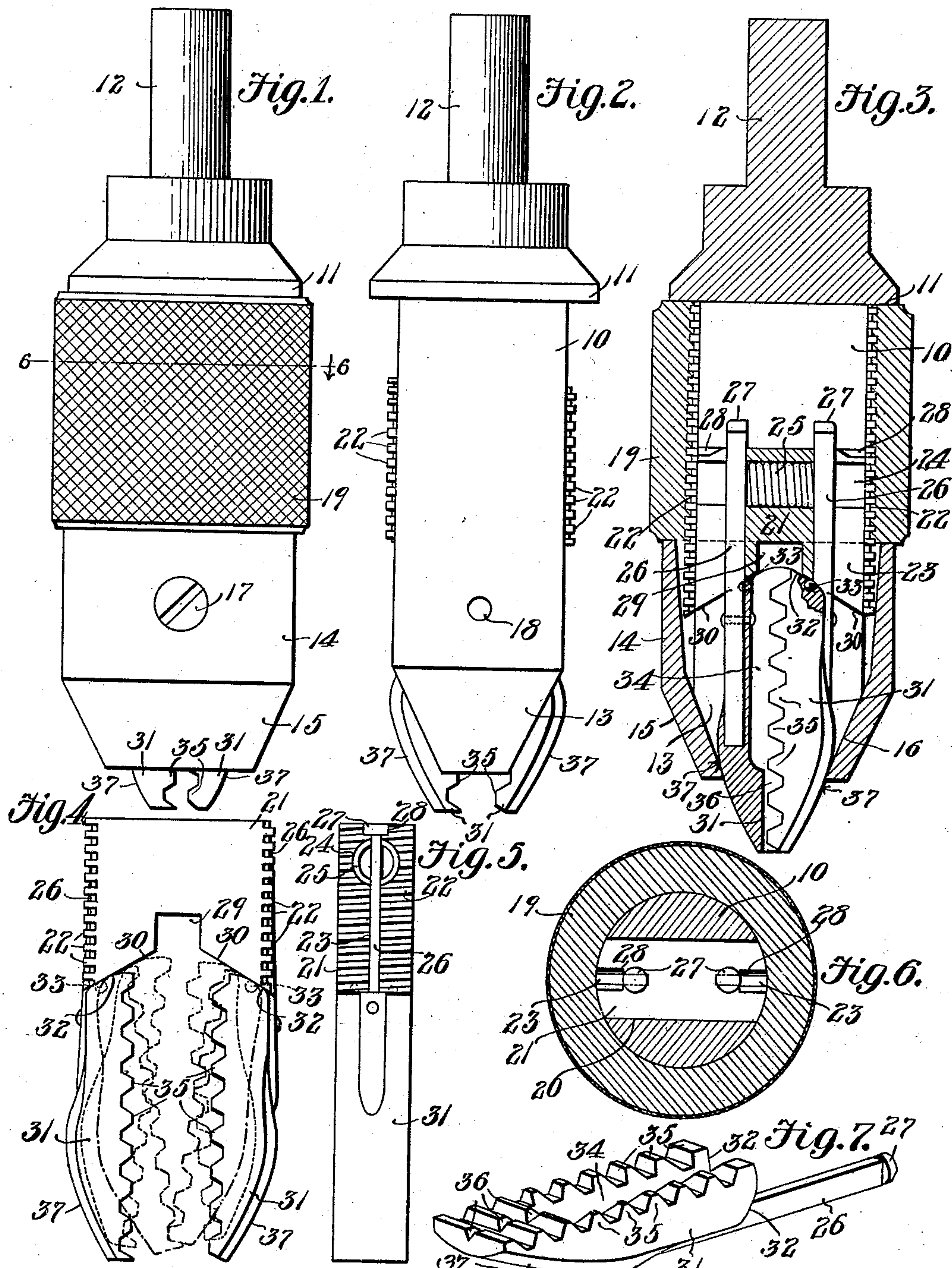


No. 842,469.

PATENTED JAN. 29, 1907.

J. A. LELAND.
CHUCK.

APPLICATION FILED DEC. 2, 1905.



WITNESSES:

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JOHN A. LELAND, OF MILLERS FALLS, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HERBERT J. LELAND, OF MILLERS FALLS, MASSACHUSETTS.

CHUCK.

No. 842,469.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed December 2, 1905. Serial No. 290,034.

To all whom it may concern:

Be it known that I, JOHN A. LELAND, a citizen of the United States, residing at Millers Falls, in the county of Franklin and State of Massachusetts, have invented a new and useful Chuck, of which the following is a specification.

This invention relates to tool-chucks, and has for an object to provide a chuck embodying new and improved features of adaptability to various tool-shanks, tenacity of grip, simplicity, and efficiency.

A further object of the invention is to provide a chuck having jaws which may be closed in parallelism or inclined toward each other at either end.

A further object of the invention is to provide a chuck with a follower having cam-surfaces and jaws provided with ball-bearings in engagement with the cam-surfaces, whereby the closing of the jaws at the necessary angle of inclination is facilitated.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter fully described, shown in the accompanying drawings, and particularly pointed out in the appended claim.

In the drawings, Figure 1 is a view of the improved chuck in side elevation and completely assembled. Fig. 2 is a view in side elevation of the improved chuck with the conical shell and screw-sleeve removed. Fig. 3 is a sectional view of the improved chuck taken on a diametrical plane. Fig. 4 is a detail view of the jaws and follower in side elevation and disengaged. Fig. 5 is a detail view of the jaws and follower in edge elevation. Fig. 6 is a transverse sectional view taken on line 6 6 of Fig. 1. Fig. 7 is a detail perspective view of one of the jaws and its supporting-arm.

Like characters of reference indicate corresponding parts in all of the figures of the drawings.

In its preferred embodiment the improved chuck forming the subject-matter of this application comprises a cylindrical body 10, having a shoulder 11 at its upper end and provided with any approved form of shank, as 12, for connection with any form of boring-machine or lathe, or it may be integral with such machine or a brace. At its end opposite the shoulder the body is continued by

a conical extremity 13, over which is fitted a shell 14, tapered at its end, as at 15, and having an internal conical surface 16.

The shell is secured in any approved manner, as by the screw 17, engaging within the screw-opening 18 in the body, and between the shell and shoulder an internally-screw-threaded sleeve 19 is mounted for rotation. The conical body 10 is divided by a slot or aperture 20, having parallel sides and extending throughout the entire length from the shoulder to and including the conical extremity. Within the aperture is slidably mounted a follower 21, having its edges extending beyond the body and screw-threaded, as at 22, to engage the internal screw-threads of the sleeve.

The follower is provided with longitudinal recesses 23, intersected by a transverse recess 24, in which is seated a spring 25. Within the recesses 23 are arms 26, having enlarged heads 27, which normally engage the countersunk walls 28 of the follower and serve to prevent the arms from drawing through the longitudinal recesses, said arms being normally held in contact with the sleeve by the spring 25.

The lower end of follower 21 is provided with a central squared opening 29, proportioned to receive and engage the squared tang of a bit or drill, and at each side of the opening 29 the follower is reversely inclined to form the cam-surfaces 30. Upon the arms 26 are secured the jaws 31, having beveled shoulders 32, provided with balls 33, abutting the cam-surfaces 30 and movable thereon. The jaws are provided throughout the greater part of their length with a deep groove 34 with intergaging-teeth 35, spaced along each side. Adjacent the lower extremities the jaws have a small groove 36, formed centrally of the teeth and at the sides opposite cam-faces 37, engaging the internal conical surface of the shell 14.

In operation, the drill or bit is inserted between the jaws while they are open to any necessary degree, as indicated in Figs. 1, 2, or 4. The sleeve 19 is then rotated to advance the jaws in contact with the shell 14 and to close the extremities upon the tool in the well-known manner. When the extremities have closed on the shank of the tool, a further rotation of the sleeve forces the balls 33 into contact with the cam-surfaces 30,

which moves the jaws and arms laterally and closes the upper ends of the jaws until the tang is firmly gripped, no matter what its form or taper.

5 In Fig. 4 is shown, in dotted lines, some of the various positions which the jaws may assume under pressure of the shell and resisted by a body between them.

10 Having thus described the invention, what is claimed is—

A chuck comprising a body portion provided with a longitudinal slot, a conical shell embracing the extremity of the body portion and rigidly secured thereto, an internally-
15 threaded sleeve mounted for rotation on the body portion and bearing against the shell, a follower mounted for sliding movement in the recess of the body portion and provided with longitudinal recesses and inclined cam-
20 faces, there being a transverse recess formed

in the upper end of the follower and intersecting the longitudinal recesses, screw-threads formed along the edge of the follower and engaging the threads on the sleeve, arms
25 seated in the longitudinal recesses of the follower and adjustable longitudinally and laterally with respect thereto, a spring seated in the transverse recess and adapted to yieldably support the same in operative position,
30 jaws carried by the arms and provided with cam-surfaces adapted to engage the cam-surfaces on the follower, and antifriction-rollers interposed between the cam-surfaces.

In testimony that I claim the foregoing as my own I have hereto affixed my signature
35 in the presence of two witnesses.

JOHN A. LELAND.

Witnesses:

W. J. RIST,

F. A. FOSTER.