-metal. The weight m when disconnected from said slide-carriage d rests upon a stand n , that is provided with a downward extension q , projecting into the hollow of an upright piece o' , and rests upon the end of a foot-lever r' , that is fulcrumed as at s , (see Fig. 1.) in the upright piece j ; and the stand n is raised or lowered by the foot-lever r' , as it is desired by the operator to couple, or uncouple the weight m , by its engaged cable l , to or from the pin f' on the slide-carriage d , aforementioned. Said pieces o' and j , each have one end flanged as at p' , and are secured to the floor w in a vertical position with the pulley k , by screws m' ; the piece o' serving as a vertical-guide way for said stand n , to support said weight m as described.

The operation of the machine is as follows:—

The tool-body L is moved forward on the rest G by the hand-wheel I, which brings the anti-friction roller e of the slide-carriage d in contact with the pattern-face b^2 , of the respective disk b in use; that is revolved by the spindle O, and reciprocates transversely in one direction on the tool-body L, said slide-carriage d

and its tool-blocks f , which are drawn back in the opposite direction by the tension of said mentioned spiral spring v^2 , or suspended weight m and connections; the respective knife n^2 , in use meanwhile, imparting to the bar metal, that is held in the chuck E, a face or hollow that is an exact counterpart of the pattern-face b^2 in use, and said knife is fed lengthwise of the bar-metal the required length, by the hand-wheel I; the roller e gliding on the pattern-face b^2 . The form or hollow being turned thus, the weight-stand n , is raised up by the foot on the lever at r' and lifts said weight up so that the cable l can be disconnected from the pin f' on the slide-carriage d , which is drawn back and turned about the turret K by the wheel I, so that each form or hollow produced may be operated upon by any other desired tools in the turret before cutting the same from the bar-metal; and this cutting is done by means of a cut-off knife a^2 , secured in a block on the slide-plate a , that is slidably mounted in transverse slide-ways on the tool-body L, and is transversely operated by means of the handle r attached to the top of a stud r^2 , that has a cam extension on its lower end located under the cap-piece a' , and engages said slide-plate. The manner of cutting said forms from the stock as described forms no part of my invention; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination in a turret-lathe of a slide-carriage d , supported transversely of the machine bed, a turret tool-body L, a movable tool-block f , suitable cutting knives n^2 , n^3 , adjusting screw n^1 , lateral projecting stud e^2 , and anti-friction roller e , with a cam-disk b , on the lathe spindle actuating said carriage in one direction, and a weight m , and connections tending to move said carriage in the opposite direction, and to hold the same in contact with the cam-face substantially as described, whereby when the lathe spindle is rotated said carriage and tools are moved crosswise of the lathe-bed.

2. In a turret-lathe having a slide-carriage d , supported transversely of the machine bed, a turret tool-body L, a cam-disk b , on the lathe-spindle actuating said carriage in one direction, and a weight m , and connections tending to move said carriage in the opposite direction, in combination with a weight-stand n , having a hollow upright piece o' , a table n , and a foot-lever r' , fulcrumed and supporting said stand substantially as described, whereby when the lever is pushed down by the foot, the stand is raised lifting the weight to be coupled or uncoupled from the slide-carriage.

In testimony whereof I sign this specification in the presence of two witnesses.

HUGH DRYSDALE.

Witnesses:

N. ANDERSON,
CHAS. SHIRK.