(No Model.)

F. A. BUCK.

HOLLOW MANDREL CHUCK.

No. 482,616. Patented Sept. 13, 1892.

Fig. 1.

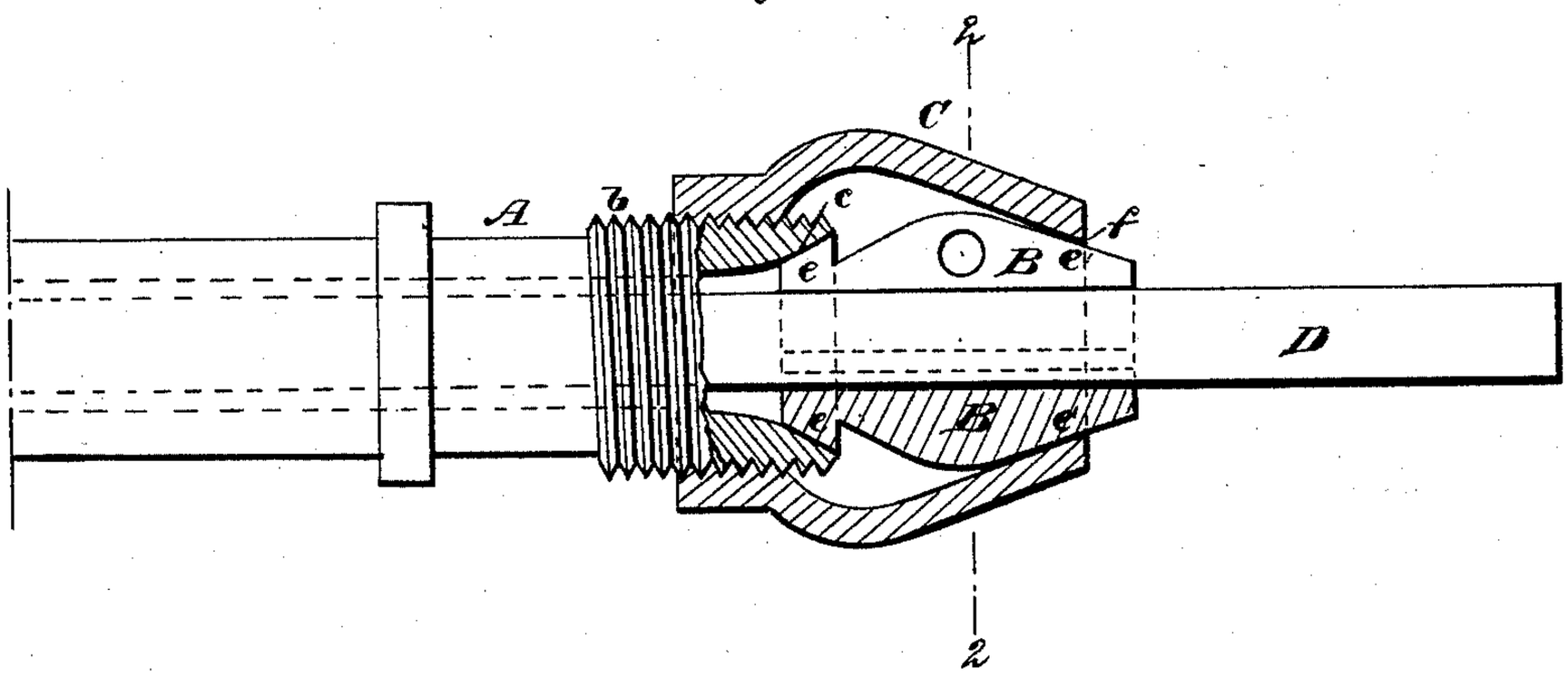
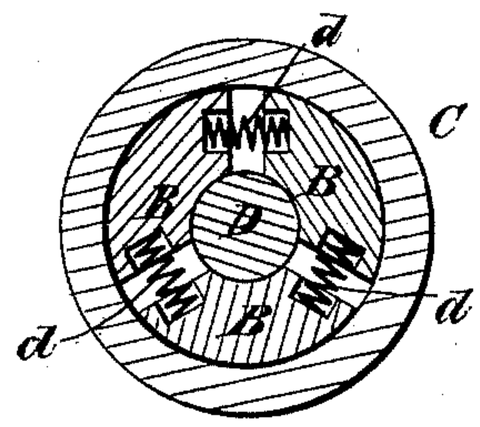


Fig. 2.



WITNESSES:

Thomas Turtchell

C. Sedgwick

INVENTOR

F. A. Buck

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FREDRICK A. BUCK, OF URBANA, OHIO.

HOLLOW-MANDREL CHUCK.

SPECIFICATION forming part of Letters Patent No. 482,616, dated September 13, 1892.

Application filed July 16, 1891. Serial No. 399,702. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK A. BUCK, of Urbana, in the county of Champaign and State of Ohio, have invented a new and useful Improvement in Hollow-Mandrel Chucks, of which the following is a full, clear, and exact description.

This invention relates to hollow-mandrel chucks for holding bars, rods, or other like pieces of wood or metal intended to be revolved for the purpose of manipulating, dressing, or working them. It is, however, more especially intended to be applied to holding broom and like handles while the broom material or whisk is being tied or secured on them, and the invention will here be described more particularly with reference to such work.

Applied to such purpose, the main object of the invention is to obtain a firm grasp of said handles while being revolved to secure the broom material or whisk on them without that marring of the handles which occurs when employing stationary dies in the hollow mandrel to hold the handle and that, if resistance is sufficient, fail to turn the handle, and so produce objectionable marring of the latter by the slipping of the rotating dies on it.

The invention consists in the construction and combinations hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 represents a partly-sectional longitudinal view of a hollow-mandrel chuck applied to holding a broom-handle or, it might be, other rod or bar; and Fig. 2, a transverse section of the same upon the line 2 2 in Fig. 1.

A indicates the barrel of the mandrel or the mandrel proper, which is intended to be rotated, as usual, by power applied to the rear end portion of it. Cut on the exterior of its forward ends are screw-threads *b*, and the extremity of said end is made internally conical or with a flaring tapering mouth *c* for the dies, composed of longitudinally-divided sections B, separated by springs *d*, which hold them apart, to fit in at their rear ends. Arranged to screw on said threaded portion *b* of the mandrel is an internally conically-shaped shell C, which holds the dies B within it at their forward ends, the dies B being conically shaped externally at or toward their opposite ends, as at *e e'*, to conform to the tapering mouth *c* of the mandrel and reversely tapering or contracting mouth *f* of the shell or cone C. The mouths *c f* are of unbroken or uninterrupted circular contour, so that the dies or jaws will be driven by friction only and will not be positively fastened to the mandrel or the body or cone C. The dies B are made circular on their inner faces to conform to the shape of the broom-handle D, which they serve to hold or grasp.

To apply the invention, the dies B are placed in the shell or cone C, with their rear tapering ends made to enter the mouth *c* of the mandrel A, and the cone C screwed upon the barrel or mandrel A. The broom-handle D is then inserted in the dies and power applied to rotate the mandrel, and the shell or cone C held by the hand until the dies grip the handle firmly by the bearing of the contracting mouth end *f* of the shell forcing up the rear tapering ends *e e* within the flaring tapering mouth *c* of the mandrel, thereby making equal pressure at both ends of the dies. The dies will stop rotating as soon as they touch the handle D, and the shell C will rotate around the dies until the pressure bearing at both ends overcomes the resisting friction, causing the handle D to be held firmly, but not rotating within the dies, thus avoiding all defacing or marring of the handle when tying the broom material or whisk on the handle. Said dies have a full and uniform pressure throughout their length and will serve to hold perfectly smooth handles. They are also wide on their faces, forming nearly a complete circle, and so will not sink into the handle.

The main feature of the invention is the loose arrangement of the dies, which will turn in the cone whenever the handle held by the dies offers sufficient resistance until such time as the pressure at both ends overcomes the friction, when all will turn together. In this way the dies cannot fail to turn the handle or to slip and rotate independently of it, but are free to slip or rotate within the cone or double-ended chuck formed by the tapering mouth *c* of the mandrel and contracting forward mouth

end of the cone, thus completely preventing the defacement of the handle. The dies are frictionally-driven ones, and will always hold the handle firmly within them.

Another advantage obtained is that by reason of the fact that there never is any friction of parts in motion between the dies and the handle there can be a raised letter or figure on the face or bearing-surface of the dies to produce a distinguishing impression or stamp on each handle, whereby to identify each man's work.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. As an improved article of manufacture, a hollow-mandrel chuck open at both ends to permit the work to pass entirely through it and provided with separate and independent frictionally-driven yielding dies or jaws separated longitudinally from end to end and adapted to remain stationary at times within the body of the chuck while the latter continues to rotate, substantially as set forth.

2. As an improved article of manufacture, a chuck provided with frictionally-driven dies or jaws separated longitudinally from end to end and about which the body of the chuck is free to be rotated by the mandrel at times and springs between the adjacent sides of the chucks, substantially as set forth.

3. As an improved article of manufacture, a chuck provided with frictionally-driven dies or jaws about which the body of the chuck is free to be rotated by the mandrel at times, opposed recesses in the sides of the dies or jaws, and spiral springs resting at their ends in said recesses, substantially as set forth.

4. As an improved article of manufacture, a chuck consisting in a mandrel having a flaring unbroken circular mouth *c*, a cone or body portion C, screwed upon the mandrel and having a circular mouth *f*, flared or tapered reversely to the mouth *c* and of unbroken or uninterrupted contour, the dies or jaws beveled or inclined oppositely on their outer edges at their ends to be held to the work by friction between the two unbroken mouths *c f* and at times remain stationary while the mandrel and cone or body rotate, and spiral springs between the sides of the dies or jaws, substantially as set forth.

FREDRICK A. BUCK.

Witnesses:
C. A. MILLER,
D. S. PERRY.