

J. A. LELAND.

CHUCK.

APPLICATION FILED JULY 14, 1909.

974,896.

Patented Nov. 8, 1910.

Fig. 1.

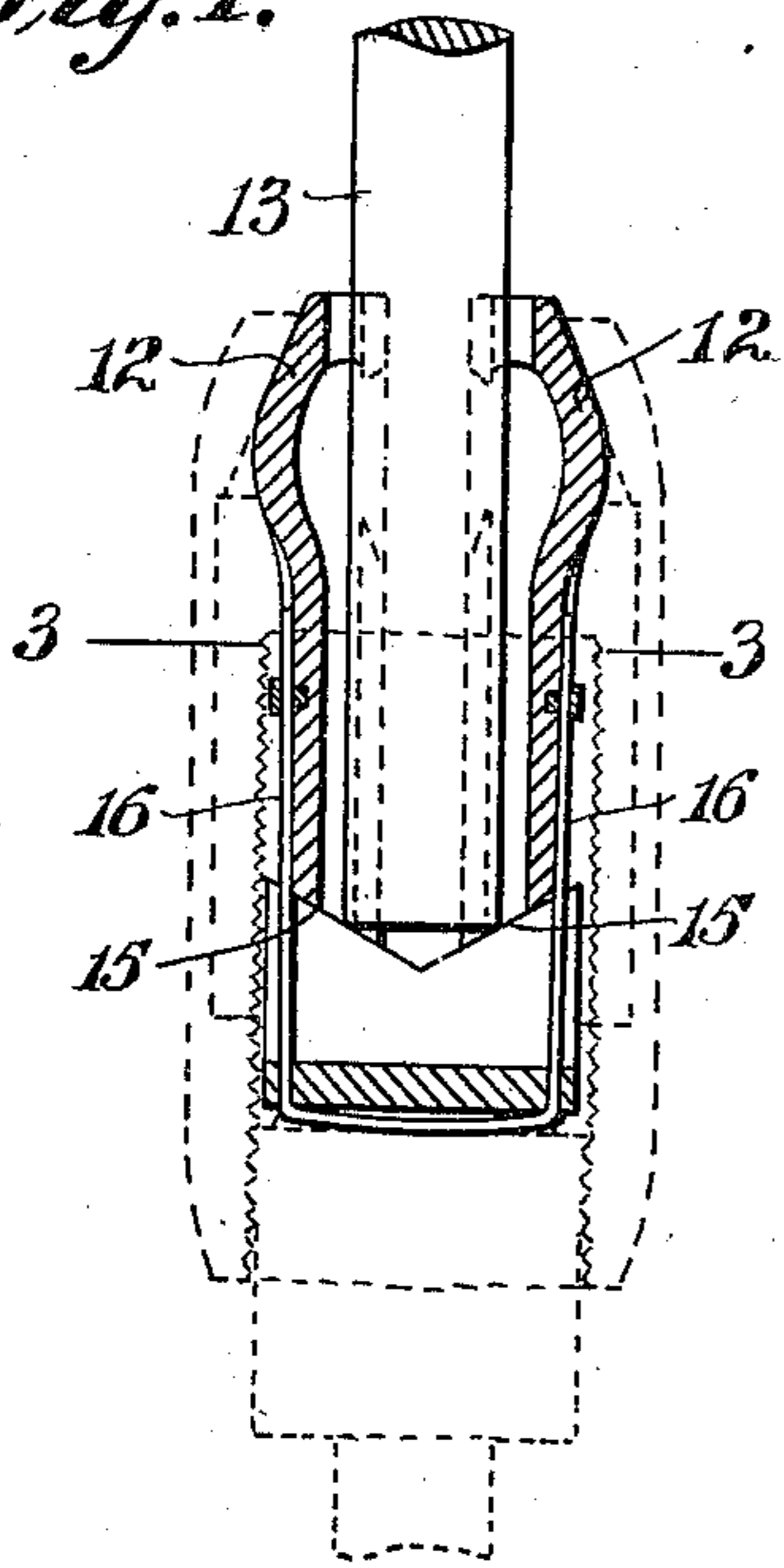


Fig. 2.

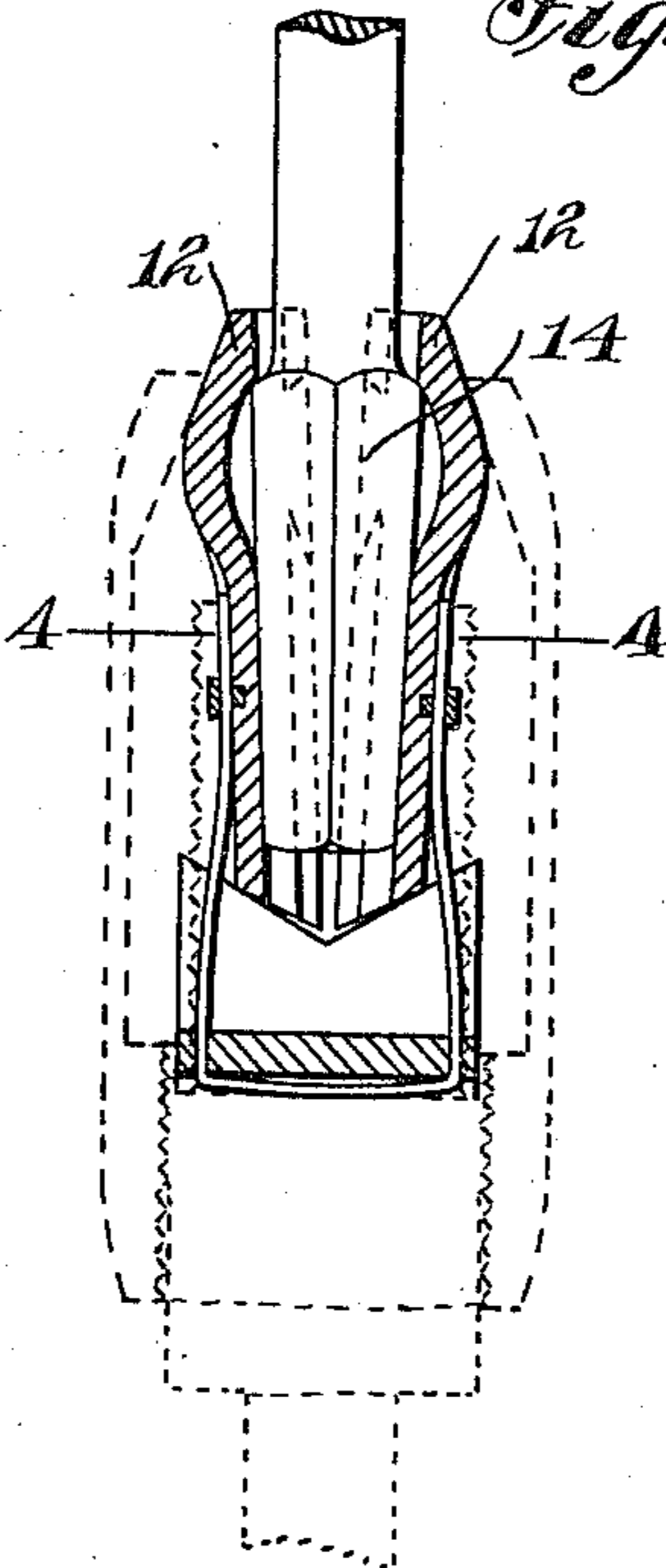


Fig. 5.

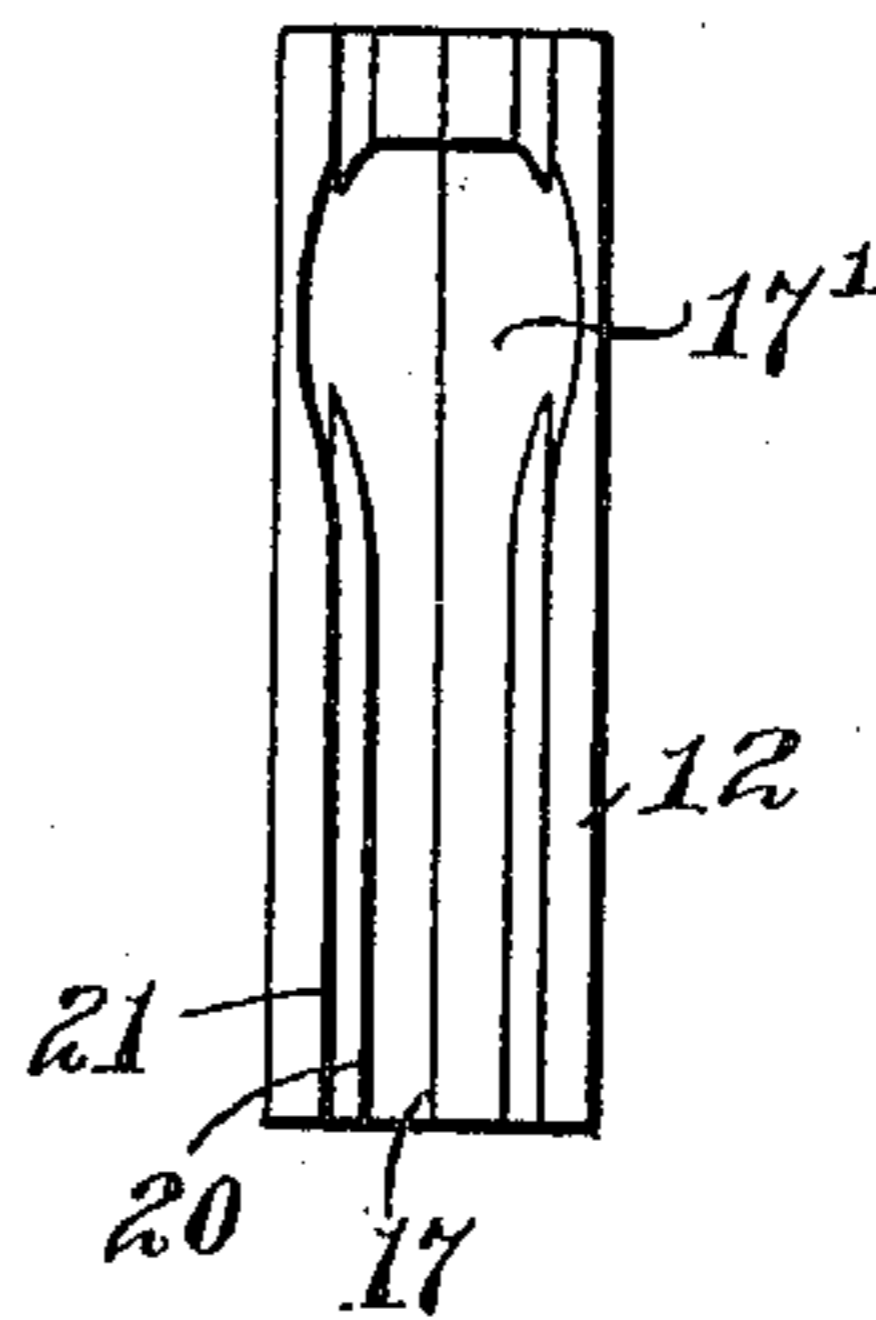


Fig. 3.

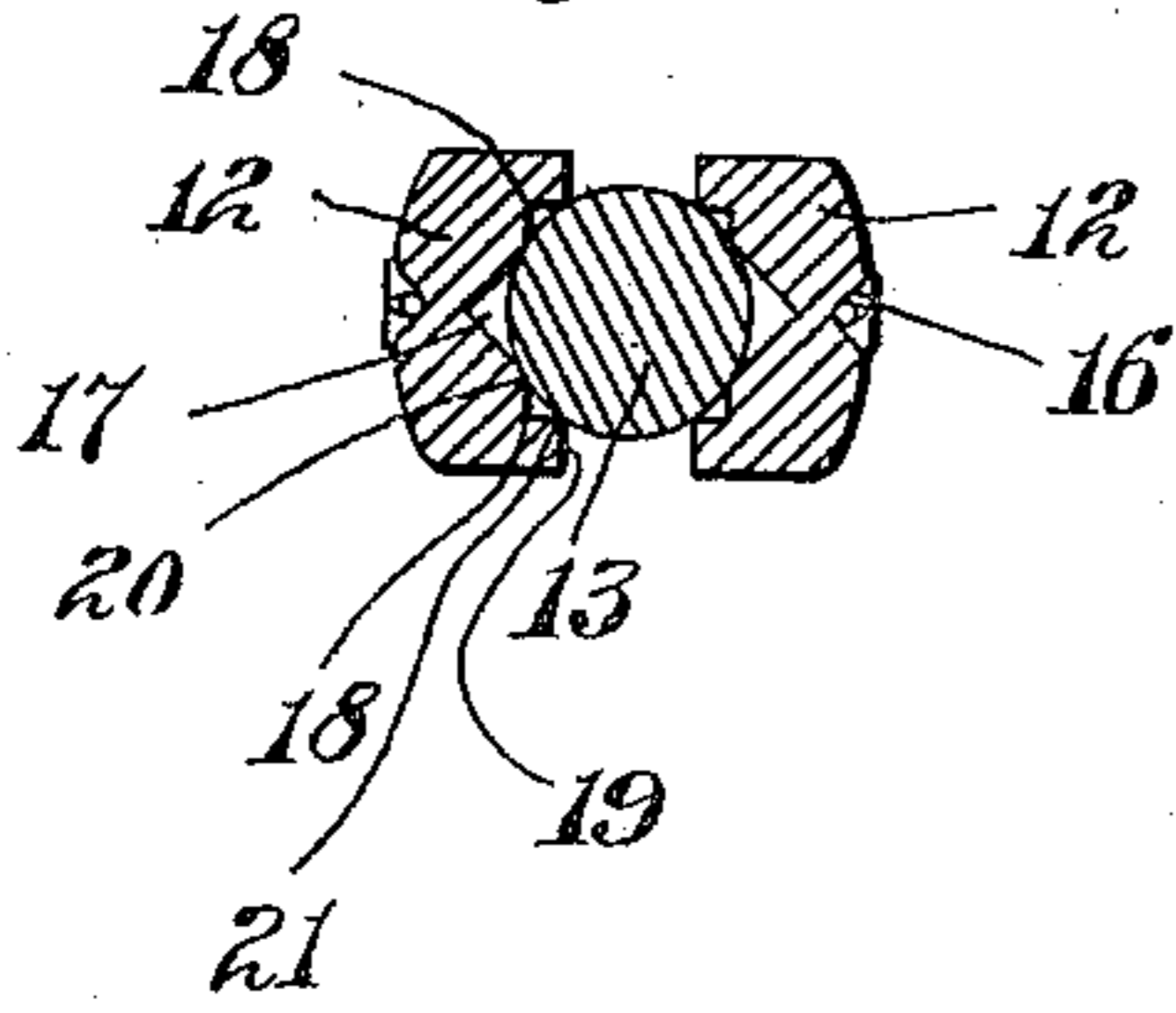


Fig. 4.

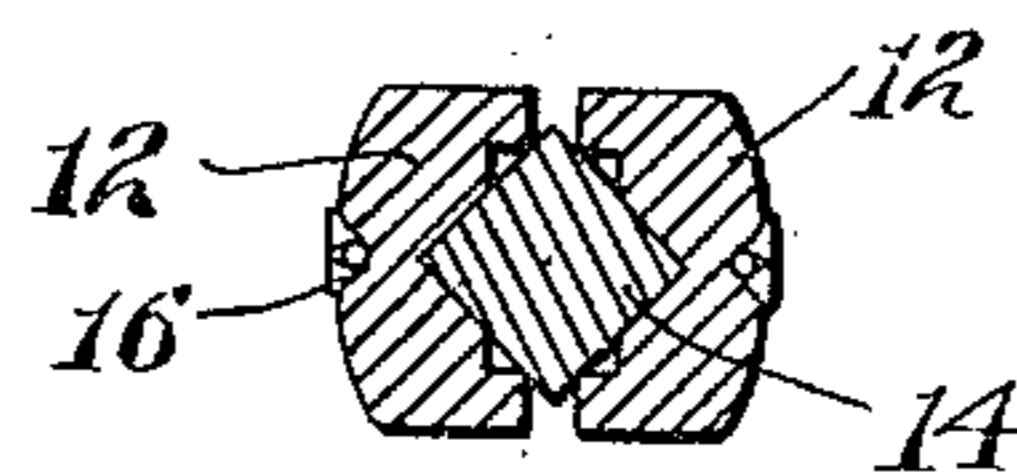


Fig. 6.

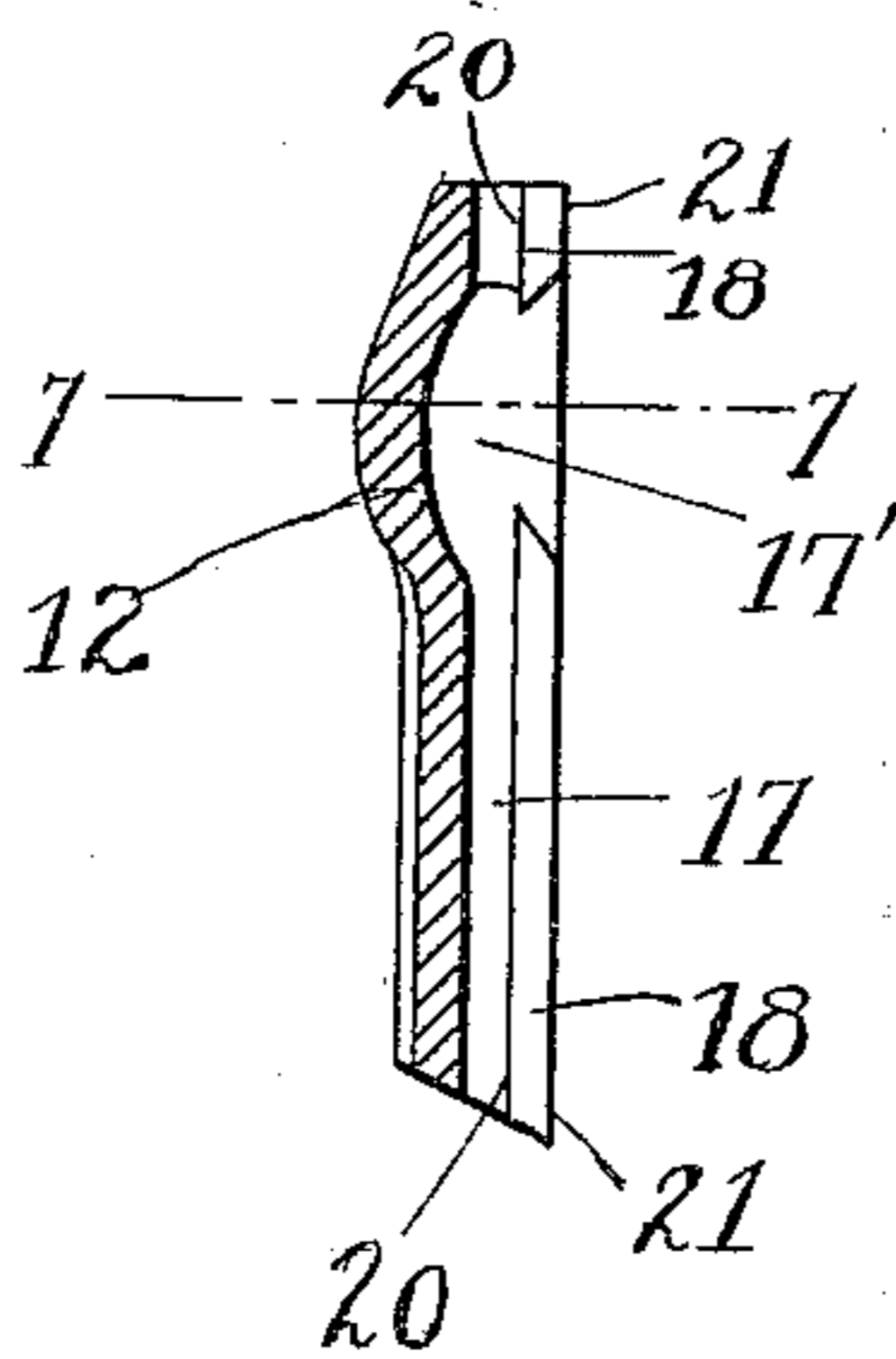
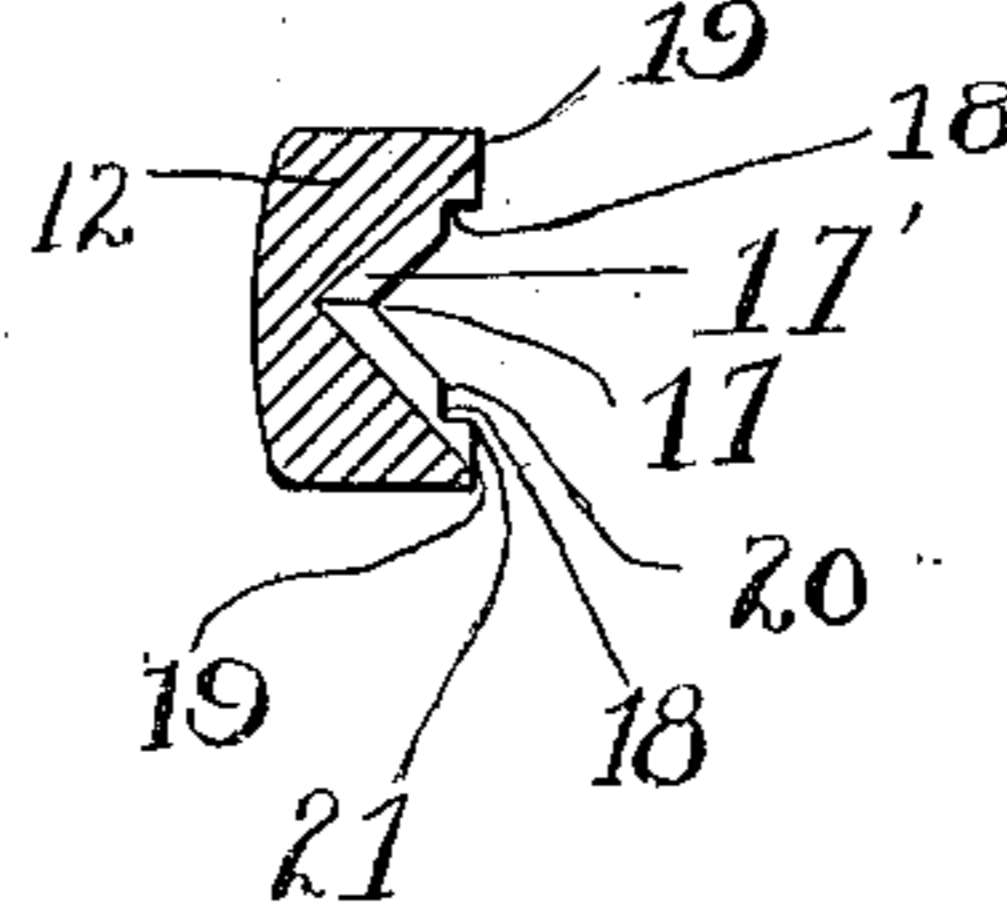


Fig. 7.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN A. LELAND, OF MONTAGUE, MASSACHUSETTS, ASSIGNOR TO MILLERS FALLS COMPANY, OF MILLERS FALLS, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CHUCK.

974,896.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed July 14, 1909. Serial No. 507,510.

*To all whom it may concern:*

Be it known that I, JOHN A. LELAND, of Montague, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Chucks, of which the following is a specification.

This invention relates to chucks for bit braces and other like instruments, and particularly to that class of chucks employing a pair of tool-shank-grasping jaws, the acting faces of which are adapted to be held either parallel with each other, or inclined relatively to each other under various adjustments, so that the jaws may be engaged not only with straight tool shanks of various sizes, but also with tapered shanks of various sizes. By the term "straight shanks" I mean those that are of uniform diameter, and are circular in cross section, that is to say, cylindrical. Tapered shanks are usually square in cross section, the tapered portion presenting four longitudinal inclined angles on its surface.

The object of the invention is to provide a pair of chuck jaws adapted to conform to the angular surfaces of tapered shanks, and to firmly grasp and hold straight or cylindrical shanks.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification,—Figure 1 represents a longitudinal section of a chuck having jaws embodying my invention applied to a straight cylindrical shank, portions of the chuck being shown in dotted lines. Fig. 2 represents a view similar to Fig. 1, showing the jaws applied to a tapered shank. Fig. 3 represents a section on line 3—3 of Fig. 1. Fig. 4 represents a section on line 4—4 of Fig. 2. Fig. 5 represents a side view showing the inner side of one of the jaws. Fig. 6 represents a longitudinal section of one of the jaws. Fig. 7 represents a section on line 7—7 of Fig. 6.

The several figures represent the chuck considerably larger than its normal size.

The same reference characters indicate the same parts in all the figures.

In the drawings, 12, 12 represent a pair of tool-shank-engaging jaws which are adaptable both to cylindrical shanks and to tapered shanks which are square in cross

section, the jaws being adjusted and supported so that they may stand either parallel with each other when grasping a straight shank 13, or inclined relatively to each other when grasping a tapered shank 14. The jaws, as here shown, are of the same general form, and are supported and adjusted by the same general means as shown in Letters Patent of the United States, No. 912,582, dated February 16, 1909, the inner ends of the jaws bearing on inclined jaw seats 15, and flexibly connected therewith by springs 16 on which the jaws are adapted to slide lengthwise, suitable means, as shown in said patent, and by dotted lines in Figs. 1 and 2, being employed to press the jaws inwardly against the interposed tool shank.

In carrying out the present invention, I form in the inner face of each jaw a longitudinal angular recess 17, the sides of which are at a right angle to each other, so that they are adapted to conform accurately to two sides of the tapered shank 14, as shown in Figs. 2 and 4, the recesses 17 preferably having enlarged or deepened portions 17' adapted to receive the larger end of the tapered shank, the outer ends of said enlarged portions forming shoulders which engage the tool at or beyond the shoulder at the outer end of the tapered shank, as indicated in Fig. 2.

In the outer portions of the sides of each recess 17, I have formed longitudinal grooves 18, the sides of which intersect the sides of the recess 17 and the inner face 19 of the jaw, and form longitudinal gripping angles or teeth 20 and 21 adapted to bear simultaneously on the periphery of the straight cylindrical shank 13, as indicated in Figs. 1 and 3. Each jaw is therefore adapted to engage the shank 13 at a plurality of points, the gripping angles or teeth of the two jaws insuring a firm, positive engagement between the jaws and the shank which will prevent independent rotary movement of either the jaws or the shank, said engagement reducing to the minimum the force required to engage the jaws with the shank. By forming the gripping angles or teeth 20 and 21 on the outer portions of the sides of the angular recesses 17, I enable the jaws to engage either of the forms of shank shown and described, the inner portions of said sides presenting flat faces adapted to bear on square tapered shanks, as shown

in Fig. 4. The deepened portions 17' divide each jaw into separated gripping portions which grasp the tool shank at different portions thereof. The ribs or 5 teeth between the longitudinal grooves are parallel the entire length of the jaws, and the teeth of the inner and outer portions of each jaw are in alinement, so that when an angular taper shank is in- 10 serted with its angles in the grooves of the outer portion, and then pushed in, it is guided into proper engagement with the grooves of the inner and longer portions of the two jaws. These inner and outer por- 15 tions of the jaws provide means for firmly gripping cylindrical shanks with great rigidity, because each jaw has two quite widely-separated sets of teeth, each set forming a concave series of angular edges adapt- 20 ed to bite into such shank in a plurality of places whether the said cylindrical shank be straight or tapered.

By referring to Figs. 3 and 4 it will be seen that the right angular central groove, 25 or recess 17, in each jaw is deeper and wider than the grooves 18, whereby each jaw presents two pairs of gripping teeth 20, 21, the teeth of each pair being closer together than the space between the two teeth 20. The 30 sides of the groove or recess 17 are flat, and the outer teeth 21 are substantially in the same plane as the flat faces of the recess or groove 17, so that an angular shank such as shown at 14 in Fig. 4 may also be engaged 35 by the outer teeth 21. And owing to the fact that the pairs of teeth 20, 21, are quite close together, slight variations in the diameter of a round shank 13 may exist and still

enable the surface of such round shank to be engaged by four pairs of teeth. If the 40 grooves 18 were omitted, then a round shank of the size shown in Fig. 3, or a little smaller than that, would not be engaged by teeth at all, but would only be engaged by flat walls of the angular grooves 17. 45

I do not limit myself to the means here shown for supporting and adjusting the jaws, as these may be variously modified without departing from the spirit of the in- 50 vention. 50

I claim:

In a chuck, a pair of tool-shank engaging jaws adapted to stand parallel with each other or at different inclinations, the inner face of each jaw having longitudinal grooves 55 forming two pairs of gripping teeth, the groove which separates the two pairs being deeper than the grooves which form each pair of teeth, and having its sides at a right angle to each other to engage the flat faces 60 of an angular tapered tool shank, the teeth of each pair being closely spaced relatively to the space which separates the two pairs whereby cylindrical shanks of varying sizes may be gripped, the inner faces of the jaws 65 being also formed with recesses between their inner and outer ends which divide the teeth into inner and outer separate sets, the teeth and grooves being in alinement on op- 70 posite sides of said recesses. 70

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN A. LELAND.

Witnesses:

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