

No. 698,084.

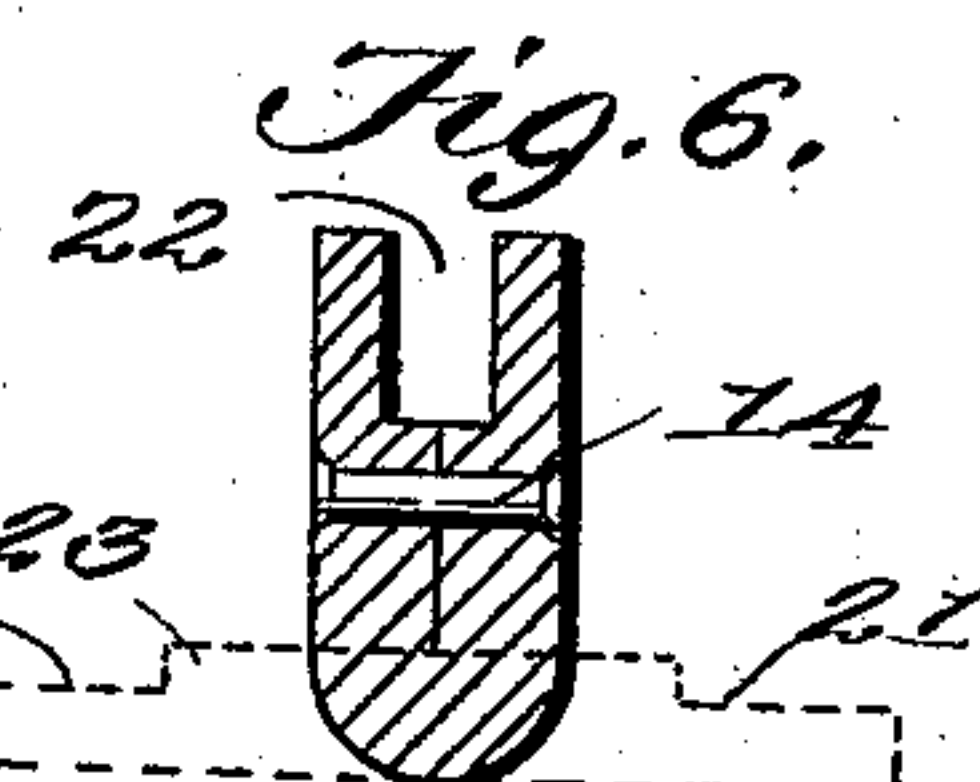
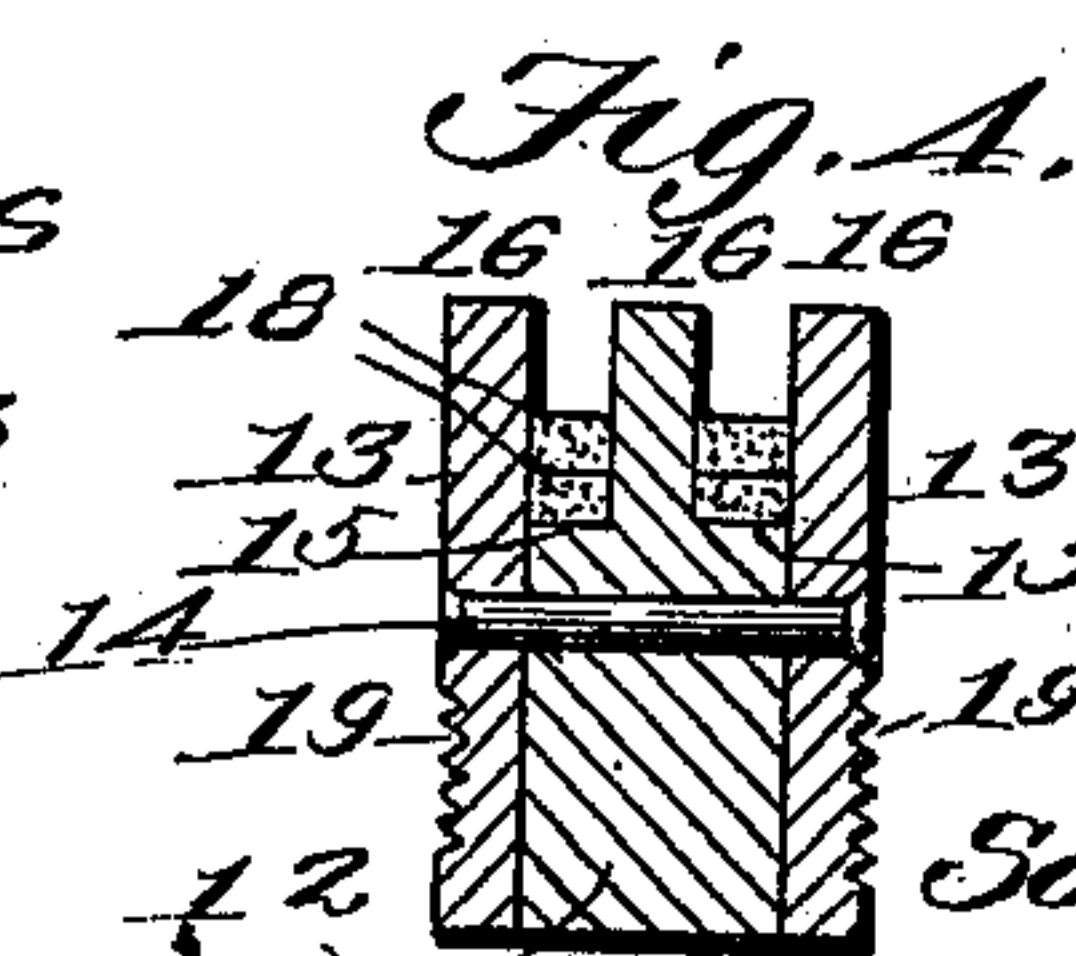
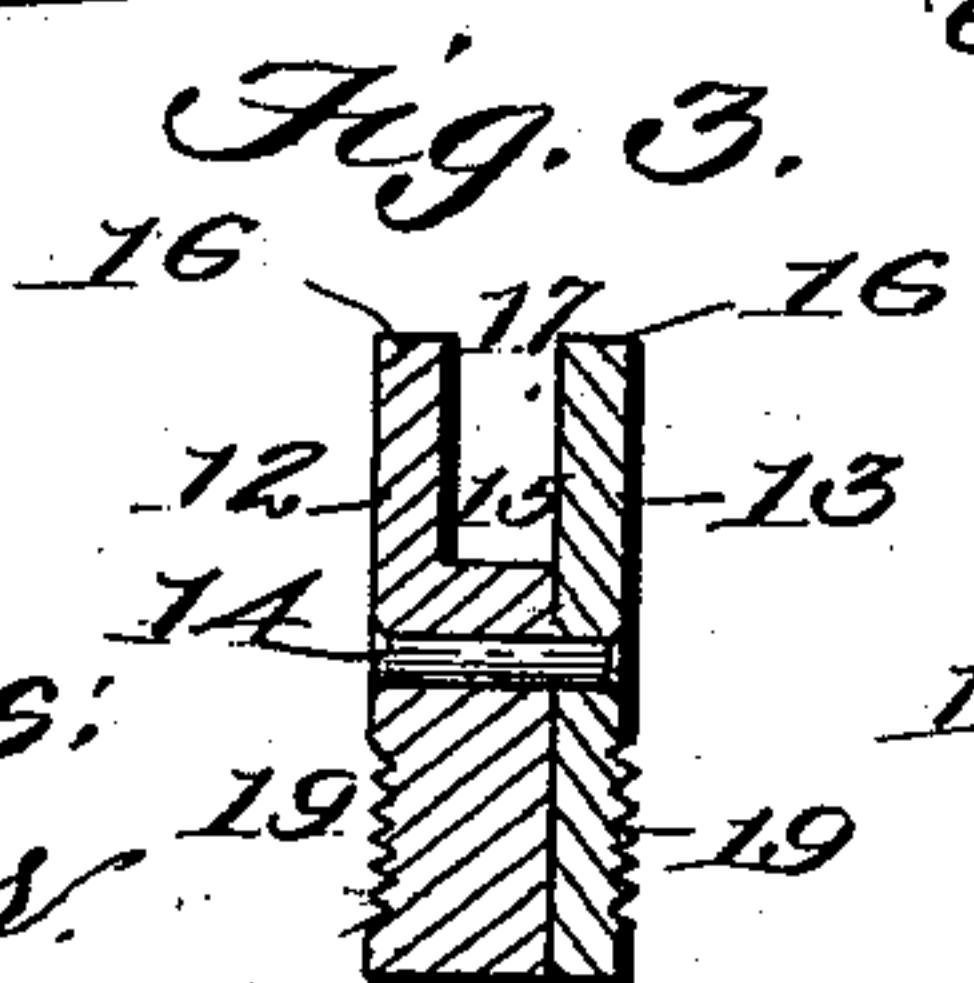
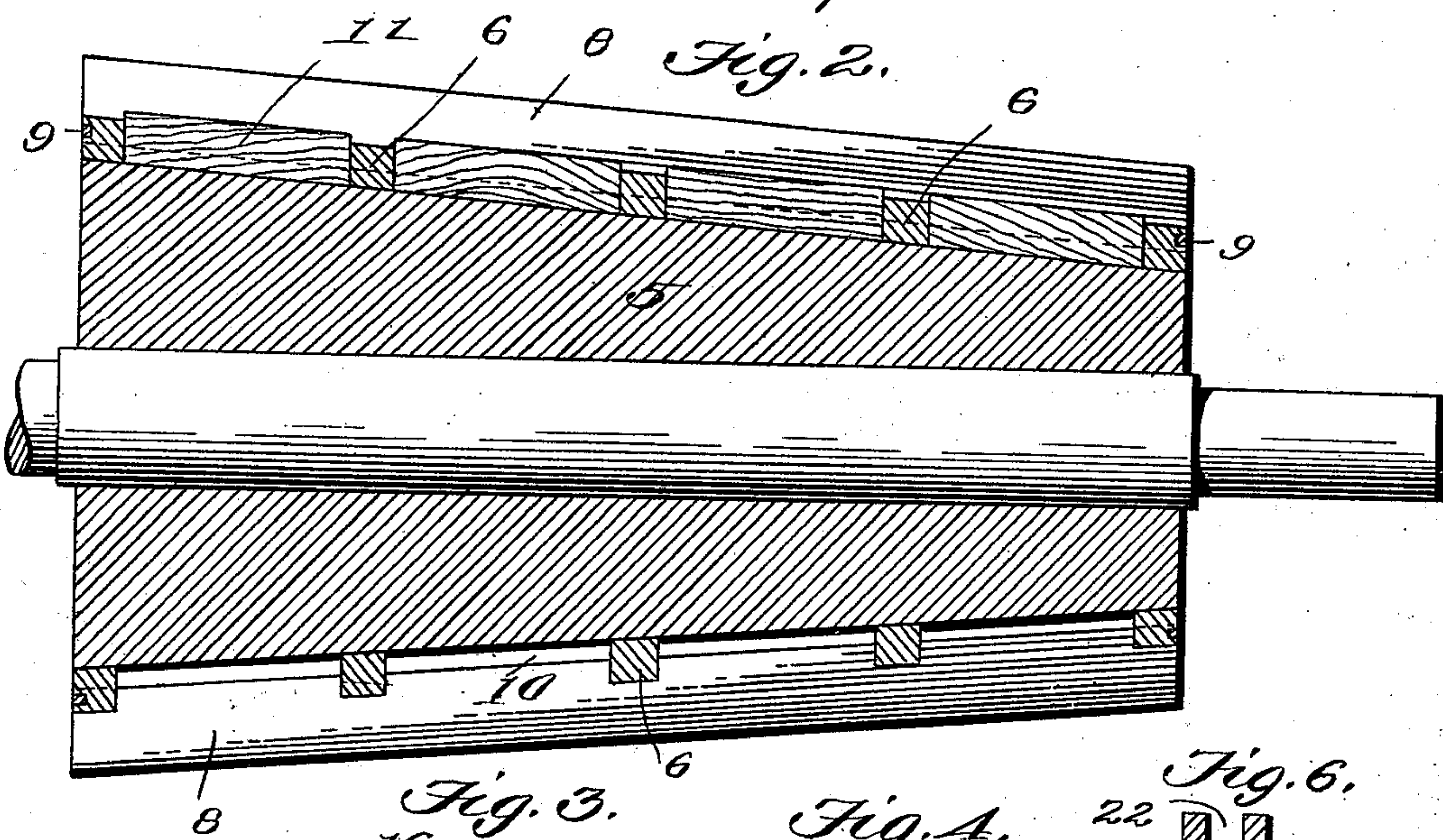
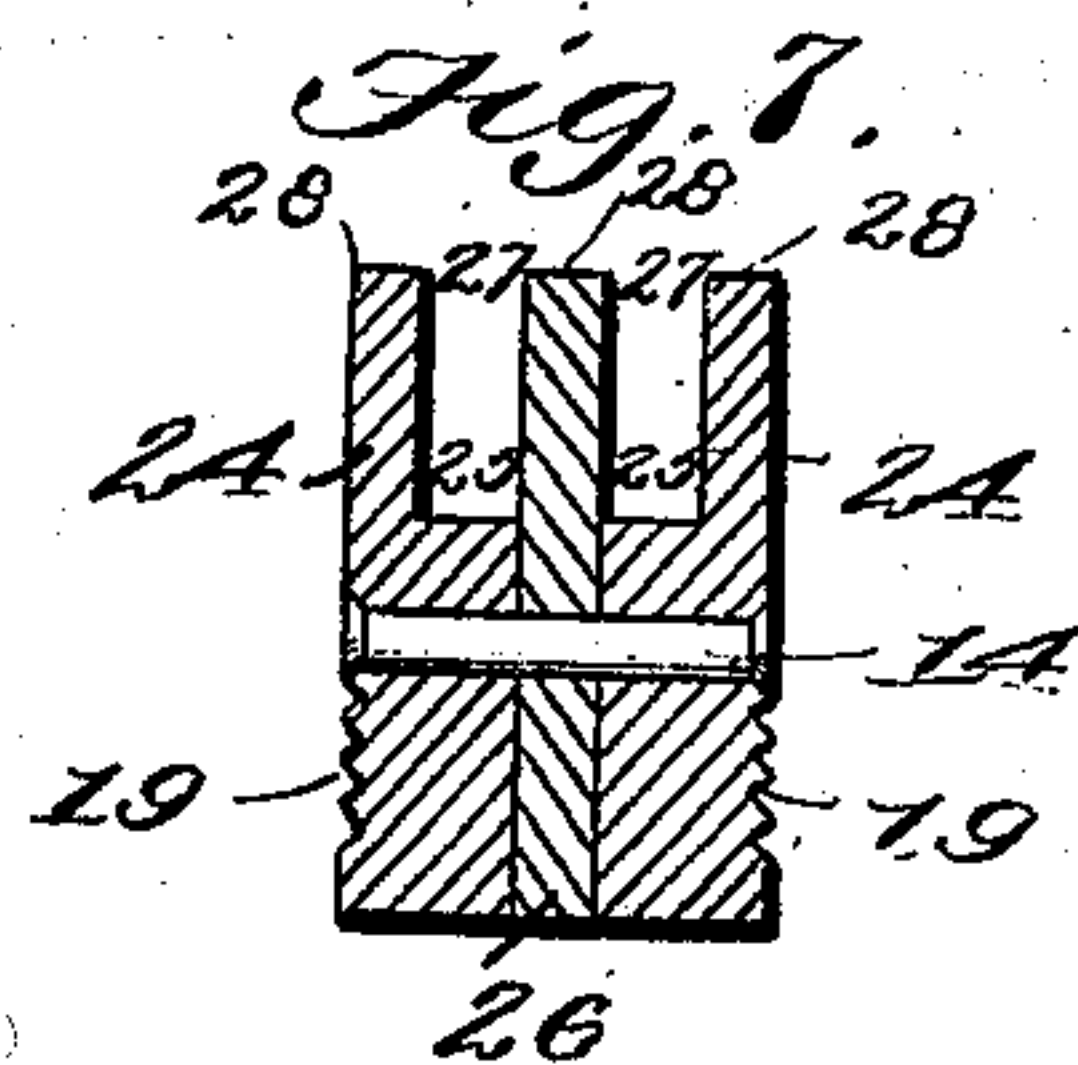
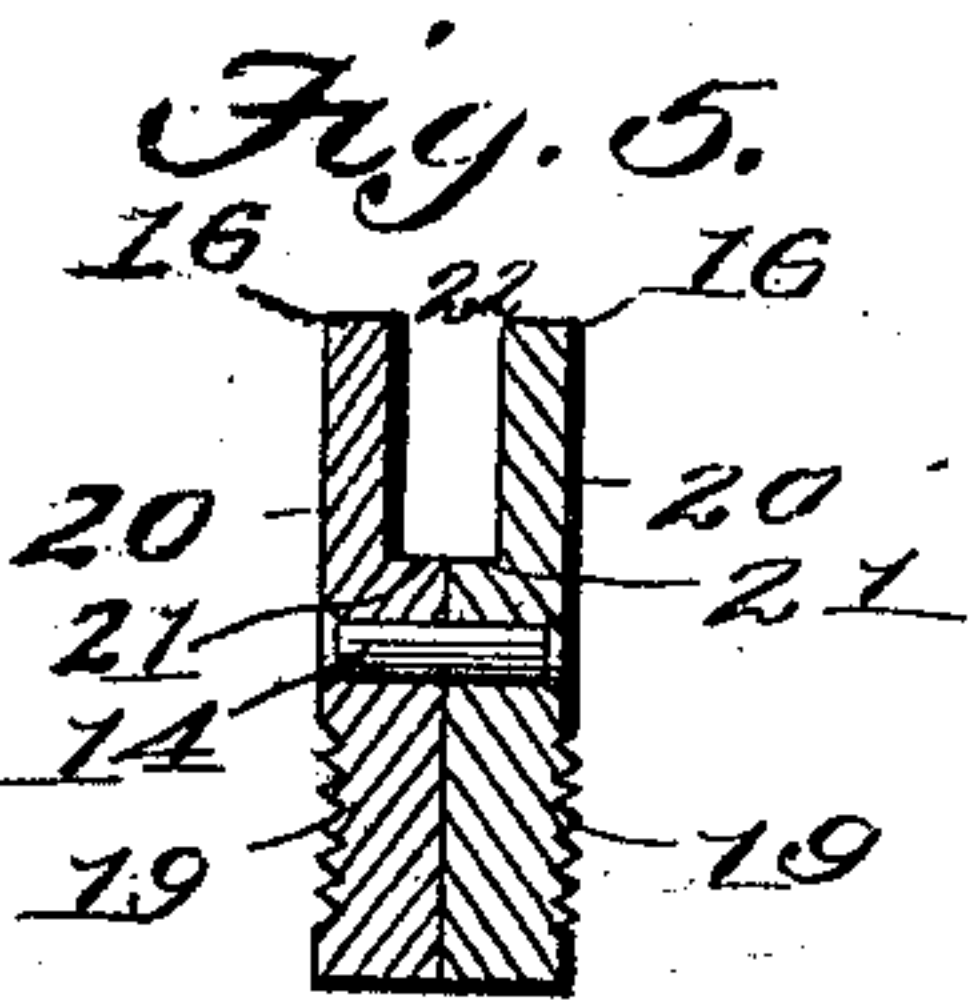
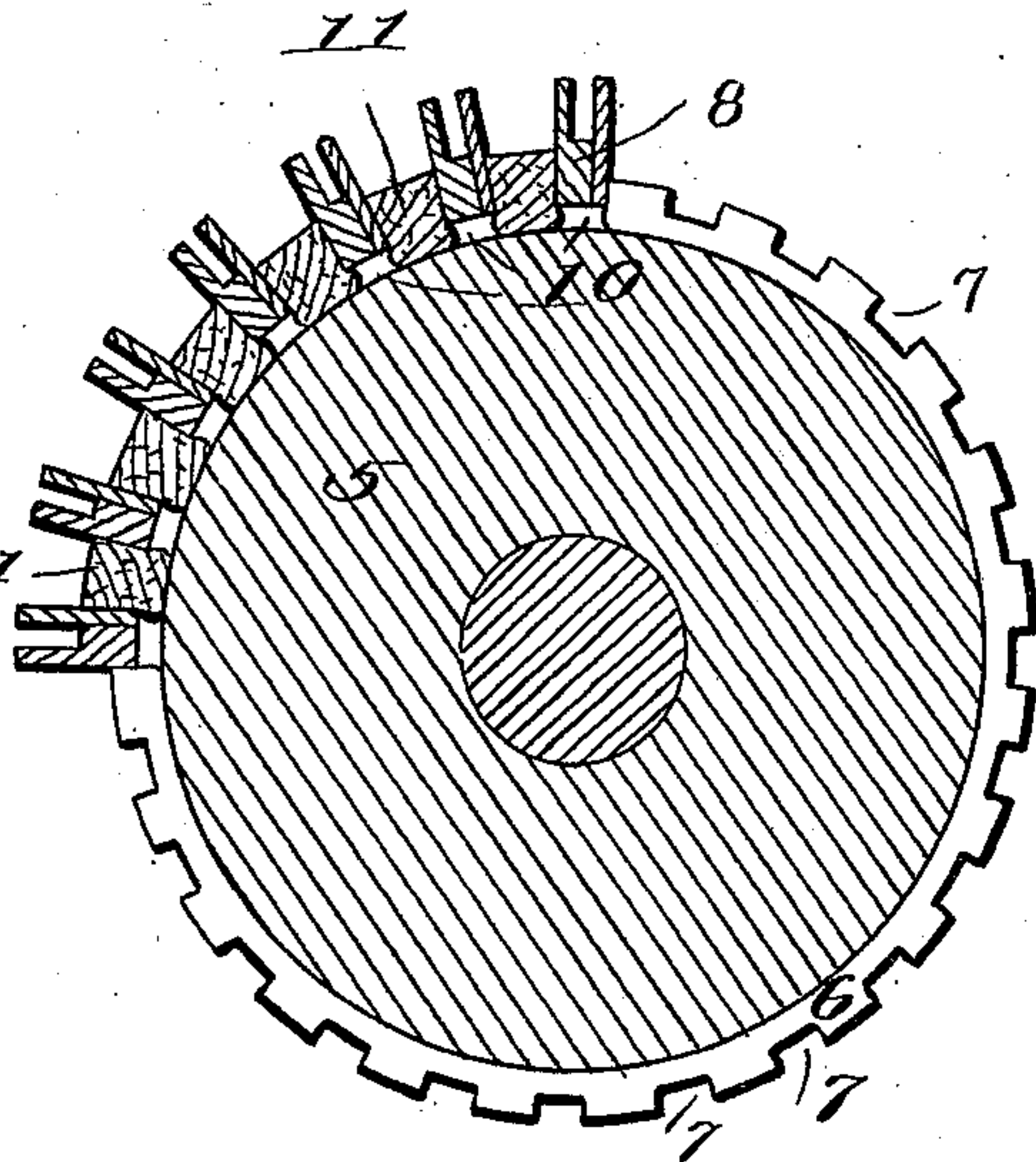
Patented Apr. 22, 1902.

S. R. WAGG.  
REFINING ENGINE.

(Application filed May 3, 1901.)

(No Model.)

Fig. 1.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

SOLOMON R. WAGG, OF APPLETON, WISCONSIN.

## REFINING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 698,084, dated April 22, 1902.

Application filed May 3, 1901. Serial No. 58,655. (No model.)

*To all whom it may concern:*

Be it known that I, SOLOMON R. WAGG, a citizen of the United States, residing at Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Refining-Engines, of which the following is a specification.

My invention relates to certain new and useful improvements in refining-engines, and specifically to a novel construction of bar or blade and to an improved manner of securing the bars about the roll or plug of the engine.

In order that my invention may be clearly understood, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a cross-section through the roll or plug of an engine, showing the bars arranged about the periphery thereof in the manner contemplated by my invention. Fig. 2 is a longitudinal section through such plug or roll. Fig. 3 is a cross-section through a bar constructed according to my invention, said bar presenting two blades or cutting edges. Fig. 4 is a similar view of a bar presenting three blades or cutting edges. Fig. 5 shows in cross-section a modified construction of the bar shown in Fig. 3. Fig. 6 shows a further modification in the construction of this bar, and Fig. 7 shows in cross-section a modified construction of the bar shown in Fig. 4.

Referring to the drawings, 5 indicates the roll or plug of a refining-engine, which roll may be of a cylindrical form for use in a Holland engine or of a conical form for use in an engine of the Jordan type. For the sake of brevity this part will be referred to hereinafter as a "roll." Located at intervals throughout the length of this roll and extending around its periphery are a series of annular ribs or projections 6, formed integral with the roll. Five of these annular ribs are shown in the drawings; but a greater or less number may be employed, so that one rib be located at each end of the roll. Each of these ribs is provided in its outer edge at intervals throughout its length with a series of recesses 7 of less depth than the total distance the ribs project beyond the surface of the roll and of a width to snugly receive the bars 8, which are adapted to be set in these recesses and project radially outward from the roll. The

bars 8 extend from end to end of the roll, and it will be understood that the construction affords a circular series of alining recesses extending longitudinally of the roll to receive the bars 8. Said bars are held in place on the roll in the usual or any preferred manner—say by means of hoops 9, inserted in recesses in the bars at each end of the roll. By setting the bars in the manner described a space 10 will be left between the bottom of each bar and the surface of the roll, and this space is to permit the wood filling 11, which is wedged in between the bars, as usual, to expand beneath the bottom edge of each adjacent bar, and thus be held securely in place, as clearly shown in Fig. 1.

In my prior patent, No. 625,818, granted May 30, 1899, I have described and claimed a bar for refining-engines having a groove in its cutting-surface. This groove in practice is about three-sixteenths of an inch in thickness and one and one-eighth inches deep, and I have found great difficulty in having such a groove formed in the bar, and the production of such a bar is relatively very expensive. To avoid the difficulty and expense of this prior construction, I have conceived the construction herein described and illustrated, which, however, it will be seen comes within the broad spirit of the invention of my said patent. In the present case the bars are constructed as follows: Referring to Fig. 3, each of the bars 8 consists of two parallel members 12 13, welded together or secured together by means of rivets 14, or both ways of securing these members together may be employed. The member 12 is twice as thick as the member 13, and before being secured thereto and in the process of manufacture is provided in the rolling-mill with an L-shaped recess 15, which extends to a depth of one and one-eighth inches from the outer edge of the bar and in width is one-half the thickness of the member 12 or of the same thickness as the member 13. When the members 12 and 13 are brought together, therefore, with the recess 15 facing the member 13, it will be seen that two blades 16 of equal width will be provided, having a space 17 between them, in which space may be applied the filling-strips described in my said patent. By preference, however, I employ lead strips 18



for this purpose, as the wood becomes discolored by use and is apt to throw off small pieces, which discolor the paper-stock. The L-shaped recess 15 may be readily formed in the bar or member 12, and the expense involved is relatively very slight. It will be seen that the bar shown in Fig. 3 differs from the bar shown in my said patent only in the fact that it is made in two parts. In use the action of each is precisely the same.

In case it is desired that each bar 8 should have three blades or cutting-surfaces 16 I have devised the construction shown in Fig. 4. In this instance the member 12 is slightly thickened and in the process of rolling is provided with an L-shaped recess 15 on each side, as shown. A member 13 is then secured to each side of the member 12, each of which provides a cutting surface or blade 16. The third blade 16 is provided by the central portion of the member 12, as shown.

In the modified construction shown in Fig. 5 I employ two bars or members 20, each of which is provided on its inner side with an L-shaped recess 21, corresponding to the recess 15 of the construction shown in Fig. 3, but only one-half the width of such recess, so that when the two members 20 are secured together with the recesses 21 facing each other a central recess 22 will be provided of the same width as the recess 17 of the prior constructions.

In Fig. 6 is shown a modified construction of the bar shown in Fig. 5. In this construction an integral bar 23 (shown by dotted lines) is provided at opposite ends while being rolled with the recesses 21, and then the bar is bent upon itself to the position shown in full lines and secured together by a rivet 14 or by being welded, or both.

In Fig. 7 I have shown a modification in the construction of bar represented in Fig. 4, wherein three cutting-blades are provided. In this construction I roll two bars or members 24, each of which is similar to the member 12 of Fig. 3, and secure them, with their recesses 25 facing each other, to opposite sides of a straight bar 26, so that two grooves 27 and three cutting-blades 28 will be provided.

In order to further insure the secure fastening of the wood filling 11 between the bars 8, I groove, corrugate, or otherwise roughen each side of said bars, as indicated at 19, so that when the wood filling expands it will take

into said grooves or roughened surface, and thereby be held securely in place.

I claim—

1. In a refining-engine, a roll provided with a series of annular ribs having continuous alining recesses, of less depth than said ribs, a series of blades set in said recesses, each of said blades having its outer sides grooved or roughened, and a wood filling between each pair of adjacent blades.

2. A bar for refining-engines, composed of two blades securely united to each other, one of said blades having a recess provided in its opposing side whereby to afford a filling-groove between the blades.

3. A bar for refining-engines composed of two members securely united, one of said members being thicker than the other and having a recess provided in its opposing side.

4. A bar for refining-engines, composed of two blades securely united to each other to form a compound bar and separated throughout their length and for a portion of their width by a groove having parallel side walls.

5. A bar for refining-engines, composed of a number of members securely united to each other to form a compound bar, one or more of said members having a portion of its body removed whereby to provide cutting surfaces or blades and a filling-groove having parallel side walls between adjacent members.

6. A bar for refining-engines, composed of a number of members, one or more of said members being recessed, whereby when the members are placed side by side to provide cutting surfaces or blades and a filling-groove between the blades.

7. A bar for refining-engines, composed of a number of members securely united to each other to form a compound bar and separated throughout their length and for a portion of their width by a rectangular recess formed in one or more of said members.

8. A bar for refining-engines having its outer sides grooved or roughened, as and for the purpose described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SOLOMON R. WAGG.

Witnesses:

WM. A. RICHARD,  
GEO. H. PIESENBOOM.