

W. L. NAHM & E. J. O'BRIEN, JR.

CYLINDER NURLING APPARATUS.

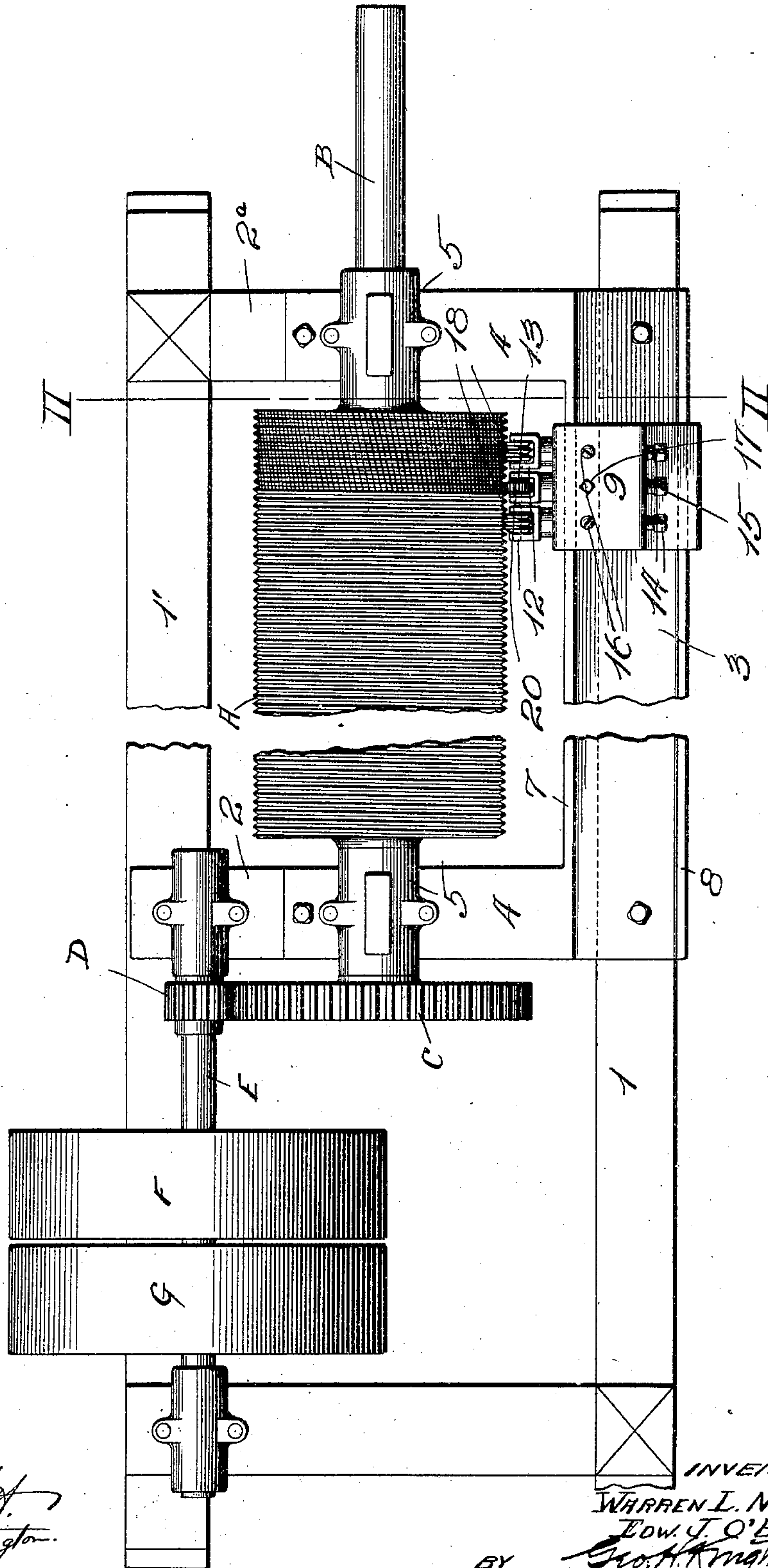
APPLICATION FILED NOV. 9, 1908.

934,335.

Patented Sept. 14, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



ATTEST:
E. M. Harrington.

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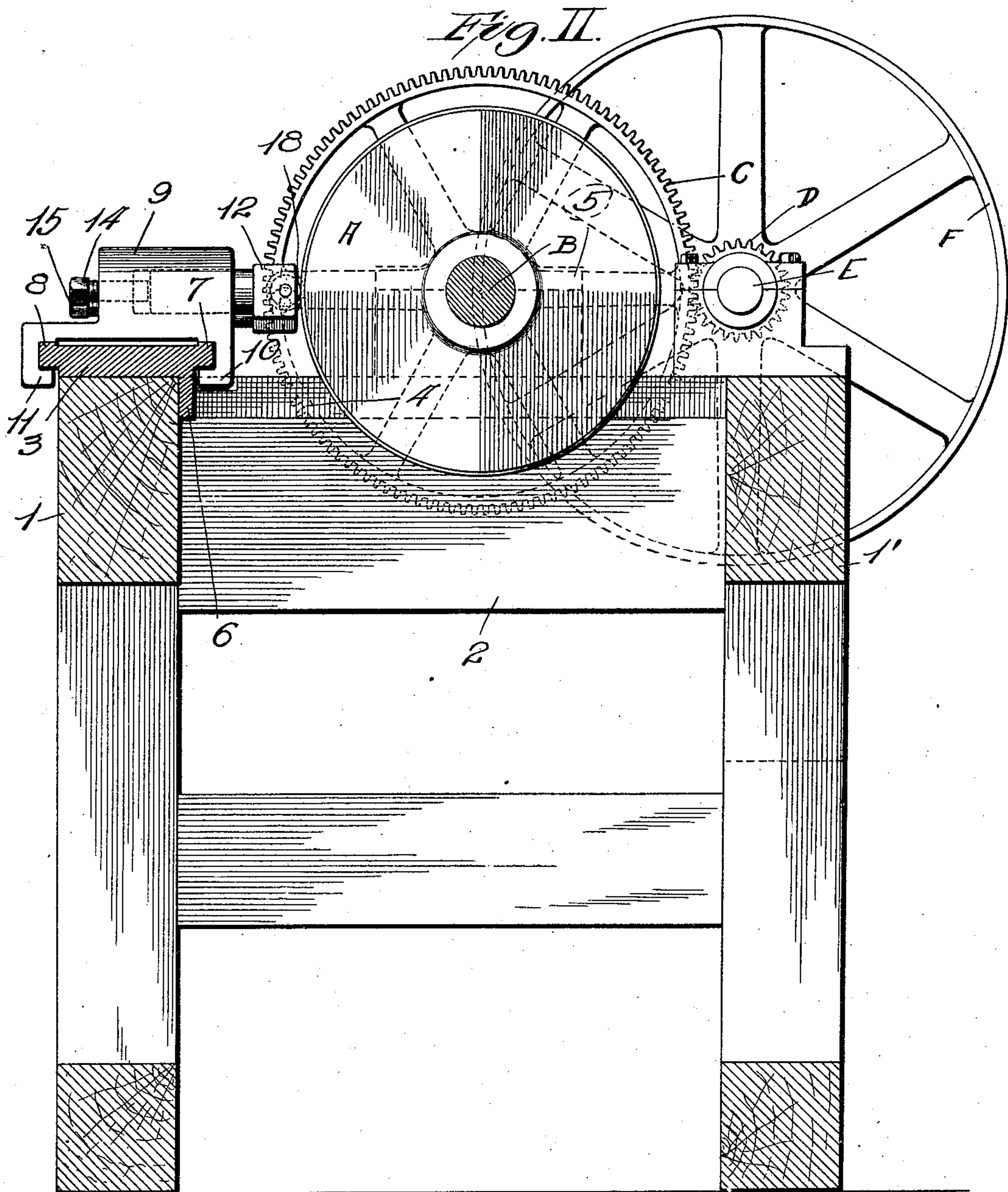
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B. A. Scott.

E. M. Harrington

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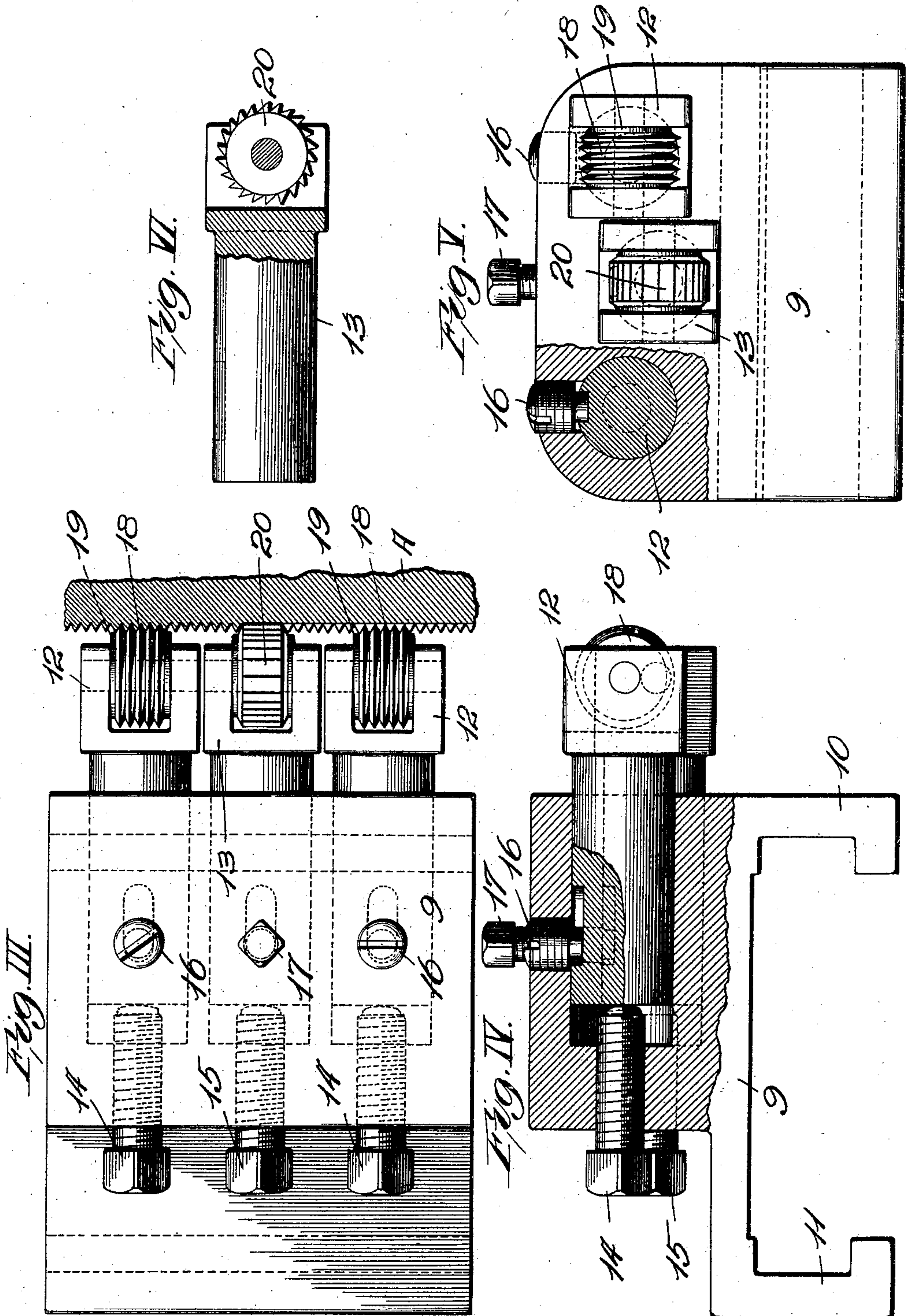
Atty.

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4 SHEETS—SHEET 4.

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Fig. VII.

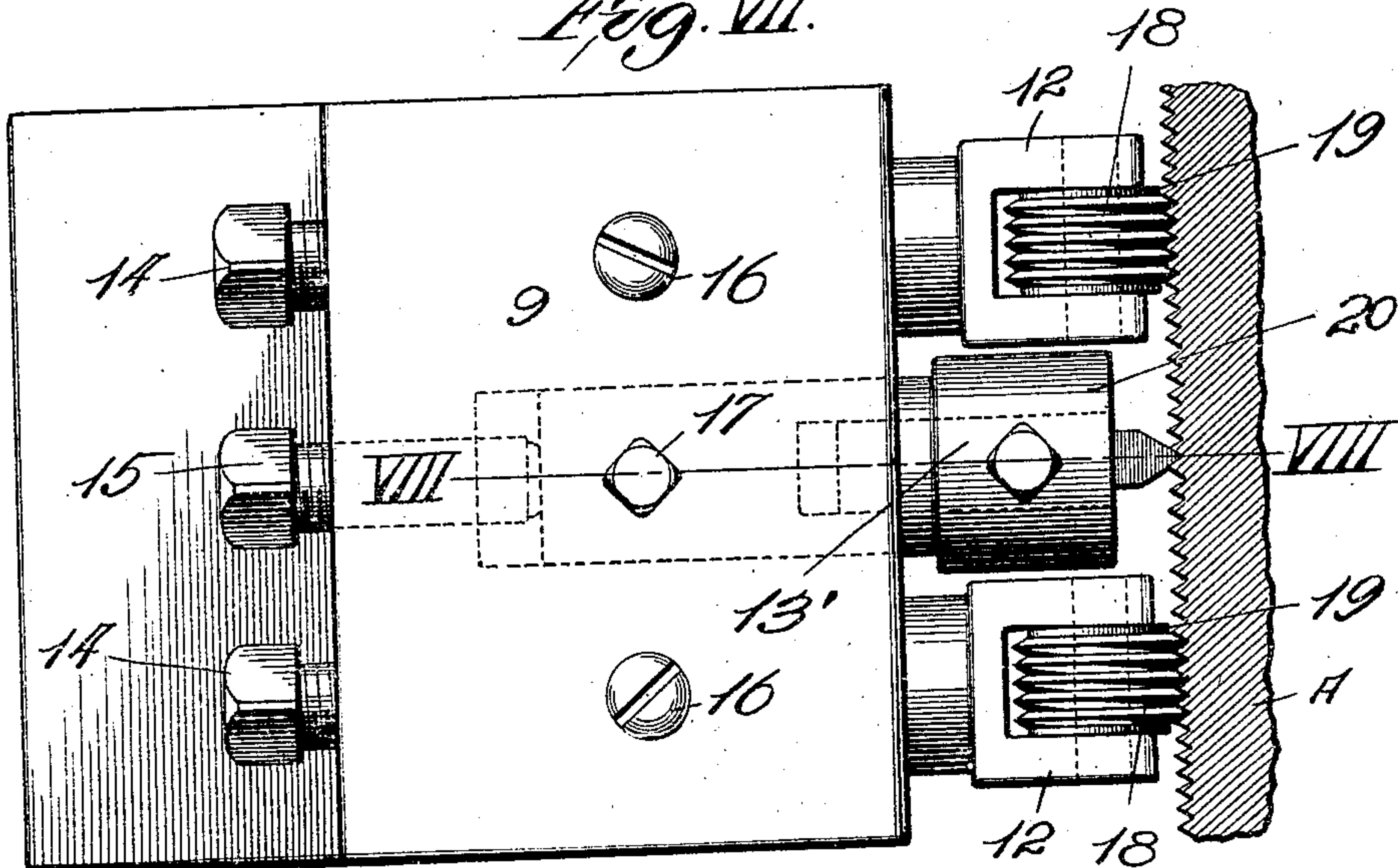


Fig. VIII.

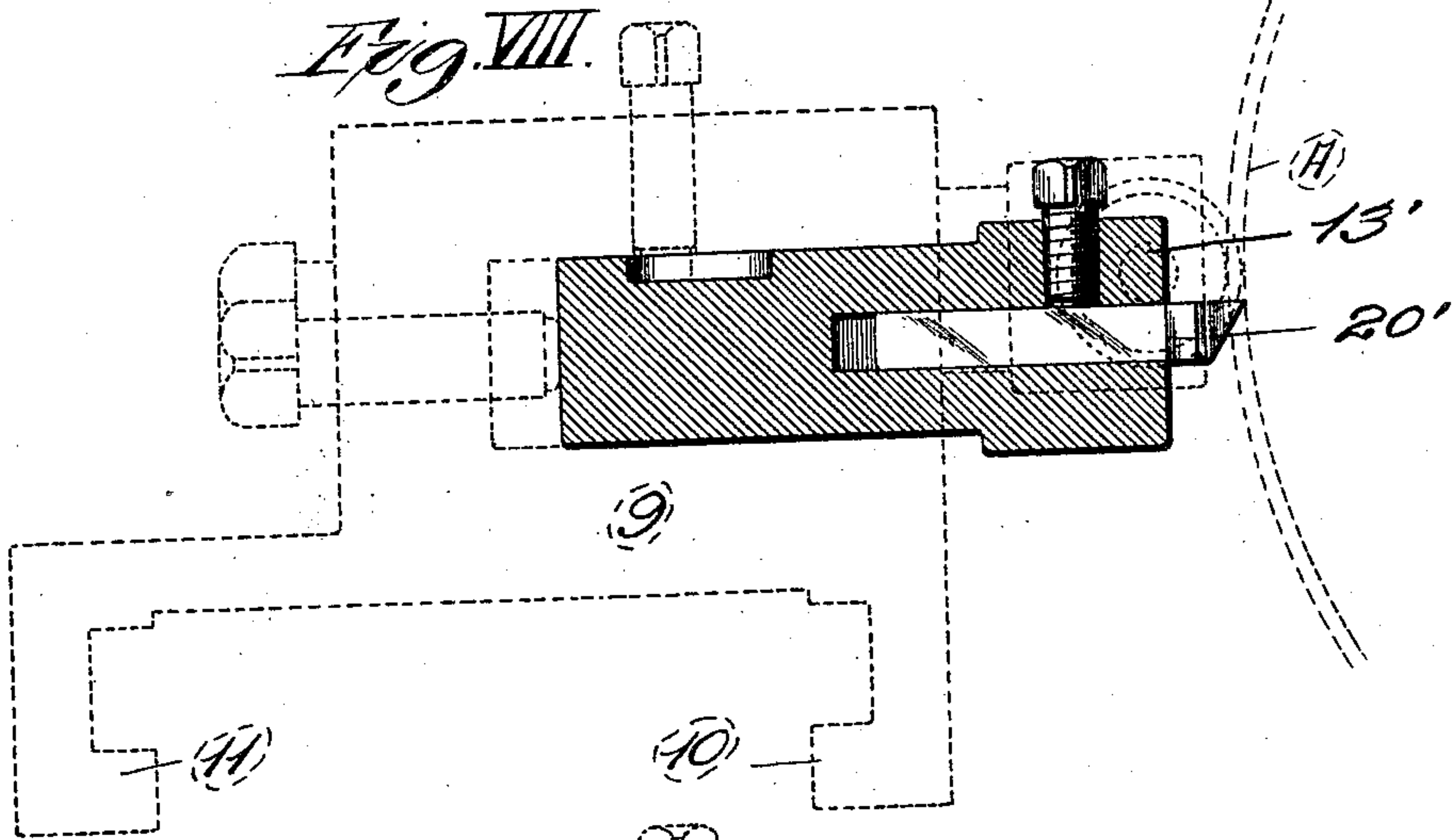
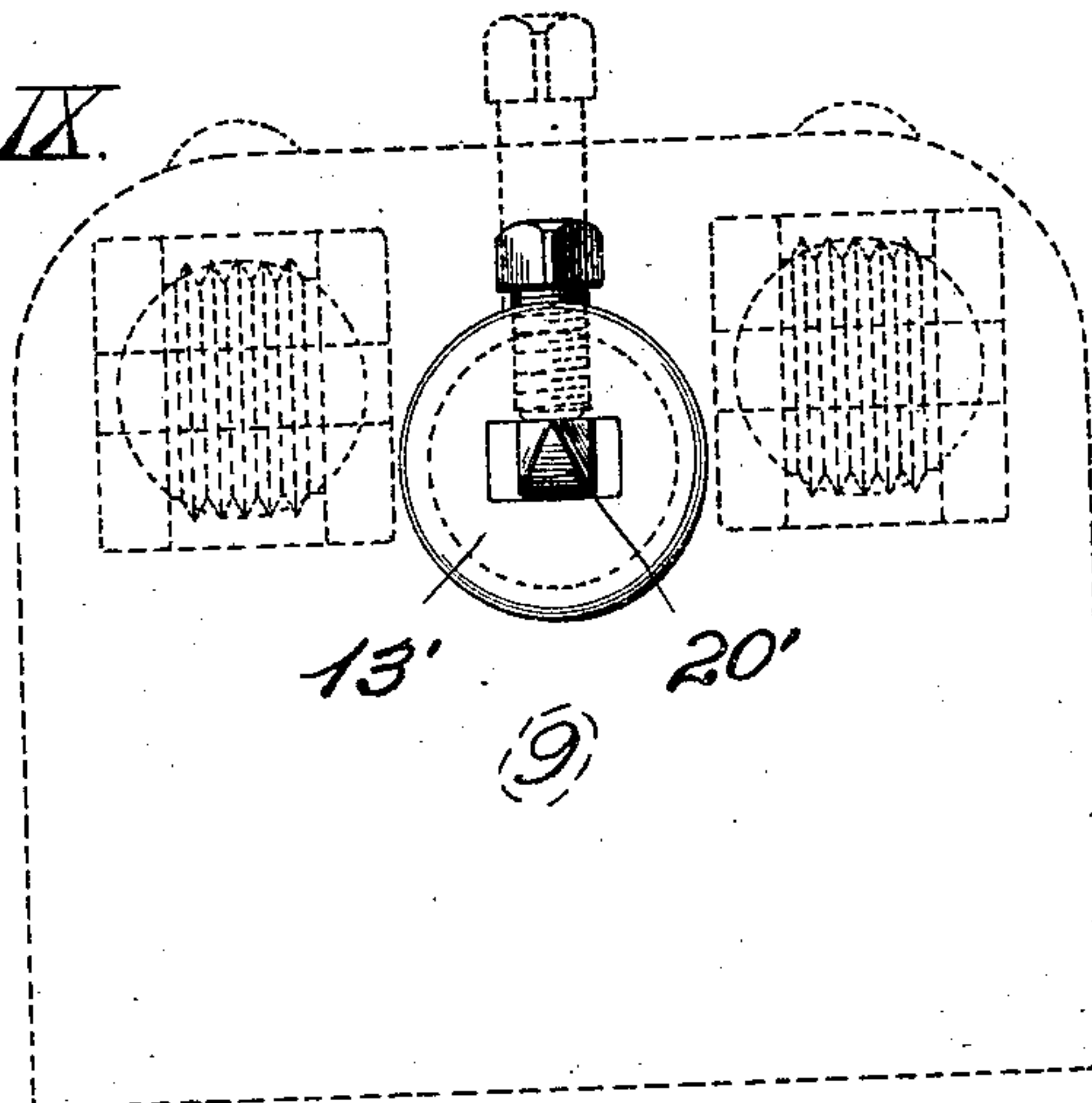


Fig. IX.



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UNITED STATES PATENT OFFICE.

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CYLINDER-NURLING APPARATUS.

934,335.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed November 9, 1908. Serial No. 461,658.

To all whom it may concern:

Be it known that we, WARREN L. NAHM and EDWARD J. O'BRIEN, Jr., citizens of the United States of America, residing in the county of St. Louis and State of Missouri and in the city of St. Louis and State of Missouri, respectively, have invented certain new and useful Improvements in Cylinder-Nurling Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to an apparatus for nurling cylinders in cotton seed delinting machines, and it has for its object the production of a simple apparatus of this kind whereby the cylinders may be efficiently nurlled from time to time after the teeth thereon have become worn during the use of the cylinders, as well as for the partial initial production of the cylinders.

Figure I is a top or plan view of our apparatus with a partially nurlled cylinder mounted therein. Fig. II is a vertical cross section taken on line II—II, Fig. I. Fig. III is in part an enlarged plan view of the carriage by which the nurling members are carried, and the nurling members, and in part a longitudinal section through a fragment of a cylinder. Fig. IV is partly a vertical cross section of the nurling member carriage and one of the nurling member holders, and partly an elevation of the carriage and nurling members. Fig. V is in part an end elevation of the nurling member carriage and in part a vertical longitudinal section of said carriage and the shank of one of the nurling member holders. Fig. VI is in part an elevation and in part a longitudinal section of the longitudinally ridged nurling roll and its holder. Fig. VII is a top or plan view of the nurling member carriage and the circumferentially ridged nurling rolls with a cutting tool substituted for the longitudinally ridged nurling roll. Fig. VIII is a cross section taken on line VIII—VIII, Fig. VII through the cutting tool and its holder, the nurling member carriage being illustrated in dotted lines. Fig. IX is an end elevation of the cutting tool and its holder with the nurling member carriage illustrated in dotted lines.

In the accompanying drawings: A designates a cylinder such as may be operated

upon in our apparatus to nurl its periphery and which is provided with a spiral thread or rib extending from end to end of the cylinder and circumferentially thereof. The cylinder A is provided with a shaft B. The cylinder to be operated upon in our apparatus may be supported by any suitable frame-work, but is preferably mounted upon a frame-work such as that shown in the drawings and which comprises the following parts:

1 and 1' are longitudinal timbers, and 2 and 2^a are transverse timbers of the cylinder supporting frame.

3 designates a top frame that is preferably of U-shape and is provided with arms 4 which rest upon the transverse timbers 2 and 2^a of the cylinder supporting frame-work. The arms 4 are equipped with journal boxes 5 in which the shaft of the cylinder to be operated upon is mounted. The body member of the top frame 3 is seated upon the longitudinal timber 1 and extends parallel to a cylinder A when mounted in the apparatus. This body member is provided adjacent to its inner edge with a depending flange 6, see Fig. II that abuts against the longitudinal supporting frame timber 1 and serves to resist outward movement of the top frame when pressure is exerted thereagainst, due to the operation of parts to be hereinafter described. At the inner and outer edges of said body member are guide tongues 7 and 8.

9 designates a nurling member carriage that is slidably seated upon the body member of the top frame 3 and is provided with grooved runners 10 and 11 that operate respectively in engagement with the tongues 7 and 8, whereby the movement of the carriage 9 is directed when said carriage is retained in engagement with the top frame body member.

12 designates outer nurling roll holders having forked heads and the shanks of which are adjustably mounted in the carriage 9, and 13 is an intermediate nurling roll holder having a forked head and the shank of which is adjustably mounted in said carriage between the shanks of the outer nurling roll holders. The outer nurling roll holders are adapted to be adjusted in a forward direction relative to the carriage 9 by adjusting screws 14 and the intermediate nurling roll

holder is adapted to be adjusted in a like direction by an adjusting screw 15, all of said adjusting screws being mounted in the upper portion of the carriage, and extending forwardly therein into engagement with the rear ends of the shanks of the roll holders. The forward and rearward movements of the nurling roll holders are limited by stop screws 16 and 17 seated in the top of the carriage 9 and the inner ends of which enter respectively into longitudinal slots in the shanks of the nurling roll holder.

18 designates circumferentially ridged nurling rolls journaled in the outer nurling roll holders 12. Each of these nurling rolls is adapted to operate in engagement with the thread or rib upon the cylinder A to be operated upon, by pressure exerted against the cylinder at the location of the thread or rib, and acts to upset the metal of the thread or rib outwardly due to the inward pressure in order that the depth of the thread or rib may be increased. Each circumferentially ridged nurling roll is provided at its ends with unridged necks 19 which extend beyond the outermost ridges of the rolls and serve to prevent breakage or chipping of said outermost ridges when pressure is exerted thereagainst.

20 designates an intermediate longitudinally ridged nurling roll journaled in the intermediate nurling roll holder 13. The longitudinally extending ridges of the nurling roll 20 are so disposed around the periphery of the roll as to cause all the points of said ridges to be in alinement with the axis of the roll in order that the pressure exerted against the ridges when they are in contact with the teeth or ribs of the cylinder to be operated upon, will be directed toward the axis of the nurling roll.

In the practical use of our apparatus, the cylinder to be operated upon is rotated by suitable means such as that shown in the drawings and which comprises a gear wheel C fixed to the shaft of the cylinder, a pinion D in mesh with said gear wheel, a shaft E by which the pinion is carried, and tight and loose pulleys F and G on said shaft adapted to receive a belt by which power is communicated to the shaft E. As the cylinder to be operated upon is rotated by the means provided for the purpose of imparting rotation to it, the outer circumferentially ridged nurling rolls 18, which have been adjusted inwardly into firm contact with the periphery of the cylinder, travel in engagement with the thread or rib of the cylinder from the starting end to the opposite end of said cylinder. During the travel of the circumferentially ridged nurling rolls, they are directed in their movement by the carriage 9 which is slidably mounted on the body member of the top frame 3 as previously stated. As the circumferentially ridged nurling rolls

travel in engagement with the thread or ribs of the cylinder, they act by pressure against said thread or ribs to upset the thread or ribs outwardly and produce the desired depth therein or restore the thread or rib to its original depth after it has become impaired in the use of the cylinder. Simultaneously with the action of the circumferentially ridged nurling rolls upon the thread or rib of the cylinder, the intermediate longitudinally ridged nurling roll operates upon the edges of the thread or rib to produce teeth therein as the result of pressure by said roll against said edges which causes the metal in the thread or rib to be upset outwardly intermediate of the points therein that receive the points of the intermediate nurling roll and the teeth are added to the thread or rib of the cylinder throughout the extent of said thread or rib. We desire to direct attention to the fact that inasmuch as the intermediate tooth forming nurling roll is located between the two outer circumferentially ridged nurling rolls, one of said outer rolls operates in advance of the tooth forming roll and the other outer roll operates subsequent to the tooth forming roll upon the cylinder. The result of this arrangement is that the advance outer roll acts to upset the thread or rib of the cylinder outwardly before it is engaged by the tooth forming roll, and the following outer roll acts upon the thread or rib to increase the depth thereof after the thread or rib has been subjected to pressure by the tooth forming roll to produce the teeth therein.

In Figs. VII to IX inclusive, we have shown in combination with our circumferentially ridged nurling rolls 18, a tool holder 13' that is mounted in the carriage 9 intermediate of the tool holders that carry the circumferentially ridged nurling rolls. This tool holder is adapted to receive a cutting tool 20' by which the thread or rib in the cylinder to be operated upon may be increased in depth. When this cutting tool is used, the carriage 9 has movement imparted to it by the engagement of the circumferentially ridged nurling rolls with the thread or rib of the cylinder and the cutting tool operates during such movement upon the cylinder. It is only necessary in the use of our apparatus to utilize the cutting tool 20' at infrequent intervals to increase the depth of the thread or rib thereon and the circumferentially ridged and longitudinally ridged nurling rolls of the apparatus are employed at frequent intervals between the times at which the cylinder is subjected to the action of said cutting tool.

We claim:

1. In a cylinder nurling apparatus, a frame by which the cylinder to be operated upon is rotatably supported, means for rotating said cylinder, a carriage slidably

mounted upon said frame, a pair of outer circumferentially ridged nurling rolls carried by said carriage and adapted to operate upon a thread or rib at the periphery of said cylinder, and a longitudinally ridged nurling roll carried by said carriage intermediate of said outer rolls and adapted to operate upon the edge of said thread or rib, substantially as set forth.

2. In a cylinder nurling apparatus, a frame by which the cylinder to be nurlled is rotatably supported, means for rotating said cylinder, a carriage slidably fitted to said frame, a pair of outer nurling roll holders adjustably mounted in said carriage, a nurl-

ing roll holder adjustably mounted in said carriage intermediate of said outer roll holders, circumferentially ridged nurling rolls mounted in said outer roll holders and adapted to engage a thread or rib upon the cylinder to be nurlled, and a longitudinally ridged nurling roll mounted in said intermediate roll holder and adapted to bear against the edge of the thread or rib upon said cylinder, substantially as set forth. 20

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In the presence of—

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