

No. 820,263.

PATENTED MAY 8, 1906.

W. A. SCHMID & C. J. MACOMBER.

CHUCK.

APPLICATION FILED AUG. 16, 1905.

2 SHEETS—SHEET 1.

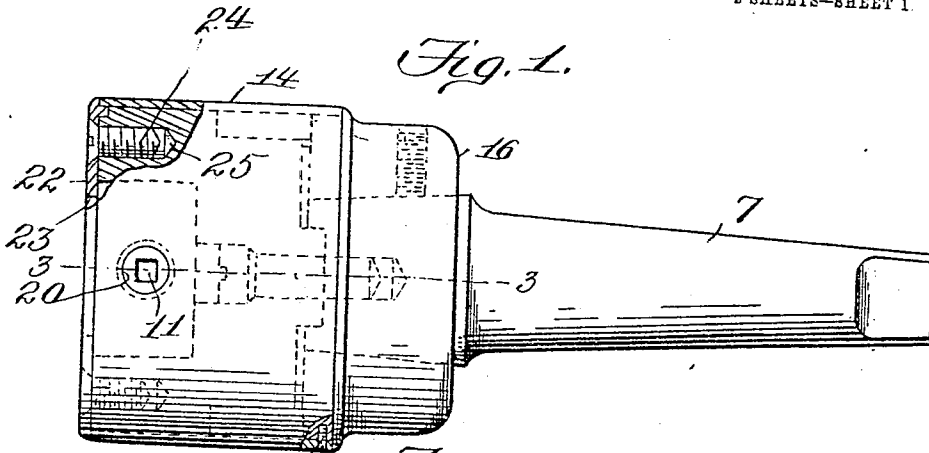


Fig. 2.

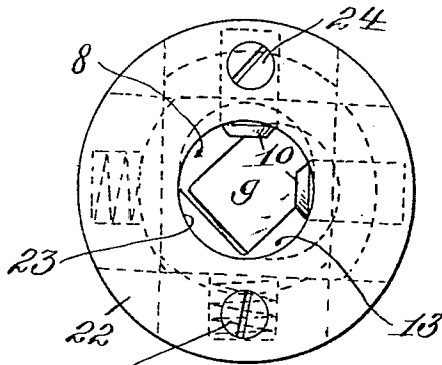
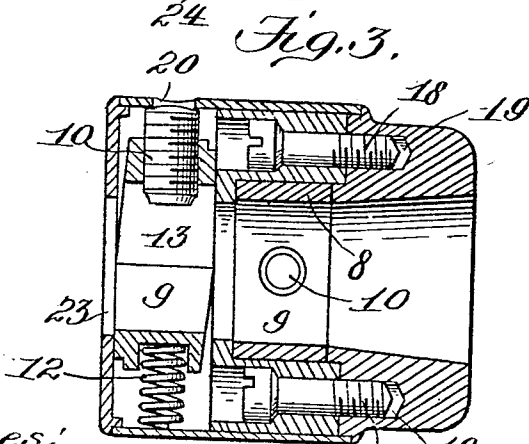


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

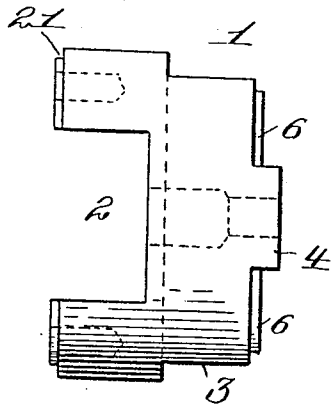


Fig. 5.

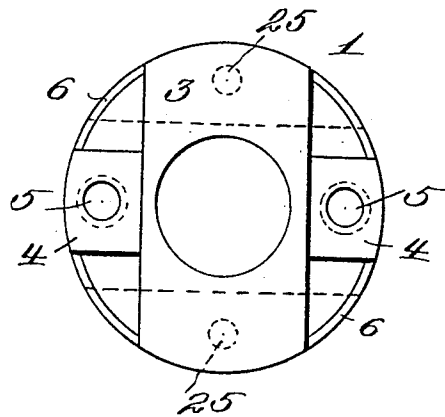


Fig. 7.

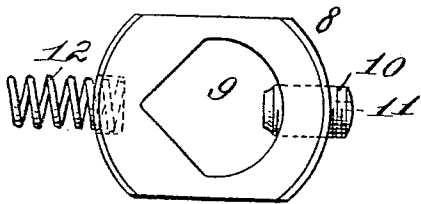


Fig. 8.

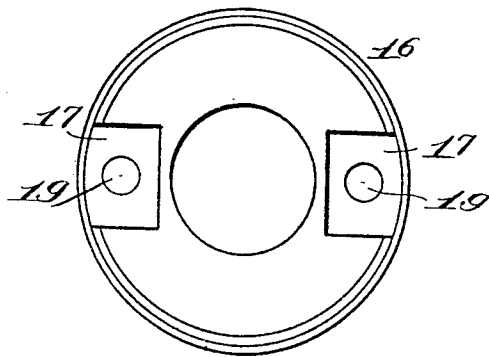


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM A. SCHMID AND CHARLES J. MACOMBER, OF MUNCIE, INDIANA,
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CHUCK.

No. 820,263.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed August 16, 1905. Serial No. 274,457.

To all whom it may concern:

Be it known that we, WILLIAM A. SCHMID and CHARLES J. MACOMBER, citizens of the United States, residing at Muncie, in the county of Delaware and State of Indiana, have invented new and useful Improvements in Chucks, of which the following is a specification.

Our invention relates to certain new and useful improvements in a positive-drive self-centering chuck, and has for its objects to provide a novel construction of chuck adapted to receive a tapering or straight shank of a drill, reamer, or other similar implement and to hold the same securely in position.

The invention consists, essentially, in the novel manner of mounting two adjustable jaws within the head of the chuck, as will be hereinafter clearly described.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a chuck constructed according to our invention, showing the same mounted on a spindle, the several parts being indicated by dotted lines. Fig. 2 is a face view of the same. Fig. 3 is a section taken on the line 3-3 of Fig. 1. Fig. 4 is a view in side elevation of the jaw-guide. Fig. 5 is a view of the inner face of the jaw-guide. Fig. 6 is an edge view of one of two similar jaws used in the chuck. Fig. 7 is a face view of the same, and Fig. 8 is a view of the inner face of the head-piece.

Referring now to the drawings, 1 indicates the jaw-guide, which is provided in one face with a recess or guideway 2 and in its other face, (shown by Fig. 5;) with a similar recess or guideway 3, said guideways being located one above the other and extending at right angles to each other. The inner face of the jaw-guide is provided on diametrically opposite sides with substantially rectangular projections 4, which extend from the periphery of the guide to the opposite edges of the guideway 3. Extending through the jaw-guide from the bottom of the guideway 2 to the outer sides of the projections 4 are screw-holes 5, located, respectively, on opposite sides of the jaw-guide. The inner face of the jaw-guide is provided with a reduced or shouldered portion 6. The inner jaw, or the one which is located nearest the inner end of the spindle 7, is indicated by 8 and comprises

a metal plate curved on its opposite ends to conform to the configuration of the surrounding casing of the chuck and having opposite parallel flat sides. The central portion of this plate is cut away to provide an aperture 9, one side of which is formed V-shaped, as shown by Fig. 7. In one of the circular ends of the jaw 8 is mounted a set-screw 10, the inner end of which projects into the aperture 9 and the outer end of which is provided with a central non-circular recess or socket 11. The opposite circular end of the jaw has mounted therein a coiled spring 12. The outer jaw 13, which is located in the guideway 2, is in all respects similar in construction to the jaw 8, and hence need not be described in detail. The jaw 8 is inserted in the guideway 3, with its flat sides bearing against the parallel walls of said guideway, and the jaw 13 is in a similar manner placed in the guideway 2. When so positioned, an outer casing 14 is inserted over the jaw-guide 1, the springs 12 on the jaws 8 and 13 being compressed thereby, and the casing is then secured in position by means of a small screw 15.

16 indicates a cap or head-piece, which is suitably grooved on its inner face to fit over the shoulder portion 6 of the jaw-guide, and is also provided on its inner face on opposite sides with recesses 17, which fit over the projections 4 on the inner face of the jaw-guide. The casing 14, as shown, projects slightly above the inner face of the jaw-guide and embraces the inner portion of the head-piece 16, the screw 15 passing into the said head-piece from the casing. The head-piece and jaw-guide are firmly connected by means of shouldered screws 18, which are inserted in the screw-holes 5 and engage in screw-threaded apertures 19, formed in the head-piece 16 on opposite sides thereof. It will be seen that by providing projections 4 to be engaged by the head-piece 16, I thereby provide for removing strain from the screws 18 in the use of the chuck.

The screws 10 of the two jaws 8 and 13 are located at a distance of ninety degrees from each other, or, in other words, at right angles to each other, and in applying an implement having a straight or tapering shank two flat places are filed on such shank at right angles to each other for the screws 10 of the jaws to set against. In order to accommodate a ta-

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pering shank, the opposite faces of each jaw are slightly tapered at one side of each face of the jaw, as shown by Fig. 6, so that when the tapered shank is placed in the chuck and the screws 10 set up the jaws 8 and 13 can tip or rock to accommodate themselves to the taper of the shank and let it have a solid bearing in the V-shaped part of the aperture 9. The casing 14 is provided at suitable points corresponding to the location of the screws 10 with openings 20, through which a suitable key-wrench, having a non-circular end adapted to fit into the socket 11, may be inserted for turning up the screws 10. These are the only openings in the chuck, except that in which the shank of the drill is inserted, and thus we exclude to the greatest possible extent the entrance of dust and grit to the interior of the chuck.

The outer face of the jaw-guide is also provided with a reduced or shouldered portion 21, over which fits a suitable flange on a face-plate 22, placed against the outer face of the jaw-guide and abutting against the outer edge of the casing 14, as shown. The face-plate 22 is provided with a central aperture 23, through which the shank of the drill or reamer is inserted into the chuck and is secured to the jaw-guide by means of screws 24, engaging in screw-threaded apertures 25, opening from the inner side of the jaw-guide on opposite sides thereof. The spindle 7 may be secured in the head-piece 16 by means of a binding-screw 26, as shown, or in any other preferred way.

The movement of the jaws in one direction is effected by unscrewing the screws 10 by means of a key-wrench, in which operation the screws will abut against the casing and cause the jaw to be pushed in the opposite direction, compressing thereby the spring 12, and in the opposite direction by setting up the screws or screwing them inward, so that the springs 12 will push the jaws outward. It will be apparent that if the shank of a drill, tap, or reamer be placed within the chuck and either screw 10 set up the tool will still have a movement in the guide; but when the other screw 10 is set up the tool will be held solid and in the center of the chuck.

We would direct attention to the fact that our chuck is specially designed and adapted to drive taper-shaped drills, taps, or reamers that have had the flat portion twisted off of them, whereby we obviate the necessity and expense of re-turning and milling the tools, as

would be necessary in the use of the ordinary socket drive.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A chuck having a casing, two apertured jaws located one above the other and movable in directions at right angles to each other, a spring located at one end of each jaw and tending to press the same constantly in one direction, and an adjusting-screw associated with the opposite end of each jaw.

2. A chuck having a casing, two apertured jaws located one above the other and movable in directions at right angles to each other, a spring located at one end of each jaw and tending to press the same constantly in one direction, and an adjusting-screw associated with the opposite end of each jaw and projecting within the aperture thereof.

3. A chuck comprising a jaw-guide having guideways formed therein extending at right angles to each other and having superposed relation, a jaw located in each guideway, a casing inclosing said jaw-guide, a spring associated with each jaw and bearing against said casing, and an adjusting-screw mounted in each jaw opposite said spring, each of said screws having one end projecting within the aperture of the jaw and the other end abutting against the casing.

4. A chuck comprising a jaw-guide, a pair of jaws mounted therein and movable in directions at right angles to each other, each of said jaws having an aperture one side of which is V-shaped in contour, a casing surrounding said jaw-guide, a spring mounted in each jaw opposite the apex of said aperture and bearing against said casing, and an adjusting-screw mounted in the opposite side of each of said jaws and projecting within said aperture and having its outer end abutting against said casing.

5. A chuck comprising a jaw-guide, a pair of jaws mounted therein and movable in directions at right angles to each other, each of said jaws being tapered on opposite faces, for the purpose described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

WILLIAM A. SCHMID.
CHARLES J. MACOMBER.

Witnesses:

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J. A. ORR.