(No Model.)

J. F. O'NEILL.

CHUCK.

No. 346,310. Patented July 27, 1886.

Fig. 1

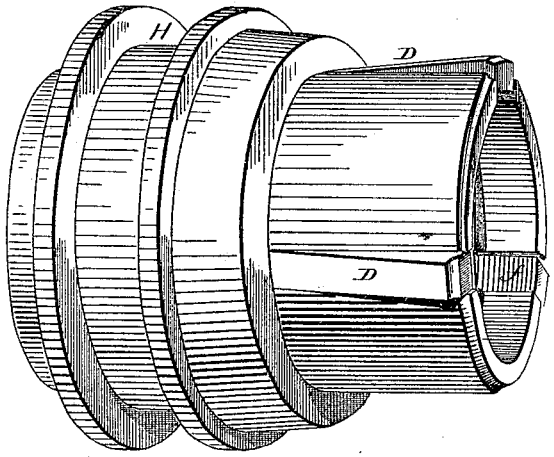


Fig. 2

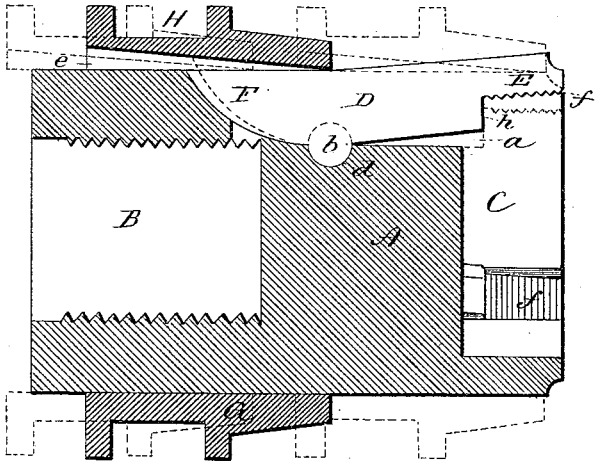


Fig. 4

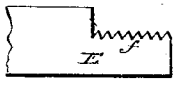
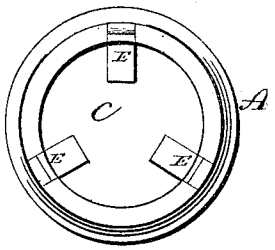


Fig. 3



Witnesses.
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UNITED STATES PATENT OFFICE.

JAMES F. O'NEILL, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE HENDEY MACHINE COMPANY, OF SAME PLACE.

CHUCK.

SPECIFICATION forming part of Letters Patent No. 346,310, dated July 27, 1886.

Application filed May 19, 1886. Serial No. 202,633. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. O'NEILL, of Torrington, in the county of Litchfield and State of Connecticut, have invented a new Improvement in Chucks; 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 perspective view of the chuck complete; Fig. 2, a longitudinal central section showing a side view of one of the levers; Fig. 3, a front end view; Fig. 4, a modification of the jaws to adapt them for internal engagement, instead of external, as seen in Fig. 2.

This invention relates to an improvement in the construction of chucks, such as are applied to a revolving mandrel to hold metal articles to be turned or finished, and particularly to that class of articles which are externally or internally screw-threaded. If the article to be wrought or finished is screwed into a chuck, the work upon the article tends to make the screw-connection the more firm as the work progresses, and it is with difficulty that the article can be removed.

Various devices have been made to make the removal of the article from the screw-threaded chuck easy—that is, to prevent the screw-thread binding in the chuck. It is to this class of chucks that my invention particularly relates, the object of the invention being to provide a chuck with jaws adapted to engage the screw-thread of the article, and hold it firm while being wrought, and then by releasing the grasp of the jaws the article may be readily removed; and it consists in the construction of the chuck, as hereinafter described, and particularly recited in the claims.

A represents the body of the chuck, which is adapted to be secured to the mandrel of the lathe or machine to which the chuck is adapted—say as by a screw-socket, B, formed in the rear end of the chuck—or may be any of the usual devices for securing the chuck to the mandrel. The forward end of the body is constructed with a concentric recess, C. In longitudinal recesses *a* in the periphery of the body (here represented as three) levers D are arranged, the bearing or fulcrum of the levers being to the rear of the recess C. The fulcrum is best formed by a semicircular projection, *b*, on the under side of the levers, and a corresponding recess, *d*, in the head, and so that the lever may rock thereon. The levers extend forward, and each terminate in a jaw, E, within the plane of the recess C, and from the pivot the levers extend rearward to form the tail F. The back or outer edge of the levers is inclined outward from a point in the plane of the fulcrum both forward and backward. That point from which the inclinations start is substantially flush with the periphery of the body, and upon the body a sleeve is arranged to slide freely in a longitudinal direction toward or from the forward end of the chuck, as the case may be, and over the levers. Upon the inner side of the sleeve radial recesses *e* are cut, corresponding to the levers. The said recesses start flush with the inside of the sleeve at the forward edge and incline outward to the rear, as seen in Fig. 2. By this construction, when the sleeve stands with its forward edge in the plane of the fulcrum, as seen in Fig. 2, the levers are free to vibrate on their fulcrum, but if the sleeve be forced forward, as indicated in broken lines at the right in Fig. 2, then the jaw end of the levers is correspondingly forced inward by the sleeve bearing upon the back of the levers. If, on the contrary, the sleeve be thrown to the rear of the fulcrum, as indicated in broken lines at the left, Fig. 2, then the forward end of the jaws will be correspondingly thrown outward. The jaws are each constructed with a threaded surface upon their inner edge, as indicated at *f*, within the recess C, and so that the said threaded portion may pass radially into the said recess. The threading corresponds to the screw-thread of the article to be held, and the screw-threaded portion of the article to be so held is placed within the recess C and between the screw-threaded jaws; then the sleeve forced forward, as indicated in broken lines at the right, Fig. 2, will force the jaws inward, and so as to firmly grasp the threaded surface of the article. The jaws are constructed with a shoulder, *h*, distant from the outer end, and against which the article to be threaded may bear to resist the rotation of the article in the chuck under

the action of the tool. After the desired work has been accomplished upon the article, instead of unscrewing the article from the chuck, the sleeve may be forced to the rear, as indicated by broken lines at the left, Fig. 2, and so as to throw the jaws open and release the article from the screw-thread of the jaws. Thus the article is readily introduced, firmly grasped, and as readily released without the usual necessary rotation required to screw the article into the chuck or unscrew it therefrom.

Owing to the manner in which the levers are hung, they may be readily removed and others introduced, to adapt the same chuck to different sizes of work—that is to say, if the screw-thread of one piece of work is of a diameter corresponding to the jaws of the levers already in the chuck, and it be desired to introduce articles of, say, smaller diameter of thread, the sleeve may be moved from the body of the chuck, either to the rear or taken off at the front, the levers removed, and other levers introduced adapted to grasp the smaller-size threaded article. The facility with which this change may be made is greatly due to the peculiar construction of the fulcrum of the levers, whereby pivot-pins are avoided. Should the article to be held be of an internal thread, then the jaws are constructed with an external thread instead of an internal, as indicated in Fig. 4; or, if the article to be held be a smooth surface outside or in, the screw-thread of the jaws will be omitted.

The sleeve G is constructed with an annular groove, H, by which the sleeve may be readily moved or adjusted.

The article grasped by the jaws may bear against the shoulders on the jaws, as I have described, or against the inner end of the recess, the result being the same in either case.

Instead of making the fulcrum projection on the bottom of the lever and the seat in the bottom of the recesses, this order may be reversed, the projection being on the body of the chuck and the recess in the jaw, as indicated in broken lines, Fig. 2.

I claim—

1. The herein-described chuck, consisting of the body A, adapted for attachment to a revolving mandrel, and constructed with longitudinal recesses in its periphery, combined with levers arranged, one in each of the said longitudinal recesses and upon a fulcrum, so as to be rocked radially in said recesses, the back of the said levers inclined forward and rearward from the plane of the fulcrum, and the said levers constructed with jaws adapted to grasp the article to be wrought, and a sleeve longitudinally movable on the said body over the inclined back of said levers, substantially as described.

2. The combination of the body A, constructed for attachment to a rotating mandrel, and with longitudinal recesses in its periphery, a lever, D, arranged in each of said recesses, and the bottom of each lever and the bottom of the said recesses constructed, the one with a projection and the other with a corresponding seat to receive said projection as a fulcrum for said lever, the back of said levers inclined forward and backward from the plane of said fulcrum, and a sleeve, H, upon said body A, and adapted to be moved over said inclined back of said levers, the forward end of the said levers constructed to engage the article to be held, substantially as described.

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Witnesses:
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