

J. KENNEDY.

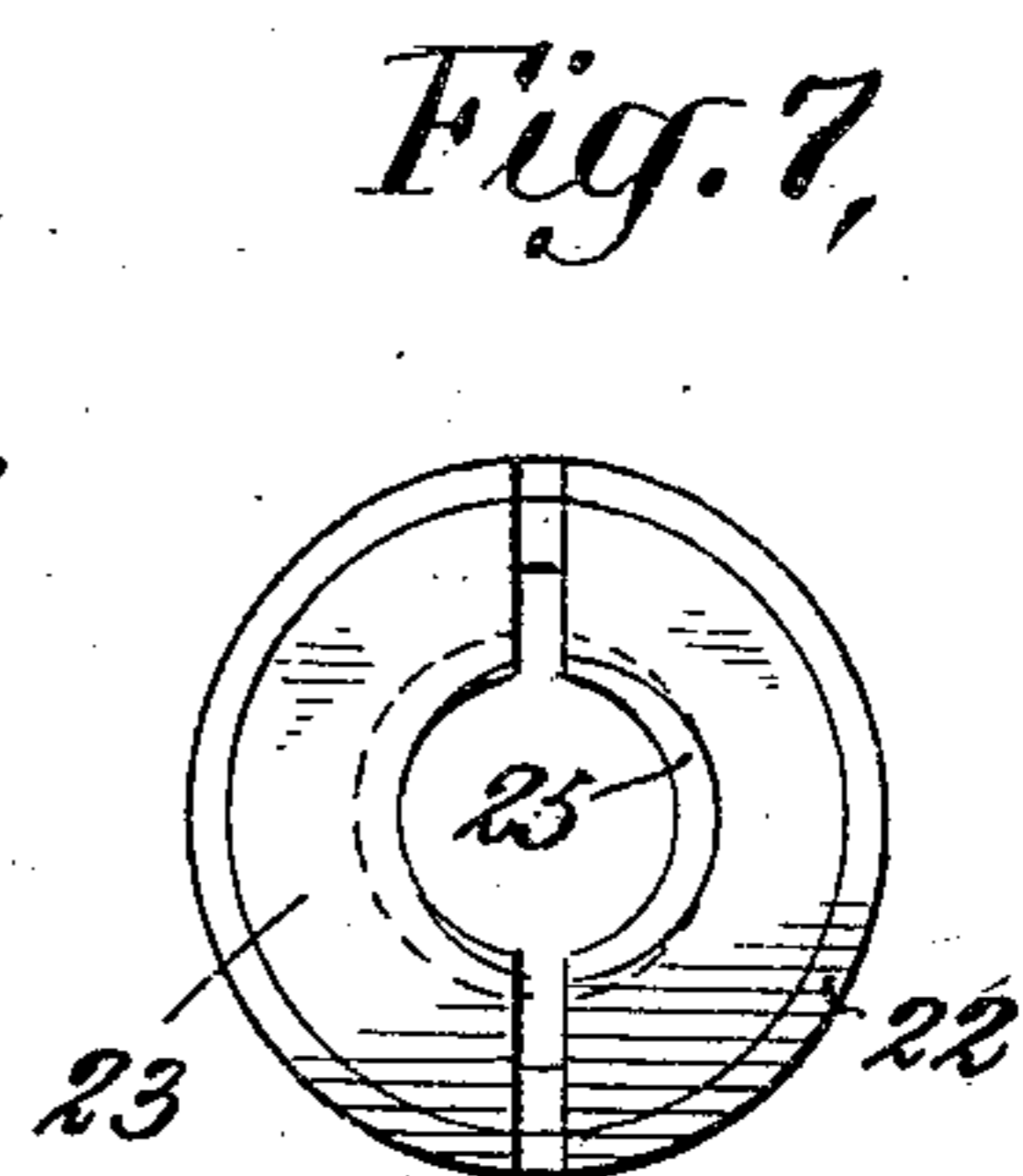
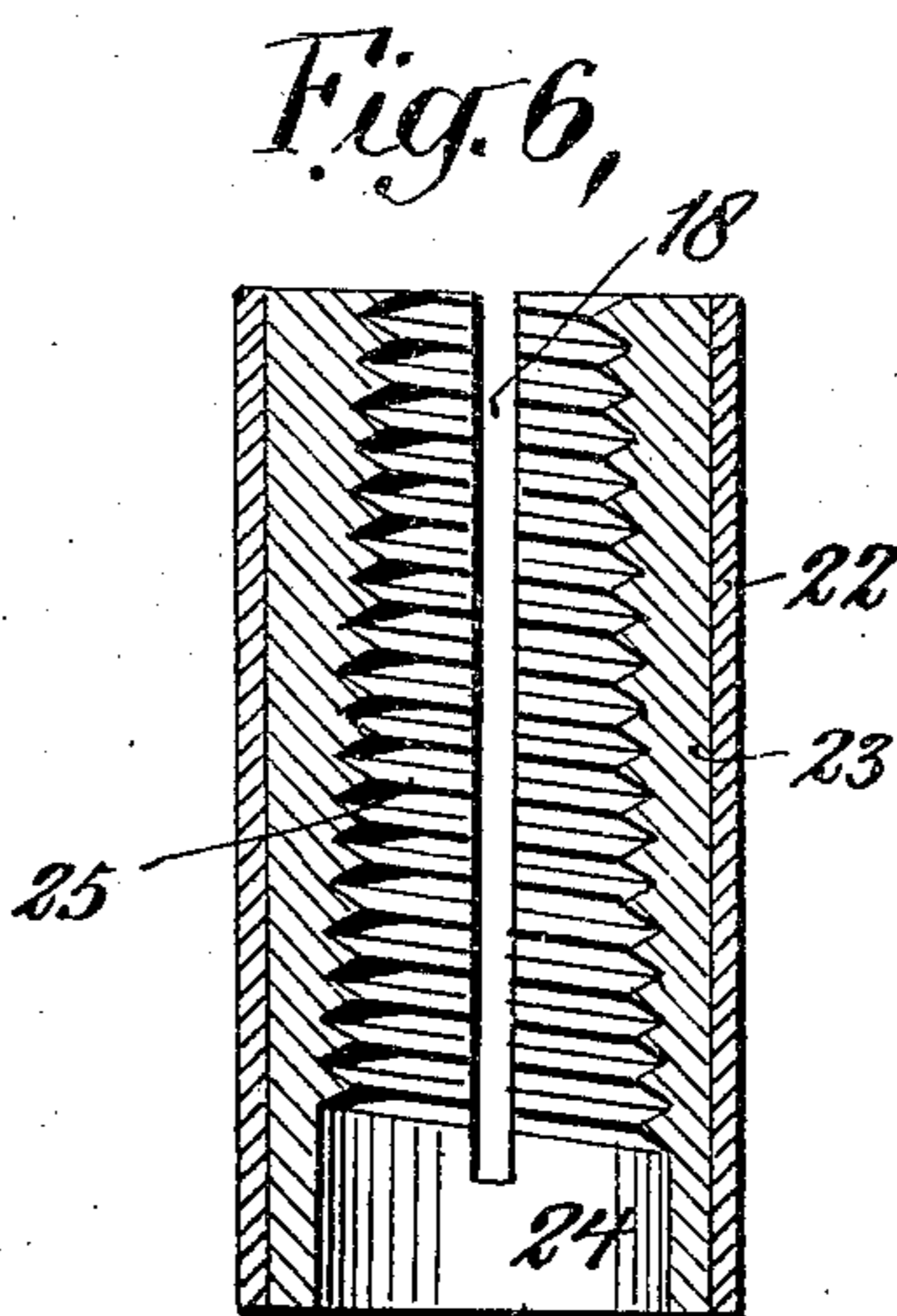
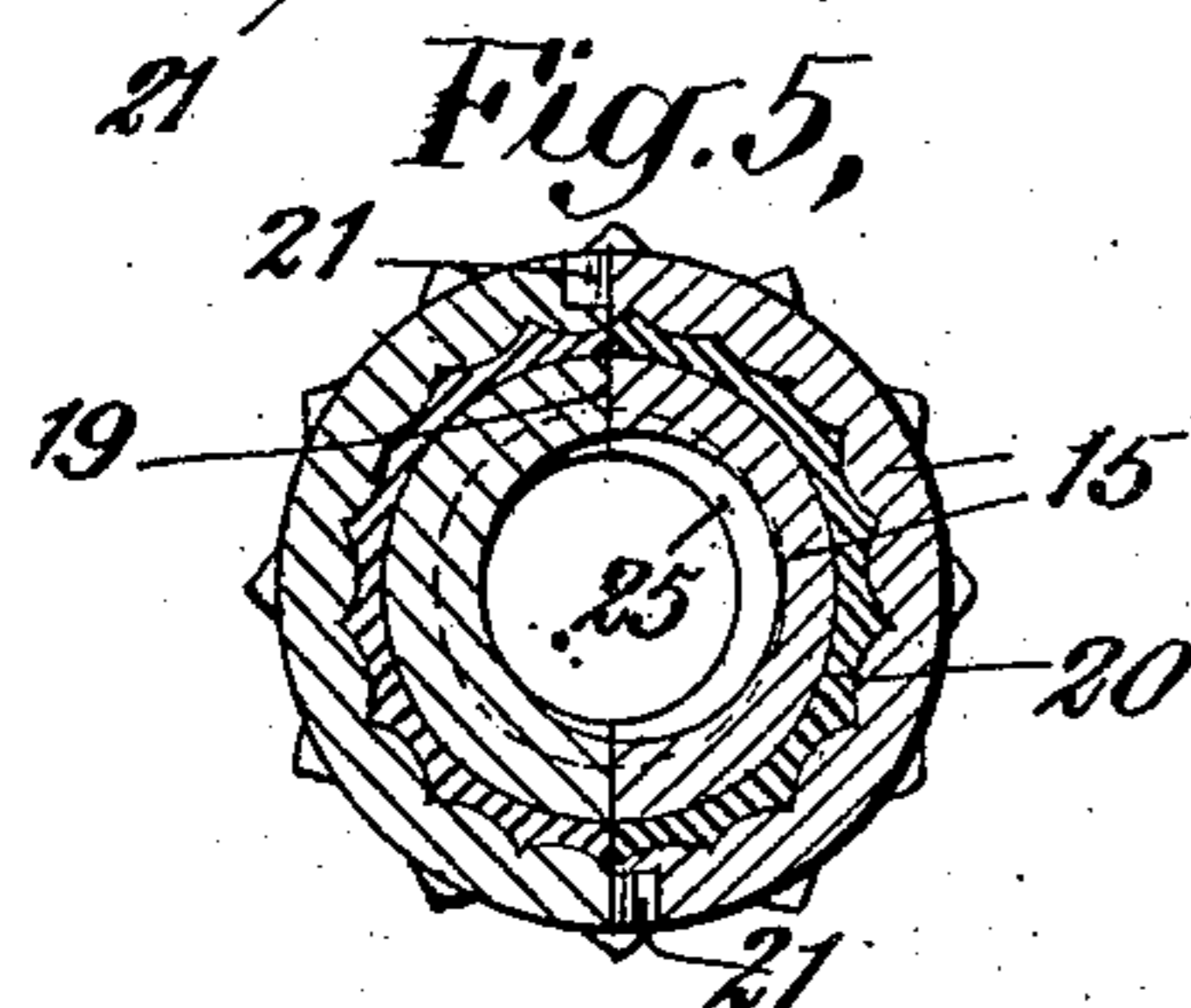
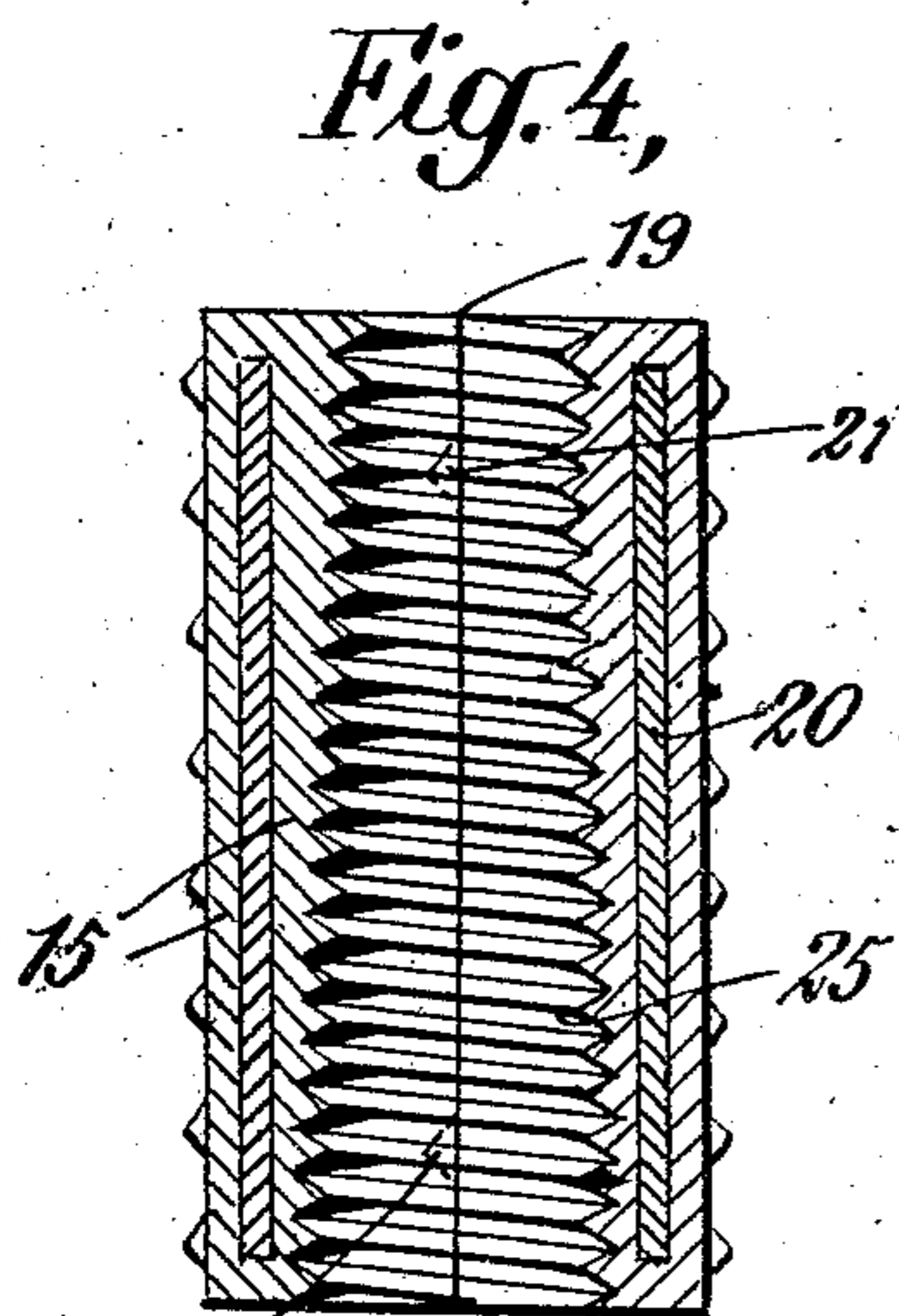
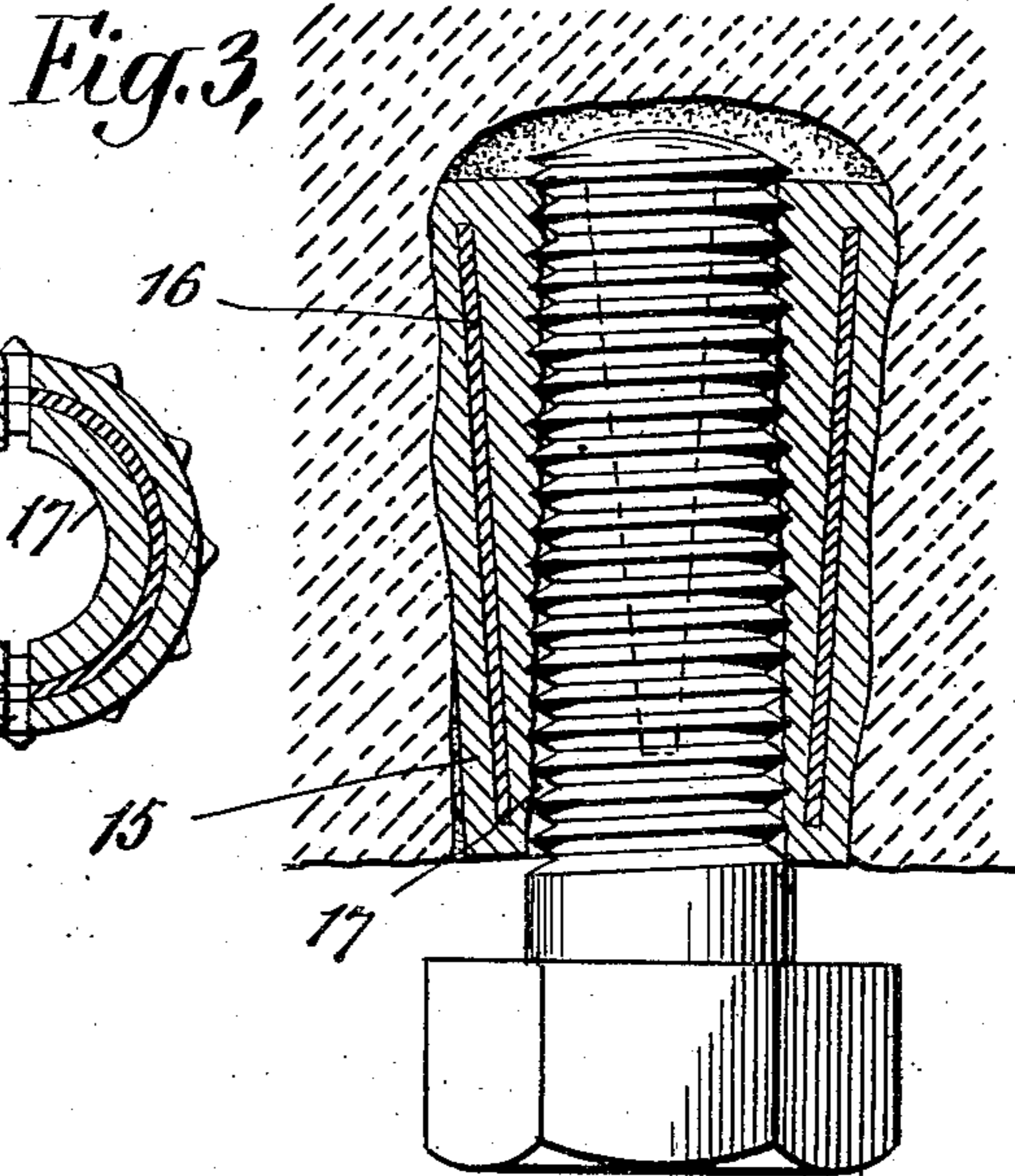
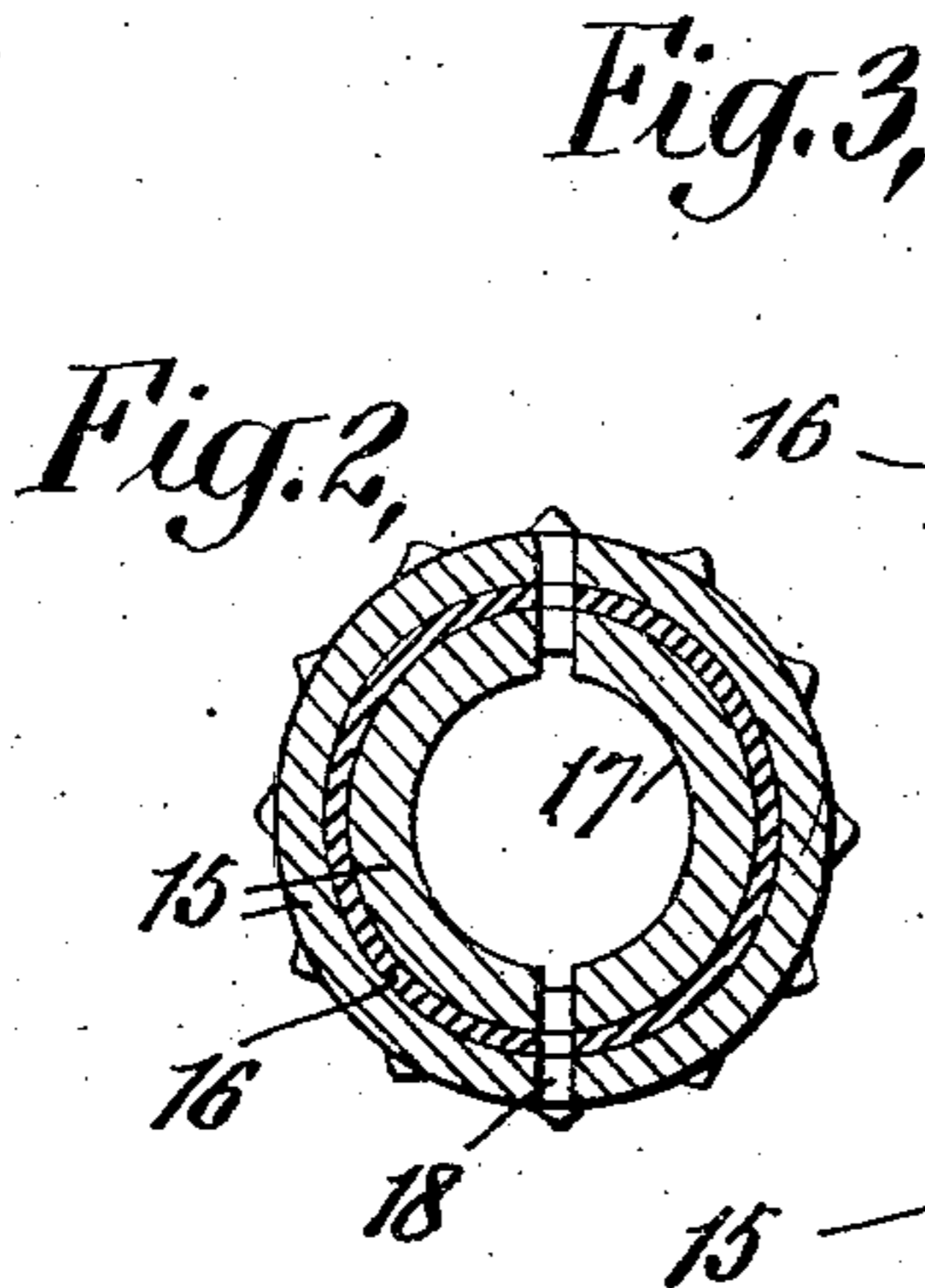
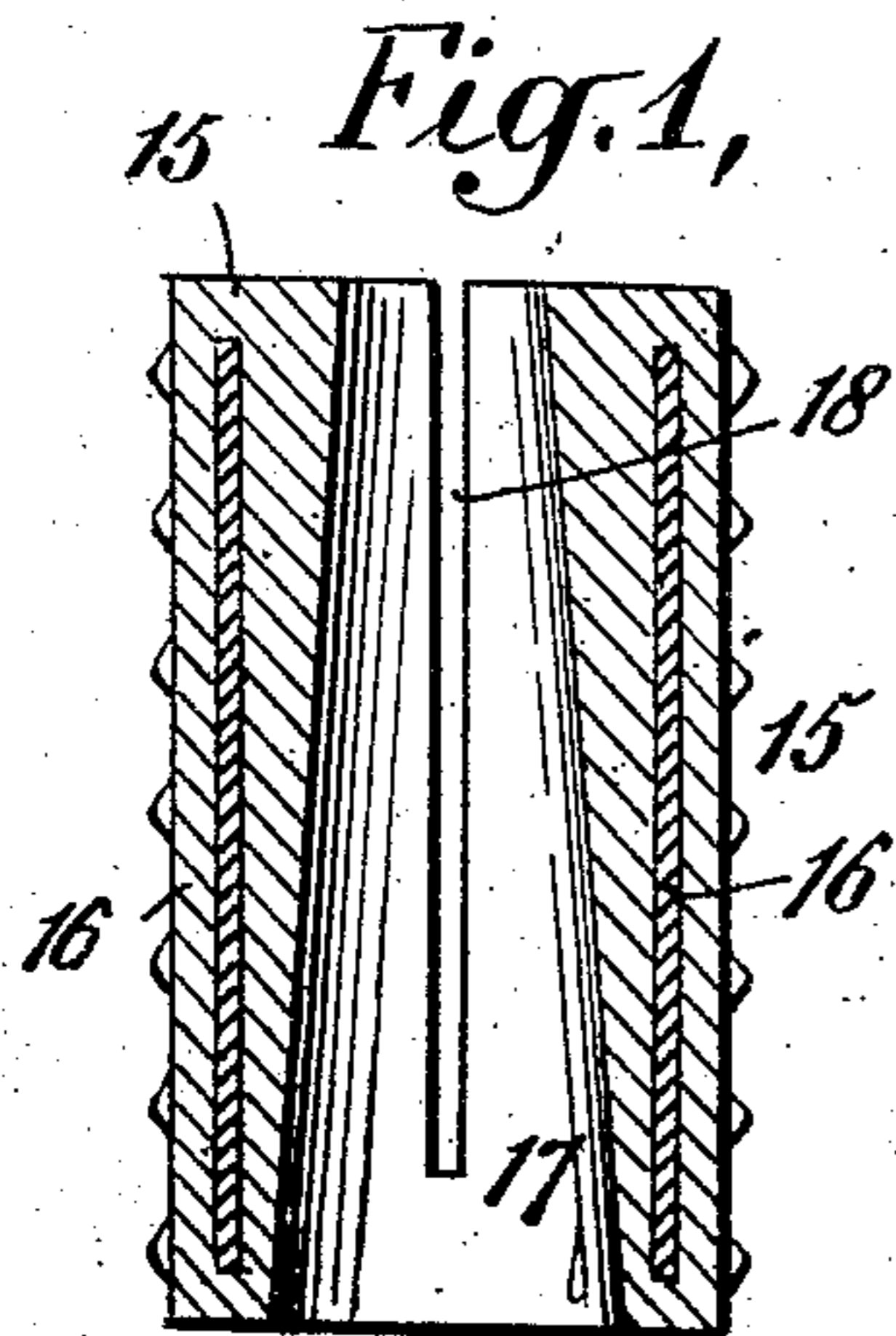
BOLT ANCHOR.

APPLICATION FILED JAN. 27, 1910.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

983,451.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 8,

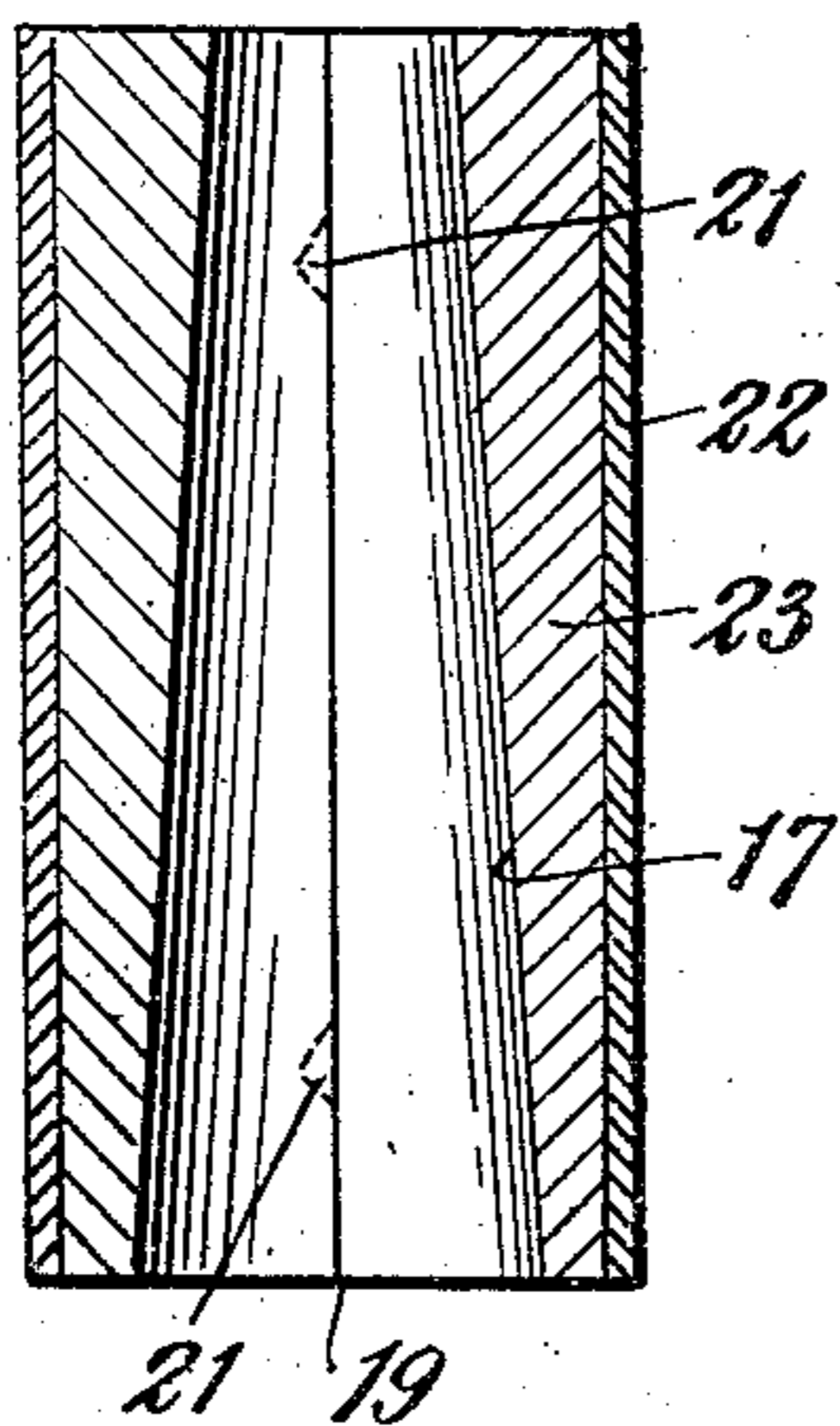


Fig. 9,

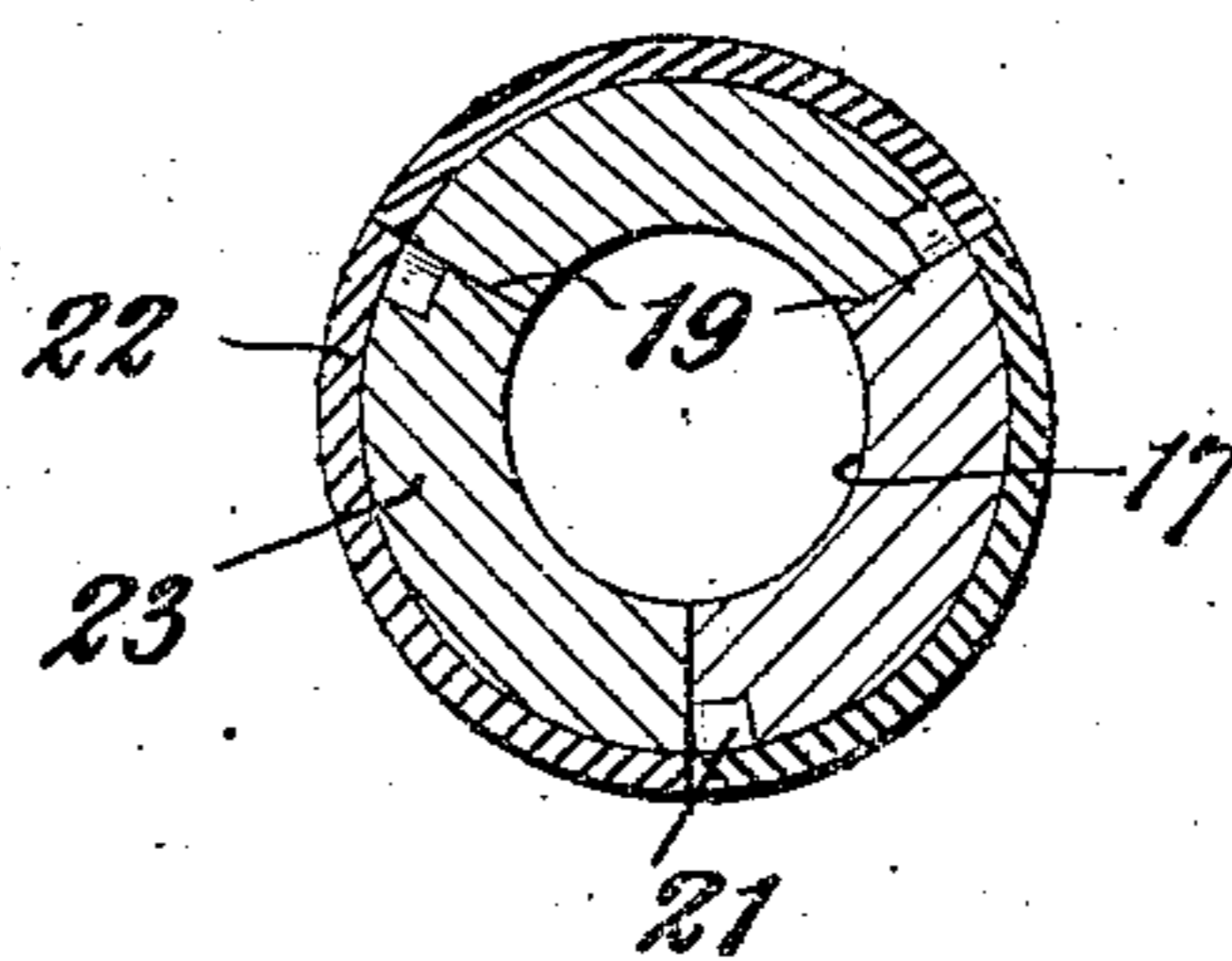


Fig. 10,

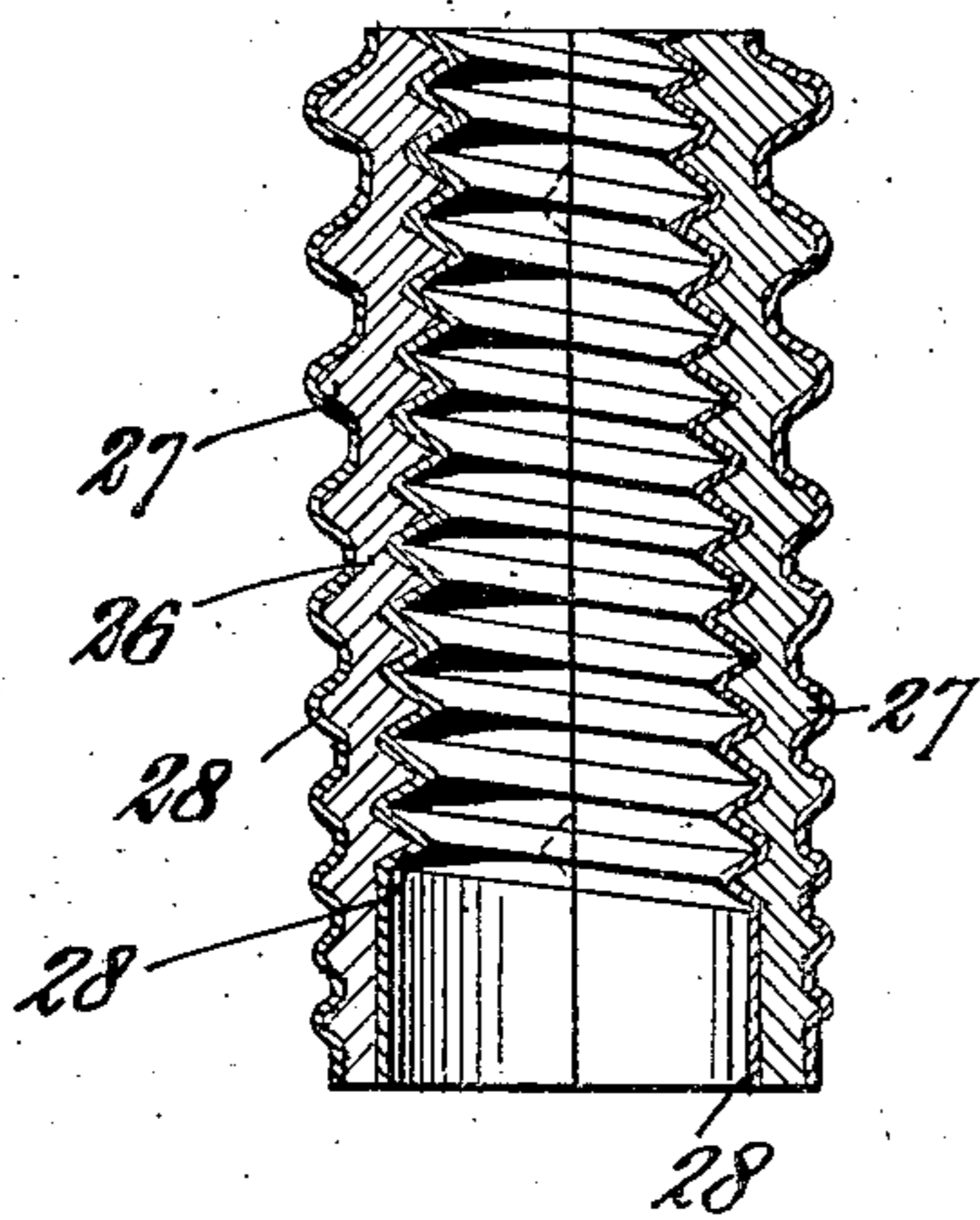
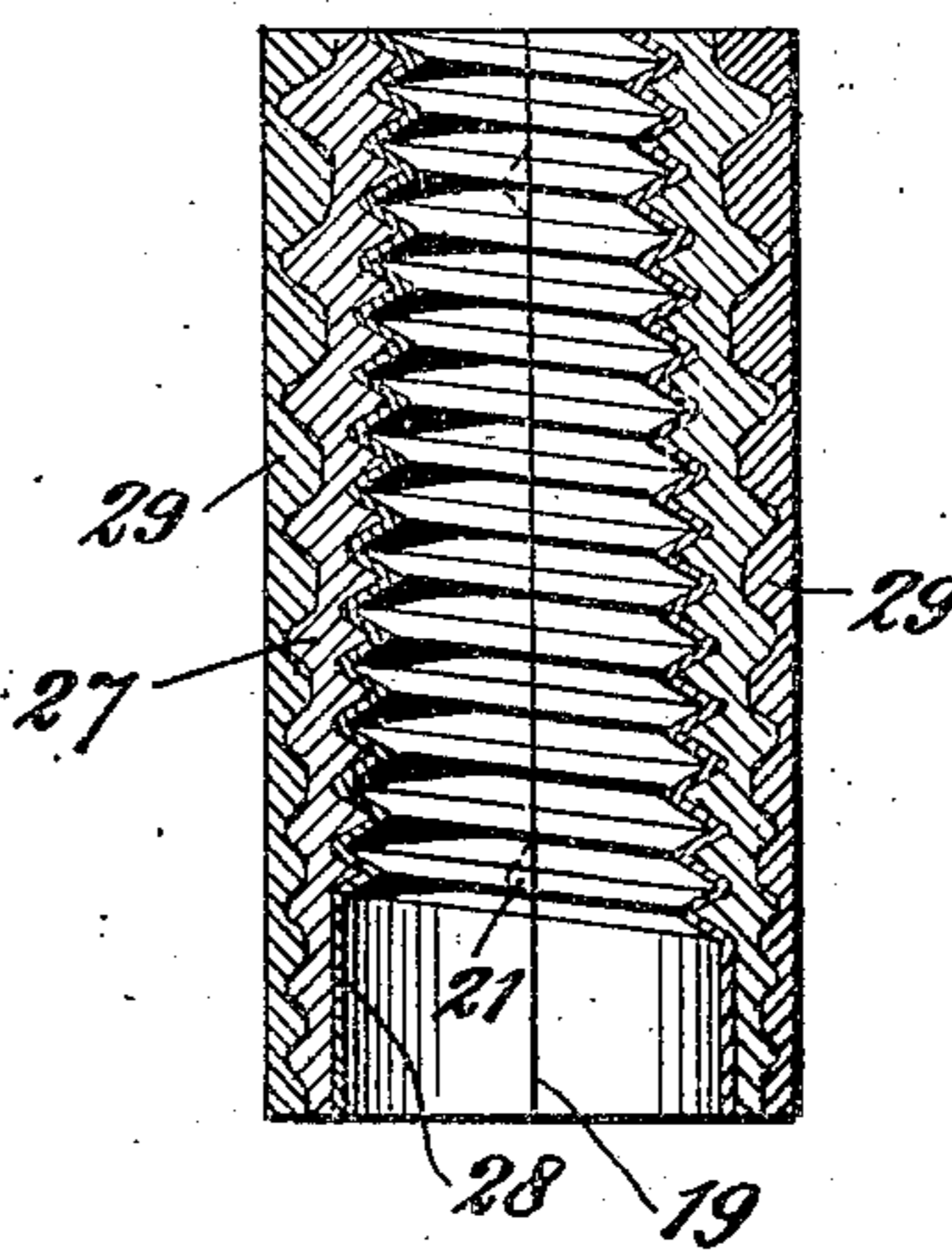


Fig. 11,



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BOLT-ANCHOR.

983,451.

Specification of Letters Patent.

Patented Feb. 7, 1911.

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To all whom it may concern:

Be it known that I, JOSEPH KENNEDY, a citizen of the United States of America, and a resident of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Bolt-Anchors, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to bolt anchors of the type employed in holes in walls of brick, stone and the like, for securing bolts thereto, and my invention consists in composing the expansible shell of a bolt anchor with an interior portion of relatively soft metal and an exterior portion of relatively hard metal. In one form of my invention, I provide in addition thereto, a portion exterior the hard metal portion, of relatively soft metal whereby the hard metal part is inclosed without and within by soft metal portions.

The foregoing is advantageous for many reasons. First, it considerably strengthens a type of bolt anchor in which threads are formed in a relatively soft metal shell by the forcing of the bolt therein which is to be held in place. Second, the relatively soft metal will act, in some forms, as a protective coating for the relatively hard metal part, whereby a hard metal type of shell in which the material is highly corrodible may be protected by a non-corrodible covering.

It will be readily understood that my invention is applicable to many types of bolt anchors, both as a strengthening and reinforcing means, and as protecting means, and in order that my invention may be thoroughly understood, I will now proceed to describe several structures embodying the same, having reference to the accompanying drawings illustrating them, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in central longitudinal section through a bolt anchor having relatively soft interior and exterior portions, and an intermediate reinforcing portion of relatively hard metal. Fig. 2 is a view in transverse section there-through. Fig. 3 is a view in central longitudinal section showing the same as employed in use, and having been expanded by the application of a bolt. Fig. 4 is a view in longitudinal section through a bolt anchor of the type shown in Fig. 1, except that the screw threads have been initially formed

therein; the shell comprising a plurality of independent sections divided longitudinally throughout, and the reinforcing intermediate portion constructed as a casting instead of in sheet metal form as in Fig. 1. Fig. 5 is a transverse sectional view therethrough. Figs. 6 and 7 are respectively a view in longitudinal section and an end view of a form of bolt anchor in which the exterior portion is of relatively hard metal and the interior portion of relatively soft metal, the bore thereof being initially screw-threaded. Figs. 8 and 9 are respectively, views in longitudinal and transverse section of a similar bolt anchor without the threads, and formed as three separate parts, longitudinally subdivided throughout. Figs. 10 and 11 are views in longitudinal section through other types of bolt anchors in which the hard metal structure is covered within and without with relatively soft metal portions.

Referring first of all to the form of bolt anchor shown in Figs. 1, 2 and 3, the same will be seen to comprise an expansible tubular shell 15 of relatively soft metal, and a tubular reinforcement 16 of relatively hard metal disposed intermediate the inner and outer walls thereof. The inner wall is tapered to constitute a tapered bore 17, and the shell is subdivided into separable portions, by means of longitudinal slots 18 which extend from the inner end toward the outer end, but which, in this case, do not penetrate clear through to the outer end. The bolt which it is desired to anchor is forced into the bore 17 after the shell has been inserted in the hole in the wall of stone, brick, or the like as is shown in Fig. 3 whereby threads are formed upon the interior bore and the shell extended into place as is shown. The relatively soft metal of this type is caused to flow sufficiently to cause it to conform to the shape of the hole and to form the threads. It will be readily understood that the relatively hard metal portion 16 acts as a reinforcement for this type of shell and considerably strengthens the same, thus removing one of the disadvantages hitherto inherent in this type of bolt anchor, namely, the weakness thereof due to the relatively soft metal of which it was necessarily composed. In manufacture, the relatively hard metal portion 16 may be inserted in the molds in which the relatively soft metal portion is cast so that the hard and soft metal portions become a single integral structure.

In Figs. 4 and 5 I have shown the tapered bore as initially screw threaded as at 25, and I have shown the shell as entirely subdivided longitudinally upon the lines 19, 5 alining lugs 21 being provided for maintaining the parts in normal registry. I have also shown the reinforcing element 20 as a cast metal structure, whereby still greater rigidity is obtained, the same being 10 conveniently provided with lateral projections, as appears in Fig. 5.

In Fig. 6 I have shown the shell as comprising an exterior relatively hard metal tubular portion 22, and an interior lining 15 of relatively soft metal 23. The tapered bore of the shell is shown as screw-threaded for a portion of the distance, the portion 24 at the end where the bolt is admitted being shown as without such screw threads where- 20 by to more readily admit the bolt.

In Figs. 8 and 9, I have shown a bolt anchor having a relatively hard metal exterior portion 22, and a relatively soft metal interior portion 23, but in this case, I have 25 shown the bore as plain, *i. e.* without initially formed screw threads, and I have shown the shell as comprising three separate segments longitudinally subdivided from end to end. Alining lugs 21 may be employed 30 in this type similar to the lugs shown in Figs. 4 and 5.

In Fig. 10 I have shown a type of hard metal bolt anchor in which the tapered walls 26 are of substantially uniform thickness 35 throughout, and are provided with exterior projections 27 which increase in height progressively from the large to the small end thereof, and I have shown this form of bolt anchor as provided with a covering 28 with- 40 out and within of a relatively soft metal.

In Fig. 11, I have shown a similar structure except that the outer covering 29 of 45 relatively soft metal fills up the space between the projections so that the exterior shell is of a generally cylindrical form. In this type of bolt, the expansion of the shell will cause the projections to embed them- selves in the walls of the hole in which the shell is inserted, while the soft metal por- 50 tions will flow to fill up the intervening spaces. It will of course be understood that different metals may be employed for the different portions of the shell in accordance with the uses to which they are to be put. 55 For instance, for some purposes the relatively soft portion might be lead or lead composition or some other very soft ma-

terial, while the relatively harder portion might be some relatively hard metal such as antimony or a harder material such as brass, or a still harder material such as iron, while in other cases, the relatively soft metal might be as hard as copper, the relatively hard material being some relatively harder material such as iron or steel.

What I claim is:

1. A bolt anchor comprising an expansible shell composed of an interior portion of relatively soft metal and a portion exterior thereto of relatively hard metal.

2. A bolt anchor comprising an expansible shell composed of a relatively hard metal intermediate portion, and relatively soft metal portions upon the interior and exterior thereof.

3. A bolt anchor comprising an expansible shell composed of an interior tubular portion of relatively soft metal, and a tubular portion of relatively hard metal, disposed exteriorly thereto.

4. A bolt anchor comprising an expansible shell composed of a relatively hard metal tubular intermediate portion and relatively soft metal tubular portions within and without the said intermediate portion.

5. A bolt anchor comprising a relatively hard metal shell composed of tubular segments, and a relatively soft metal segmental lining therefor.

6. A bolt anchor comprising a shell composed of tubular segments of relatively hard metal, and a complete covering therefor composed of a relatively soft metal.

7. A bolt anchor comprising an expansible tubular interiorly threaded shell composed 9 of an interior portion of relatively soft metal, and a portion of relatively hard metal disposed exteriorly thereto.

8. A bolt anchor comprising a tubular expansible interiorly threaded shell composed 10 of a relatively hard metal intermediate portion, and relative soft metal portions upon the exterior and interior thereof.

9. A bolt anchor comprising an expansible tubular shell composed of a relatively hard 10 metal tubular portion provided with lateral projections, and relatively soft metal tubular portions upon the exterior and interior thereof.

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Witnesses:

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