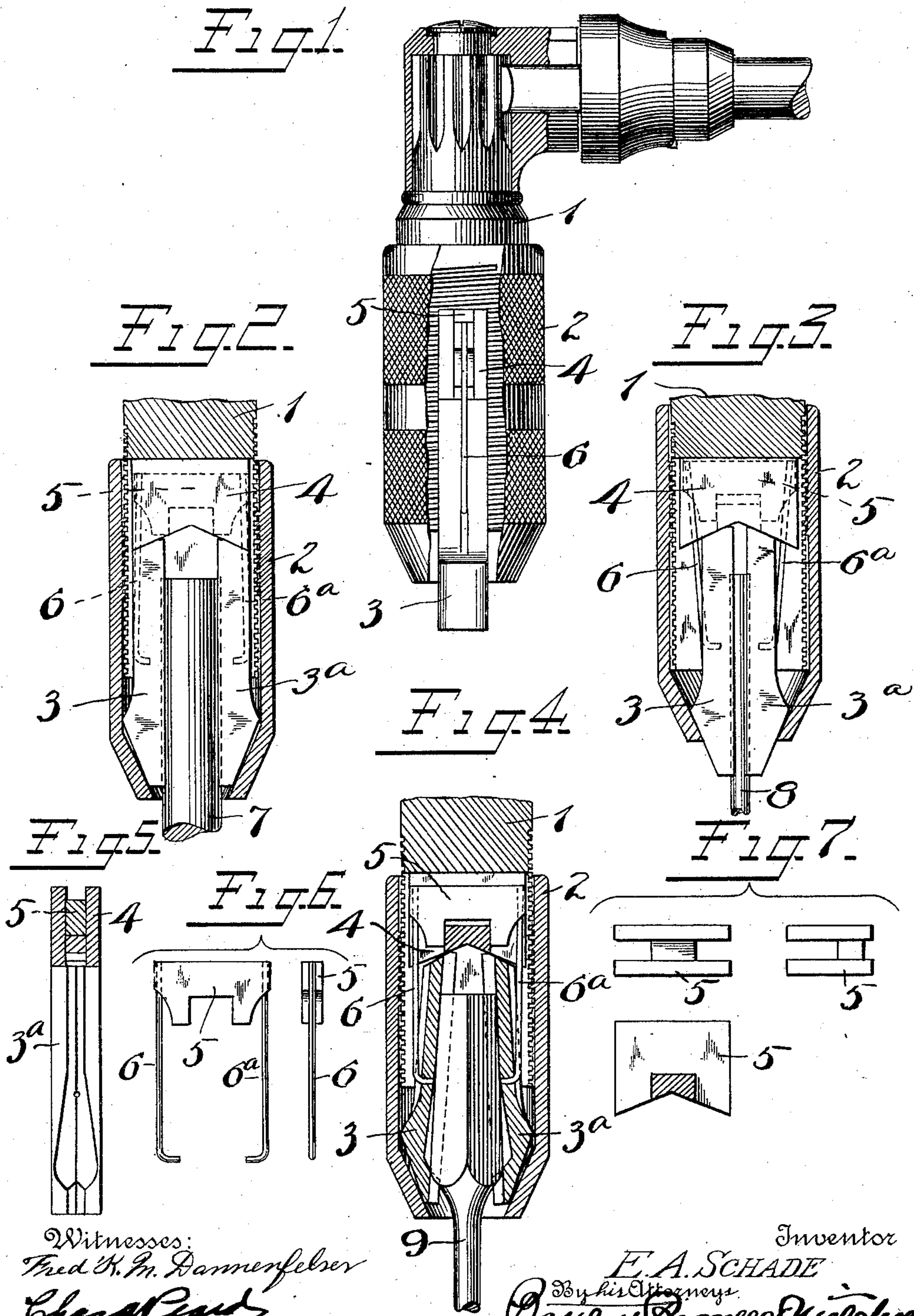


E. A. SCHADE.
BIT BRACE CHUCK.

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UNITED STATES PATENT OFFICE.

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CONNECTICUT.

BIT-BRACE CHUCK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDMUND A. 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 Bit-Brace Chucks, of which the following is a full, clear, and exact description.

This invention relates to improvements in chucks of a type particularly useful in connection with bit braces.

The object of the invention is to provide a simple and effective means to secure uniform action of the jaw members.

In the drawings: Figure 1 is a side elevation partly in section of a jaw such as employed in connection with bit braces, a portion of the brace being shown; Fig. 2 is a section taken on a plane at right angles to the plane of the parts as shown in Fig. 1 and showing the jaws expanded and applied to a round drill shank; Fig. 3 is a similar view showing the parts applied to a round drill shank of smaller size; Fig. 4 is a similar view but somewhat more in section and showing the parts applied to the angular head of an ordinary bit; Fig. 5 is a detail view partly in section; Fig. 6 is illustrative of another detail detached; Fig. 7 illustrates different views of still another detail.

1 is the main body of the chuck which I will term the driver.

2 is the jaw controlling shell which is screw-threaded on to the body of the driver

1. The body of the driver 1 is longitudinally slitted from its forward end to receive the jaws 3—3^a such as customarily employed. 4 is an abutment block also located in said slot and having two receding inclines at its forward end, against which the rear ends of the jaws 3—3^a bear and ride. The outer end of the shell 2 has a tapered annular wall for engaging the outer ends of the jaws 3—3^a, whereby when the shell is screwed back on the body 1, the jaws 3—3^a are contracted or pressed toward each other, said jaws riding down the two receding inclines at the opposite ends thereof.

In chucks of this type much difficulty is experienced in securing parallel action of the jaw members. Various means have been devised to accomplish this end, but the following simple means I have found to be exceedingly effective. The opposite sides and the rear of the block 4 are grooved and re-

cessed to provide a space for receiving a U-shaped spring carrier 5, said spring carrier being properly fitted to the space in the rear of the abutment block 4, so that it may move to and fro to a limited extent but will not tilt. 6—6^a are springs carried by the carrier 5 and connected at their forward ends to the jaws 3—3^a respectively. As the jaws are moved to and fro, they will operate in substantial parallelism, so that a round drill shank may be readily inserted. In Fig. 2, I have shown in place a round shank 7 of a drill of large size. In Fig. 3, I have shown the chuck as gripping the round shank 8 of a small drill. While this construction tends to normally preserve parallelism of the jaws, they can nevertheless be tilted, by reason of the yielding action of the spring members 6—6^a, so as to assume the position indicated in Fig. 4, wherein said jaws are shown as gripping the usual tapered conical shank 9 of the ordinary boring bit. The carrier 5 partakes of sufficient sliding movement to and fro relatively to the axis of the chuck and within the recess at the rear of the block 4 to permit the rear ends of the jaw members to ride up and down on the two inclines at the front end of said block 4, but, since said carrier 5 cannot tilt out of line with the axis of the chuck, it follows that one jaw cannot be projected or retracted at any time more than its companion jaw, but the degree of projection of said jaws will at all times correspond.

It should be stated that the normal action of the spring connection between each jaw and the carrier is to expand or move apart the jaws, so that they will follow the inclines at the ends thereof, riding outwardly thereon as the jaw operating shell is screwed outwardly on the driver.

It will be understood that I have shown and described only the preferred form of my invention.

What I claim is:

1. In a chuck, in combination, a driver having a longitudinal slot therein, a pair of jaws standing in said slot, an abutment block in said slot at the rear ends of said jaws, said abutment block having opposite receding inclines at its forward end and grooves in its opposite sides, a jaw-operating shell surrounding said driver having a tapered or inclined outlet for engaging the outer ends of said jaws, a U-shaped spring

carrier guided on said block and in said grooves and arranged to move to and fro in axial alinement with said chuck but held against being tilted by engagement with said side walls, and a spring connection between each jaw and said carrier.

2. In a chuck, in combination, a driver having a longitudinal slot therein, a pair of jaws standing in said slot, an abutment block in said slot at the rear ends of said jaws, said abutment block having opposite receding inclines at its forward end, a jaw-operating shell surrounding said driver having a tapered or inclined outlet for engaging the outer ends of said jaws, said abutment having guide grooves in its opposite sides and a recess in its rear connecting said grooves, a reciprocating U-shaped spring carrier guided on said block and standing in said grooves and capable of limited longi-

tudinal movement, and a spring connection between each jaw and said carrier.

3. In a chuck, in combination, a driver having a longitudinal slot therein, a pair of jaws standing in said slot, an abutment block at the rear end of said slot, said abutment block having opposite receding inclines at its forward end against which said jaws bear, a jaw-operating shell surrounding said driver and having a tapered or inclined outlet for engaging the outer ends of said jaws, jaw expanding springs rigidly secured to said jaws respectively, means to permit said springs to move longitudinally relatively to the abutment block and to hold said springs against unequal movement.

EDMUND A. SCHADE.

Witnesses:

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