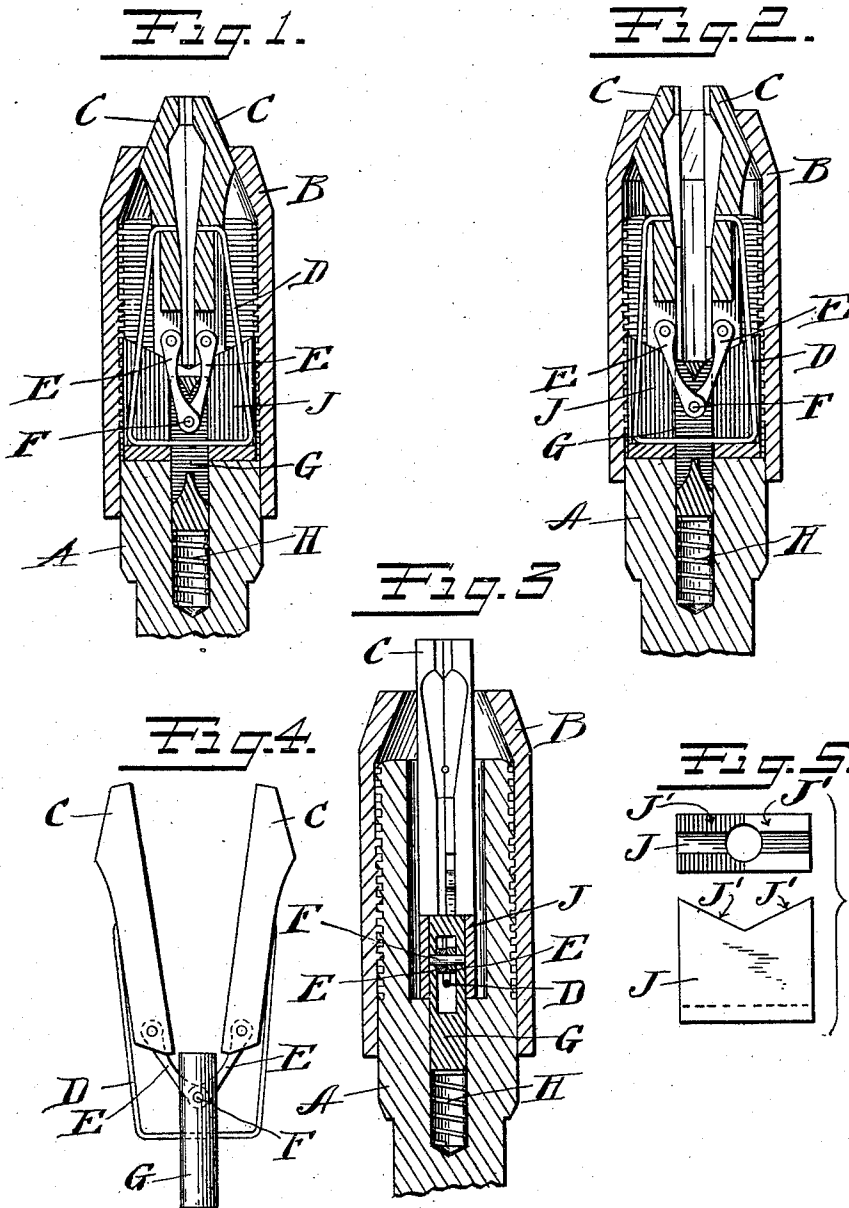


A. F. SCHADE.
CHUCK.

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UNITED STATES PATENT OFFICE.

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CHUCK.

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To all whom it may concern:

Be it known that I, ALBERT F. SCHADE, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Chucks, of which the following is a full, clear, and exact description.

My invention relates to improvements in chucks particularly adapted for use in connection with bit braces.

The main object of the invention is to provide means to insure the proper action of the jaws as the same are being expanded and contracted.

In the drawings Figure 1 is a longitudinal section of a bit brace provided with my improvement, showing the jaws as contracted. Fig. 2 is a similar view, the jaws being expanded. Fig. 3 is a section taken at right angles to the plane of the section shown in Fig. 1, the parts being in a similar position. Figs. 4 and 5 are detail views.

A represents the head-block or driver, the same having a slot in its forward end for the reception of the jaw devices later described.

B represents a shell, threaded upon the driver A so that it may be moved up and down to control the jaws.

C—C represent the jaws, the same being of conventional design suitable for receiving the shank of a tool.

D represents the jaw expanding spring, the ends of said spring being suitably engaged with the jaws and tending to move the same apart.

E—E represent toggle links hinged in any suitable way to a reciprocating plug or slide G. In the particular form shown, the slide is slotted to provide clearance for the links, and a hinge pin F is provided, which passes through each of said links. The other end of each of said links E—E is pivotally connected to a jaw respectively. A longitudinal bore is provided in the driver at the base of the recess in which said slide G is guided. Back of the slide and in the bottom of said bore is located a spring H tending to force the slide outwardly.

J is what I may term a jaw-block, the same having converging abutment inclines J' J' against which the inner ends of the jaws may bear. The jaw-block J likewise has a central bore to afford clearance for the

slide G, and is slotted to afford clearance for the links E—E.

In Fig. 4, I have shown an assembly view of the jaws C—C, the jaw spring D, the links E—E and the slide G. In assembling the parts, the slide spring H would first be inserted in the bore in the driver. The jaw-block J would then be inserted in the bottom of the notch therein; the jaws, spring, links and slide would then be inserted in the slot, and finally the shell B would be applied, thereby causing all the parts to assume the position shown in Fig. 2. In this position, the jaws C—C would stand apart or expanded, ready to receive a tool. It should be stated that the outer end of the jaws have externally beveled sides and that the outer end of the shell is contracted internally to form an annular, tapered, abutment wall to engage said beveled jaw ends. When assembled, the spring H tends to force the jaws outwardly against the tapered, abutment wall of the shell. Since the pressure of the spring H is outward, it tends, through the medium of the links E—E, to force the tail ends of the jaws apart, whereby they will ride up the inclines J' of the jaw block. The opposite ends of said jaws are held apart by the spring D. The conjoint action of the springs D and H and all of said inclines referred to, operate to cause said jaws to stand substantially parallel at all times, thereby greatly facilitating the introduction of a tool shank between said jaws. By turning the shell B down on the driver A, the action of the internal, tapered, abutment wall of the shell and the abutment inclines J' J' tends to contract the jaws bodily, and maintain the same in substantial parallelism throughout their entire range of movement from the wide-open to the completely closed position.

A very important advantage is afforded by the spring H, in that said spring tends to hold the jaws outwardly and into proper seating engagement with the tapered, abutment wall of the shell. This is particularly important when, after the shell has been screwed entirely down on the driver and without any tool between the same, it is desired to open the jaws. The unscrewing of the shell at such a time permits said jaws to open under the action of the spring D, while the action of the spring H causes the outer

ends of the jaws to remain in proper contact with the tapered abutment wall of said shell. It is essential to the operation of the jaws that one of these jaw abutments at least shall have a movement to and fro. In the particular form of the chuck shown, I have illustrated the shell as the movable abutment. In this connection it should be stated that I have attempted to show and describe only one preferred form of construction. Another important advantage, due to the particular construction and arrangement of the parts herein described, is found in the fact that pressure endwise, in the act of using the chuck with a drill therein of the round shank type, is in a direction to cause the jaws to more tightly clamp upon said shank. This is due to the fact that the tail of the drill shank may rest against the outer end of the slide G, hence, as said drill presses rearwardly against said slide, its tendency is to draw the jaws together by reason of the toggle link connection E—E. To permit of this engagement of the drill with the slide G, it is essential that there shall be nothing interposed between said parts. To that end, the jaw-expanding spring D is so formed as to pass through the slot in the slide G below the pivot point F of the toggle link instead of passing around the inner ends of the jaw members in the heretofore

conventional manner. The toggle links E—E likewise may have their inner ends slightly curved, as shown, to provide the necessary clearance for the tail end of the drill shank.

What I claim is:

1. In a chuck, in combination, a driver, a pair of jaws carried thereby, two oppositely faced jaw engaging inclined abutments, one of which is movable toward and from the other, a slide located to the rear of said jaws, toggle links connecting said slide with said jaws, the space in front of said slide being unobstructed whereby said slide may be engaged by the tail end of a drill shank.

2. In a chuck, in combination, a driver, a pair of jaws carried thereby, two oppositely faced jaw engaging inclined abutments, one of which is movable toward and from the other, a slide located to the rear of said jaws, toggle links connecting said slide with said jaws, the space in front of said slide being unobstructed whereby said slide may be engaged by the tail end of a drill shank, a spring tending to move said jaws apart, and another spring tending to move said jaws longitudinally.

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