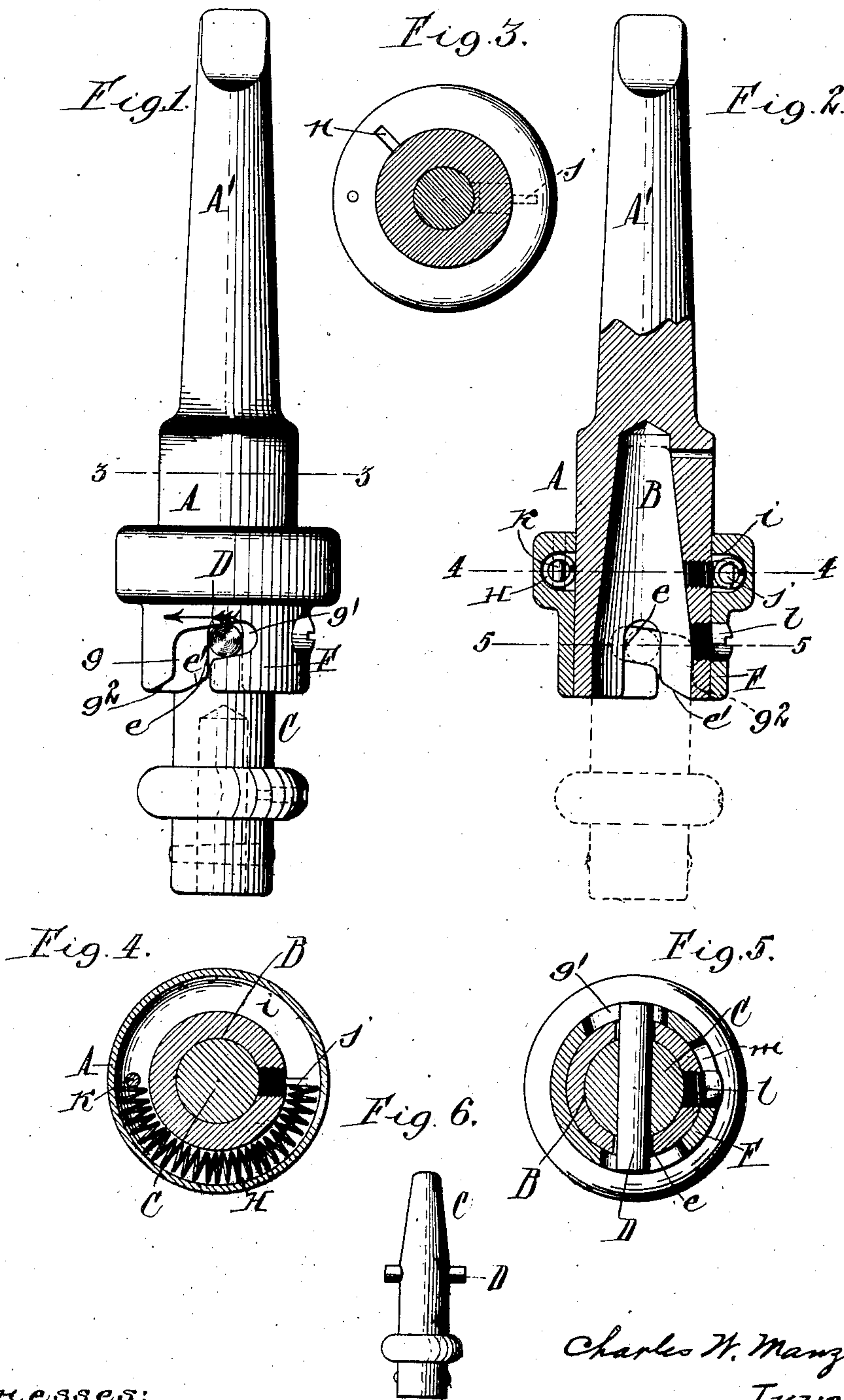


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 DRILL CHUCK.  
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931,327.

Patented Aug. 17, 1909.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## DRILL-CHUCK.

No. 931,327.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed March 13, 1908. Serial No. 420,791.

*To all whom it may concern:*

Be it known that I, CHARLES W. MANZEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Drill-Chucks, of which the following is a specification.

This invention relates to tool chucks or holders adapted to receive different drilling or other machine-tools, and it has for its object the construction of a simple and inexpensive chuck of this class which permits the tools to be quickly changed.

In the accompanying drawings: Figure 1 is a side elevation of the improved chuck, showing a collet or tool holder locked therein. Fig. 2 is a sectional elevation of the chuck, showing the collet in dotted lines. Fig. 3 is a horizontal section on line 3—3, Fig. 1. Figs. 4 and 5 are horizontal sections on lines 4—4 and 5—5, Fig. 2. Fig. 6 is a side elevation of the collet, on a reduced scale.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the body of the chuck which is preferably cylindrical, and A<sup>1</sup> its customary taper-shank adapted to fit into the socket of the drill-spindle, not shown. The body is provided with an axial socket B, preferably tapered upwardly, as shown, and adapted to receive the correspondingly-shaped shank of a drilling or other tool or of a collet or tool-holder C.

The shank of the tool or collet is provided at opposite sides with projections, which, in the example shown in the drawings, are formed by the projecting ends of a cross pin D passing diametrically through the collet. These projecting ends are adapted to enter notches or slots *e* arranged in opposite sides of the chuck-body and extending upwardly from its lower edge. The cross pin is normally retained in these notches by a rotary locking sleeve F closely surrounding the cylindrical body of the chuck and having diametrically-opposite slots of inverted L-shape. The vertical or entrance-portions *g* of these slots extend upwardly from the lower edge of the locking sleeve while their horizontal portions *g*<sup>1</sup> normally intersect the notches *e* and receive the projecting ends of the cross pin D, as shown in Figs. 1 and 5, thereby firmly and reliably locking the tool or collet in the chuck. To facilitate the

entrance of the cross pin into said notches and slots, the lower edges of their left-hand walls are preferably beveled or chamfered, as shown at *e*<sup>1</sup> and *g*<sup>2</sup>.

The sleeve F is yieldingly held in its normal or locking position by a spring H of any suitable construction. In the construction shown in the drawings, the spring is of coiled form and occupies about one half of an annular groove *i* formed in the enlarged head of the sleeve, the groove opening into the bore of the sleeve and being closed by the body of the chuck when the sleeve is in position thereon, as shown in Figs. 2 and 4. This spring bears at one end against an abutment or pin *j* projecting from the body of the chuck and at its other end against an abutment or pin *k* carried by the locking sleeve and projecting into or across the groove *i*, as shown in Figs. 2 and 4. In the preferred construction shown in the drawings, the pin *k* is arranged lengthwise of the locking-sleeve. By this construction, the spring H tends constantly to turn the locking sleeve in the direction of the arrow in Fig. 1, that is, in the proper direction to keep the horizontal portions *g*<sup>1</sup> of its locking slots in engagement with the cross pin D.

The locking sleeve is retained upon the chuck body by a pin or screw *l* secured to the latter and arranged in a horizontal slot *m* in the locking sleeve. This slot is preferably of such length that the locking sleeve is arrested by the pin *l* when the vertical portions *g* of the slots of the sleeve register with the notches *e*, thus predetermining the movement of the sleeve and requiring no special care or attention on the part of the operator in turning the sleeve to its unlocking position to release or admit the tool or collet.

In order to permit the locking sleeve to pass the abutment pin *j*, in applying and removing it from the chuck-body, the sleeve is provided in its top with a radial slot *n* (Fig. 3) of the proper size to pass over said pin when brought in register with it. This slot is arranged to break register with said pin when the parts of the chuck are assembled.

In the use of the chuck, when it is desired to insert the tool or collet C in the same, the locking sleeve is turned toward the right to the limit of its movement, thus compressing the spring H and bringing the vertical por-



tions of the slot *g* of said sleeve in line with the notches *e* of the chuck-body. The tool or collet is now inserted in the chuck with its cross pin in said slots and notches and the locking sleeve is then released, whereupon the sleeve is automatically turned to the left by the reaction of the spring *H*, causing the horizontal portions *g*<sup>1</sup> of its slots to interlock with the cross pin, as hereinbefore described.

To release the tool or collet to change tools, it is only necessary to rotate the locking sleeve toward the right to the extremity of its movement, when the tool or collet can be removed. An important advantage of this construction is that the tools can be readily changed during the rotation of the drill-spindle. When it is desired to do this, the operator simply grasps the locking sleeve to check its rotation, when the notches *e* by the continued rotation of the chuck body will come in line with the vertical portions *g* of the sleeve-slots and permit the tool or collet to be withdrawn and another substituted for it.

In order to draw the collet or tool tightly into the chuck upon inserting it and also to aid in withdrawing the same upon releasing it, the edges of the horizontal portions *g* of the locking slots are inclined toward their vertical portions, as shown in Fig. 1.

The construction herein shown has the further advantage that it accurately centers the tool or collet and firmly holds it in place, causing the tool to run true and reducing its vibration to a minimum. The chuck will, moreover, drive the tool in either direction.

While permitting a quick and convenient change of the tools, the chuck comprises but few parts and can be manufactured at comparatively small expense.

I claim as my invention:

1. A drill chuck, comprising a body hav-

ing a tool socket and a longitudinal slot on one or opposite sides extending inwardly from the mouth of the socket, a rotary-locking sleeve mounted on said body and having an L slot on one or opposite sides consisting of an entrance longitudinal portion and a locking cross portion, the longitudinal portion extending inwardly from the lower end of the sleeve and cooperating with the longitudinal slot in the body, and yielding means for retaining said sleeve in locking position.

2. A drill chuck, comprising a body having a tool-socket and a longitudinal notch extending inwardly from the mouth of the socket, a rotary locking sleeve mounted on said body and having a slot cooperating with said notch and consisting of an entrance portion arranged lengthwise of the sleeve and extending inwardly from its lower end and a locking portion arranged crosswise of the sleeve and inclined toward said entrance portion, and yielding means for retaining said sleeve in locking position.

3. A drill chuck, comprising a body having a tool socket with a taper seat and a longitudinal slot on one or opposite sides extending inwardly from the mouth of the socket, a rotary locking sleeve mounted on said body and having an L slot on one or opposite sides consisting of an entrance longitudinal portion and a locking cross portion, the longitudinal portion extending inwardly from the lower end of the sleeve and cooperating with the longitudinal slot in the body, and the locking cross portion being inclined toward the entrance longitudinal portion; and yielding means for retaining said sleeve in locking position.

Witness my hand this 10th day of March, 1908.

CHARLES W. MANZEL.

Witnesses:

O. F. GEYER,

E. M. GRAHAM.