

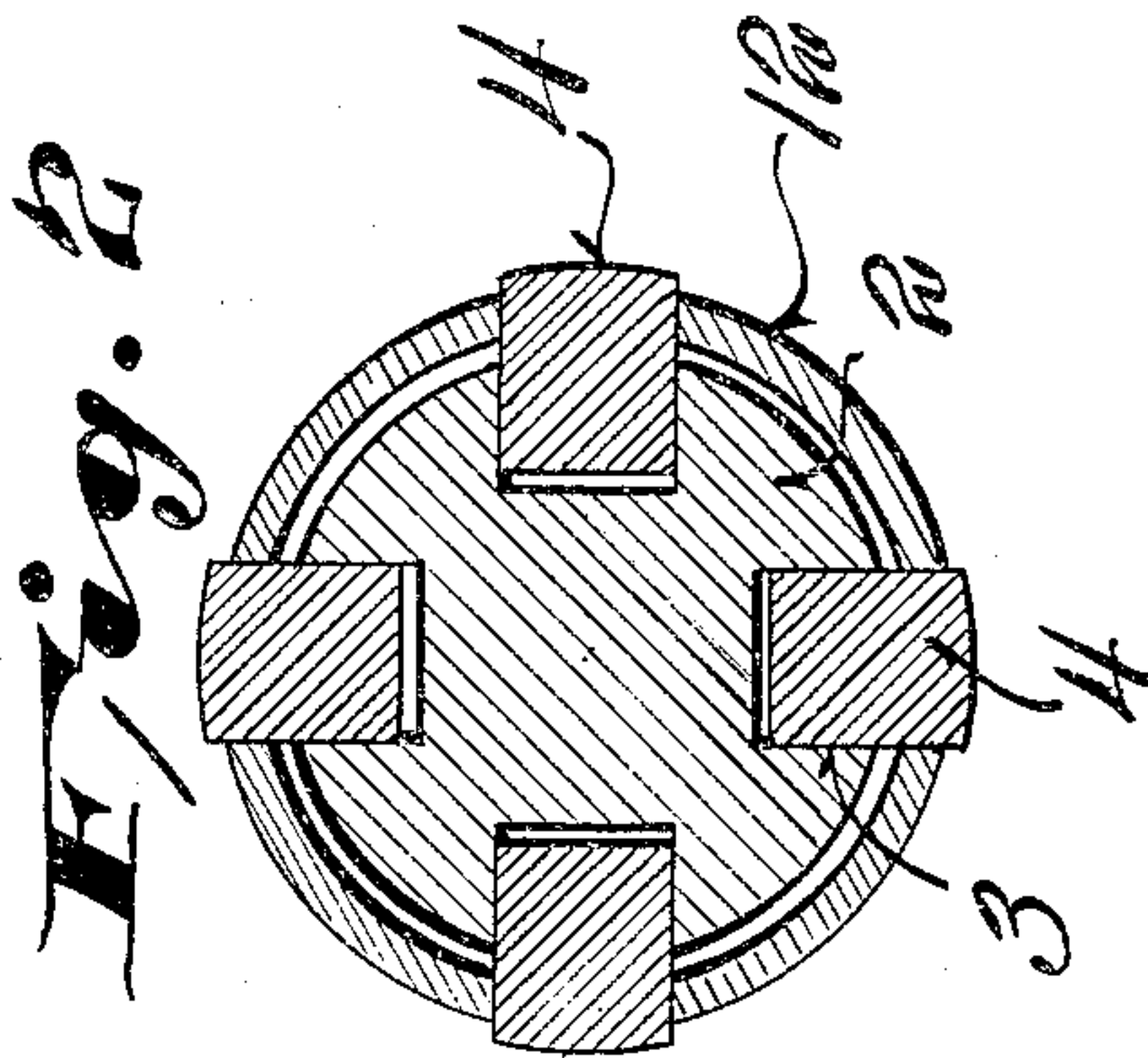
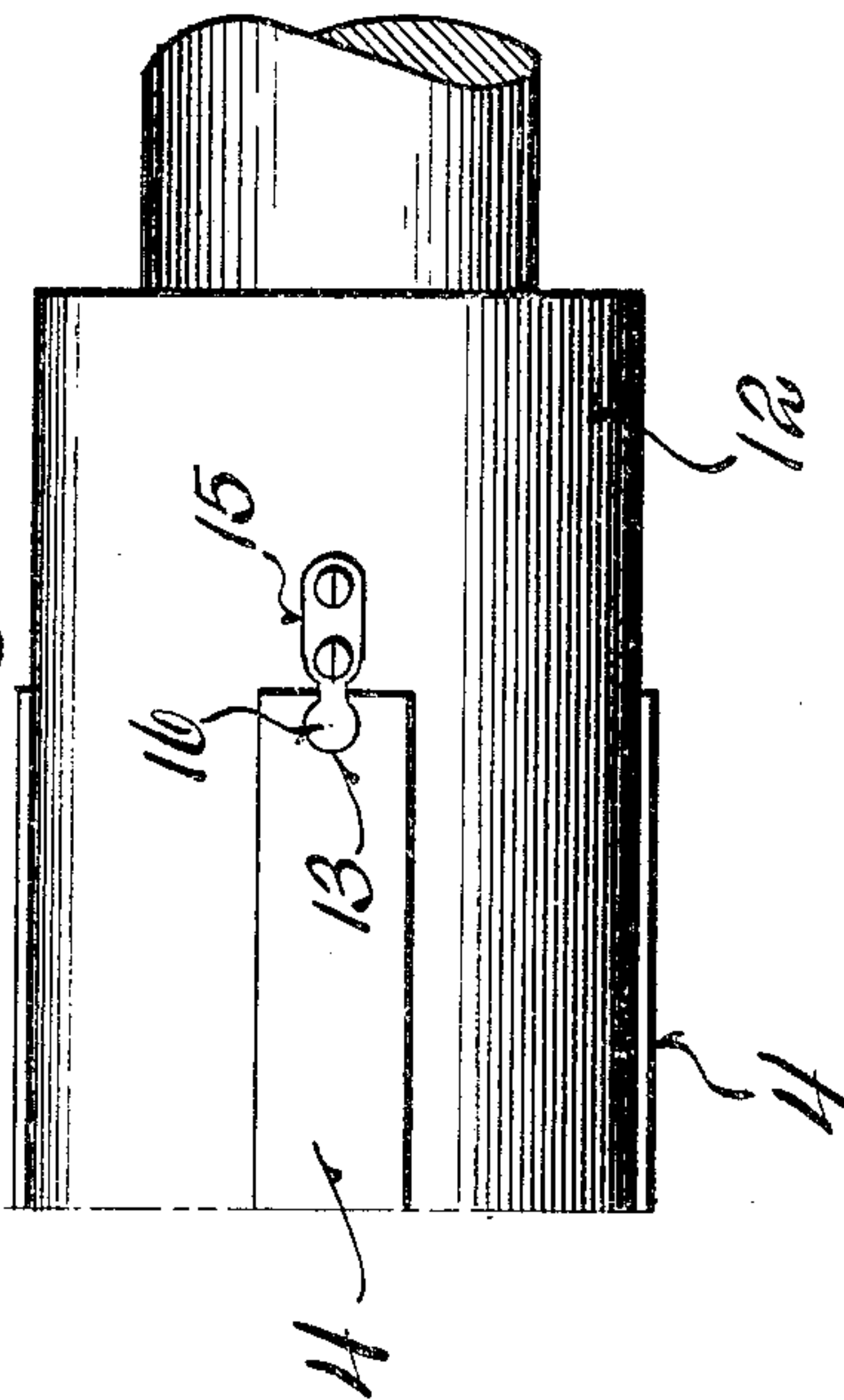
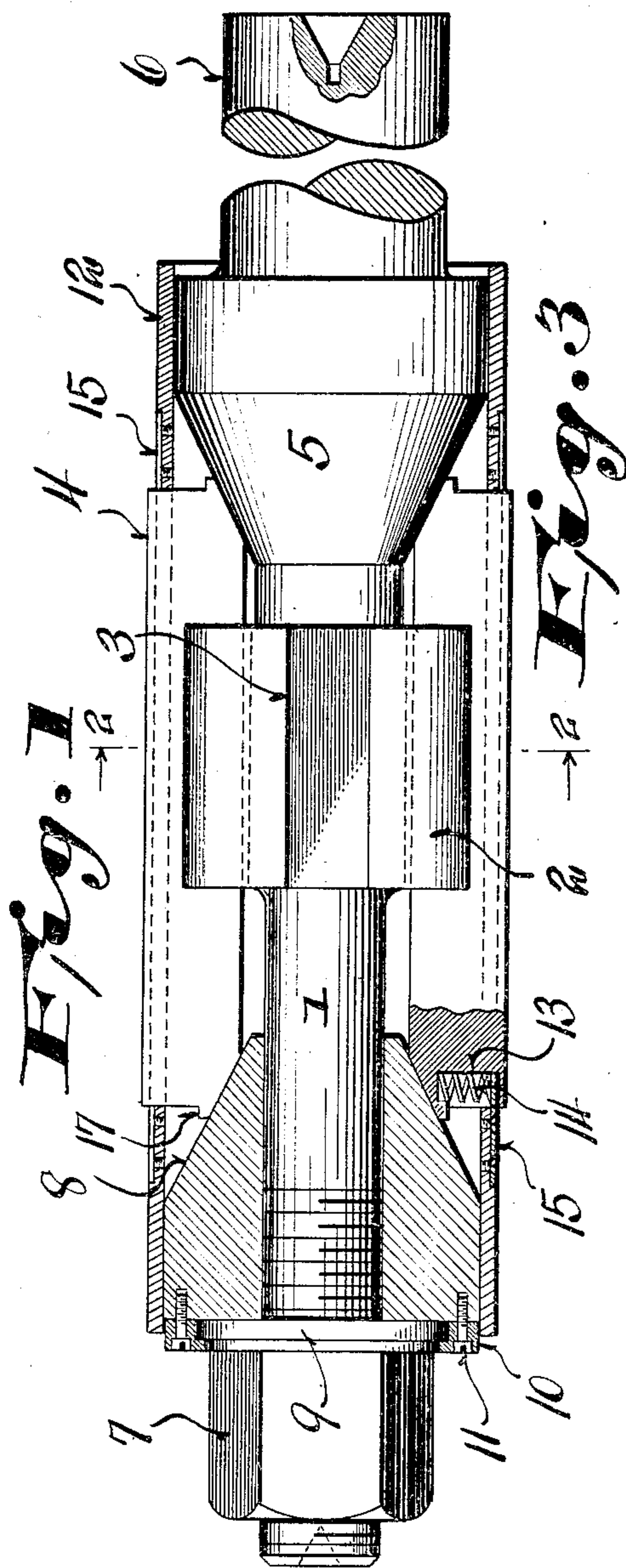
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EXPANSIBLE MANDREL

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UNITED STATES PATENT OFFICE

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EXPANSIBLE MANDREL

Application filed December 22, 1927. Serial No. 241,860.

This invention relates to expanding mandrels.

Objects of this invention are to provide an expanding mandrel which is of very substantial and sturdy construction, which will stand a large amount of severe use without getting out of order, and which has a relatively small number of parts.

More specifically, objects of this invention are to provide a mandrel in which the work engaging members are relatively heavy bars which are elevated by conical end members, so that the bars are braced or supported at both ends, and to provide means for forcing the bars inwardly when the controlling nut is loosened.

A further object of this invention is to provide an expanding mandrel which may be very easily made by ordinary machine-shop processes.

An embodiment of the invention is shown in the accompanying drawings in which:

Fig. 1 is a longitudinal sectional view through the device;

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1; and

Fig. 3 is a fragmentary face view of the device.

Referring to the drawings, it will be seen that the mandrel comprises a central spindle 1 which has an integral enlargement 2 provided with a plurality of slots 3 adapted to receive the expanding bars 4. The spindle is provided with a conical end member 5 and with a dog-engaging extension 6. It is recessed at its ends for receiving the lathe points. The spindle 1 continues outwardly at its rear end and is threaded and receives the controlling nut 7. It carries a slidably mounted conical member 8 which is moved inwardly by means of the nut 7. The nut 7 is provided with an integral flange 9 which is engaged by means of a small annular member 10 held to the conical member 8 by means of the small screws 11. The major portion of the device is surrounded by means of a shell 12 which is slotted so as to permit the bars 4 to project therethrough. These bars are provided with recesses 13 within which small springs 14 are housed.

These recesses are provided with end slots through which the restricted necks of clips 15 project. The clips are secured to the shell 12 and have circular enlargements 16 at their inner ends which contact with the outer ends of the springs 14. The other ends of the spring seat against the bottoms of the apertures 13 and thus tend to force the bars 4 inwardly.

It is to be noted from Fig. 1 that each end of the bars is beveled at its ends and contacts with the bevel faces of the members 5 and 8. Further, it will be noted from this figure that the bars are provided with tongues 17 at their ends which limit their outward motion and prevent their falling from the device in the event that the clips 15 should break, as these tongues hook beneath the shell 12.

In operating the device, all that is necessary is to slip the mandrel into the work and thereafter screw the nut 7 inwardly. This causes the conical member 8 to approach the member 5 and to thus force the bars 4 outwardly into binding engagement with the work.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting, as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

I claim:

An expanding mandrel comprising a spindle, a conical member rigidly carried thereby, a second conical member slidably mounted upon said spindle, a nut for controlling the position of said second conical member, said nut being threaded upon said spindle, an annular flange on the nut, an annular retaining member engaging the flange and detachably connected to the second conical member, a plurality of bars having bevelled ends contacting with the conical members and adapted to be moved outwardly by said conical members, and an enlargement rigidly carried by said spindle and having guiding slots for said bars, a shell surrounding said conical members and having slots through which said bars project, laterally projecting tongues

at the ends of said bars adapted to engage the
shell for limiting the outward movement of
the bars, said bars having apertures adjacent
opposite ends and having slots opening
5 through the ends and communicating with
the apertures, clips carried by the shell and
projecting through the slots and into the
apertures, and springs positioned within said
apertures and bearing at their outer ends
10 against said clips and at their inner ends
against said bars.

In testimony that I claim the foregoing I
have hereunto set my hand at Milwaukee, in
the county of Milwaukee and State of Wis-
consin.
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JOSEPH KUFFNER

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