

W. A. IRELAND.
ELECTRIC GRINDING MACHINE.
APPLICATION FILED DEC. 4, 1909.

968,768.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.

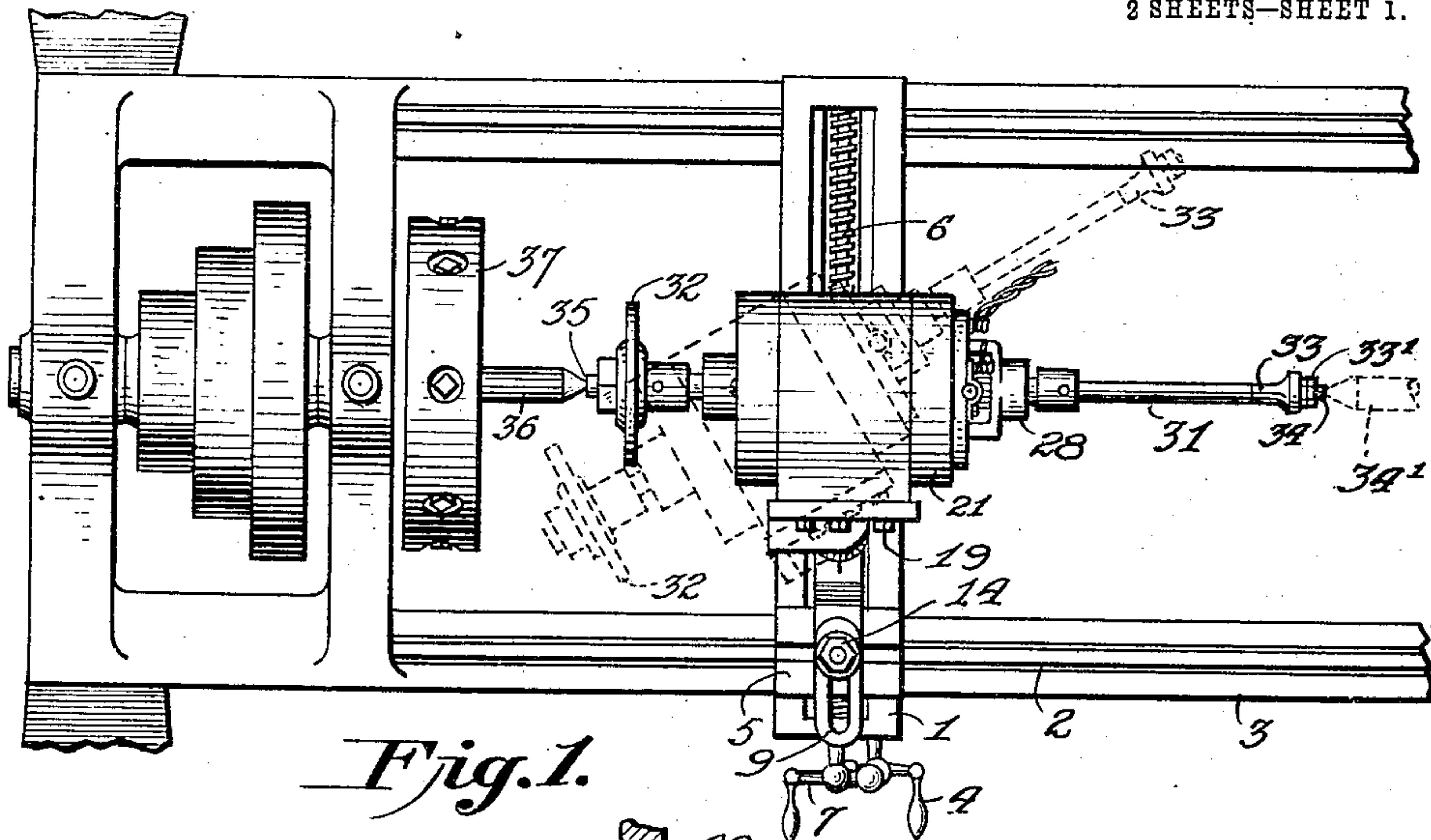


Fig. 1.

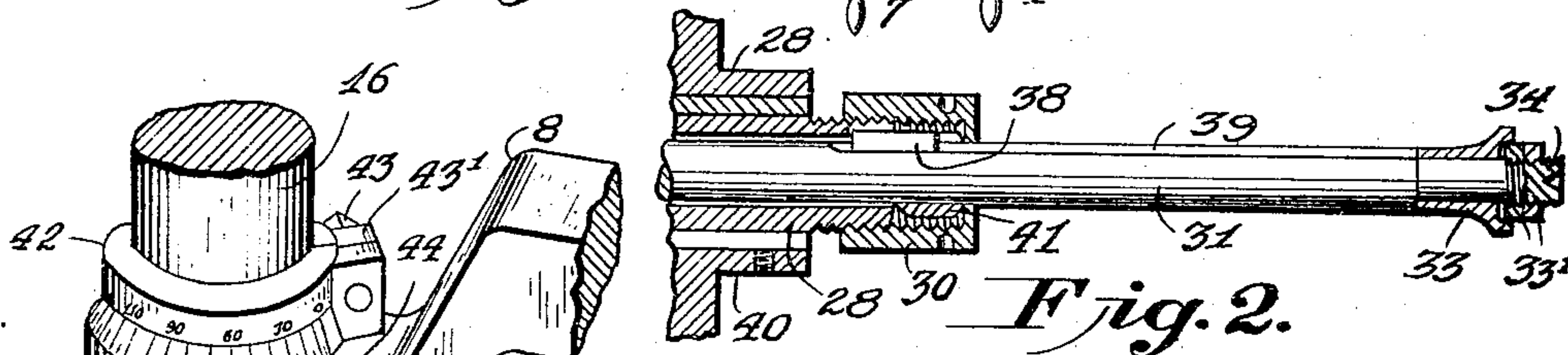


Fig. 2.

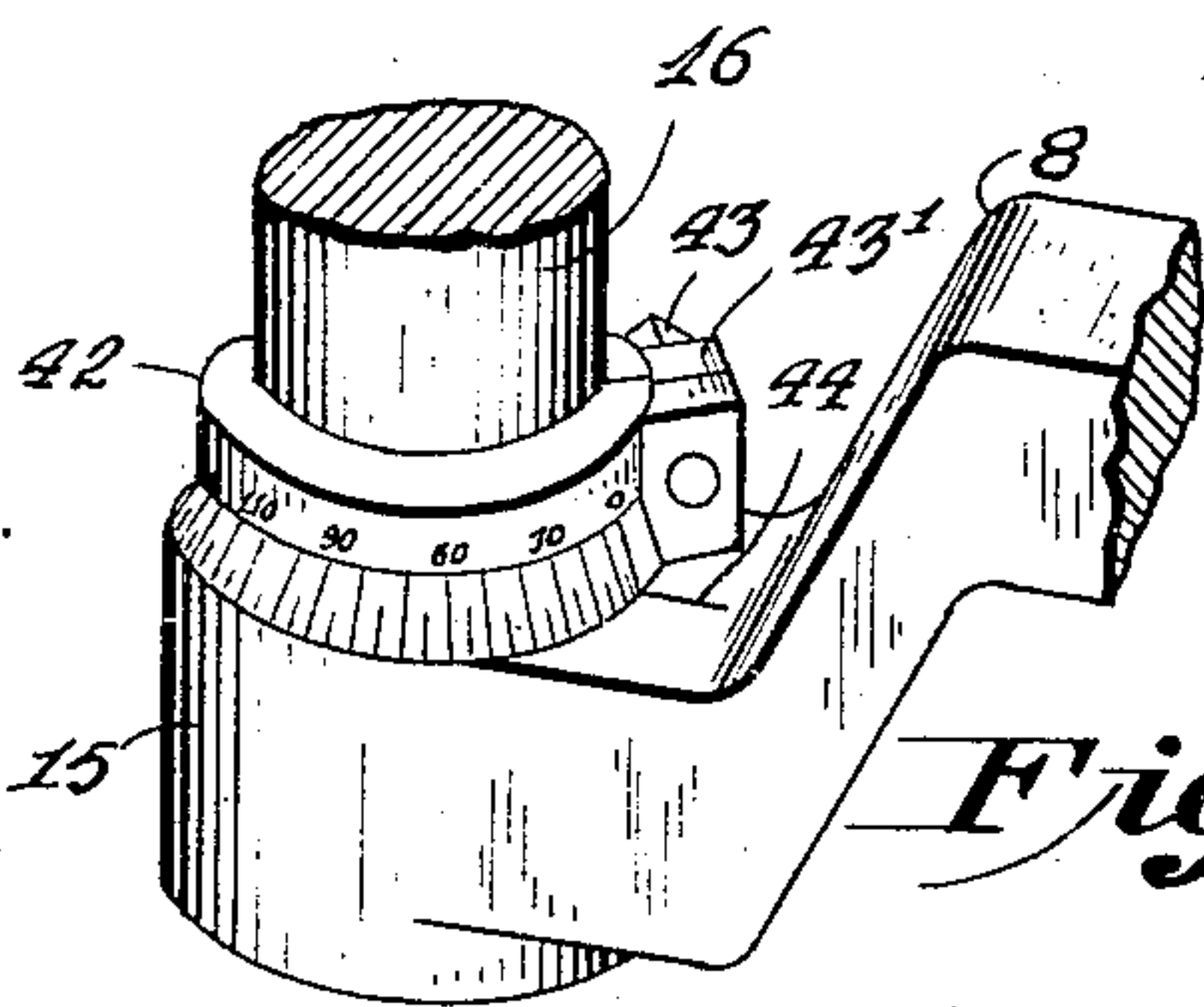


Fig. 3.

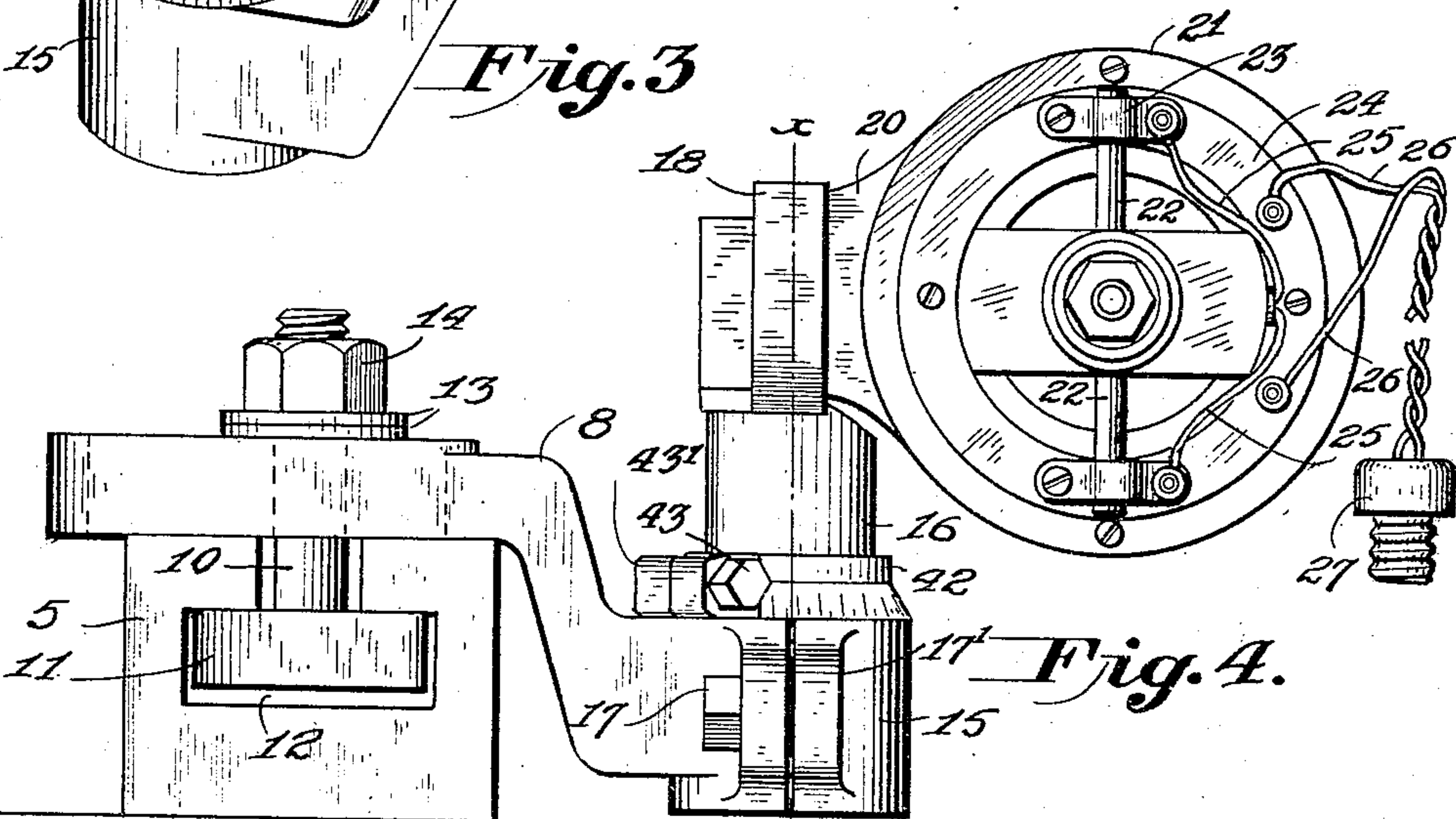


Fig. 4.

Witnesses

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2 SHEETS—SHEET 2.

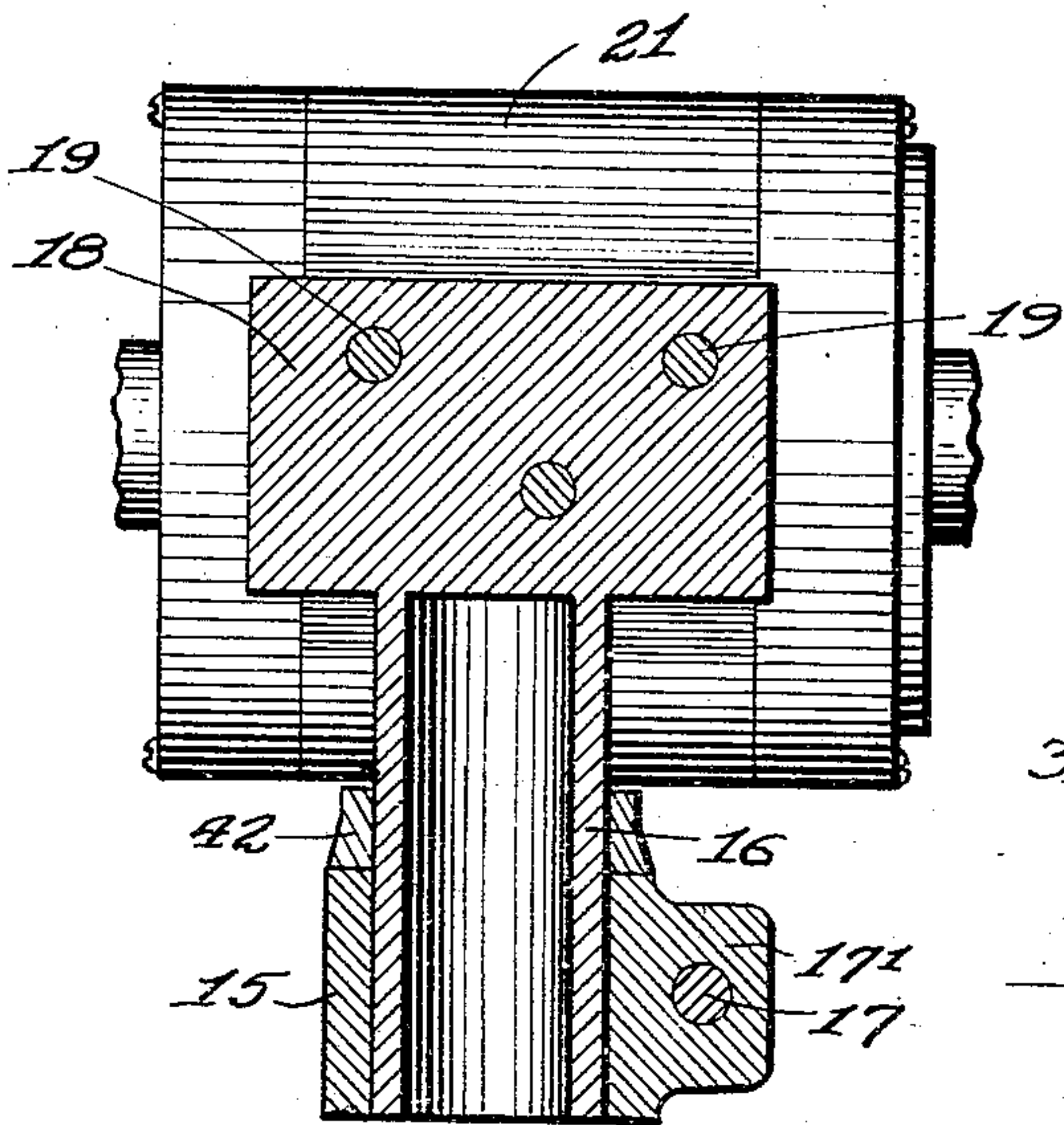
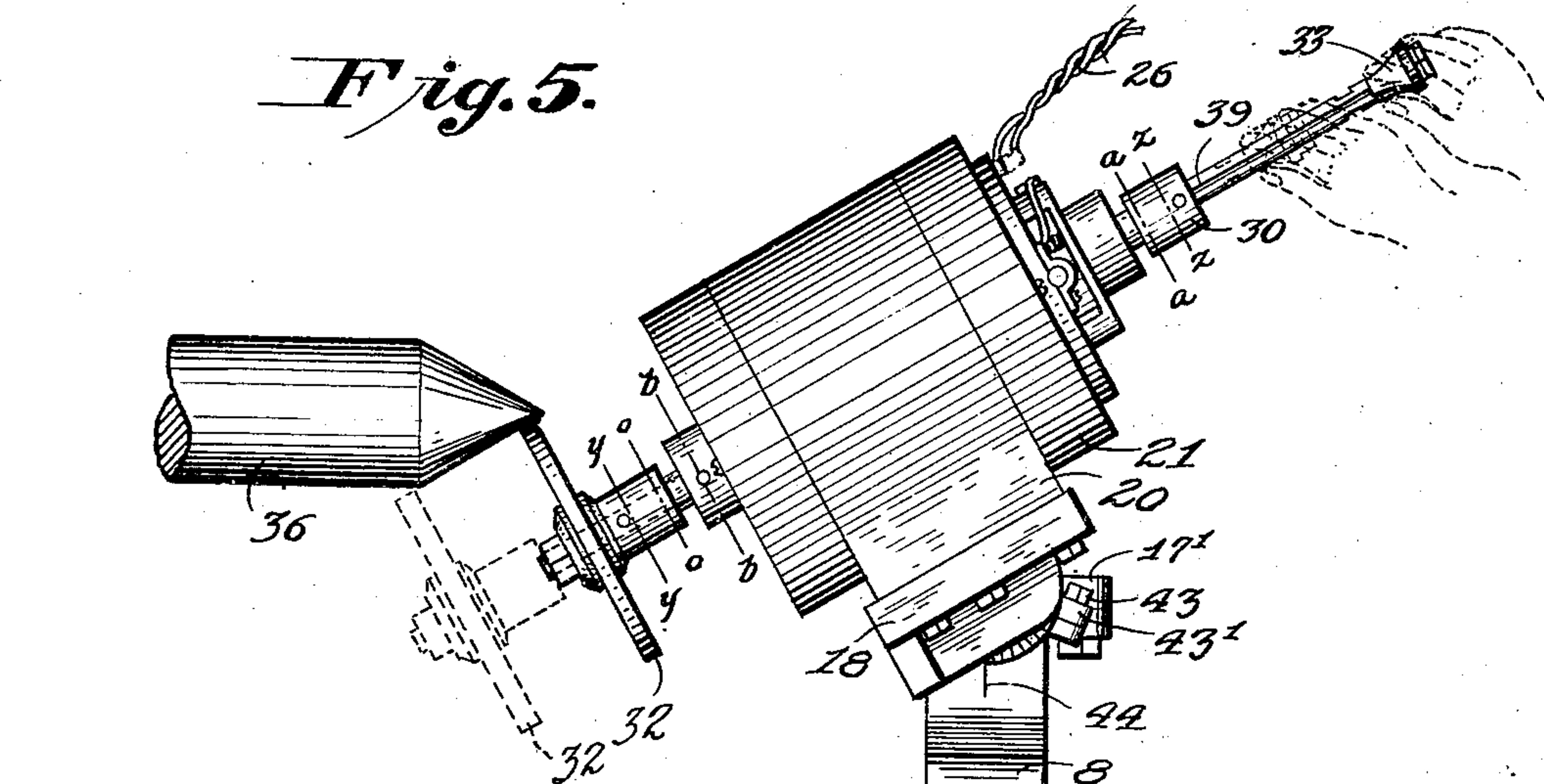


Fig. 6.

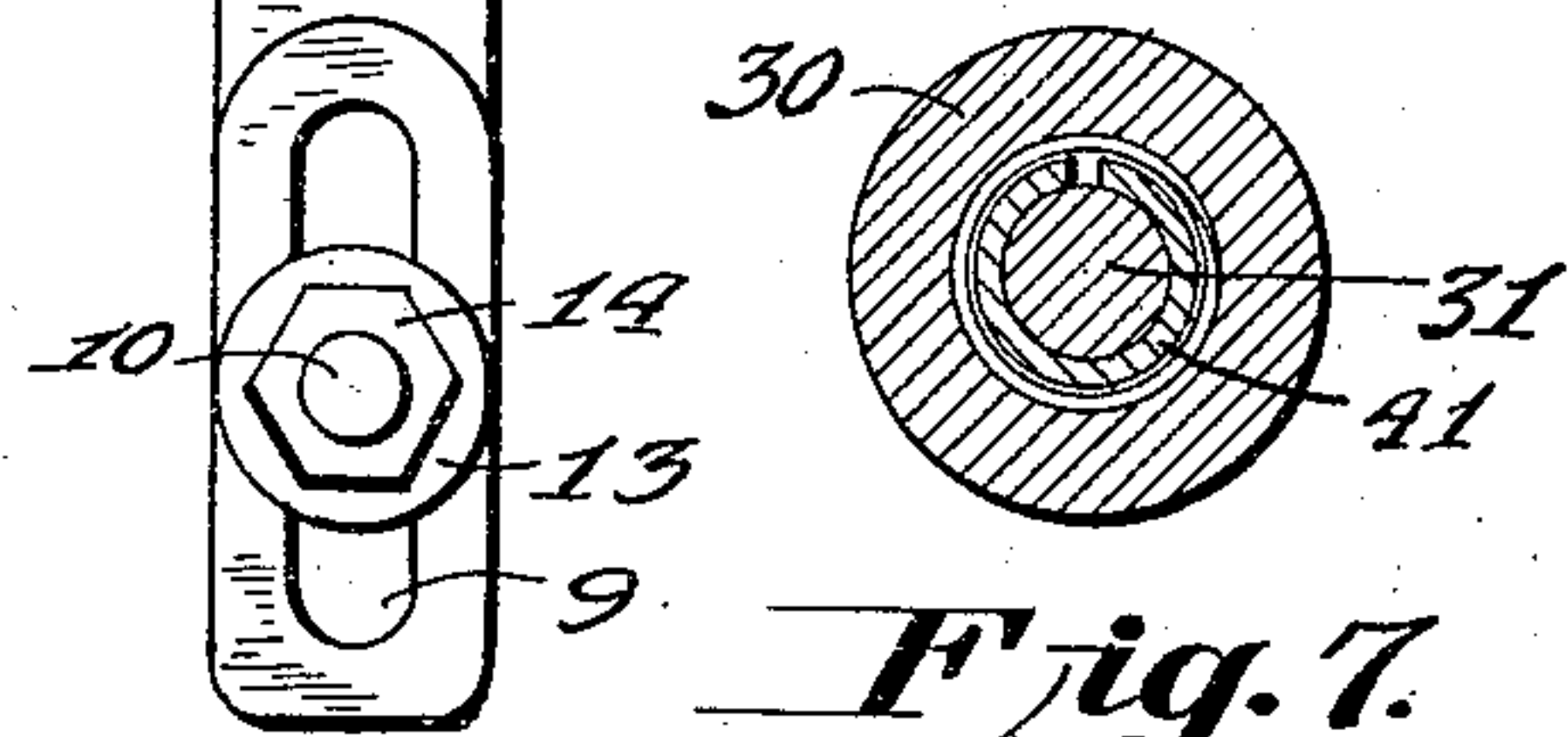


Fig. 7.

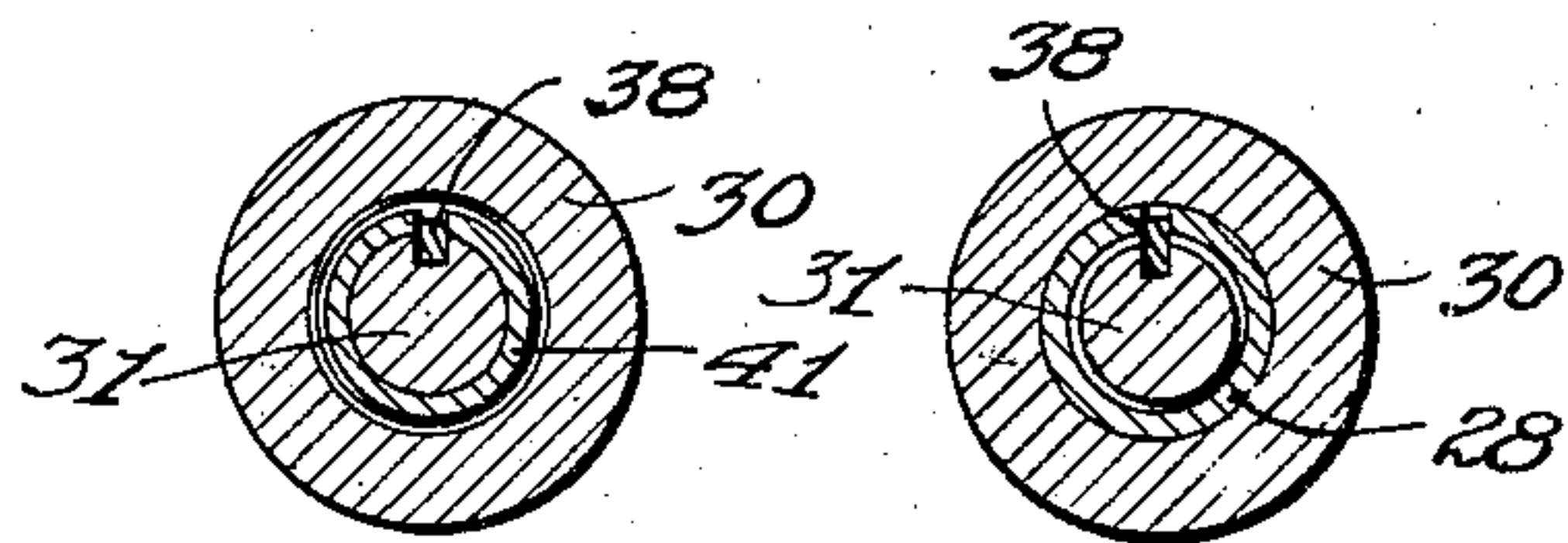


Fig. 8. Fig. 9.

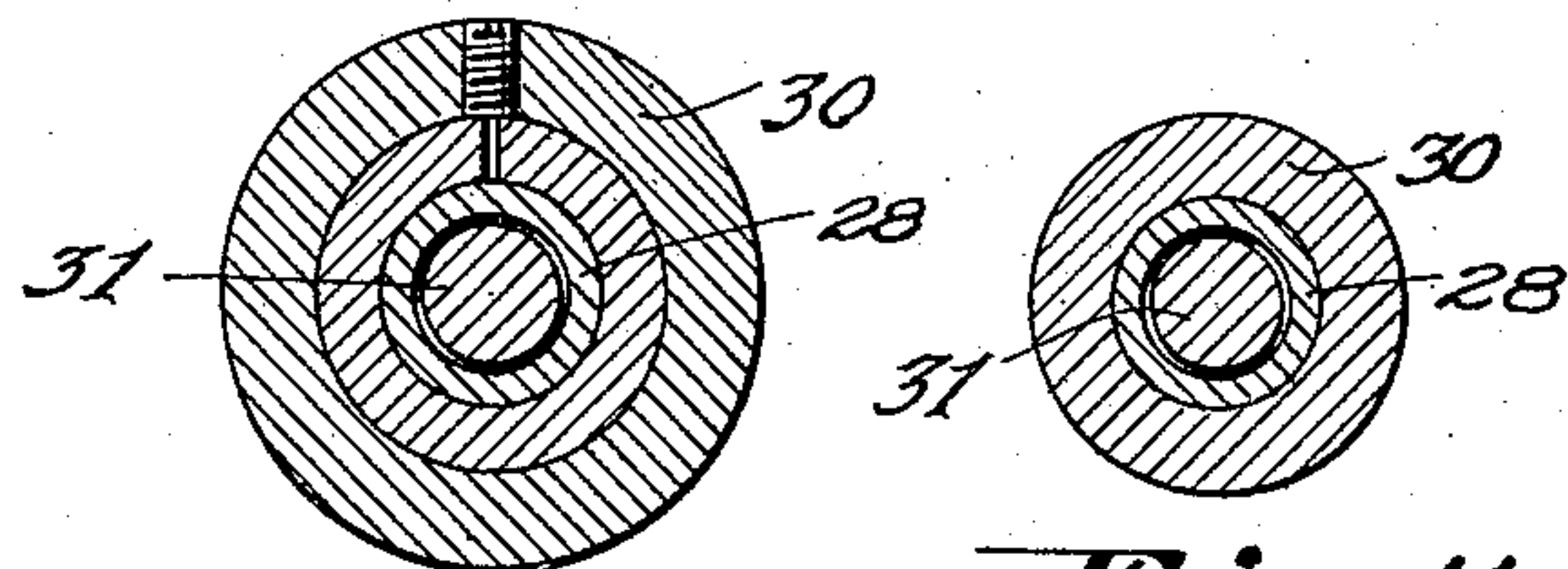


Fig. 10.

Fig. 11.

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Fig. 12.

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UNITED STATES PATENT OFFICE.

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ELECTRIC GRINDING-MACHINE.

968,768.

Specification of Letters Patent. Patented Aug. 30, 1910.

Application filed December 4, 1909. Serial No. 531,379.

To all whom it may concern:

Be it known that I, WILLIAM A. IRELAND, a citizen of the United States of America, residing at Newburgh, in the county of Orange and State of New York, have invented certain new and useful Improvements in Electric Grinding-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to electrically-operated grinding machines, and has special reference to machines of this class which are adapted to be employed for grinding lathe centers and other tools.

15 The invention has for its object to provide an improved electric grinding machine by means of which the proper grinding position of the grinding wheel may be accurately located.

20 Referring to the accompanying drawings, Figure 1 is a plan view of a lathe showing an electric grinding tool constructed in accordance with this invention mounted thereon. Fig. 2 is an enlarged detail view showing a portion of the spindle of the grinding wheel and a portion of a motor, and a portion of a tubular shaft and nut through which said spindle projects. Fig. 3 is an enlarged detail view in perspective of a portion of the adjustable bracket of the motor and a gage sleeve for determining the adjusted position of the motor. Fig. 4 is an enlarged end view of the motor with its supporting adjustable bracket. Fig. 5 is an enlarged detail view of the motor and a portion of a lathe center to which the grinding wheel is applied, showing the manual adjustment of the wheel to the center in full and dotted lines. Fig. 6 is an enlarged detail view of a portion of the motor supporting bracket shown on the line $x-x$, Fig. 4. Fig. 7 is a detail view in transverse section on the line $y-y$, Fig. 5. Fig. 8 is a detail view in perspective on the line $z-z$, Fig. 5. Fig. 9 is a detail view in cross section on the line $a-a$, Fig. 5. Fig. 10 is an enlarged detail view in cross section on the line $b-b$, Fig. 5. Fig. 11 is a detail view in cross section on the line $o-o$, Fig. 5. Fig. 12 is a detail view in perspective of a split bushing employed in connection with the spindle of the emery wheel.

55 In carrying out the invention as shown in Fig. 1 the usual form of traveling carriage 1 adapted to travel lengthwise of the lathe frame on tracks 2 of the rails 3 of the lathe

frame and movable by means of the usual form of mechanism operated by a handle 4. Upon the traveling carriage 1 is mounted a block 5 secured thereto so as to be movable thereon and adjusted thereon by means of a screw 6 engaging the same, and a handle 7 operating said screw.

The motor is mounted on an adjustable angular bracket arm 8 which is formed with an elongated slot 9 through which extends a bolt 10 having a cross head 11 located in the transverse elongated slot 12, said arm 8 being adapted to be clamped in adjusted position on the lock 5 by means of washers 13 and a nut 14 on the bolt 10. The lower end of the angular bracket arm 8 is formed with a clamping sleeve 15 which is clamped to a vertical post 16 by means of a nut 17 extending through wings 17' of said sleeve 15. The upper end of the post 16 is formed with an enlargement 18 which is secured by bolts 19 to a bracket arm 20 projecting from the side of the motor casing 21. The motor may be of any well-known form of structure being provided with the brushes 22 secured by the straps 23 to a ring 24 on the end of the motor casing. Conducting wires 25 connect said brushes with the motor and conducting wires 26 connect the motor with a suitable contact plug 27 which may be fastened to any suitable electric source of supply.

In order that the emery grinding wheel may be adjusted to different positions in relation to the tool upon which it operates and also in order that it may be moved into and out of adjusted position with said tool, the motor is provided with a tubular sleeve 28 extending through the commutator 28' of the motor and having threaded upon each end a steel nut 30 adapted to be operated by a spanner wrench. Extending through said tubular shaft 28 is a spindle 31 which is freely movable lengthwise through the shaft 28 and has mounted on one end an emery grinding wheel 32 and at its other end a sleeve 33 held in place by nuts 33', the ends of the spindle 31 being each provided with a tapering recess 34 and 35 adapted to receive the lathe centers 34' and 36, as shown by full and dotted lines in Fig. 1, the lathe center 36 projecting from a chuck 37 of the lathe.

110 In order that the spindle 31 may rotate with the tubular shaft 28, a key 38 is loosely mounted in a longitudinal slot 39 in the

spindle 31 and is adapted to engage the nut 29 in order to cause the spindle 31 to rotate with the tubular shaft 28. By means of the construction just described, the spindle 31 may be moved longitudinally through the tubular shaft 28 by hand and in adjusting the position of the emery wheel 32, said spindle may be adjusted longitudinally while the motor is in motion by means of the sleeve 33 being held by the hand, permitting the spindle 31 to rotate while it is moved longitudinally through the tubular shaft 28. In order to hold the spindle 31 away from the sides of the tubular shaft 28, a slit bushing 41 is mounted on the spindle 31 within the nut 29.

It will be seen that by means of the adjustable bracket support for the motor as hereinbefore described, the motor casing and motor may be adjusted to different angular positions. In order, for example, to adjust the motor first to the position shown in full lines in Fig. 1 for having the grinding shaft in proper alinement with the lathe centers, and then to the angular position shown in dotted lines in Fig. 1 and in full and dotted lines in Fig. 5, the motor casing is adjusted as follows: The angular arm 8 having been adjusted on the block 5 by means of the bolt 10, nut 14 and the cross head 11 of the bolt 10 in the slots 9 and 12 to bring the motor in position across the lathe frame, the sleeve 15 is loosened from the post 16 by loosening the nut 17 and the motor casing 21 is swung into proper position as shown in Fig. 1 by swinging it with the post 16 turning on the sleeve 15, and the sleeve 15 is then clamped to the post 16 by means of the nut 17.

In order to accurately determine and gage the position of the motor, a collar 42 is mounted on the post 16 and rests on the top of the sleeve 15, said collar being graduated from zero to the number of degrees desired and being clamped to the post 16 by means of a nut and bolt 43 engaging the wings or lips 43' on said collar. On the lower end of the angular arm 8 adjacent to the collar 42, there is formed a cut or line 44. The collar 42 is set upon the post 16 with the zero mark in alinement with the line 44, which indicates the normal position of the motor casing.

When it is desired to adjust the motor casing in the angular position shown in Figs. 1 and 5, the collar 42 is loosened. The collar 42 is then turned on the post 16 to bring the zero point to the line 44 when it is clamped to the post 16. The sleeve 15 is then loosened and the casing 21 is then swung to the angular position desired which is indicated by the number on collar 42 registering with line 44. It will be seen that by means of these adjustments, the motor may be first moved into the proper position to bring the shaft of the grinding tool in alinement with the lathe centers and then the motor casing and the grinding tool may be swung to the desired angular position, and by means of the gage the grinding wheel may be located at the proper angle with regard to the lathe center.

Referring to Fig. 5, one advantage of the invention will be apparent as shown in said figure, whereby the emery wheel may be manually applied and held in operative position while in motion so that all parts of the tool being sharpened may be readily and accurately reached. Another advantage of this feature of the invention is that in case the grinding wheel bears too hard against the tool being ground, it may be quickly and readily withdrawn from the tool.

What I claim is:—

In an electric grinding machine of the character described, a lathe frame, a traveling carriage movable lengthwise on said frame, a block movable lengthwise on said carriage, an arm adjustably clamped at one end to said block and having a split sleeve at its other end, and means for clamping said sleeve, a vertical post slidably mounted in said sleeve, an electric motor mounted on the upper end of said post, and a split graduated collar, means for clamping said collar a gage mark on said arm adjacent to said collar, and a spindle longitudinally movable through said motor, and rotatable therewith, having a grinding wheel on one end, and a hand sleeve on the other end.

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

WILLIAM A. IRELAND.

Witnesses:

WILLIAM E. FLANAGAN,
MAMIE E. DALE.