

C. SCHOENLEBER.

LATHE FOR TURNING IRREGULAR FORMS.

No. 316,835.

Patented Apr. 28, 1885.

Fig. 1

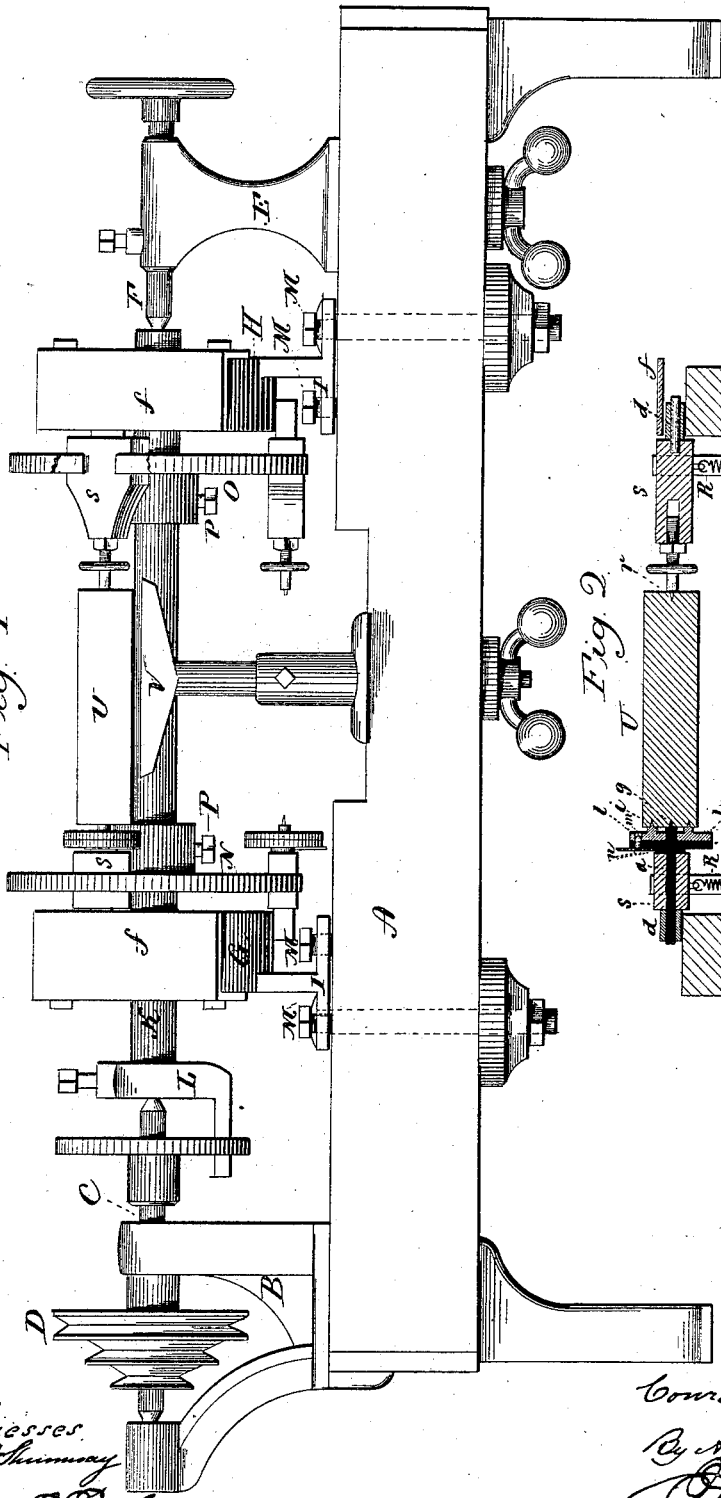
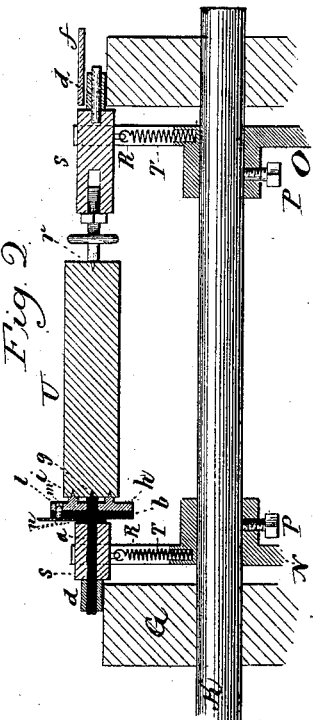


Fig. 2



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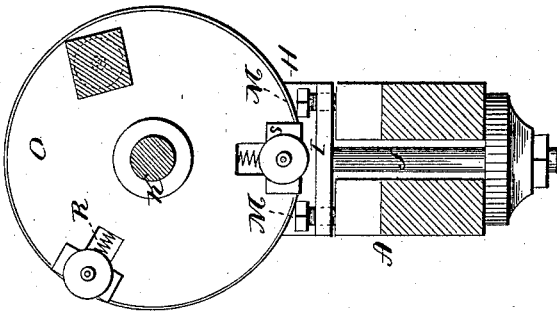


Fig. 4.

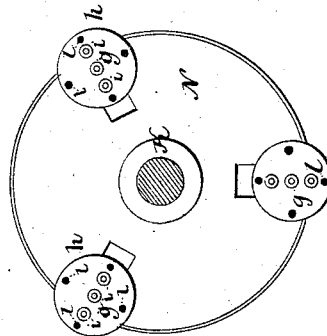


Fig. 5.

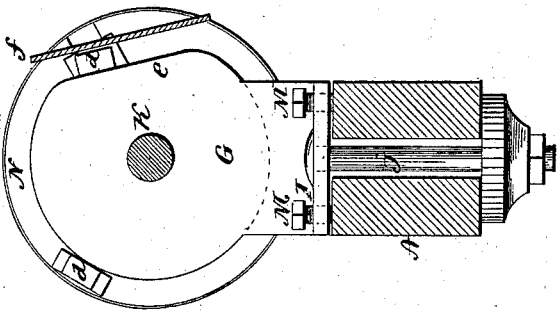


Fig. 3.

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UNITED STATES PATENT OFFICE.

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LATHE FOR TURNING IRREGULAR FORMS.

SPECIFICATION forming part of Letters Patent No. 316,835, dated April 28, 1885.

Application filed February 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, CONRAD SCHOENLEBER, of Rochester, in the county of Monroe and State of New York, have invented new Improvements in Irregular-Shaped Turning Attachments for Lathes; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a front view of a lathe showing the attachment applied and with a piece in position to be wrought; Fig. 2, a longitudinal section through the attachment cutting on a line centrally through the blocks S; Fig. 3, a transverse section through the bed at the rear of the head G, showing the guard *f* in transverse section; Fig. 4, a transverse section through the bed and through the piece to be wrought, looking toward the inner side of the disk O; Fig. 5, an inner side view of the disk N.

This invention relates to an attachment to be applied to lathes for wood-turning, the object of the invention being to provide an attachment for a common wood-turning lathe whereby articles may be turned of polygonal shape; and the invention consists in the device hereinafter described, and more particularly recited in the claims.

A represents the bed or shears of a common turning-lathe; B, the head-stock, in which the mandrel C is arranged, and upon which are the driving-pulleys D; E, the tail-stock adjustably arranged on the bed, and provided with an adjustable spindle, F, all of common and well-known construction.

G and H are two heads, each constructed with a base, I, arranged to be set upon the bed of the lathe, and secured thereto by a bolt, J, down through the bed, as seen in Fig. 3, and in similar manner to the usual method of adjustably securing the tail-stock. Through these two heads a shaft, K, is arranged, and so as to revolve freely therein, the shaft taking its bearing in the two heads, and is in line with the centers of the lathe, so that one end rests on the center of the tail-stock, and the other on the center of the head-stock, the shaft coupled with the head-stock by a dog, L, or

otherwise, so that the shaft may partake of the revolution of the lathe-mandrel.

In building an attachment of this character for general application to lathes, some adjustment is necessary in order to insure the exact concentric position of the shaft with the mandrel and spindle of the lathe. To make such adjustment, I introduce screws M through the base I of the head, say four in number, making four bearings, two on the front part of the bed and two on the rear part, so that by turning the screws the head may be adjusted to bring the shaft into exact axial line with the mandrel and spindle.

Fixed to the shaft K are two disks, N O, and so as to revolve with the shaft. They may be made adjustable on the shaft, so as to be set nearer to or farther from each other, they being provided with a set-screw, P, or other device for this purpose. In the disks several corresponding radial grooves, R, are formed, and into which blocks S are set so as to slide radially in said grooves R, the blocks working in said grooves so as to be guided and permit only a radial movement. To each block a spring, T, is applied, the tendency of which is to draw the blocks toward the center of the disks. In the blocks at one end—say the right hand—a spindle, *a*, is arranged parallel with the axis of the shaft. This spindle extends through the block S, and to its inner end a disk, *b*, is rigidly fixed. To its outer end a shoe, *d*, is fixed, which rides upon the periphery of the head G, the bearing-surface of the shoe being flat. The shape of the heads G H are circular, except at the front, where the surface is flattened, as at *e*. (See Fig. 3.) Forward of this flat surface *e*, but fixed to the head, is a guard, *f*, parallel with the flat surface *e*, the space between the guard and flat surface *e* being substantially that of the thickness of the shoe *d*, and so that as the shaft K, carrying the disk N, revolves the shoe will traverse around the head upon its circular surface until it arrives at the flat surface *e*. Over that flat surface the shoe rides, held thereto by its spring R, and so as to prevent rotation of the spindle *a*. The spindle *a* projects through the disk *b*, and forms a center, *g*, to center the piece to be turned, U representing that piece. Upon the face of the disk B, and supported by the projecting end of the spindle, is a second

disk, *h*. (See Fig. 5.) This disk is armed with several projecting points, *i*, which may also enter the end of the piece U, so as to secure the piece U to the disk *h*, substantially as the block of wood is secured to the lathe-dog for wood-turning. The disk *h* is made adjustable, or so as to be set at different positions. This may be done by making several holes, *l*, in the disk *h*, and introducing a pin, *m*, through a hole in the disk *b*. This pin is attached to a spring-lever, *n*, the tendency of the spring being to force the pin forward into one of the holes in the disk *h*, and as seen in Fig. 2, and so that if the pin *m* be drawn from its engagement with the disk *h* the disk *h* will be free to be rotated, turning upon the center *g* of the spindle *a*; but when the disk *h* is engaged by the pin *m*, then the disk must partake of any movement imparted to the disk *b*.

At the opposite end the block S is provided with a like shoe, *d*, arranged to travel upon the periphery of the head H, as does the shoe *d* upon the other block. The head H has a flat surface, like and corresponding to the flat surface *e* of the head G, and is also provided with a like parallel guard, *f*, so that the two blocks S S as they move around the periphery of their respective disks will have the same movement—that is, exactly follow the same path. The second block is provided with an adjustable still center, *r*, similar to the adjustable center of the turning-lathe, which center takes into that end of the piece to be wrought. Suppose the piece to be turned is to have four sides—that is, to be four-sided in transverse section. The disk *h* has four holes, *l*, equidistant, and each corresponding to the pin *m* on the disk *b*. The piece to be turned is introduced between the disk *h* and the center *r*, the points on the disk entering one end so as to engage the piece with the disk, the center *r* at the opposite end applied in the center of that end of the piece. Thus arranged, the shaft is started. The block revolves around with the shaft, but as it comes near the front the shoes pass onto the flat surface *e* of the heads, and so that the piece will follow the path defined by the said flat surface *e*, and while passing this flat surface it also passes the tool-rest V. The workman applies a tool upon the rest, as in the usual manner of turning, and as the piece passes the rest the tool cuts therefrom as in common turning, and so continuing the piece will revolve with the shaft, but substantially fixed upon its own axis, and a cut will be made each time the piece passes the rest, the workman applying the tool in the usual manner of turning until the requisite shape longitudinally is given to the surface, but transversely the surface thus wrought will be flat. Having turned one side, the operator withdraws the pin *m*, turns the block U with the disk *h* one point, and returns the pin into the second hole in the disk *h* to hold the piece in the second position. The work then proceeds as before, and the second side is turned

at right angles to the first, and the third side finished at right angles to the second but parallel with the first. The third side finished, the piece is adjusted for the fourth side, and that in like manner turned, and the piece is four-sided or square in transverse section, the shape longitudinally depending only upon the workman.

The disks *h* may have numerous holes corresponding to the pin *m*, so that the number of sides may be varied—that is, to be more or less than four—which I have described.

The attachment thus constructed is adapted to a common turning-lathe, so that such a lathe may be readily converted from cylindrical to polygonal work.

The disks N O may be provided with as many blocks S as they can conveniently carry, and consequently carrying as many pieces to be wrought, and so that the several pieces will present substantially a continuous surface to the workman. The surface of one being finished, all are finished, and all will require corresponding resetting.

I am aware that machines for turning polygonal forms are common and well known—as, for instance, Patents Nos. 245,107, 252,481, 283,874, and others. I therefore do not claim, broadly, a machine for such turning.

I claim—

1. The combination of the heads G H, adapted to be secured to the bed of a lathe, their surface circular except as to a portion at the front of each, which is made flat alike in both, the shaft K, supported in said heads, corresponding to the centers of the lathe, and adapted for connection with the mandrel of the lathe, whereby the rotation of the mandrel will be imparted to said shaft, corresponding disks, N O, fixed to and so as to revolve with said shaft, corresponding blocks, S, arranged in radial grooves in each of said disks, a spindle, *a*, through one of said blocks, parallel with the axis of the shaft carrying a shoe, *d*, upon its outer end, arranged to travel upon the periphery of the corresponding head, the said spindle constructed to engage the piece to be wrought, the block in the other disk provided at its outer end with a like shoe, *d*, arranged to travel upon the periphery of its corresponding head, and also fitted with a center to support its end of the piece to be wrought, substantially as and for the purpose described.

2. The combination of the two heads G H, adapted to be applied to the bed of a lathe, the surface of the two heads circular in shape except at the front, which is flat alike in both, the shaft K, supported in said heads and adapted to revolve with the mandrel of the lathe, the disks N O, fixed to said shaft, each disk constructed with corresponding radial grooves, blocks S, arranged in each of said grooves, a spring, T, arranged to draw said blocks toward the shaft, a spindle, *a*, through one of said blocks, carrying a shoe, *d*, upon its outer end arranged to travel upon the surface

of the one head, disk *h*, loose upon the inner end of said spindle, and provided with points to enter and engage the piece to be wrought, the said disk adapted to be rotated upon the spindle, a stop arranged to fix said disk at different positions in such rotation, the other block provided with a shoe, *d*, to travel upon the surface of its head, and also with an adjustable center to engage the other end of the piece to be wrought, substantially as described.

3. The combination of the heads G H, circular in shape except at the front, where the surface of the two are alike flat, said heads adapted to be fixed to the bed of a lathe, set-screws M, whereby the heads may be adjusted with relation to the centers of the lathe, shaft K, supported in and so as to revolve in said heads with the mandrel of the lathe, disks N O, blocks S S, arranged in radial grooves in said disks, and radially adjustable in said disks, each block provided with a shoe, *d*, adapted to travel upon and follow the periphery of their respective heads, one shoe carrying a spindle constructed to engage one end

of the piece to be turned and the other with a corresponding center to support the other end, substantially as described.

4. The combination of the heads G H, circular in shape except at the front, where the surface of the two are alike flat, said heads adapted to be fixed to the bed of a lathe, shaft K, supported in and so as to revolve in said heads with the mandrel of the lathe, disks N O, blocks S S, arranged in radial grooves in said disks, and radially adjustable in said disks, each block provided with a shoe, *d*, adapted to travel upon and follow the periphery of their respective heads, one shoe carrying a spindle constructed to engage one end of the piece to be turned and the other with a corresponding center to support the other end, and with a guard, *f*, parallel with the flat surface of each head, substantially as and for the purpose described.

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