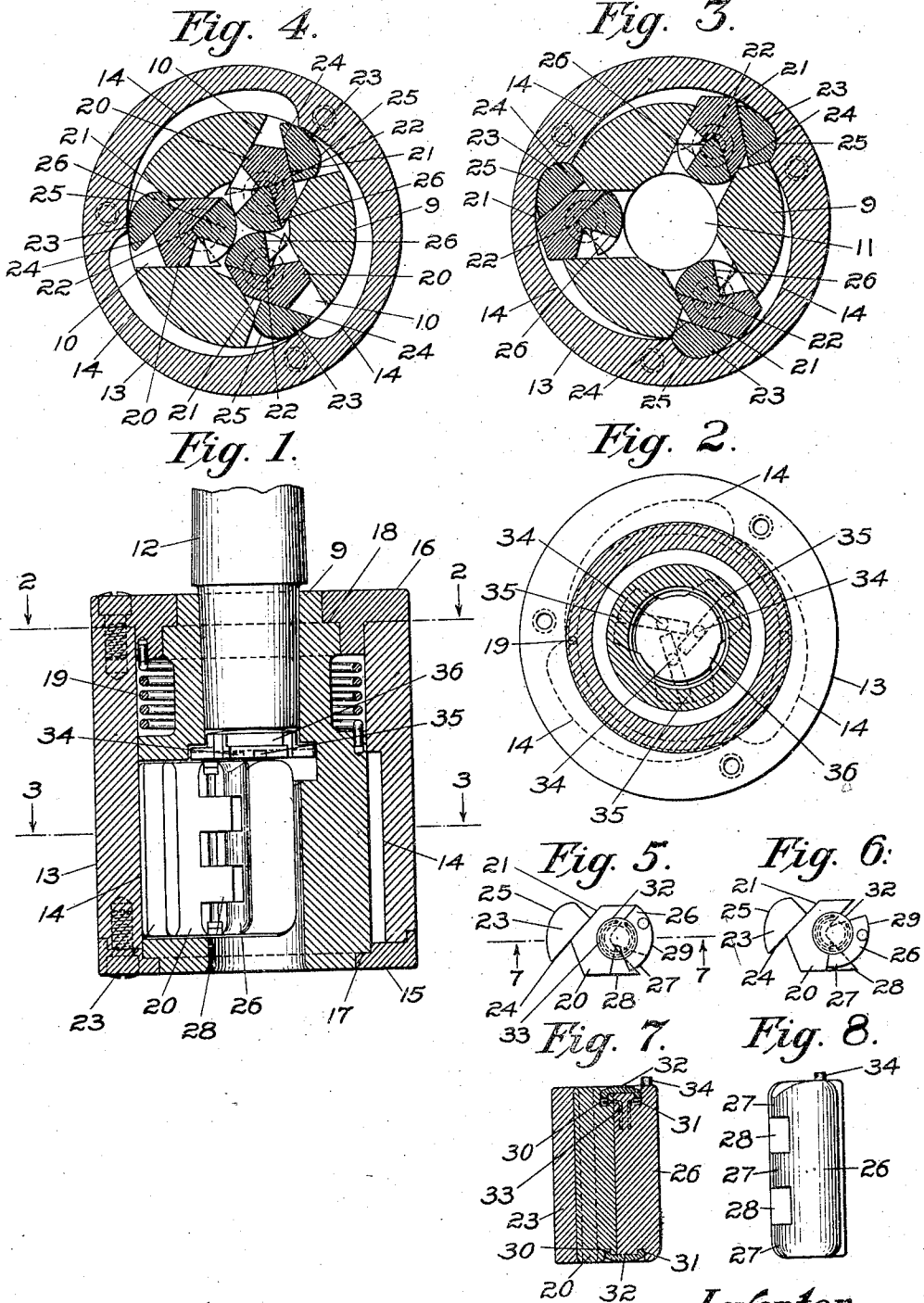


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CHUCK.
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CHUCK.

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To all whom it may concern:

Be it known that I, VERNER J. WAHLSTROM, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Chucks, of which the following is a specification.

This invention relates to an improvement in chucks, and it has for its main objects the production of a device of this general character of increased capacity and efficiency.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same parts, Figure 1 is a central sectional view of a device constructed in accordance with the invention, Fig. 2 is a sectional view taken on the line 2—2 in Fig. 1, with the shank omitted, Figs. 3 and 4 are sectional views taken on the line 3—3 in Fig. 1, showing the jaws in different positions, Figs. 5 and 6 are plan views of one of the jaws showing the parts in different positions, Fig. 7 is a sectional view taken on the line 7—7 in Fig. 5, and Fig. 8 is an end elevation of the jaw shown in Figs. 5, 6 and 7.

In the device selected to illustrate the invention, there is provided a body 9 having three radial slots 10 cut through its wall to a central aperture 11 adapted to receive a tool shank. The body is further provided with a shank 12, driven or otherwise fastened therein, for the purpose of attaching the device to a drill press or other machine tool. The device is further provided with an annular shell 13 surrounding the body and rotatable thereon. This shell is provided with three internal cam faces 14, and is held in position by means of two caps 15, 16, screwed to the shell and engaging rabbets 17, 18 formed on the body 9. A spring 19

is coiled around the body within the shell, one end being fast to the body and the other to the shell, as indicated in Fig. 1.

That portion of the device so far described is old and well known in the art, and a more detailed description of its construction is deemed unnecessary to a full understanding of the present invention, and is therefore omitted in the interest of brevity.

For the purpose of clamping a tool in the central aperture 11, there is provided a jaw, or plurality of jaws, working in the slots 10. This jaw or these jaws may vary within wide limits. As shown, however, jaws 20 are provided, each jaw having a flat face 21 on its outer end, and a recess 22 on its inner end the purpose of which will be hereinafter explained.

For the purpose of producing a movement of the jaw toward the axis of the shell and center of the device, there is provided a wedge interposed between the jaw and one of the internal cam faces 14, and this wedge may vary within wide limits. In certain constructions within the invention for instance, a roller might be employed for this purpose. As shown, however, a wedge 23 is employed, this wedge having a flat face 24 engaging the rear face 21 of the jaw and a curved face 25 engaging the internal cam face 14. When the shell 13 is rotated by the spring 19, the internal cam face 14 slides by the curved face 25 of the wedge and forces it inward toward the center of the chuck. During this movement, the flat face 24 of the wedge slides on the flat face 21 of the jaw. Owing to the angle at which these faces are cut, a small radial movement, produced by the internal cam face, is translated into a relatively large radial movement of the jaw toward the center of the chuck. This can be best understood by reference to Figs. 3 and 4. In Fig. 3, the jaws are shown in wide open position and ready to receive between them a drill shank of the largest size within the capacity of the device. In Fig. 4, the jaws are shown in their inner, or closed position on a very small drill shank.

While, in certain constructions, the jaw might be relied upon to clamp the tool shank by direct contact; in the best constructions and as shown, a tool gripper carried by the jaw is employed. This gripper, marked 26, is a segmental rocking gripper and is seated in the recess 22 of the jaw, as clearly shown in Figs. 3 and 4. It is provided with fingers 27 which interlock with fingers 28 on the jaw 20. The bearing face 29 of each gripper is cam shaped so that the grippers are, by contact with a tool shank, caused to tightly clamp a tool shank in the aperture 11 in a well known manner.

The upper and lower ends of the jaws 20 are provided with segmental channels 30 concentric with the recess 22. Similarly, the upper and lower ends of the grippers are provided with segmental channels 31 registering with the channels 30. In these channels are fitted annular caps 32, which serve to pivotally hold the jaws and grippers together. For the purpose of holding each gripper in open or inoperative position, a spring 33 is provided. One end of this spring is secured in the jaw and the other end in the gripper, Figs. 5 and 7. When a plurality of jaws and grippers are employed, each gripper is provided with an upwardly projecting stud 34 which engages one of the slots 35 cut in the lower face of a plate 36 centrally located in the upper part of the aperture 11. The mechanism just described serves to control the rocking movement of the several grippers and insure uniform movement of the same so that a tool shank will always be centrally clamped in the aperture.

In view of the foregoing, a detailed description of the operation of the device is deemed unnecessary and is therefore omitted in the interest of brevity.

Changes and variations may be made in the structure by means of which the invention is carried into effect. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, a floating wedge interposed between the cam face and the jaw, and a tool gripper carried by the jaw.
2. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, a floating wedge interposed between the cam face and the jaw, and a rocking tool gripper carried by the jaw.
3. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, a floating wedge interposed between the cam

face and the jaw, and a rocking tool gripper pivotally carried by the jaw.

4. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, a floating wedge interposed between the cam face and the jaw, a rocking tool gripper, and a pair of annular caps engaging the ends of the jaw and gripper to pivotally hold them together.

5. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, a floating wedge interposed between and arranged to slide on the cam face and the jaw, and a rocking tool gripper carried by the jaw.

6. In a chuck, the combination with an annular shell having a plurality of internal cam faces, of a plurality of jaws movable toward the axis of the shell, a plurality of floating wedges interposed between the cam faces and the jaws, a plurality of rocking tool grippers one carried by each jaw, and means connecting the grippers whereby uniform movement of the same is controlled.

7. In a chuck, the combination with an annular shell having a plurality of internal cam faces, of a plurality of jaws movable toward the axis of the shell, a plurality of floating wedges interposed between the cam faces and the jaws, a plurality of rocking tool grippers one carried by each jaw and each provided with a stud, and means engaging the studs whereby uniform movement of the grippers is controlled.

8. In a chuck, the combination with an annular shell having a plurality of internal cam faces, of a plurality of jaws movable toward the axis of the shell, a plurality of floating wedges interposed between the cam faces and the jaws, a plurality of rocking tool grippers one carried by each jaw and each provided with a stud, and a plate having a series of slots engaging the studs whereby uniform movement of the grippers is controlled.

9. In a chuck, the combination with a movable jaw, of a rocking tool gripper, and a pair of annular caps engaging the ends of the jaw and gripper to pivotally hold them together.

10. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, and a floating wedge interposed between the cam face and the jaw and having a flat face engaging the jaw and a curved face engaging the cam face.

11. In a chuck, the combination with an annular shell having an internal cam face, of a jaw movable toward the axis of the shell, a floating wedge interposed between the jaw and cam face, and a segmental tool gripper pivotally carried by the jaw.

12. In a chuck, the combination with an
annular shell having an internal cam face, of
a jaw movable toward the axis of the shell,
a floating wedge interposed between the jaw
5 and cam face, and a segmental tool grip-
per interlocked with and pivotally carried
by the jaw.

In testimony whereof, I have signed my
name to this specification in the presence
of two subscribing witnesses.

VERNER J. WAHLSTROM.

Witnesses:

J. D. H. BERGEN,
H. OTTO CLAUSEN.