

(No Model.)

2 Sheets—Sheet 1.

F. L. GREGORY.

LATHE CHUCK.

No. 374,405.

Patented Dec. 6, 1887.

Fig. 1.

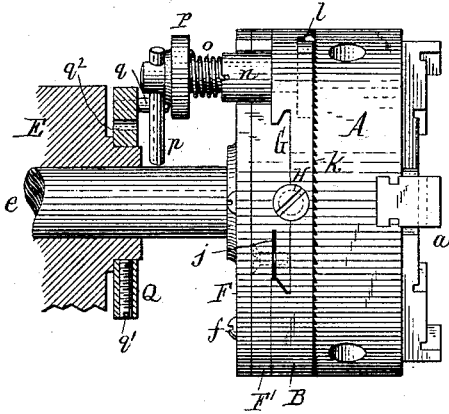


Fig. 2.

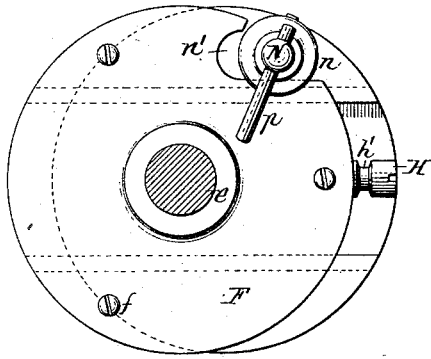


Fig. 3.

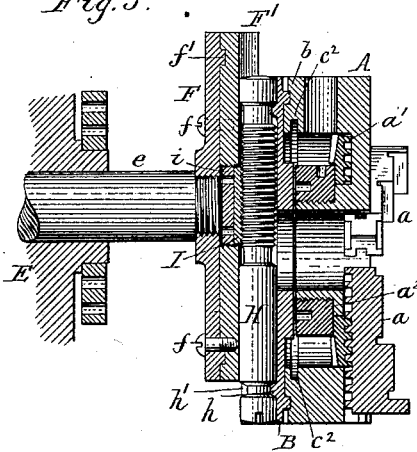


Fig. 4.

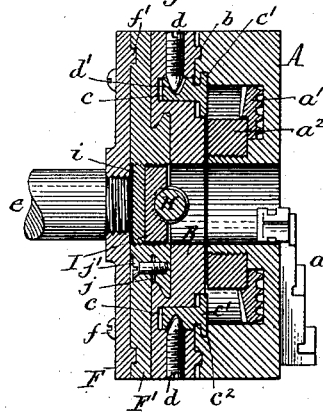


Fig. 5.

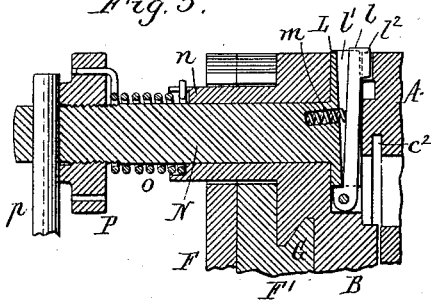


Fig. 6.

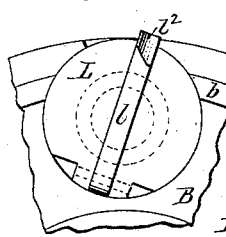
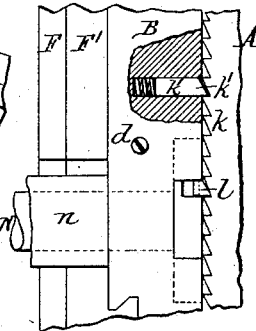


Fig. 7.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 8.

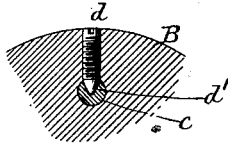


Fig. 9.

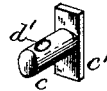


Fig. 10.

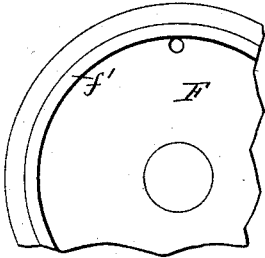


Fig. 11.

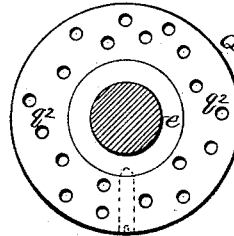
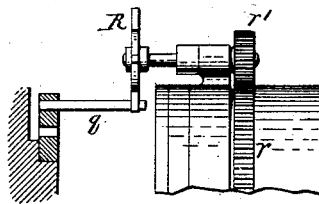


Fig. 12.



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UNITED STATES PATENT OFFICE.

FRED LEON GREGORY, OF NIAGARA FALLS, NEW YORK.

LATHE-CHUCK.

SPECIFICATION forming part of Letters Patent No. 374,405, dated December 6, 1887.

Application filed March 9, 1887. Serial No. 230,190. (No model.)

To all whom it may concern:

Be it known that I, FRED LEON GREGORY, of Niagara Falls, in the county of Niagara and State of New York, have invented new and useful Improvements in Lathe - Chucks, of which the following is a specification.

This invention relates to that class of lathe-chucks which are known as "eccentric chucks," in which the work-holding plate or face-plate can be arranged eccentrically to the lathe-spindle and can be turned to bring different portions of the work opposite the tool. (A chuck of this character is shown in Letters Patent No. 327,791, granted to me October 6, 1885.) These chucks are used, for instance, for producing ornamentations consisting of annular rows of intersecting circles. In producing such ornamentations the face-plate must be turned on its supporting back plate after a circle has been formed in order to place the work in position for the formation of the next circle. In the chuck described and shown in my aforesaid Letters Patent this turning movement of the face-plate is effected by hand and requires considerable attention and care on the part of the operator.

The principal object of my present invention is to effect this turning movement of the face-plate automatically.

Another object of my invention is to improve the construction of the devices whereby the several parts of the chuck are held together.

My invention consists of the improvements, which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional side elevation of my improved chuck. Fig. 2 is a rear elevation of the chuck. Fig. 3 is a longitudinal section of the same. Fig. 4 is a section at right angles to Fig. 3. Fig. 5 is a longitudinal section, on an enlarged scale, of the automatic feed mechanism attached to the chuck. Fig. 6 is a front elevation of the actuating-pawl and connecting parts of the feed mechanism. Fig. 7 is a top plan view of the same, partly in section. Fig. 8 is a sectional elevation of the bolt and set-screw whereby the work-holding plate is attached to its supporting-ring. Fig. 9 is a perspective view of said bolt. Fig. 10 is a fragmentary front elevation of the mandrel-plate. Fig. 11

is a front elevation of the stationary collar on the bearing of the mandrel. Fig. 12 is a fragmentary elevation showing a modified construction of the automatic feed mechanism.

Like letters of reference refer to like parts in the several figures.

A represents the work-holding plate or face-plate, which may be of any ordinary or suitable construction, and which may be provided with any suitable devices for securing the work to the same. As shown in the drawings, the face-plate is provided with clamping-jaws *a*, which are opened and closed by a scroll-ring, *a'*, in a well-known manner.

*a*² is an internally-threaded ring, which is screwed upon the externally-threaded hub of the face-plate A, and which holds the scroll-ring *a'* in place.

B represents the eccentric plate, to the front side of which the face-plate A is applied, and on which the latter turns by an annular rib, *b*, formed on the face of the eccentric plate B and entering a corresponding depression in the back of the face-plate A.

c c represent horizontal bolts arranged in cylindrical sockets in the eccentric plate B on diametrically-opposite sides thereof, and provided at their front ends with flat heads *c'*, which engage in an annular groove, *c*², formed in the bore of the face-plate A.

d represents radial set-screws arranged in the eccentric plate B and engaging with their tapering inner ends in tapering recesses *d'*, formed in the bolts *c*, thereby holding the latter in their sockets and the face-plate A against the face of the eccentric plate B. By tightening the set-screws *d* the bolts *c* are drawn into their sockets in the eccentric plate and the face-plate A is clamped tightly against the eccentric plate B.

e represents the mandrel of the lathe, and E the bearing in which it turns.

F is a plate or disk secured to the screw-threaded end of the mandrel, and F' is a plate secured to the face side of the plate F by screws *f*. The plate F' is centered on the plate F by an annular rib, *f'*, formed on the plate F and entering a corresponding groove in the plate F'. The plates F and F' form together the concentric mandrel-plate of the lathe.

G represents a dovetail or undercut rib formed diametrically on the face side of the

plate F' and entering a corresponding groove formed in the rear side of the eccentric plate B, so that the latter can be moved out of center on the mandrel-plate by sliding it on the rib G.

H represents the adjusting-screw, arranged between the mandrel-plate and the eccentric plate B, and resting in a semi-cylindrical groove formed lengthwise in the face of the dovetail rib G and a similar groove formed in the rear side of the eccentric plate B. The screw H is held against longitudinal movement by projections *h*, formed on the rear side of the eccentric plate B and entering annular grooves *h'*, formed in the screw H.

I represents a half-nut seated centrally in the mandrel-plate F' and engaging with the screw H, so that by turning the screw the eccentric plate B is moved on the dovetail rib G toward or from the center of the mandrel-plate. The half-nut I is held against the screw H by a screw-threaded follower, *i*, which is arranged in a central threaded opening in the plate F'. One wing of the dovetail rib G is preferably severed from the plate F' by a slit, *j*, and provided with an adjusting-screw, *j'*, by which the wear can be taken up.

k represents an annular row of ratchet-teeth formed in the rear side of the face-plate A on the outer side of the groove in which the annular rib *b* of the eccentric plate B engages, and *k'* is a spring detent-pawl which is seated in the plate B and engages with the ratchet-teeth *k*, so as to prevent retrograde movement of the same.

l represents the actuating-pawl, arranged in a circular head, L, which latter is provided in its front side with a diametrical groove, *l'*, in which the pawl plays. The latter is pivoted at its lower end to the head L and provided at its upper end with a head, *l''*, which engages with the ratchet-teeth *k*. The head *l''* is provided with an abrupt face and an inclined back, so that its forward movement causes the face-plate A to be turned while it slides over the ratchet-teeth during its backward movement. The pawl *l* is held in engagement with the ratchet-teeth by a spring, *m*. The head L is arranged in a recess formed in the front side of the eccentric plate B and provided with an axial stem, N, which extends rearwardly from the head and turns in a socket or bearing, *n*, formed in the eccentric plate B and extending rearwardly therefrom. The mandrel-plates F' F' are cut away, as shown at *n'* in Fig. 2, to make room for the rearwardly-extending portion of the bearing *n*.

o represents a spring which is coiled around the stem N in rear of the bearing *n*, and which is secured with its front end to the bearing *n* and with its rear end to a collar, P, which is mounted on the stem N. The collar P is provided with an internal screw-thread, which engages with an external screw-thread on the stem.

p represents the actuating-arm, attached to the rear end of the stem N in such a posi-

tion that it comes in contact with a fixed stop, *q*, on the lathe by the rotation of the chuck, whereby the stem N is turned in its socket. As shown in the drawings, the outer portion of the arm *p* is inserted in a diametrical opening formed in the stem on the outer side of the collar P, and the latter bears against the arm and clamps the latter in the opening. Upon loosening the collar the arm *p* can be adjusted in the opening of the stem, so as to lengthen or shorten its effective length, as may be necessary to change the throw of the arm. The spring *o* holds the collar P against the arm *p*, and also turns the stem N backward to its normal position when the arm *p* has cleared the stop *q*. The latter is attached to a collar, Q, which is secured to the lathe-bearing by a set-screw, *q'*. The collar Q is provided with a number of differently-located openings, *q''*, in either of which the stop *q* may be placed, as may be required by the character or design of the work to be produced. Two or more stops *q* may be employed, if necessary. The work being attached to the face-plate A and the eccentric plate having been properly adjusted on the mandrel-plates F' F' by the screw H, the rotation of the chuck causes the face-plate to be turned automatically on the eccentric plate, thereby producing the desired design without attention on the part of the operator and insuring a correct and uniform spacing of the elements of the design which are successively produced. Every time the actuating-arm *p* comes in contact with a stop *q* the pawl *l* is moved forward a certain distance and turns the face-plate correspondingly. The extent of this movement is easily regulated by adjusting the arm *p* or the stop *q*, or both.

Instead of employing the pawl-movement hereinbefore described, the face-plate may be provided with a gear-rim, *r*, and may be turned by a pinion, *r'*, which is actuated by a star-wheel, R, coming in contact with the stop *q*, as represented in Fig. 12.

I claim as my invention—

1. The combination, with the mandrel-plate, of an eccentric plate attached thereto, a face-plate mounted on said eccentric plate, and automatic feed mechanism by which the face-plate is automatically turned on the eccentric plate, substantially as set forth.

2. The combination, with the mandrel-plate, of an eccentric plate connected with the mandrel-plate by a guide rib and groove, a screw whereby the eccentric-plate is adjusted on the mandrel-plate, a face-plate mounted on said eccentric plate, and automatic feed mechanism whereby the face-plate is automatically turned on the eccentric plate, substantially as set forth.

3. The combination, with the mandrel-plate, of the eccentric plate B, the face-plate A, provided with ratchet-teeth *k*, a detent, *k'*, an actuating-pawl, *l*, a head, L, having a stem, N, and an actuating-arm, *p*, attached to said stem, substantially as set forth.

4. The combination, with the mandrel-plate,

of the eccentric plate B, the face-plate A, provided with ratchet-teeth *k*, a detent, *k'*, an actuating-pawl, *l*, a head, L, having a stem, N, an adjustable actuating-arm, *p*, and a collar, P, whereby the arm *p* is held in place on the stem, substantially as set forth.

5 5. The combination, with the mandrel-plate, of the eccentric plate B, the face-plate A, provided with ratchet-teeth *k*, a detent, *k'*, an actuating-pawl, *l*, a head, L, having a stem, 10 N, an actuating-arm, *p*, and a spring, *o*, by which the stem is returned to its former position after having been actuated, substantially as set forth.

15 6. The combination, with the face-plate A and eccentric plate B, of the mandrel-plate F, provided with an annular rib, *f'*, and a plate, F', provided with a corresponding groove and secured against the plate F, substantially as 20 set forth.

7. The combination, with the eccentric plate B, of the mandrel-plate F', an adjusting-screw, H, arranged between said plates, a half-nut, I, seated in the plate F', and an adjustable follower, *i*, whereby said half-nut is held 25 against the adjusting-screw, substantially as set forth.

8. The combination, with the grooved eccentric plate B, of the mandrel-plate F', provided 30 with a dovetail rib, G, having one of its wings severed from the base by a slit, *j*, and a set-

screw, *j'*, applied to said wing, substantially as set forth.

9. The combination, with the face-plate A, provided with an internal annular groove, *e'*, 35 of the eccentric plate B, bolts *e*, seated in said eccentric plate and provided with heads *e'*, which engage in the groove *e'*, and set-screws *d*, arranged in the eccentric plate and engaging with said bolts, substantially as set forth. 40

10. The combination, with the mandrel-plate, an eccentric plate attached thereto, and a face-plate mounted on said eccentric plate, of a feed mechanism attached to the eccentric 45 plate and provided with an actuating-arm, and a fixed stop secured to the latter and adapted to come in contact with said actuating-arm, substantially as set forth.

11. The combination, with the chuck and its feed mechanism provided with an actuating-arm, of the mandrel-bearing, an adjustable collar secured thereto, and an adjustable 50 stop secured to said collar and adapted to come in contact with said actuating arm, substantially as set forth. 55

Witness my hand this 2d day of March, 1887.

FRED LEON GREGORY.

Witnesses:

JNO. J. BONNER,
GEO. J. BUCHHEIT, Jr.