

A. H. WHATLEY.
GRINDING AND POLISHING ROLL.
APPLICATION FILED DEC. 23, 1907.

919,665.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.

Fig. 1

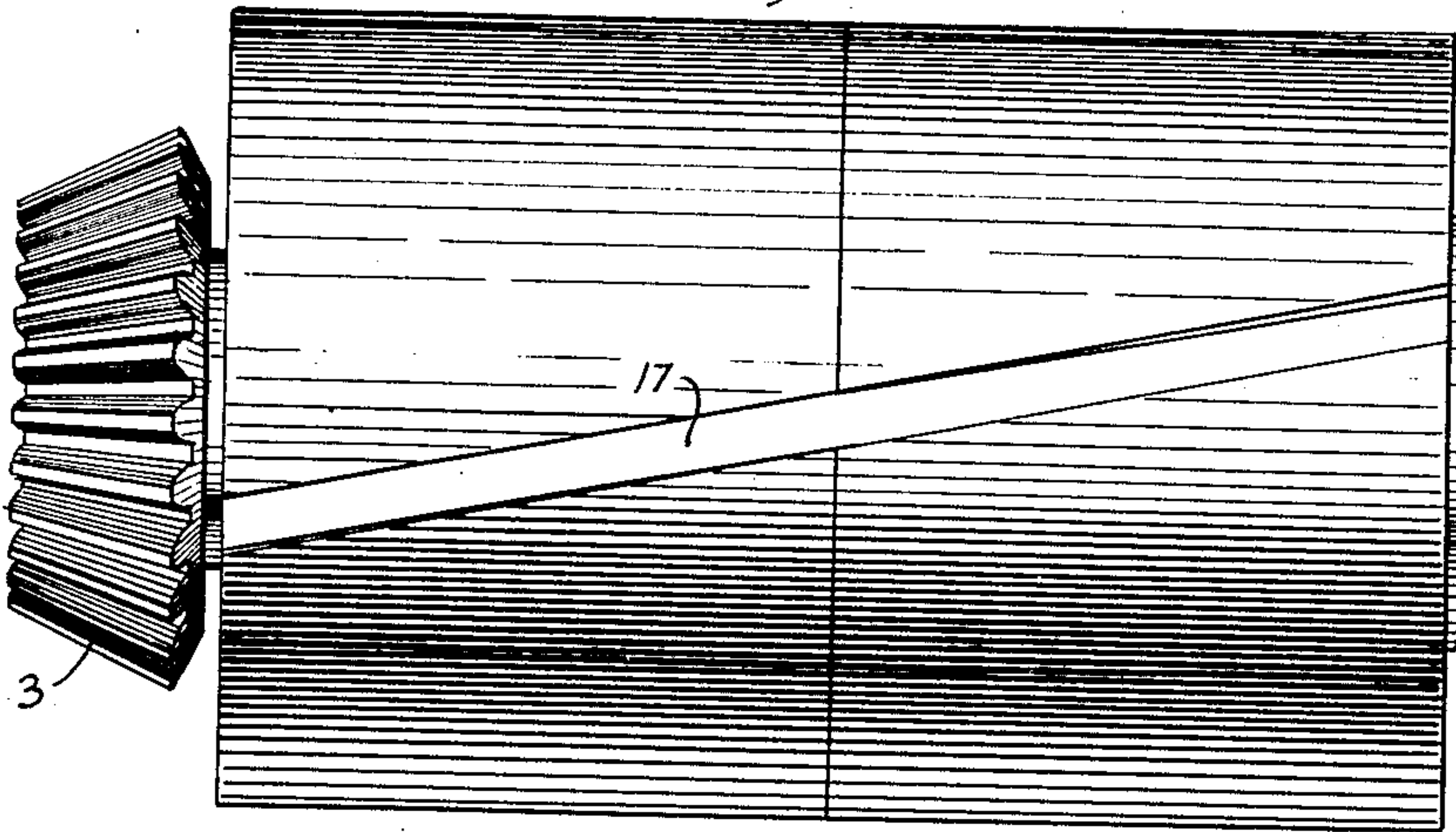


Fig. 2

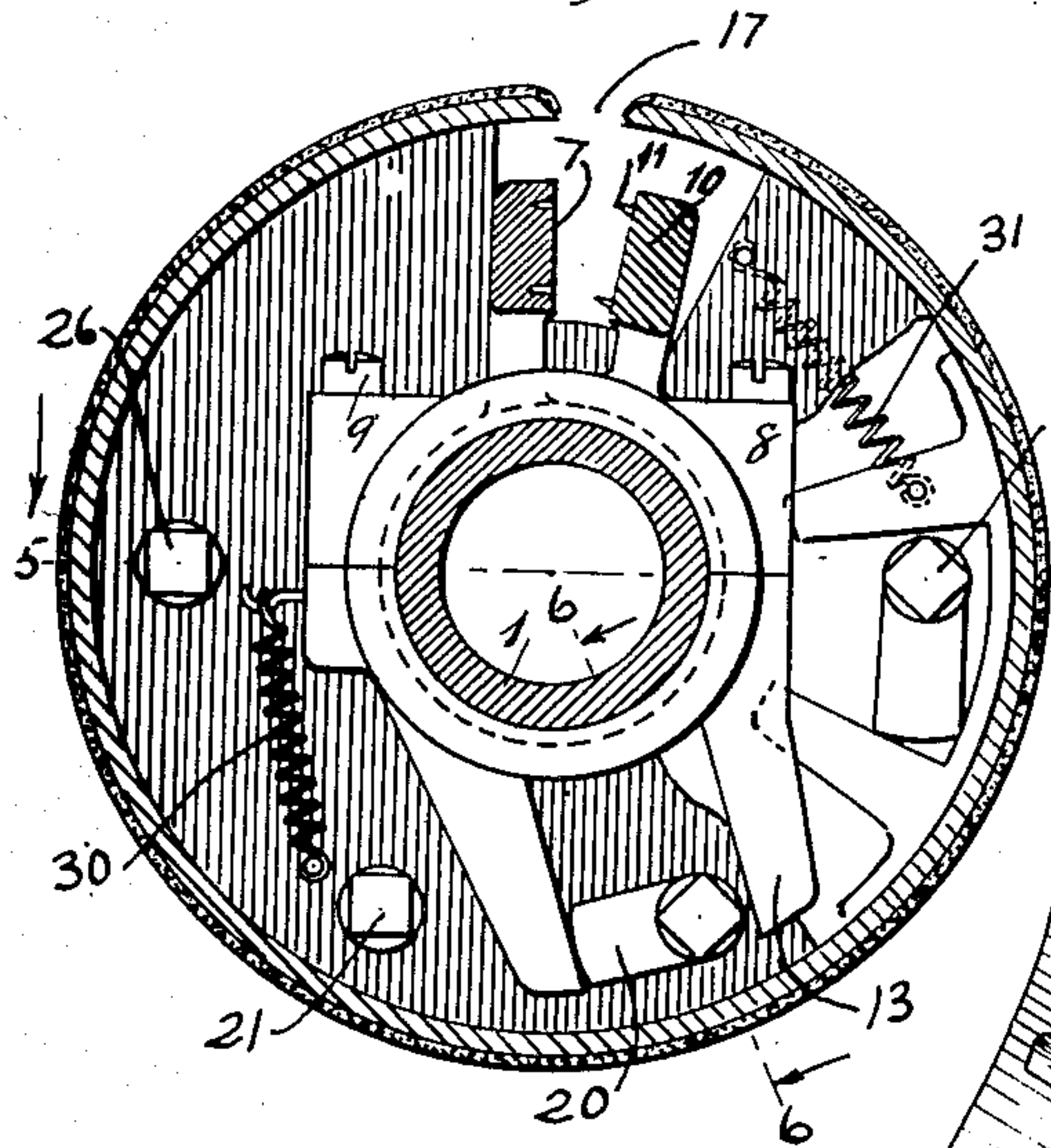


Fig. 3

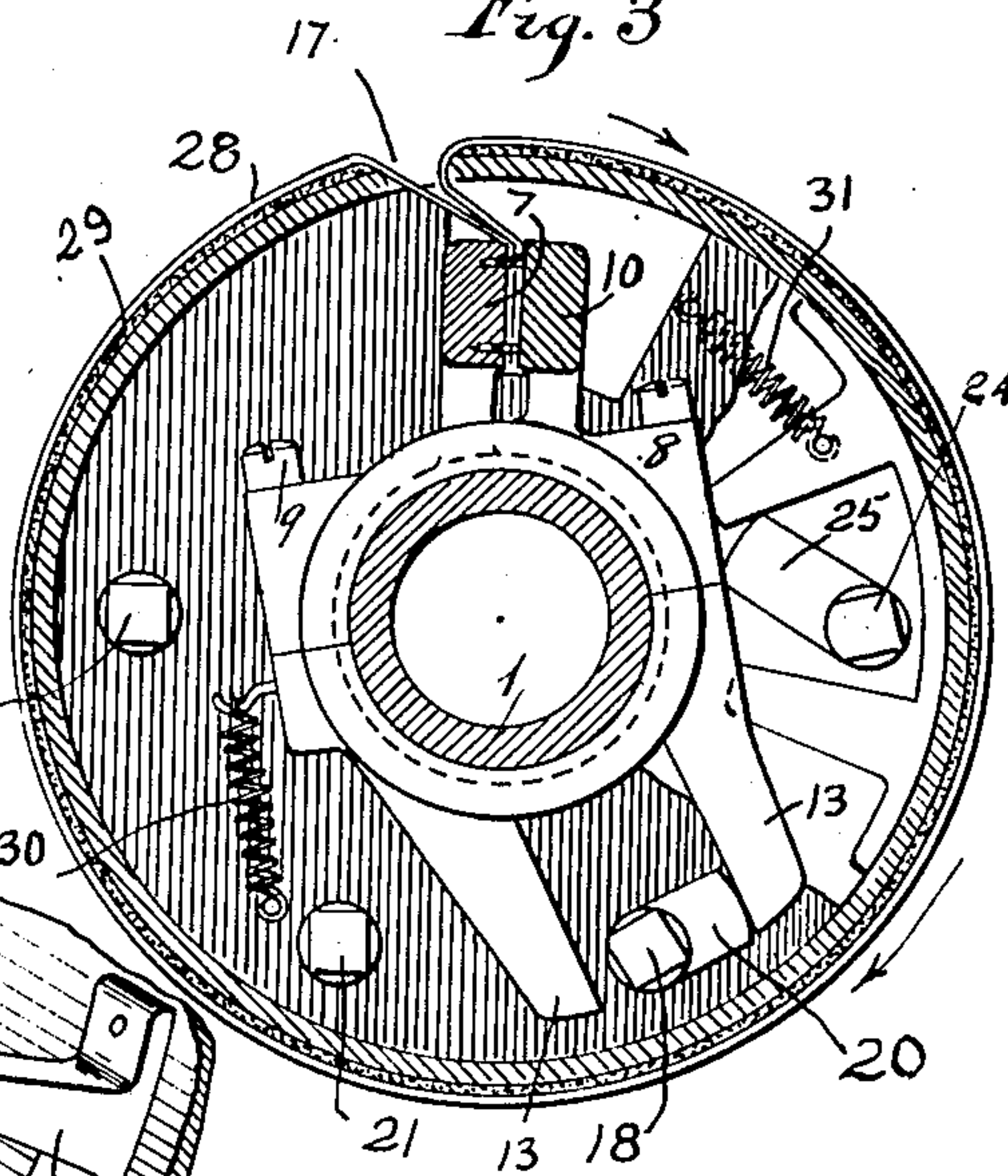
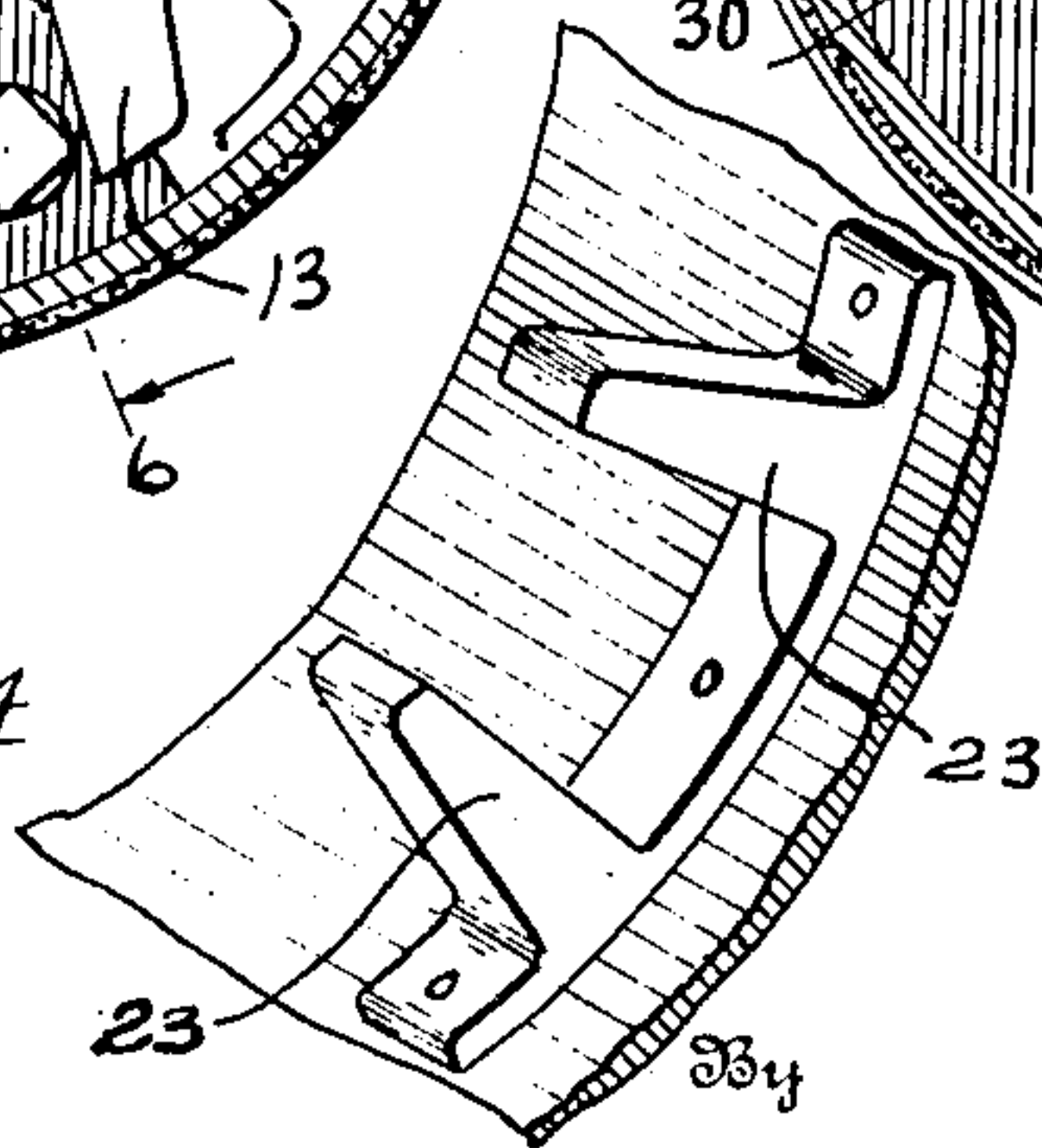


Fig. 4



Witnesses

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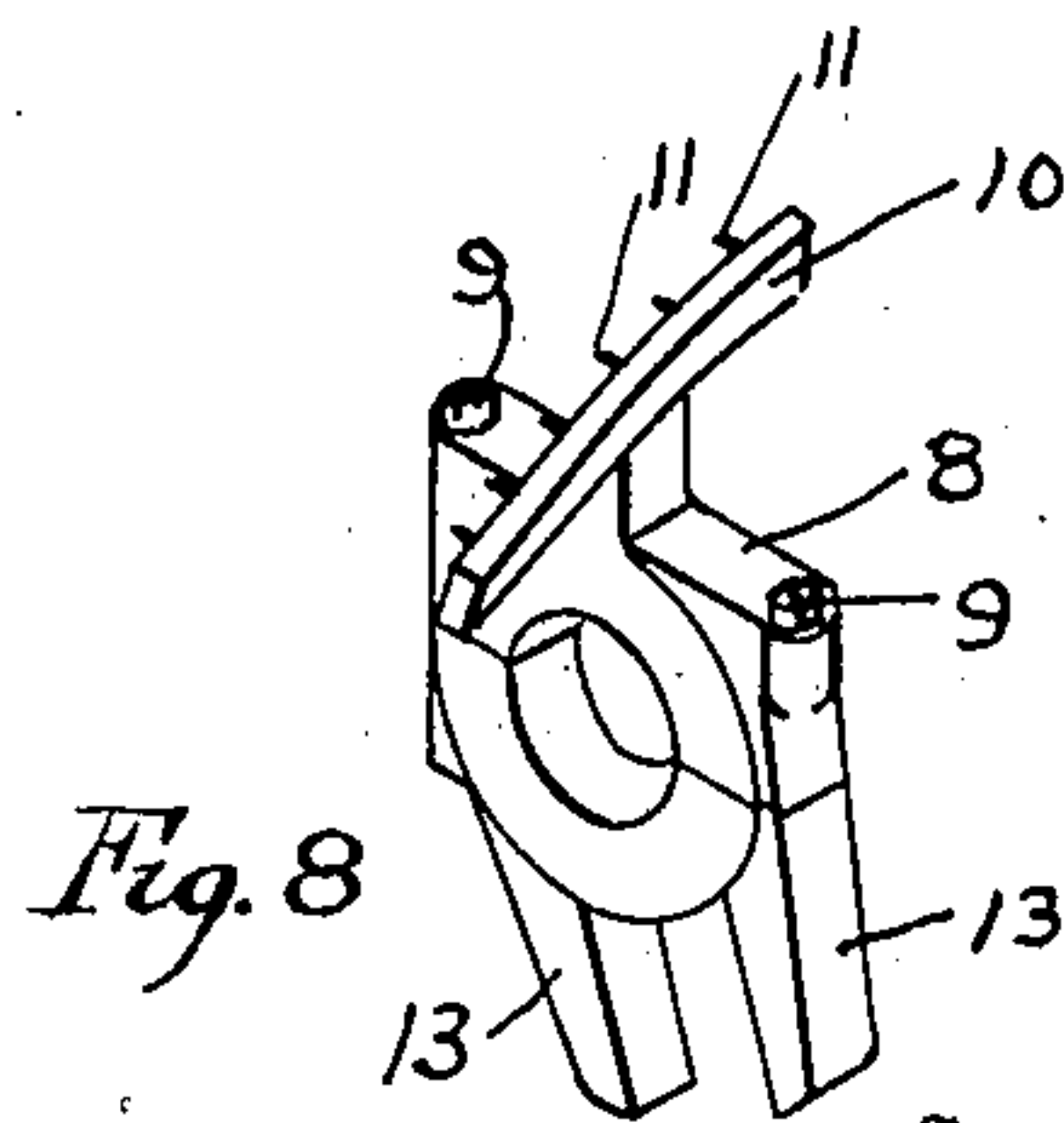
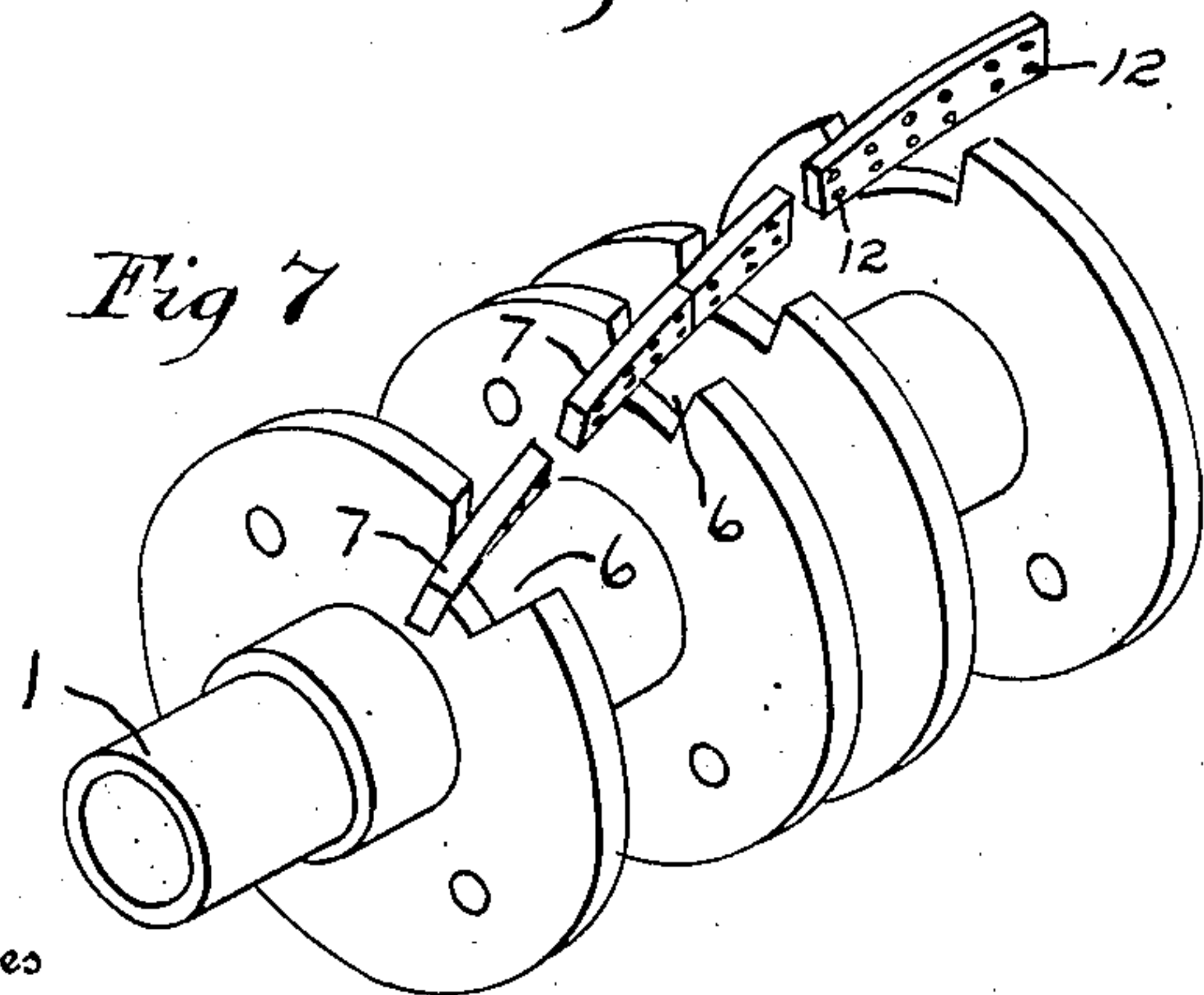
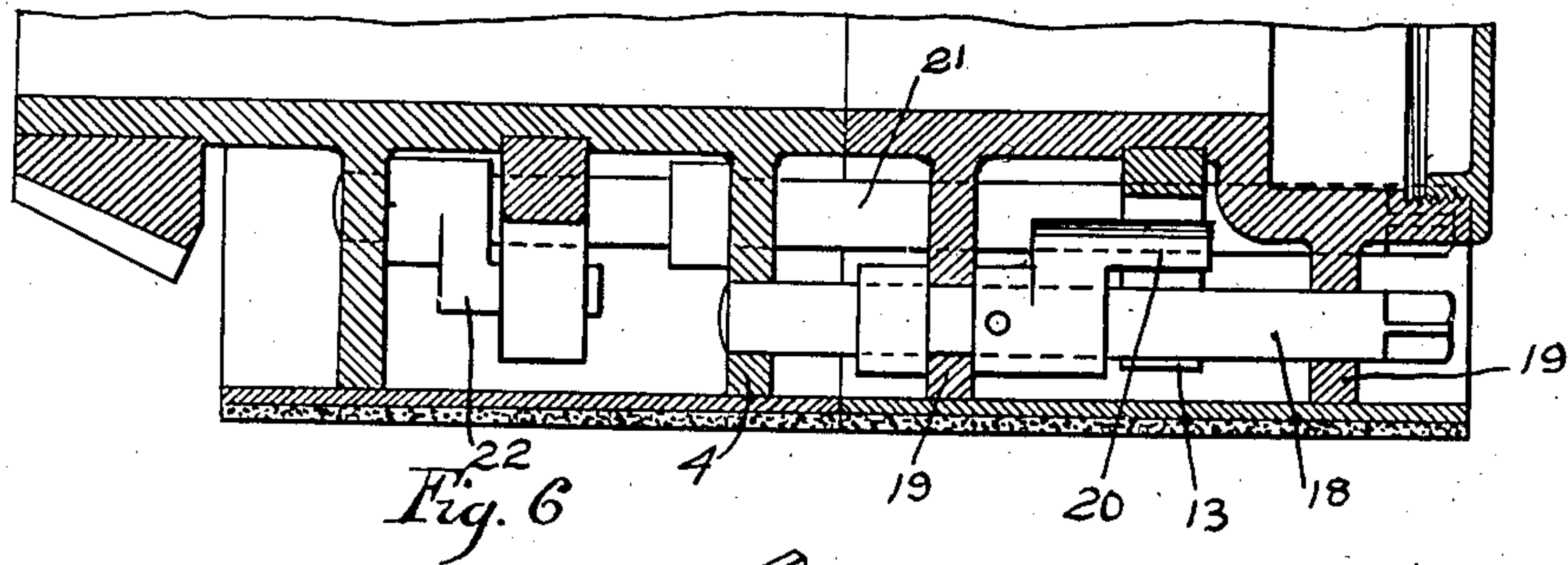
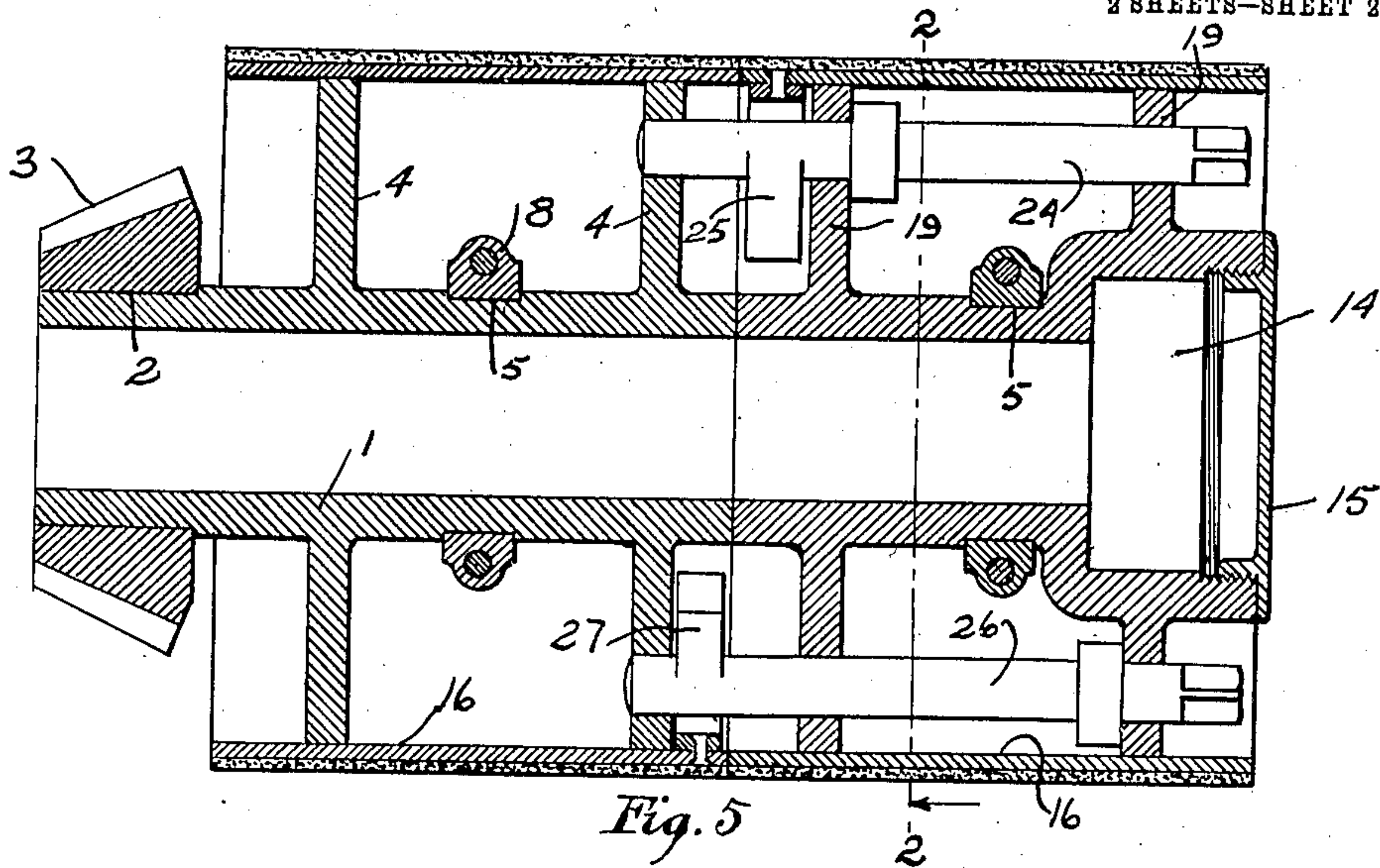
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

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GRINDING AND POLISHING ROLL.

No. 919,665.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed December 23, 1907. Serial No. 407,754.

To all whom it may concern:

Be it known that I, ALFRED H. WHATLEY, a citizen of the United States, residing in the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Grinding and Polishing Rolls, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to surfacing rolls and has for its object to provide a roll of practical construction adapted to engage and positively fasten both ends of the abrading or polishing material which is wrapped around it, and a further object is to provide means whereby this covering may be drawn tightly around the roll and held in that position.

In carrying out my invention I provide a body portion through which the roll is driven and on this body portion a shell is mounted and adapted to be moved independent of said body. Around this shell is wrapped the sheet of surfacing material, the ends of which are passed through a slot in said shell and secured within by a pair of jaws mounted on said body. By this construction it will be seen that the ends of the surfacing material are gripped and held within the shell and then the loose shell is carried around by means of a cam to stretch the material onto the roll.

The invention consists of other novel features and parts and combinations of the same as will be fully described hereinafter and then pointed out in the appended claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

In the drawings: Figure 1—is a plan view of the complete roll showing a diagonal slot therein and the driving gear at one end thereof. Fig. 2—is a section on line 2—2 of Fig. 5 showing the gripping jaws locked in their open position, a portion of one of the body flanges being broken away to show the tension cam beyond. Fig. 3—is the same as Fig. 2 showing the wrapper in position on the shell, with its ends passed through the slot into the gripping jaws which are locked in their closed position, also showing the tension cam acting on the covering to tighten it on

the roll. Fig. 4—shows a small section of the interior of the loose shell with the yoke attached thereto, in which yoke the wrapper tension cam is adapted to work. Fig. 5—is a central sectional view on line 5—5 of Fig. 2. Fig. 6—is a sectional view on a portion of the shell on line 6—6 of Fig. 2. Fig. 7—is a perspective view of the body, core, or inner portion of the roll. Fig. 8—is a perspective view showing one of the movable jaws mounted on said body portion and the forked end by which said jaw is operated by means of the rotatable cam.

In the practical operation of a roll of this character it is found advisable on account of the uneven wear on the material to divide said roll transversely forming two complete sections whereby two separate sheets of surfacing material may be attached and operated independent of each other, therefore in the construction of this roll the different parts are substantially duplicated. The body portion as a matter of convenience is also constructed in two parts, one part being hereinafter called the innerbody member and the opposite end the outer body member. Both members are provided with a central hollow trunnion 1 adapted to receive and rotate on its supporting shaft, (not shown). One end of the trunnion 1 on the inner member is reduced as at 2 for the reception of the driving gear 3. A pair of thin circular body flanges 4—4 are formed on each member, the same being located a short distance apart and supported from said trunnion. Between these flanges the trunnion is reduced, as at 5—5, for the purpose of receiving the movable jaws hereinafter described. The periphery of these flanges 4—4 are notched or cut away as at 6—6, and cross pieces 7—7 are set into these notches, said pieces extending longitudinally or on a slight angle to the axis of the roll to coincide with the angle of the slot through the shell. These pieces are attached to and supported by said flanges and serve to form one of the gripping jaws. The opposite movable jaw, which is formed by the longitudinal cross piece 10, corresponds in shape and form to the said opposite stationary jaw 7 on the body portion. This movable jaw is preferably corrugated on its gripping face or provided with a series of teeth 11 which are adapted to grip or pass through the ends of

the wrapper and enter corresponding holes 12—12 in the opposite fixed jaw. This movable jaw is preferably mounted on a split collar 8 which is adapted to be rotatably mounted on the trunnion 1, the parts of said collar being joined together by means of the bolts 9—9. This collar 8 is provided with outwardly extending arms 13—13 forming a yoke to engage the cam which operates its jaw.

The outer body member, or that portion nearest the end of the supporting shaft, is provided with a recess 14 for receiving the nuts and washers (not shown) which hold the roll onto said shaft. A cap 15 is also threaded into this recess for keeping out the dust and dirt. The jaw 10 on the outer member is an exact duplicate of that located on the inner member, both being held normally in their closed position by means of springs similar to that shown at 30 in Figs. 2 and 3.

A thin shell or piece of tubing 16—16 is adapted to fit over the circular body flanges of each of the duplicate body members to rotate freely thereon. This shell is provided with a slot 17 through it which is set on a slight angle to the axis of the roll and corresponds to the angle of the biting jaws within.

In order to control the movement of the movable jaw 10 toward and from the fixed jaw 7 and lock the same both in its open and closed position I have provided a short shaft 18 which extends through both of the flanges 19—19 on the outer member and also through one of the flanges 4 of the inner member. A cam 20 is fixed to this shaft 18, which cam is adapted to engage the aforesaid downwardly extending fingers 13—13 and so actuate the moving jaw by the rotation of said shaft 18 to open said jaw against the pull of the spring 20 and assist in closing and locking the same in its closed position, shown in Fig. 3. In order to actuate the jaw in the inner member a longer shaft 21 extends from the front of the roll back through both of the flanges in both of the body members, and on this shaft a cam 22 is located to operate its corresponding jaw, in the manner that the first jaw is operated by the cam 20, as explained above. Another feature in the passing of these two shafts through the flanges of both members is that said members by this method are locked together so that they will rotate in time with each other.

After the ends of the surfacing material have been gripped between the jaws, in the manner shown in Fig. 3, it is found advantageous to turn the shell on the body portion so as to cause a tension of the surfacing material on the roll. To accomplish this a yoke has been attached to the inner surface of the shell having inwardly projecting fingers 23, see Figs. 2, 3 and 4. A short shaft 24, provided with a cam 25, (see Fig. 5) is arranged to extend through the flanges in the body

members to engage said yoke whereby one of the shells may be forced around on its body member. A similar shaft 26, having a cam 27, is arranged to engage a corresponding yoke on the opposite shell whereby the same is also rotated in the manner above described. Springs, such as that illustrated at 31 in Figs. 2 and 3, are applied to each shell to assist in causing a tension on the two wrappers.

The operation of my invention may be more fully described as follows: Surfacing material 28, in the form of two narrow sheets, is wrapped around the shell periphery over a padding of felt, or other cushioning material 29. The ends of the wrapper are passed down through the slot 17 in the outer shell between the jaws 7 and 10 which have been previously opened into the position shown in Fig. 2, by means of turning the cam 20 to the left by a wrench on the end of shaft 18. After the ends of the material have been passed between the jaws the cam is turned back to the right and said jaws are closed and positively locked, its teeth piercing the papers and firmly gripping the ends. The next operation is to turn the cam 25 by means of its shaft 24 to the right so as to force the loose shell around on the body portion, into the position shown in Fig. 3, and so tighten the wrapper around the surface or shell of the roll, in which position it is held by the tension of the spring 30.

An essential feature of my invention is first, that the jaws are positively operated and locked both in their open and closed position by means of an externally operated cam.

Another feature of the invention is that the stretch or tension on the covering is also positively taken up by means of an independent cam operated from the outer end of the roll.

The device is of a practical construction, efficient in its operation and easy to manipulate.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell and means for rotating said shell on said body for the purpose of taking up the slack of said covering.

2. A surfacing roll comprising a body portion through which said roll is driven, a shell rotatably mounted on said body, a surfacing covering on said shell and a cam for rotating said shell on said body for the purpose of taking up the slack of said covering.

3. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell means for rotating said shell on

said body for the purpose of taking up the slack of the surfacing covering, and means for retaining the ends of said covering within said shell.

5 4. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body a surfacing covering on said shell, a cam for rotating said shell on said body for the purpose of taking up the
10 slack of said covering, and means for retaining the ends of said cover within said shell.

5. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body, a surfacing covering
15 on said shell means for rotating said shell on said body for the purpose of taking up the slack of said covering, a pair of jaws for retaining the ends of said covering within said shell, and means for operating one of
20 said jaws.

6. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell a cam for rotating said shell
25 on said body for the purpose of taking up the slack of said covering, a pair of jaws for retaining the ends of said covering within said shell, and means for operating one of said jaws.

30 7. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell a cam for rotating said shell on said body for the purpose of taking up the
35 slack of said covering, a pair of jaws for retaining the ends of said cover within said shell and a cam for operating one of said jaws.

8. A surfacing roll comprising a positively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell a cam for rotating said shell on said body for the purpose of taking up the
40 slack of said covering, a pair of covering retaining jaws within said shell, and external means by which one of said jaws is positively locked both in its open and in its closed
45 position.

9. A surfacing roll comprising a shell a
50 surfacing covering in said shell said shell being provided with a slot through which the ends of the covering may extend, a pair of

covering retaining jaws within said shell, external means by which one of said jaws is positively locked both in its open and in its
55 closed position and positively actuated means for causing a tension of said covering on said roll.

10. A surfacing roll comprising a positively driven body portion, a shell rotatably
60 mounted on said body, a surfacing covering on said shell externally operated means by which said shell is positively moved on said body for the purpose of taking up the slack of said covering, a pair of covering retaining
65 jaws within said shell, and an externally operated means by which one of said jaws is positively locked both in its open and in its closed position.

11. A surfacing roll comprising a posi-
70 tively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell a rotatable shaft mounted in said body and extending out through the end thereof, a cam on said shaft by which
75 said shell is positively moved on said body for the purpose of taking up the slack of said covering, a pair of covering retaining jaws within said shell, and a cam externally operated by which one of said jaws is posi-
80 tively locked both in its open and in its closed position.

12. A surfacing roll comprising a posi-
85 tively driven body portion, a shell rotatably mounted on said body, a surfacing covering on said shell a rotatable shaft mounted in said body and extending out through the end thereof, a cam on said shaft by which said shell is positively moved on said body for the purpose of taking up the slack of
90 said covering, a pair of covering retaining jaws within said shell, a rotatable shaft mounted in said body and extending out through the end thereof, and a cam on said shaft by which one of said jaws is positively
95 locked both in its open and in its closed position.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED H. WHATLEY.

Witnesses:

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E. I. OGDEN.