(No Model.)

W. H. WILSON.

Lathe Chuck.

No. 235,836. Patented Dec. 21, 1880.

Fig 1.

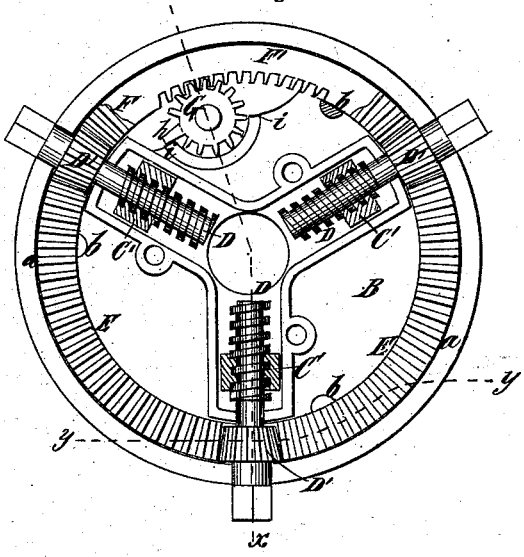


Fig 2.

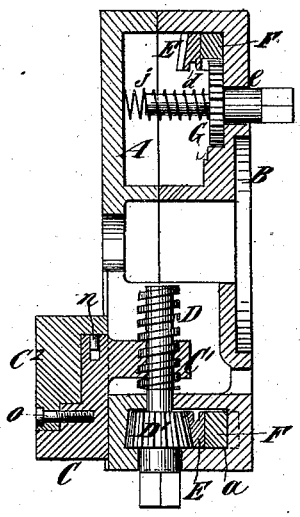


Fig 3.

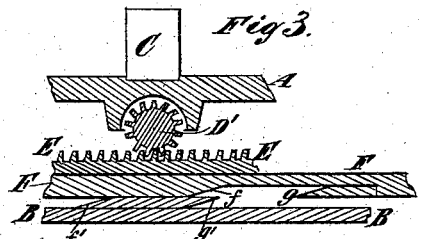


Fig 4.

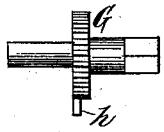


Fig 5.

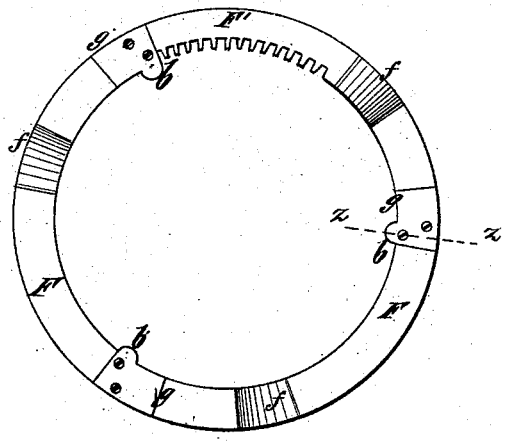
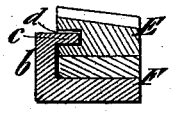


Fig 6.



Witnesses:
Geo. H. Haynes
H. C. Webb

Inventor:
Wm. H. Wilson
by his Attorneys
Brown & Brown

UNITED STATES PATENT OFFICE.

WILLIAM H. WILSON, OF ONEIDA, NEW YORK.

LATHE-CHUCK.

SPECIFICATION forming part of Letters Patent No. 235,836, dated December 21, 1880.

Application filed October 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WILSON, of Oneida, in the county of Madison and State of New York, have invented certain new and useful Improvements in Lathe-Chucks, of which the following is a specification.

My invention relates, principally, to that class of chucks in which the screws for moving the jaws are provided with pinions which engage with a circular rack or toothed ring, so that the jaws may all be moved inward or outward simultaneously by a wrench applied to one screw, and in which the said rack or ring may be moved or adjusted back out of engagement with the pinions, so that each jaw may be moved inward or outward independently of the other jaws.

My invention consists in the combination, in a chuck, with the shell, the screws by which the jaws are adjusted, and their pinions, of a circular rack and a ring, secured together so as to turn independently, and the latter of which is constructed with internal gear-teeth, inclined projections, or cams upon the back of the said ring and upon the shell, and a pinion engaging with the internal gear-teeth upon said ring, whereby the said ring may be turned in one direction to cause its inclined projections to engage with the projections upon the shell to move the rack forward into engagement with the said pinions. I may also provide the back of said ring and the said shell with catches which are preferably inclined, and when the said ring is turned in the opposite direction to that above described its inclined catches will engage with those upon the shell to move the said rack back and hold it out of engagement with said pinions. The said pinion is preferably provided with a long tooth, which engages with stops upon the shell to hold the said ring against turning accidentally and to prevent chattering, and it may be disengaged from these stops by a longitudinal or axial movement.

The invention also consists in a novel means of securing the circular rack and ring together, so that either may turn independently.

In the accompanying drawings, Figure 1 represents a face view of one-half the chuck, a portion of the circular rack being broken away to better illustrate the construction. Fig. 2 represents a sectional view thereof upon the dotted line *x x*, Fig. 1. Fig. 3 represents a sectional view upon the line *y y*, Fig. 1. Fig. 4 represents a side view of the pinion whereby the ring carrying the inclined projections and catches is turned. Fig. 5 represents a back view of the said ring; and Fig. 6 represents a transverse section of said ring and the circular rack upon the dotted line *z z*, Fig. 5, and on a larger scale.

Similar letters of reference designate corresponding parts in all the figures.

A B designate, respectively, the front and back parts of the shell, which may be secured together in any suitable manner, as, for instance, by screws passing through one part and engaging with screw-threads in the other part.

C designates jaws, of which three or more may be used, and which are adapted to move or slide in radial grooves or recessed slideways or channels upon the face of the part A. These jaws are provided with nuts C′, which, as here represented, are formed in the same piece therewith; and D designates screws, which engage with said nuts and serve as a means for adjusting any one of the jaws independently of the other jaws.

D′ designates pinions, which are formed or fitted upon said screws, and which all may be made to engage with a circular rack, E, so that by turning one screw all the other screws will be turned and their jaws advanced or drawn back simultaneously.

So far as described, the parts are not materially different from chucks commonly in use, the essential features of my invention being the mechanism whereby the circular rack is moved forward into engagement with the pinions D′ and backward out of engagement therewith.

The rack E fits in an annular groove or recess, *a*, in the part B of the shell and back of said rack; and also fitting in said annular groove or recess is a ring, F, which constitutes a seat for the rack E, and is locked thereto, so that either the rack or the ring can be turned independently of the other.

Although any desirable means may be employed to secure the rack and the ring together, the means which I prefer to employ, and which is here represented, consists of gibs or lugs *b*, secured to the ring F, and having outwardly-projecting lips or prongs *c*, which enter an annular groove, *d*, in the inner edge of the rack E, as most clearly shown in

Fig. 6. Thus the rack is held securely to its seat upon the said ring and provision afforded for the independent turning of either.

A portion, F′, of the ring F is provided with internal gear-teeth, with which engages a pinion, G, the shaft of which fits in a bearing, *e*, in the back part, B, of the shell, as seen in Fig. 2.

I will now describe the means whereby the rack E and the ring F are moved forward to cause the rack to engage with the pinions D′ or drawn back to move and hold the rack out of engagement with the said pinions.

Upon the back of the ring F are inclined projections *f* and catches *g*, which are also preferably inclined; and upon the part B of the shell, at the bottom of the annular groove or recess *a*, are correspondingly-inclined projections *f′* and catches *g′*, as most clearly shown in Fig. 3. For convenience of construction the inclined catches *g* upon said ring may be formed by separate pieces attached to the ring, and the projections and catches *f′ g′* upon the shell may be formed by separate pieces or segments screwed, pinned, or riveted in the bottom of the annular groove or recess *a*.

When the ring F is turned slightly in one direction by the pinion G the inclined projections *f* ride upon the inclined projections *f′* upon the shell and move the ring F, and with it the rack E, forward, so that the rack engages with the pinions D′, as shown in Fig. 3, thus making the chuck universal in its action. When the ring F is turned in the opposite direction the inclined catches *g* upon the ring engage with the inclined catches *g′* upon the shell, and draw the ring and rack back together sufficiently to move the rack out of engagement with the pinions D′, permitting the movement of each jaw independently of the others.

Some provision is necessary for preventing the accidental turning of the ring F when adjusted to either position, and to prevent chattering, and in this example of my invention I effect this by constructing the pinion G with a long tooth, *h*, which may engage with either of two stops, consisting of shoulders *i i*, upon the shell. To effect the automatic engagement of the long tooth *h* with the stops *i*, I place in front of the pinion G a spiral or other spring, *j*, and to turn the pinion it is necessary first to move it axially against the force of said spring sufficiently to free the long tooth *h* from the shoulders *i*.

I will now describe the detachable faces for the holding-jaws, which are applicable to lathe-chucks generally.

As clearly shown in Fig. 2, the jaws C are constructed with shoulders or steps upon the front, which are desirable for chucking pulleys, rings, and other articles of comparatively large diameter. When, however, pieces of smaller diameter are to be chucked, it may be desirable to have a longer face or biting-surface for the jaw, and to provide this I secure to the front of the jaw a false face, C^2, which may be readily removed when desirable.

The face may be secured to the jaw in any convenient way; but, preferably, it is provided with a fixed pin, *n*, which enters a hole in the face of the jaw, and a screw, *o*, is inserted through the face and into the front of the jaw. When so secured the face may be removed by simply taking out the single screw *o* and disengaging the pin *n* from its hole.

By my invention I provide a very convenient means for making the chuck either universal or independent in its action, and furnish a chuck in which all the working parts are concealed within the shell and protected from dust and dirt.

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

1. The combination, in a chuck, with the shell, the jaw-adjusting screws, and their pinions, of a circular rack and a ring secured together so as to turn independently, and the latter of which is constructed with internal gear-teeth, inclined projections upon the back of said ring and upon the shell, and a pinion engaging with said gear-teeth and serving as a means of turning said ring, substantially as and for the purpose specified.

2. The combination, in a chuck, with the shell, the jaw-adjusting screws, and their pinions, of a circular rack and a ring secured together so as to turn independently, and the latter of which is constructed with internal gear-teeth, inclined projections, and catches upon the back of said ring and upon the shell, and a pinion engaging with said gear-teeth and serving as a means of turning said ring, substantially as and for the purpose specified.

3. The combination, in a chuck, with the shell, the jaw-adjusting screws, and their pinions, of a circular rack and a ring secured together so as to turn independently, and the latter of which is constructed with internal gear-teeth, inclined projections and catches upon the back of said ring and upon the shell, a pinion engaging with said gear-teeth and having a long tooth, and stops from which said long tooth may be disengaged by the axial movement of the pinion, substantially as and for the purpose specified.

4. The combination of the shell A B, the jaws C, the screws D, and pinions D′, the rack E, the ring F, with its internally-toothed portion F′, the pinion G, with its long tooth *h*, the stops *i*, and the spring *j*, all substantially as specified.

5. The combination, in a chuck, of a circular rack provided internally with an annular groove, a ring serving as a seat for said rack, and lugs fixed upon said ring and provided with projecting lips or prongs which enter said annular groove, whereby the said rack and ring are secured together, so that either may turn independently of the other, substantially as and for the purpose specified.

WM. H. WILSON.

Witnesses:
T. F. HAND, Jr.,
J. M. MARKHAM.