

L. S. PFOUTS.
HAND POWER DRILL.

APPLICATION FILED DEC. 16, 1905. RENEWED DEC. 4, 1908.

911,755.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

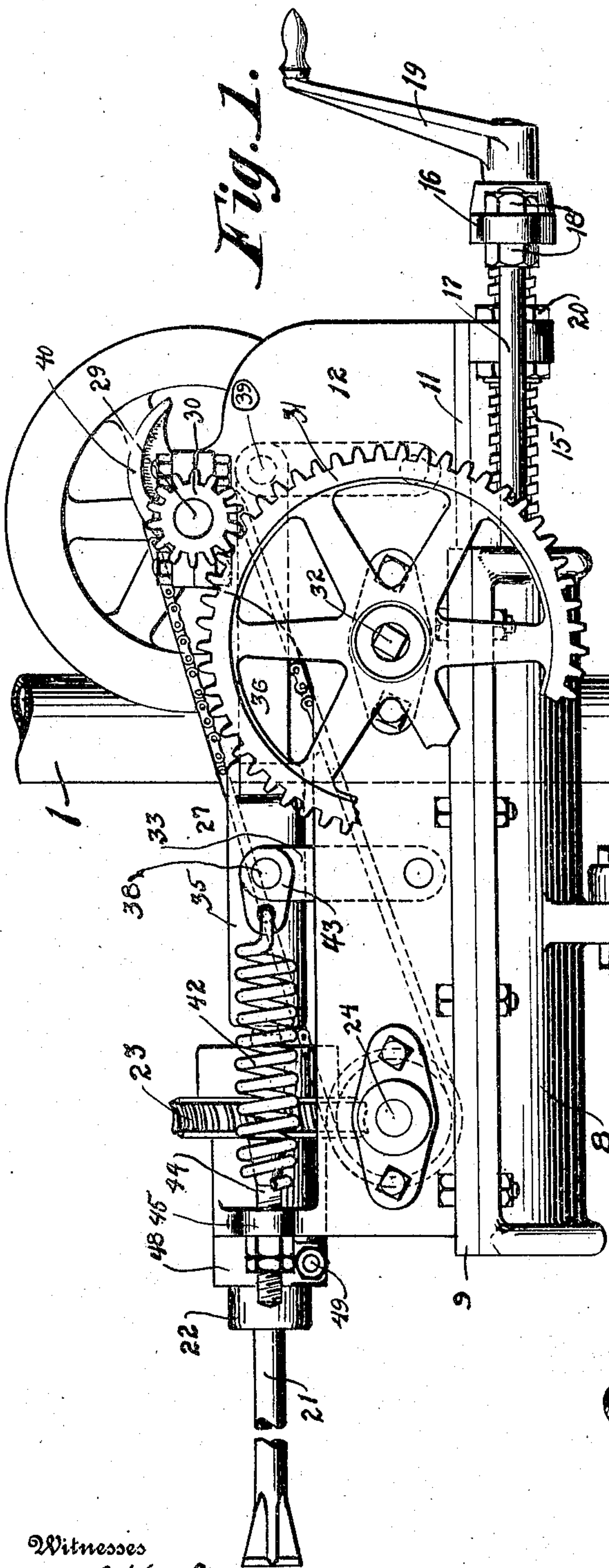


Fig. 1.

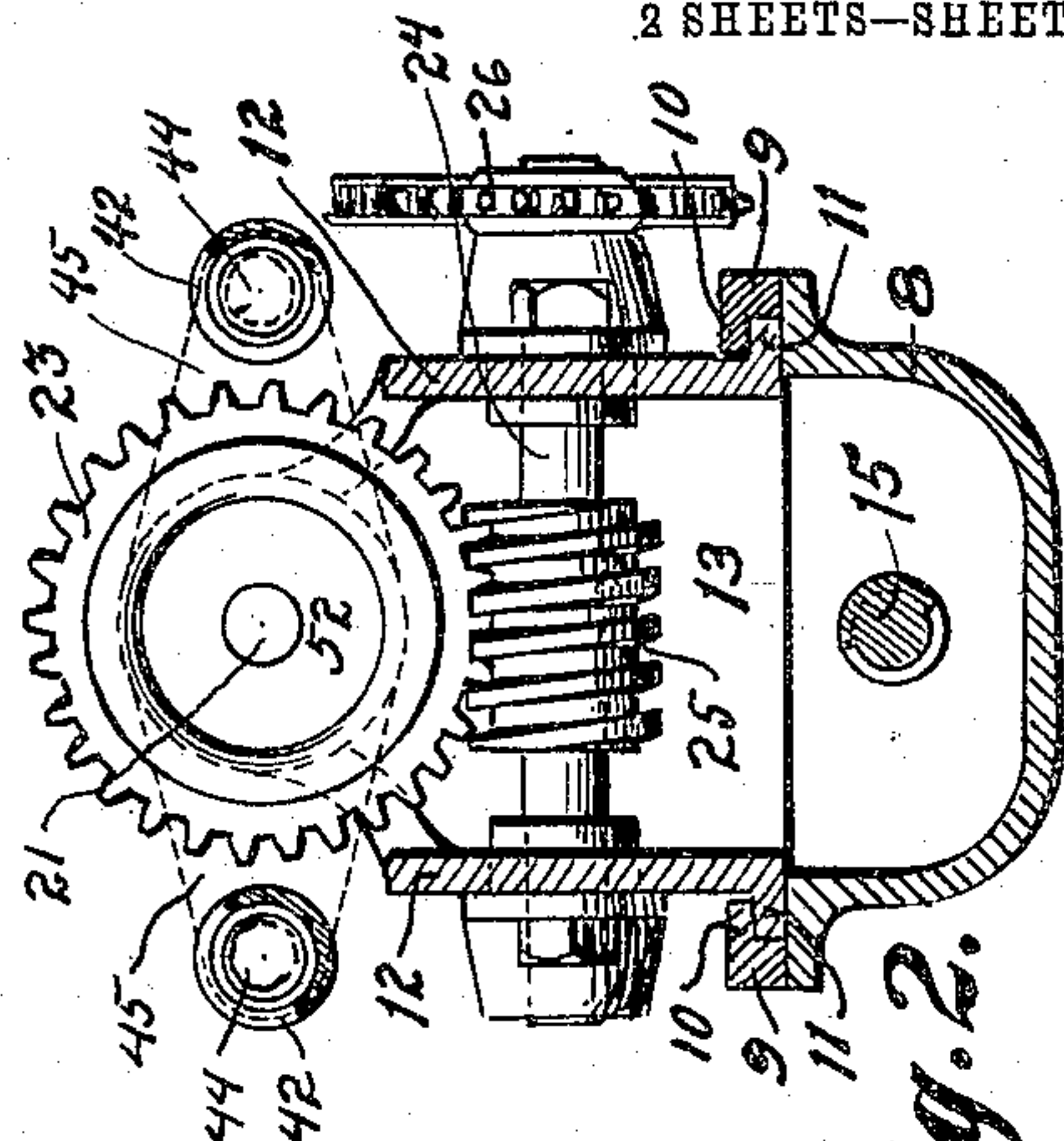


Fig. 2.

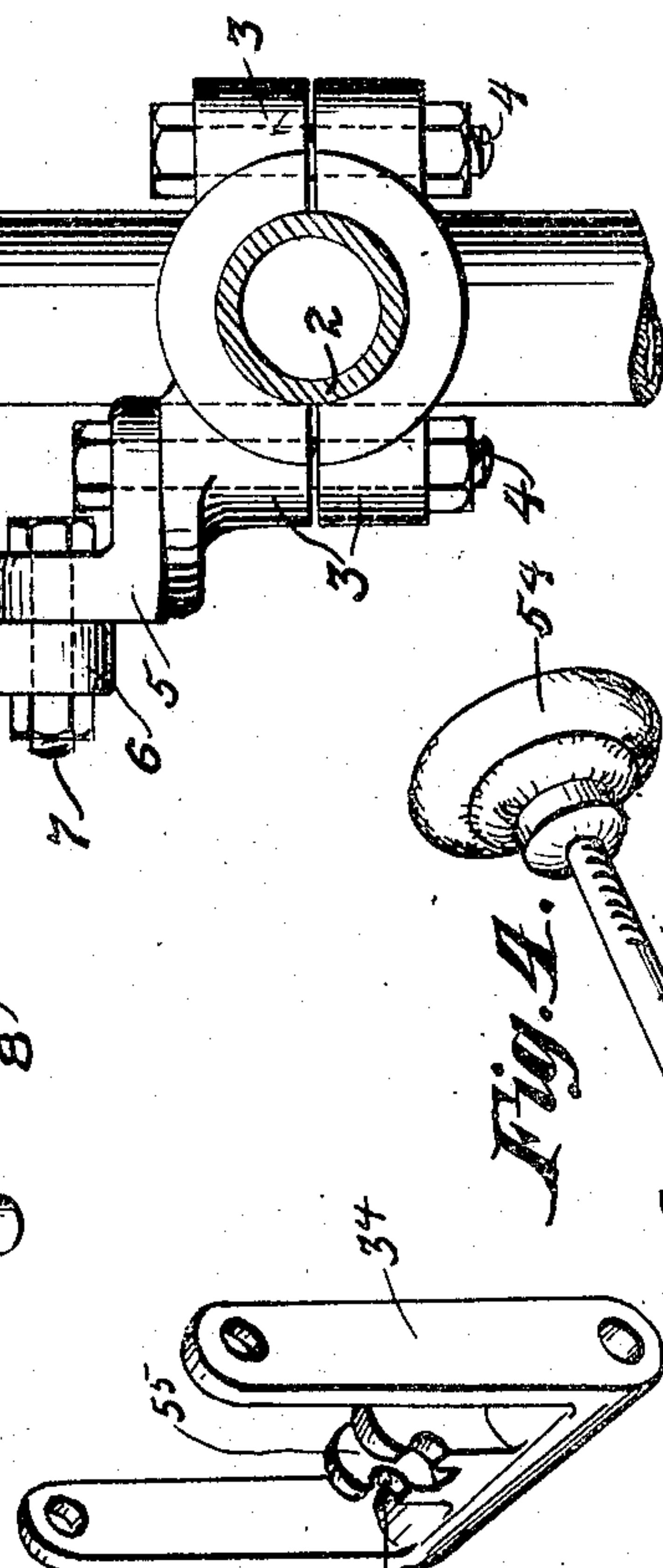


Fig. 3.



Fig. 4.

Witnesses
Joseph Kosler
Sylvia Boron,

Inventor
Leroy S. Pfouts

H. W. Bond

Attorney

L. S. PFOUTS.
HAND POWER DRILL.

APPLICATION FILED DEC. 16, 1905. RENEWED DEC. 4, 1908.

911,755.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 2.

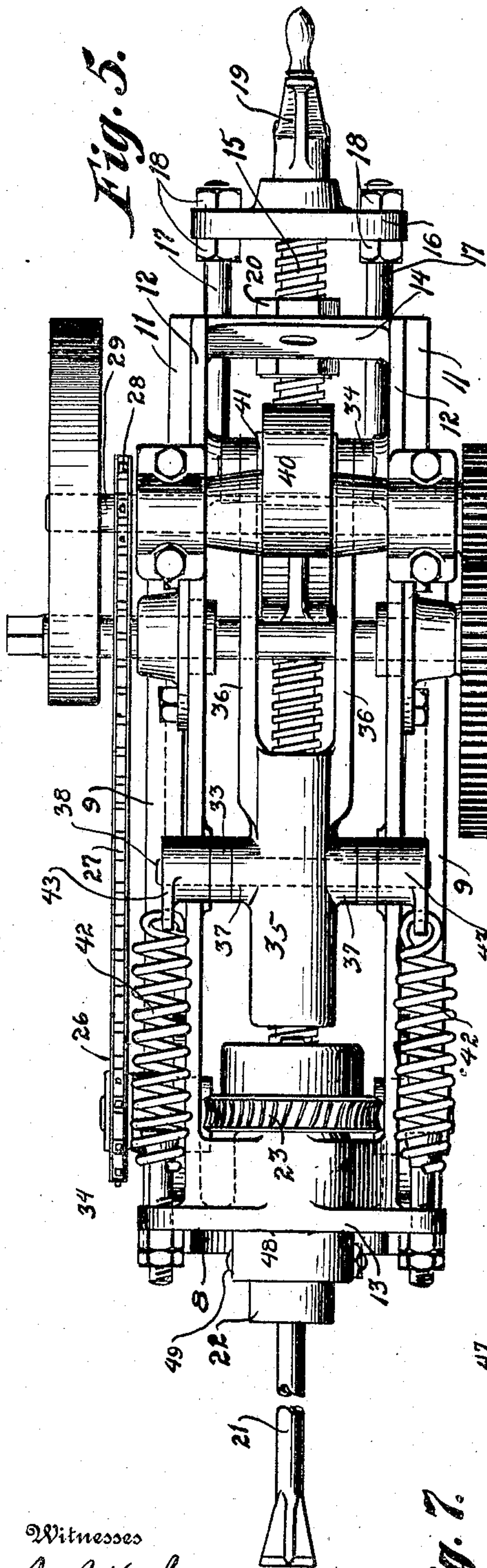


Fig. 5.

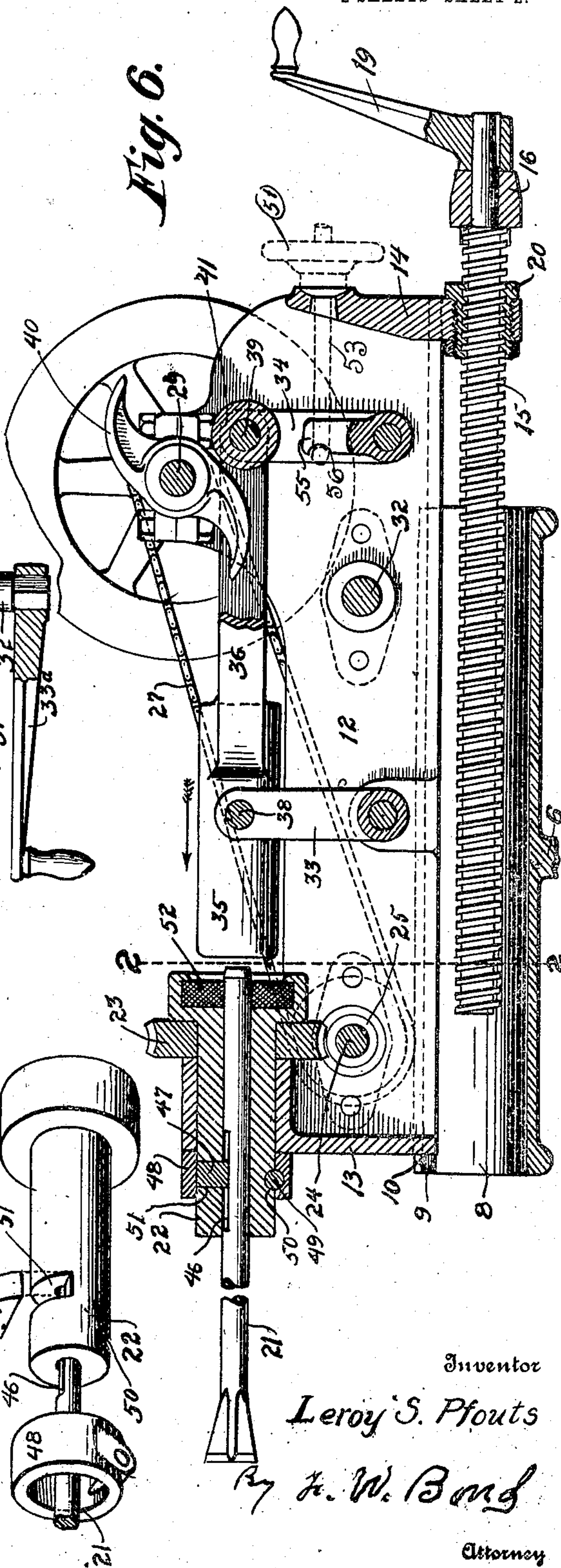
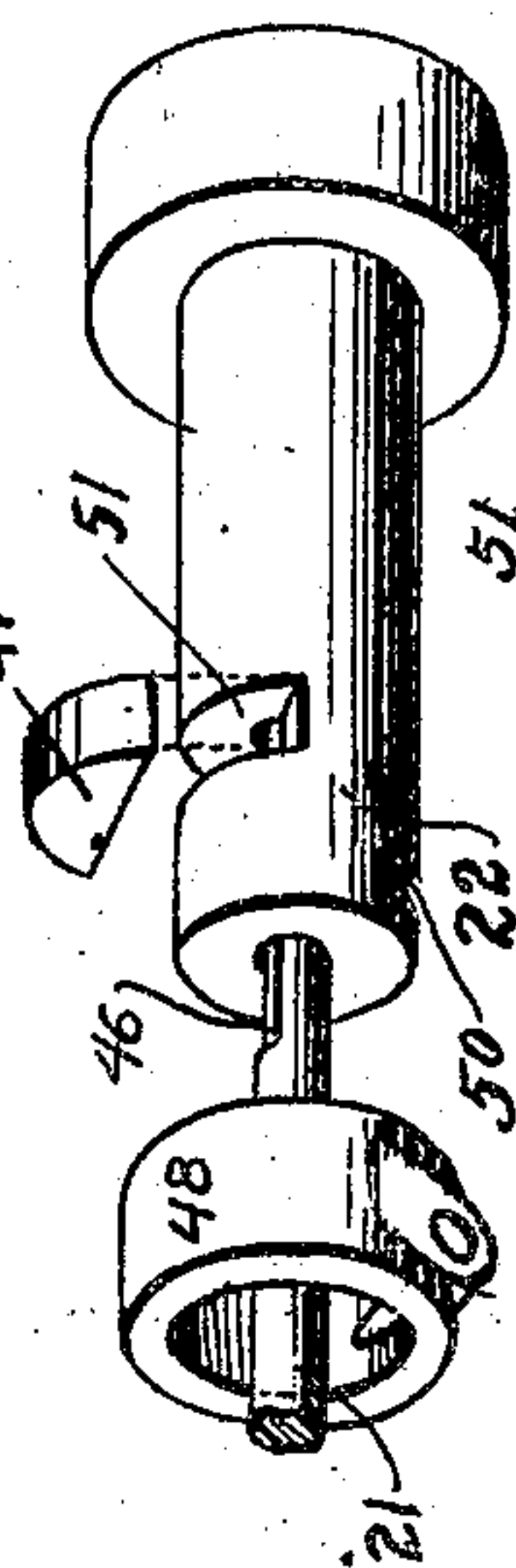


Fig. 6.

Witnesses
J. H. Hosler.
E. Sylvia Boron,

Fig. 7.



Inventor
Leroy S. Pfouts

By H. W. Bond

Attorney

UNITED STATES PATENT OFFICE.

LEROY S. PFOUTS, OF CANTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CYCLONE DRILL COMPANY, A CORPORATION OF OHIO.

HAND-POWER DRILL.

No. 911,755.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed December 16, 1905, Serial No. 292,037. Renewed December 4, 1908. Serial No. 465,980.

To all whom it may concern:

Be it known that I, LEROY S. PFOUTS, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Hand-Power Drills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, and to the numerals of reference marked thereon, in which—

Figure 1 is a side elevation showing the drill properly attached to a post or standard. Fig. 2 is a section on line 2—2, Fig. 6. Fig. 3 is a detached view of the rear vibrating drill carriage, carrying arm. Fig. 4 is a detached view of the T rod and its head designed to hold the drill carriage out of reciprocating action. Fig. 5 is a plan view of the drill and its different parts properly assembled. Fig. 6 is a longitudinal vertical section. Fig. 7 is a detached view of the drill socket and its parts.

The present invention has relation to hand power drill, and it consists in the novel arrangement hereinafter described and particularly pointed out in the claims.

Similar numerals of reference indicate corresponding parts in all the figures of the drawing.

In the accompanying drawing, 1 represents the standard, which is designed to support the drill at the required height and of course is of the usual construction and forms no part of the present invention, except that a standard or support of some kind must be employed. The standard is provided with the right angled flange or bearing 2, shown in cross section Fig. 1, to which flange or extension the divided head 3 is attached and clamped by means of the bolts 4. To the upper member of the divided head 3 is pivotally attached the angled flange 5 to which angled flange is attached the drill frame connecting flange 6 by means of the clamping bolt 7. The construction just above described is all common in drills of this class and is illustrated and described simply to better show a complete operating device within itself.

The base or drill mechanism supporting base 8 is formed of a size to properly support and carry the various devices designed to be connected and carried and may be of the

form shown in the drawings. To the base or support are attached or formed integral therewith the guide plates 9, which guide plates are formed of a length to correspond substantially with the length of the base. The guide plates 9 are provided with the flanges 10, which flanges are for the purpose of producing grooves, and in which grooves are located the flanges 11, which flanges are formed of a size to correspond substantially with the size of the grooves produced or formed by the flanges 10. The flanges 11 are extended from the bottom or lower ends or edges of the spaced vertical plates 12, which spaced vertical plates are held in proper spaced relation with reference to each other at their ends by means of the cross heads 13 and 14, which cross heads are preferably formed integral with the spaced vertical plates 12.

For the purpose of providing a means for moving the spaced vertical plates 12 back and forth upon the base or support 8 the screw threaded shaft 15 is provided, which screw threaded shaft is journaled in the bar 16, which bar is held in fixed relative position with reference to the base or support 8 by means of the rearward extending rods 17 and the nuts 18. To the screw threaded shaft 15 is attached in the ordinary manner the crank 19. The screw threaded shaft 15 is located through the nut 20, which nut is connected to the rear cross head 14 as best illustrated in Fig. 6. It will be understood that by rotating the screw threaded shaft 15 in one direction the vertical plates 12 together with the different parts connected thereto, and carried thereby, will be moved forward, and by rotating said screw threaded shaft 15 in the opposite direction said parts will be carried rearward, thereby providing a means for feeding the drill 21 forward during its operation and withdrawing the drill for any purpose.

The drill 21 is slidably connected to the rotatable head 22, which rotatable head is journaled in the upper portion of the cross head 13; as best illustrated in Fig. 6. For the purpose of imparting a rotary movement to the head 22, said head is provided with the worm gear wheel 23, which gear wheel is fixed to the head 22 in any convenient and well known manner. The shaft 24 is provided with the worm 25, which worm meshes with the worm gear wheel 23 as illus-

trated in Fig. 2. Upon the shaft 24 is mounted the sprocket wheel 26, which sprocket wheel together with its shaft and worm is rotated by means of the drive chain 5 27, which drive chain extends around the sprocket wheel 28, which sprocket wheel is mounted upon the shaft 29, said shaft 29 being driven by means of the pinion 30, which pinion meshes with the gear wheel 31, 10 said gear wheel being securely mounted in any convenient and well known manner upon the power shaft 32, said power shaft being journaled in the spaced vertical plates 12. It will be understood that the power shaft 32 15 is to be provided with the crank 33^a, which crank is removably attached, so that it can be attached at either end of the power shaft 32.

It is well understood that in operating 20 drills of this class and kind it is necessary to provide means for connecting the crank upon both sides of the drill proper, and in order to provide for this shifting of the crank both ends of the power shaft are so formed 25 that the crank can be attached at either end. To the spaced vertical plates 12 are pivotally attached the vibrating brackets 33 and 34, which vibrating brackets carry the hammer head 35 together with the different parts per- 30 taining to said hammer head. The hammer head 35 is provided with the rearward extended forked portion 36, and the hammer head 35 is provided with the lateral lugs or flanges 37 and the vibrating brackets 33 and 35 34 are pivotally attached to the hammer head at their upper or free ends by means of the bolts 38 and 39. Upon the shaft 29 is mounted the double tappet cam 40, which 40 rotates the cam will come in contact with the anti-friction roller 41, which anti-friction roller is located upon the bolt 39, and by the rotation of the cam 40 the bracket 34 will be carried rearward, which movement carries 45 the hammer head 35 backward and away from the rotating drill head 22 and the rear end of the drill 21. For the purpose of imparting a quick forward movement of the hammer head 35, after the vibrating bracket 50 34 has been carried rearward by the cam 40 a distance sufficient to release the contact between the anti-friction roller 41 and the cam 40 the springs 42 are provided, which springs are attached at their ends to the 55 flanged heads 43 on the bolts 38 and the conical headed bolts 44, which conical headed bolts are attached to the cross bar 45 as best illustrated in Fig. 5. It will be understood that by the rotary movement of 60 the shaft 29 a reciprocating movement will be imparted to the hammer head 35, and owing to the action of the springs 42 a quick blow will be given to the drill 21.

For the purpose of providing a means for 65 rotating the drill 21 with the rotation of the

head 22, said drill is provided with the flat faced portion 46, against which flat faced portion is seated the flat faced or edged block 47, which block is held in fixed position with reference to the head 22 by means 70 of the band 48 and for the purpose of holding said band the cross pin 49 is provided, which cross pin is located in the semi-circular grooves 50 formed in the head 22 and the band 48 respectively, said pin being located 75 as illustrated in Fig. 6, and the block 47 seated in the recess 51.

For the purpose of allowing a reciprocating movement of the drill 21 the flat faced portion 46 is formed of a length greater than 80 the width of the block 47 thereby permitting the drill 21 to rebound or move backward after a blow has been delivered upon the rear end of the drill 21 or its shank, thereby bringing the rear end of said shank beyond 85 the rear end of the rotating head 22 so that the blow of the hammer head 35 can be given direct upon the rear end of the drill 21.

For the purpose of cushioning the blow of the hammer head 35 as between said hammer 90 head and the head 22 the rear end of the head 22 is recessed and in the recess is located the rubber or other elastic block or head 52.

By the device above described and in which 95 arrangement it will be understood that when rotary motion is imparted to the power shaft 32 a rotary motion will be imparted to the drill 21 and a series of blows or hammer strokes given to the rear end of the drill, 100 thereby providing means for imparting a succession of blows or strokes upon the material being operated upon, and as the drill advances to feed forward by means of the screw threaded shaft 15. 105

It is well understood that in drilling certain kinds of material it is not necessary to impart blows upon the material being drilled, and a continuous rotary movement of the drill is all that is necessary. When it 110 is desired to operate the drill without imparting blows the hammer head together with its different parts is brought out of action by means of the T headed rod 53, which T headed rod is located substantially 115 as shown in Fig. 6, and upon which rod is mounted the knob or head 54, which knob or head is provided with a screw threaded aperture and is located upon the screw threaded portion of the T headed rod 53. The oscil- 120 lating bracket 34 is provided with the recessed flange 55, which recessed flange is so formed that the open recesses 56 will receive the T head 57, and by rotating the knob or head 54 in one direction the bracket 34 will 125 be moved rearward, which movement brings the anti-friction roller 41 out of engagement with the cam 40, thereby allowing said cam to rotate without imparting any action to the vibrating bracket or the parts connected 130

thereto. When it is desired to bring all of the parts into action by which a rotary and striking blows are imparted or given to the drill the T head bar 53 is, or should be entirely removed.

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

1. In a drill of the class described, a base, slidable plates located thereon, vibrating brackets carried by the sliding plates, a hammer head provided with a forked rear portion and the forked rear portion and hammer head carried by the vibrating brackets and one of the brackets provided with an anti-friction roller, a cam adapted to actuate one of the vibrating brackets by the anti-friction roller, means for holding the actuated bracket and its anti-friction roller out of contact with the cam, a drill head and a drill carried thereby, and means for rotating the drill head and drill, substantially as and for the purpose specified.

2. In a drill of the class described, a base supported in proper elevation, slidable members carried thereby, a drill head bearing carried by said sliding plates and a drill head located therein, and a drill carried by the head, the drill head provided with a worm gear wheel, a worm adapted to actuate the worm gear wheel and drill head, a reciprocating hammer head means for reciprocating the hammer head, and means for holding the hammer head out of action and means for rotating the drill head and drill independent of the reciprocating movement of the hammer head, substantially as and for the purpose specified.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

LEROY S. PFOUTS.

Witnesses:

J. A. JEFFERS,
F. W. BOND.