

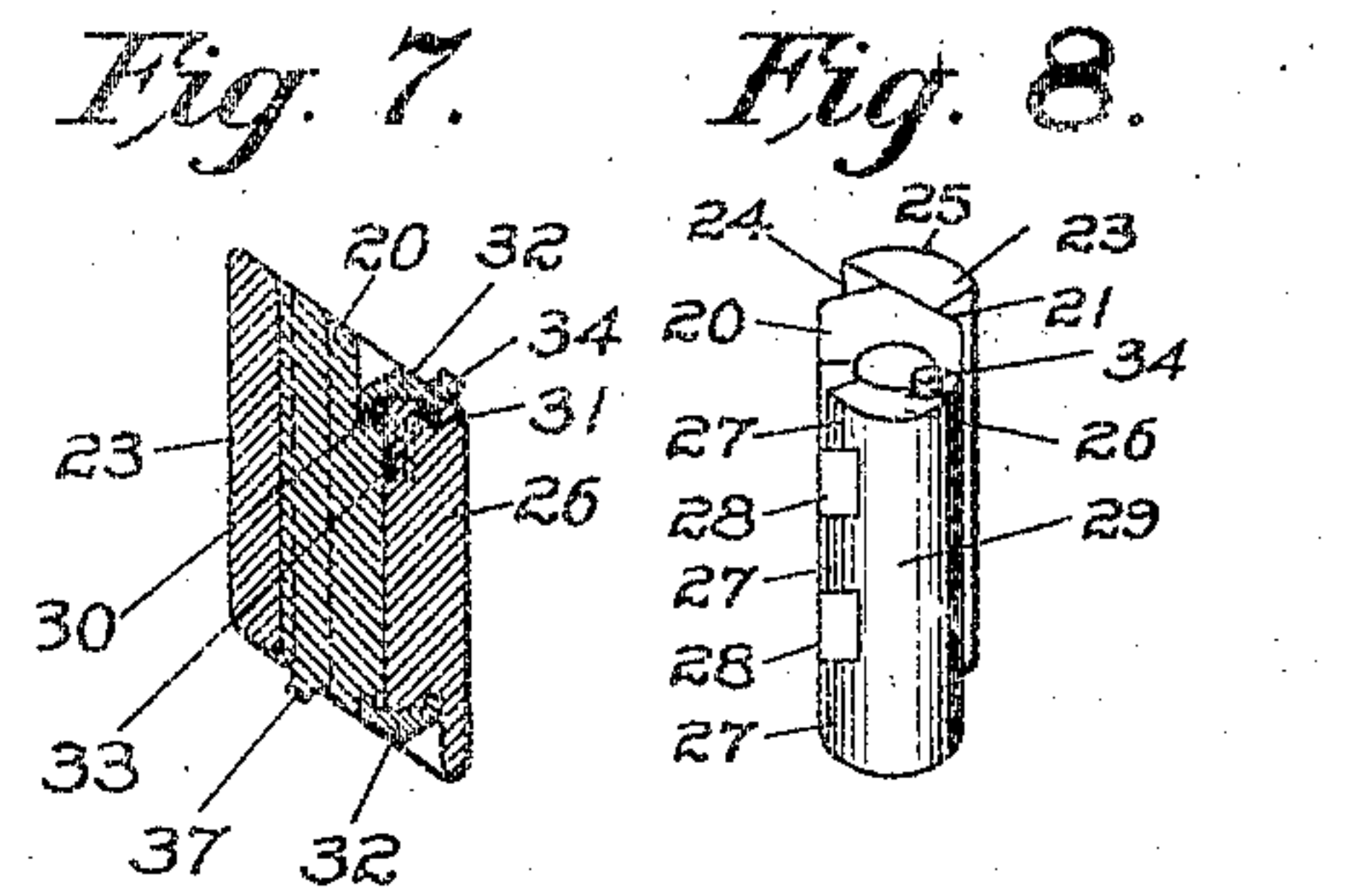
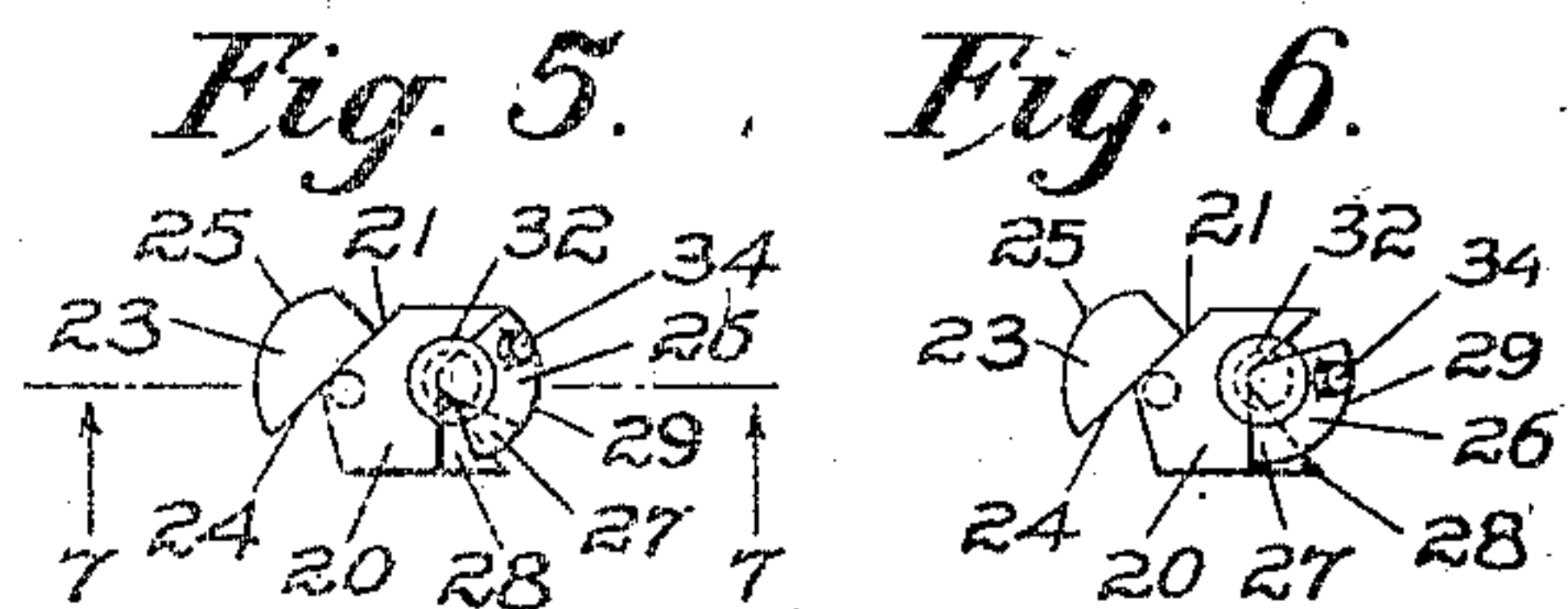
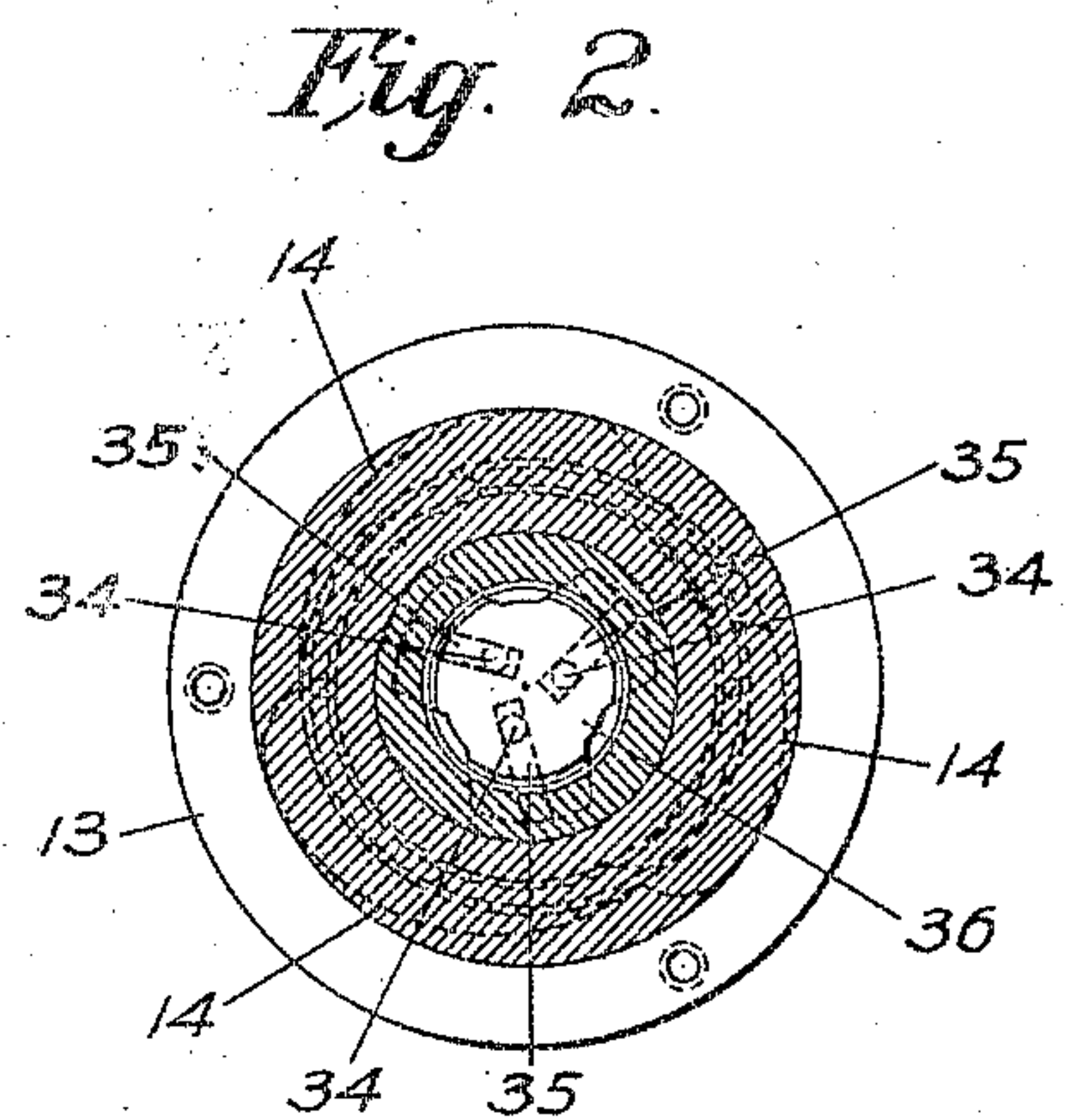
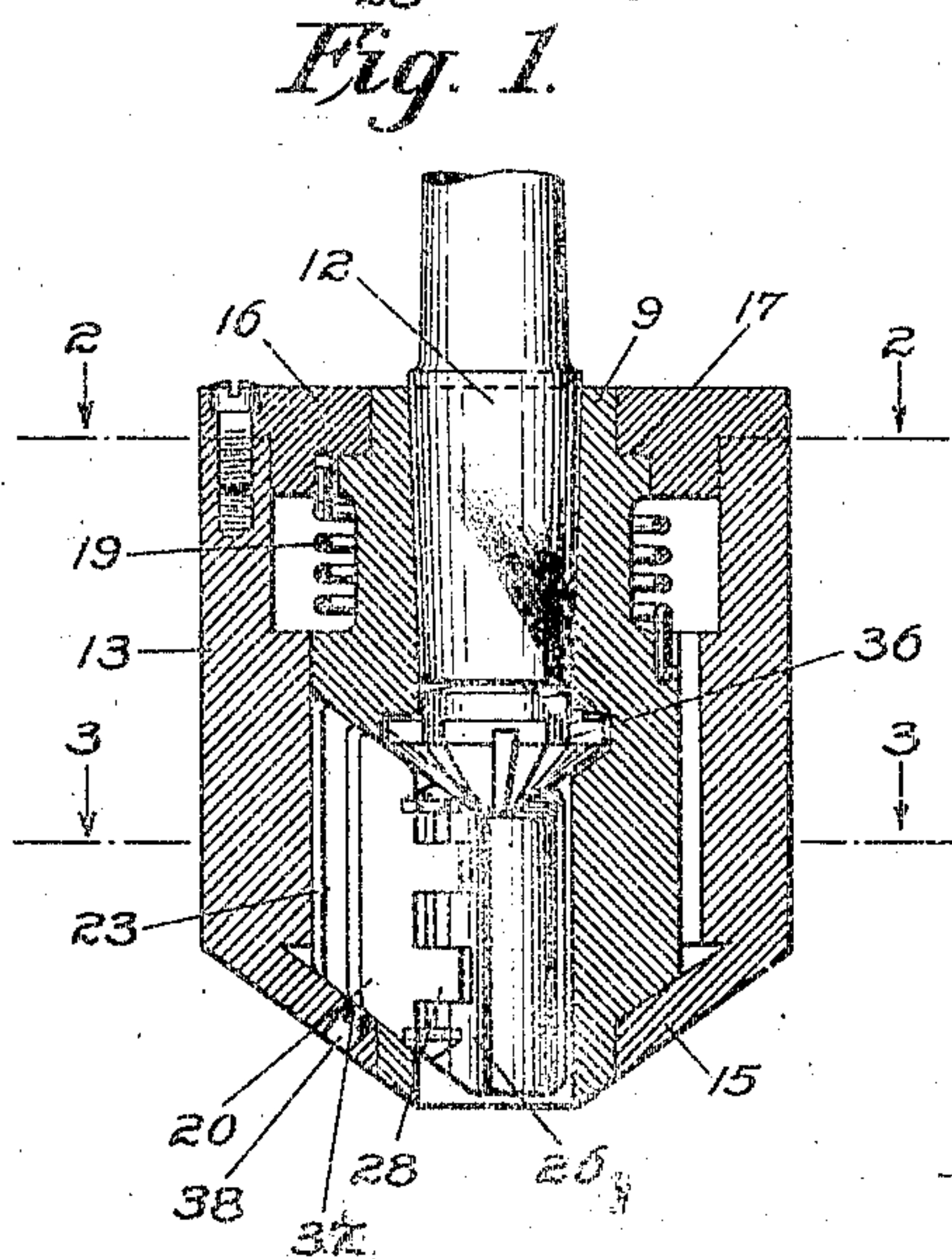
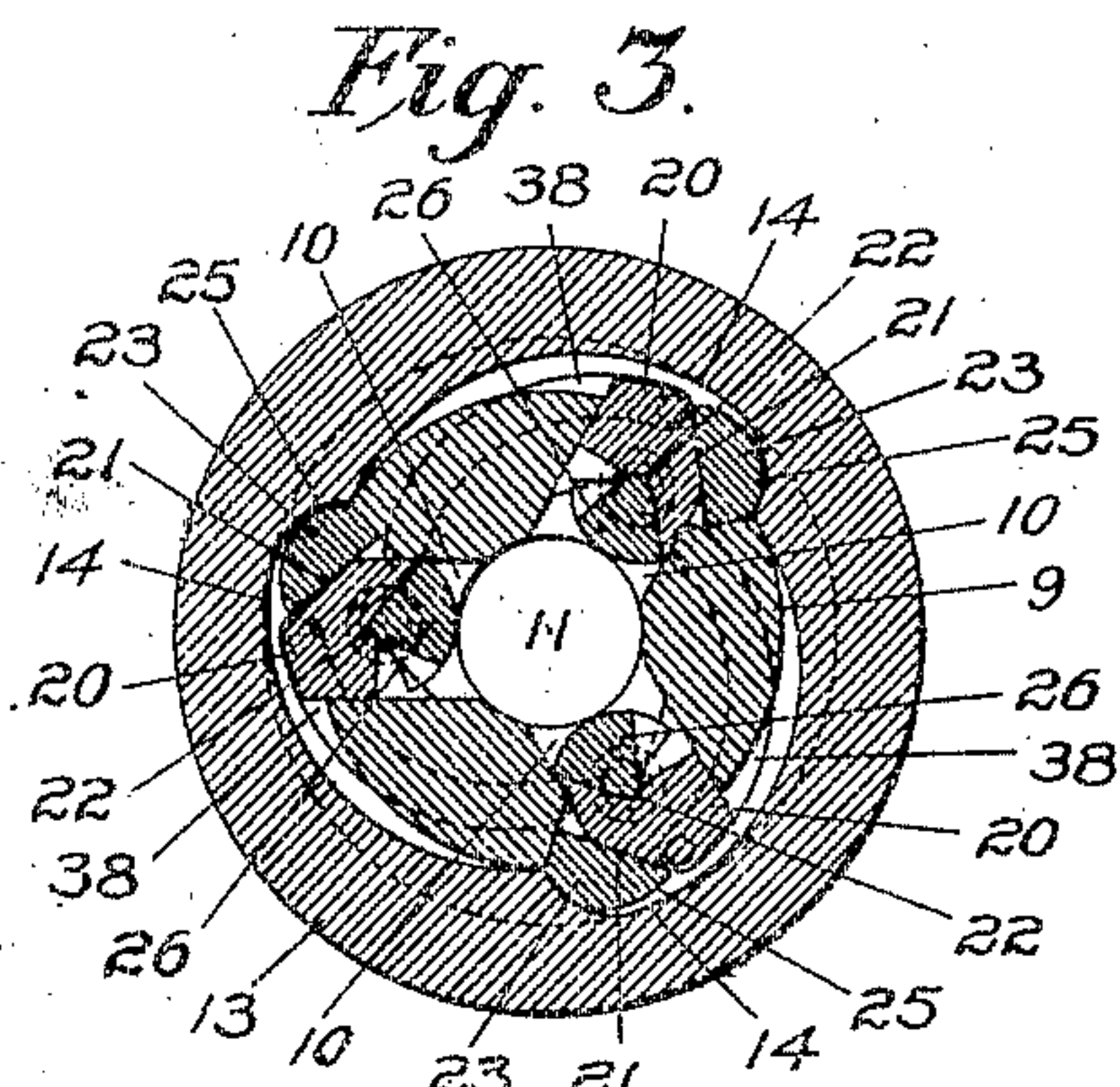
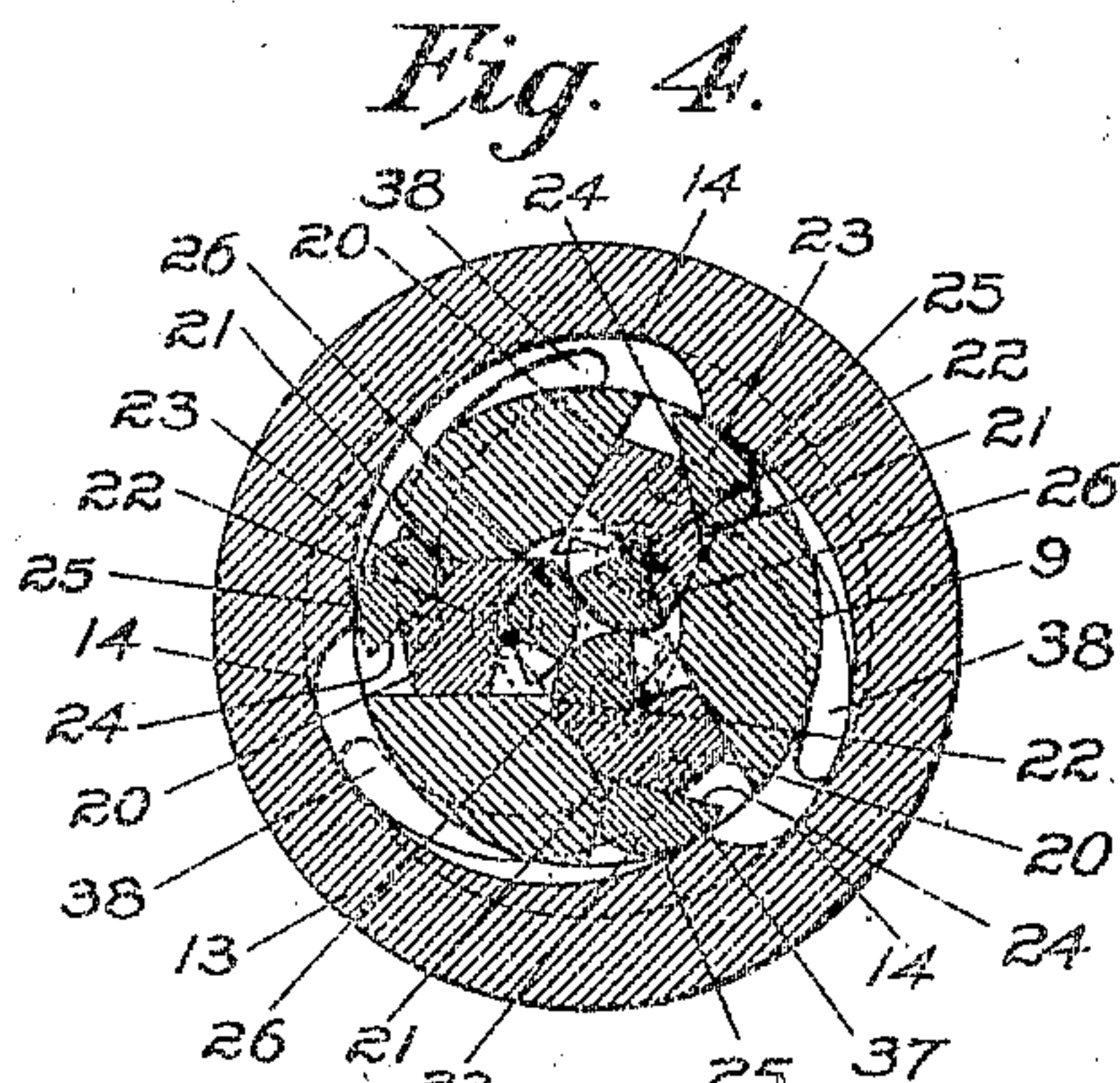
V. J. WAHLSTROM.

CHUCK.

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996,954.

Patented July 4, 1911.



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# UNITED STATES PATENT OFFICE.

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CHUCK.

996,954.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed October 14, 1910. Serial No. 586,987.

*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 object 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 slots are also inclined from the axis of the aperture 11. 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 an intumed flange 15 at its lower end, and a cap 16 screwed to the shell at its upper end and engaging a rabbet 17 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. Each of the jaws, marked 20, has 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 each jaw toward the axis of the shell and center of the device, there is provided a floating wedge interposed between the jaw and one of the internal cam faces 14. This floating wedge, marked 23, has a flat face 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 slides by the curved face 25 of the wedge and forces it inward toward the axis of the device. 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 and to the inclination of the slots 10, a small movement, produced by the internal cam face, is translated into a relatively large movement of the jaw radially inward and downward 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.

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 will of course be understood that each jaw carries a gripper. Each gripper is provided with fingers 27 which interlock with fingers 28 on the jaw 20. The bearing face 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, 110



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  
 5 serve to pivotally hold the jaw and gripper together. For the purpose of holding each gripper in open or inoperative position, a spring 33 is provided. One end of this  
 10 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  
 15 face of a conical 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  
 20 same so that a tool shank will always be centrally clamped in the aperture.

For the purpose of causing retraction of the jaws from the aperture, each jaw is provided with a stud 37 engaging a cam chan-  
 25 nel 38 cut in the flange 15 of the shell 13. This channel is cut spirally, as clearly shown in Figs. 3 and 4, so that the movement produced thereby corresponds with the jaw movement produced by the internal cam  
 30 faces and wedge 23.

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

35 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.  
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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  
 45 shell and provided with a stud in one of its ends, a wedge interposed between the cam face and the jaw, a cam channel in the shell engaging the stud, and a tool gripper carried by the jaw.

50 2. In a chuck, the combination with an annular shell having an internal cam face,

of a jaw movable radially toward and in a direction inclined to the axis of the shell and provided with a stud in one of its ends, a wedge interposed between the cam face 55 and the jaw, a cam channel in the shell engaging the stud, and a tool gripper carried by the jaw.

3. In a chuck, the combination with an annular shell having an internal cam face, 60 of a jaw movable radially toward and in a direction inclined to the axis of the shell and provided with a stud in one of its ends, a floating wedge interposed between the cam face and the jaw, a cam channel in the 65 shell engaging the stud, and a tool gripper carried by the jaw.

4. In a chuck, the combination with an annular shell having a plurality of internal cam faces, of a plurality of jaws movable 70 radially toward and in directions inclined to the axis of the shell and each provided with a stud in one of its ends, a plurality of floating wedges interposed between the cam faces and jaws, a plurality of cam chan- 75 nels in the shell one engaging each of the studs, a plurality of tool grippers one carried by each jaw and each provided with a stud, and a controlling member having a series of slots engaging the gripper studs. 80

5. In a chuck, the combination with an annular shell having a plurality of internal cam faces, of a plurality of jaws movable radially toward and in directions inclined 85 to the axis of the shell and each provided with a stud in one of its ends, a plurality of floating wedges interposed between the cam faces and the jaws, a plurality of cam channels in the shell one engaging each of the studs, a plurality of rocking tool grippers 90 one carried by each of the jaws and each provided with a stud, and a conical plate having a series of slots engaging the gripper studs.

In testimony whereof, I have signed my 95 name to this specification in the presence of two subscribing witnesses.

VERNER J. WAHLSTROM.

Witnesses:

J. D. H. BERGEN,  
 H. OTTO CLAUSSEN.