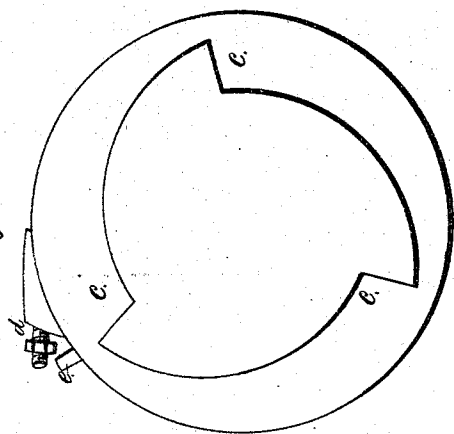


*B. Haviland*  
*Lathe Chuck.*

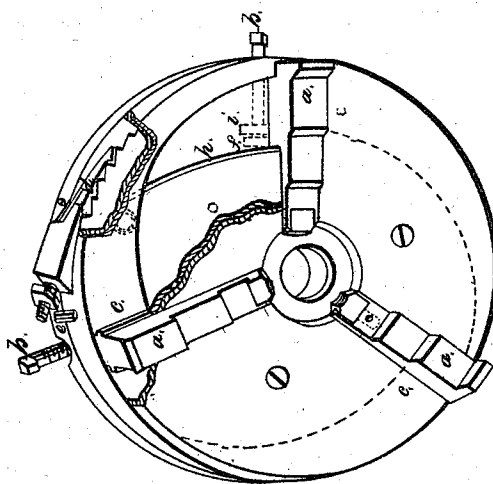
*N<sup>o</sup> 81,500.*

*Patented Aug. 25, 1868.*

*Fig. 3.*



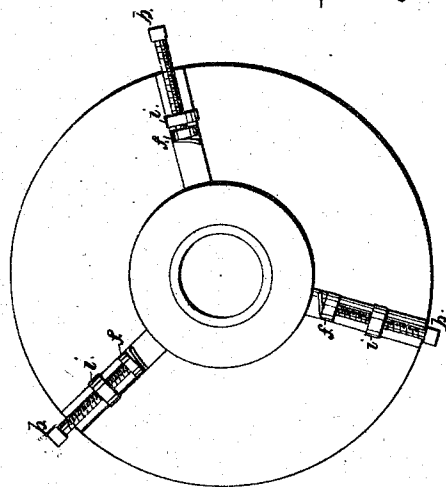
*Fig. 4.*



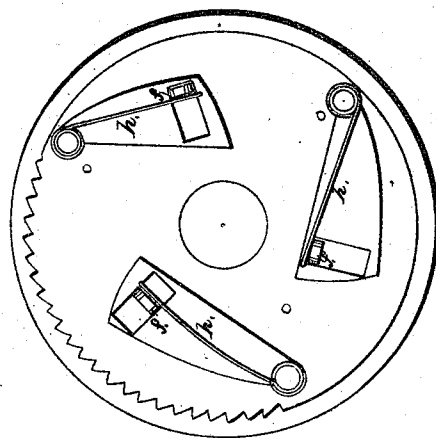
*Fig. 5.*



*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*A. J. Gardner*  
*Alex. S. Rowley*

*Inventor:*

*Benj<sup>m</sup> Haviland*

# United States Patent Office.

BENJAMIN HAVILAND, OF HUDSON, NEW YORK.

Letters Patent No. 81,500, dated August 25, 1868.

## IMPROVEMENT IN CHUCKS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, BENJAMIN HAVILAND, of the city of Hudson, in the county of Columbia, and State of New York, have invented a new and improved Lathe-Chuck, which I call "The Self-Centring and Screw-Cutting Chuck;" and do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a transverse sectional view of the back of the chuck.

Figure 2, a transverse sectional view of the inside of the back plate.

Figure 3, a transverse sectional view of the middle or cam-rim.

Figure 4, a perspective view of the chuck, with a portion of the face-plate, and also of the middle or cam-plate removed, so as to expose to view parts of the interior.

Figure 5, a perspective view of one of the screw-cutting dies detached.

Like letters indicate like parts in the several figures.

The nature of my invention consists in employing three radial arms in a circular plate, and operating them concentrically by means of three cams, arranged in a plane, and within a circle of the same dimensions as the face or arm-plate, in combination with the same number of radial set-screws in the back plate, to adjust these arms eccentrically, thus forming a combined self-centring and screw-cutting lathe-chuck, composed of three circular plates or parts of the same dimensions.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct my chuck in the usual circular form, (see fig. 4,) with a central opening, provided with a screw-thread or other equivalent device, to attach it securely to the mandrel of a lathe. For screw-cutting purposes, this mandrel must be hollow, to allow the screws, as cut, to enter. The three parts of which the chuck is composed, (see figs. 1, 2, 3,) each embraces peculiar devices, which conjointly operate, when combined, to actuate the three radial arms *a a a*, either eccentrically or concentrically, as may be required.

When used as a concentric chuck, the three cams, *c c c*, are employed by applying the thumb to the head of the screw-latch or check *d*, and pressing it forward, which operates the cams, causing them to press the arms *a a a* toward the centre. The catch *d*, acting like a dog in the ratchet *p*, which is cut on the inside of the back plate, (see fig. 2,) holds the arms *a a a* at any required point.

When it is desired to make it eccentric, the radial set-screws *b b b* are employed. These screws, working through the fixed nuts *i i i* against the stems *f f f* of the radial arms, operate and adjust the arms *a a a* independently of each other, so as to throw the article held by them out of the centre of the chuck, or so as to accommodate the arms themselves to the shape of the article or piece to be held by them, however irregular that shape may be. I desire it to be clearly understood that the arms *a a a* can thus be operated radially forward, or towards the centre, or backward from it, independently of each other, so that all the arms may be made to bear firmly upon the article subjected to their hold, whatever may be its shape. The stems *f f f*, being a part of or firmly attached to the arms *a a a*, slide with them in the radial slots *g g g*. Springs *h h h* force the arms back to their places as the screws *b b b* are withdrawn, (see figs. 2 and 4.) The cams *c c c*, as the middle or cam-rim is revolved forward, bear or force the arms *a a a* inward concentrically, and all together against the piece or article to be worked or turned. The radial arms are provided with tongues on each side, fitting into corresponding grooves in the face-plate in both edges or sides of the slots *g g g*, which keep the arms in place, (see fig. 4.)

Bearing on the top of the screw-catch *d* is a spring, *o*, to keep the catch or dog close down to the ratchet *k*. The screw and nut on the upper or outer end of this catch are used to draw the cams, and thereby force the arms firmly against the article or piece embraced by them. The stem or pin *e* is designed as a bearing for the thumb in pressing the middle or ratchet-rim forward to engage all the arms concentrically. The several parts of the chuck are confined together by means of screws, (as shown on fig. 4.) The three shoulders, *t t t*, on each

of the arms, are of such distances from each other (usually equal) that the ratchet *k* will adjust them firmly against the piece to be held, at any point between each, and then, by lifting the catch *d*, by the use of a hook, from the ratchet-teeth, and revolving the rim back, if the piece be too large for the first shoulder, by pressing it forward again, it traverses upon the arm to the second shoulder, holding the piece firmly at any point between the first and second shoulders, and so also between the second and third. The ratchet extending one-third the circumference of the chuck, will allow the arms to be adjusted so as to hold the article placed upon them, or within their embrace, firmly at any point between any two of the shoulders, that is, between the ordinary or normal position of the shoulders.

In addition to the ordinary use of this chuck, to wit, holding articles to be turned on their ends or faces, firmly in the head of the lathe, I also employ it for cutting screws, to which purpose it is easily adapted. To do this, I place or insert in the ends of the arms *a a a*, removable screw-cutting dies, (see fig. 4, and for the form and details of the individual die, see fig. 5,) screwing or otherwise attaching the chuck to a hollow mandrel in the lathe, to receive the screws as they advance through the dies. These dies may be made to cut any-sized screw, or a thread of any required size or degree of fineness. The ends of the arms *a a a* are perforated with circular or other-shaped holes or sockets, into which the stems of the dies *s s s* are inserted, and they (the dies) are retained or kept in their places by means of set-screws, catches, or springs. When the screw-dies are not required, their places in the ends of the arms are supplied with blank dies of same size and form, when it is ready for ordinary use.

This use of my chuck is especially convenient for cutting screw-threads on the ends of metallic rods of any size, and by the use of a cutting-die in place of the screw-die, to cut journals and blank screw-bolts; so also a large-sized chuck is useful for cutting wood-screws.

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

1. The general construction and arrangement of the several parts, which, taken together, constitute the chuck herein described, whereby the same may serve as a screw-cutting die, or a universal chuck, all as set forth.
2. Rotating the cam-plate *e e e*, and retaining it in position by means of the rack-plate, detent *a*, and stub *e*, substantially in the manner specified.

BENJ'N HAVILAND.

Witnesses:

A. BOGARDUS,  
ALEX. S. ROWLEY.