

No. 734,051.

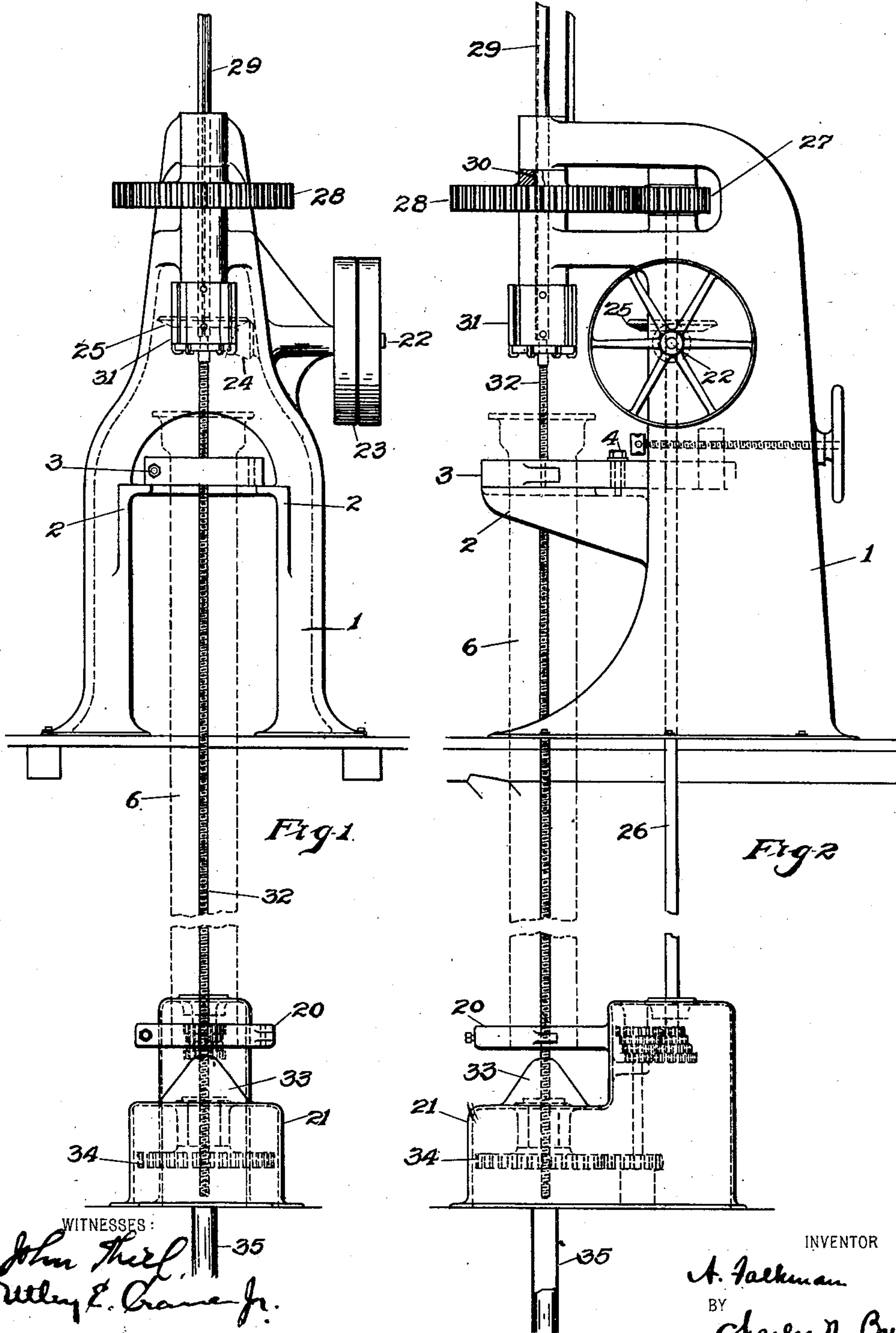
PATENTED JULY 21, 1903.

A. FALKENAU.
BORING MACHINE.

APPLICATION FILED NOV. 13, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

John Thiel
Wiley E. Crane Jr.

INVENTOR

A. Falkenau
BY
Charles N. Butler
ATTORNEY.

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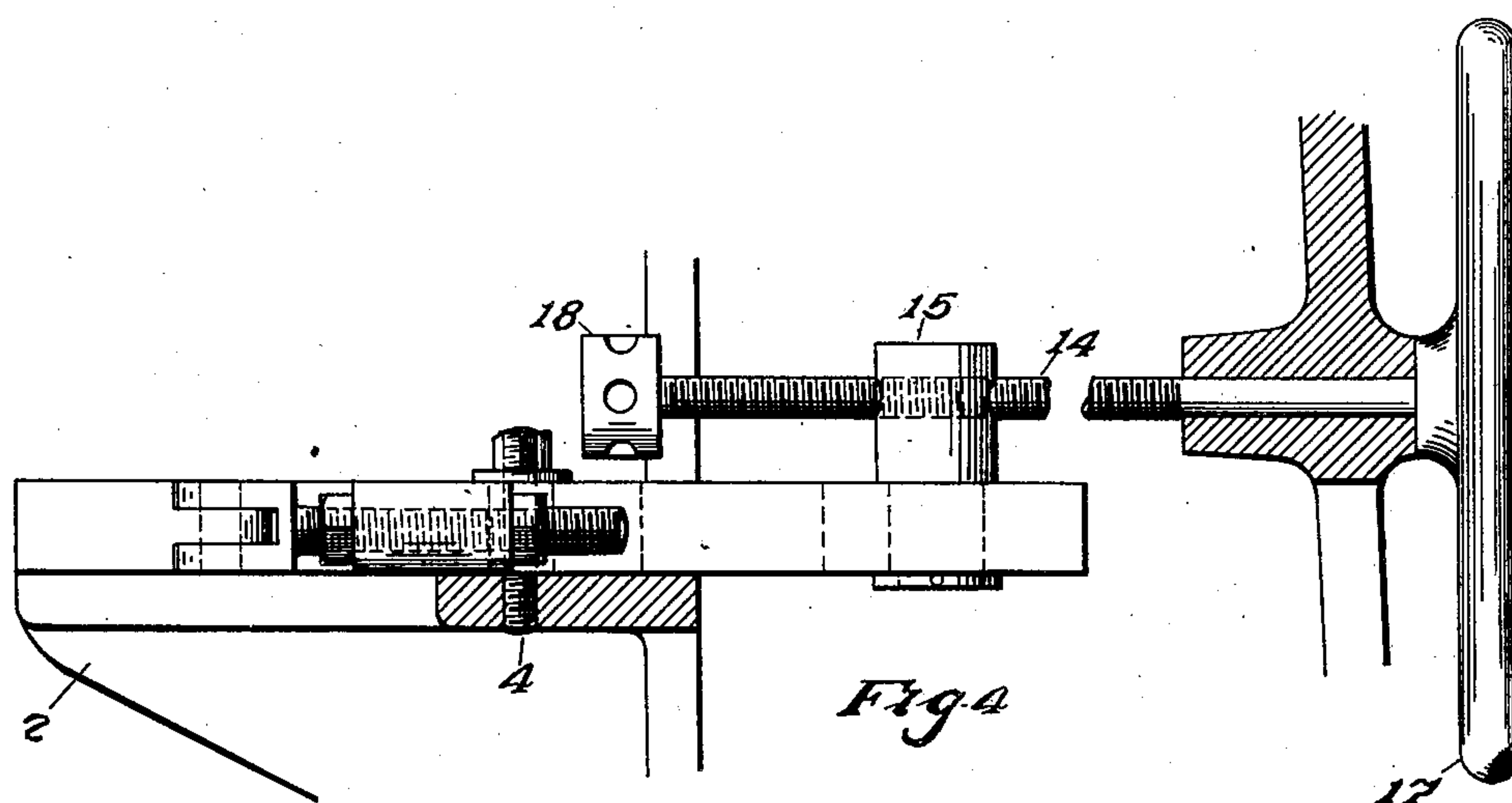
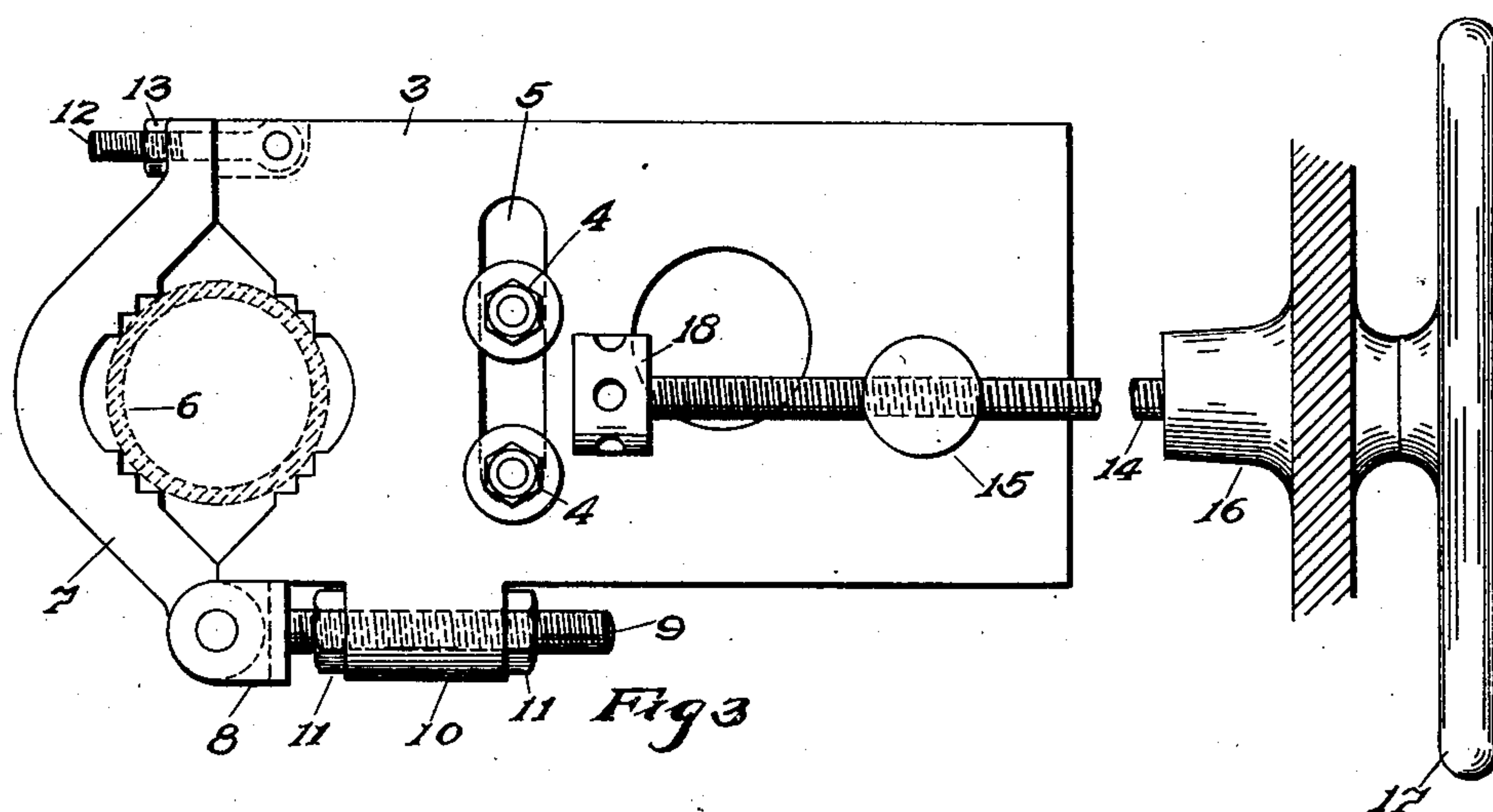
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3 SHEETS—SHEET 2.



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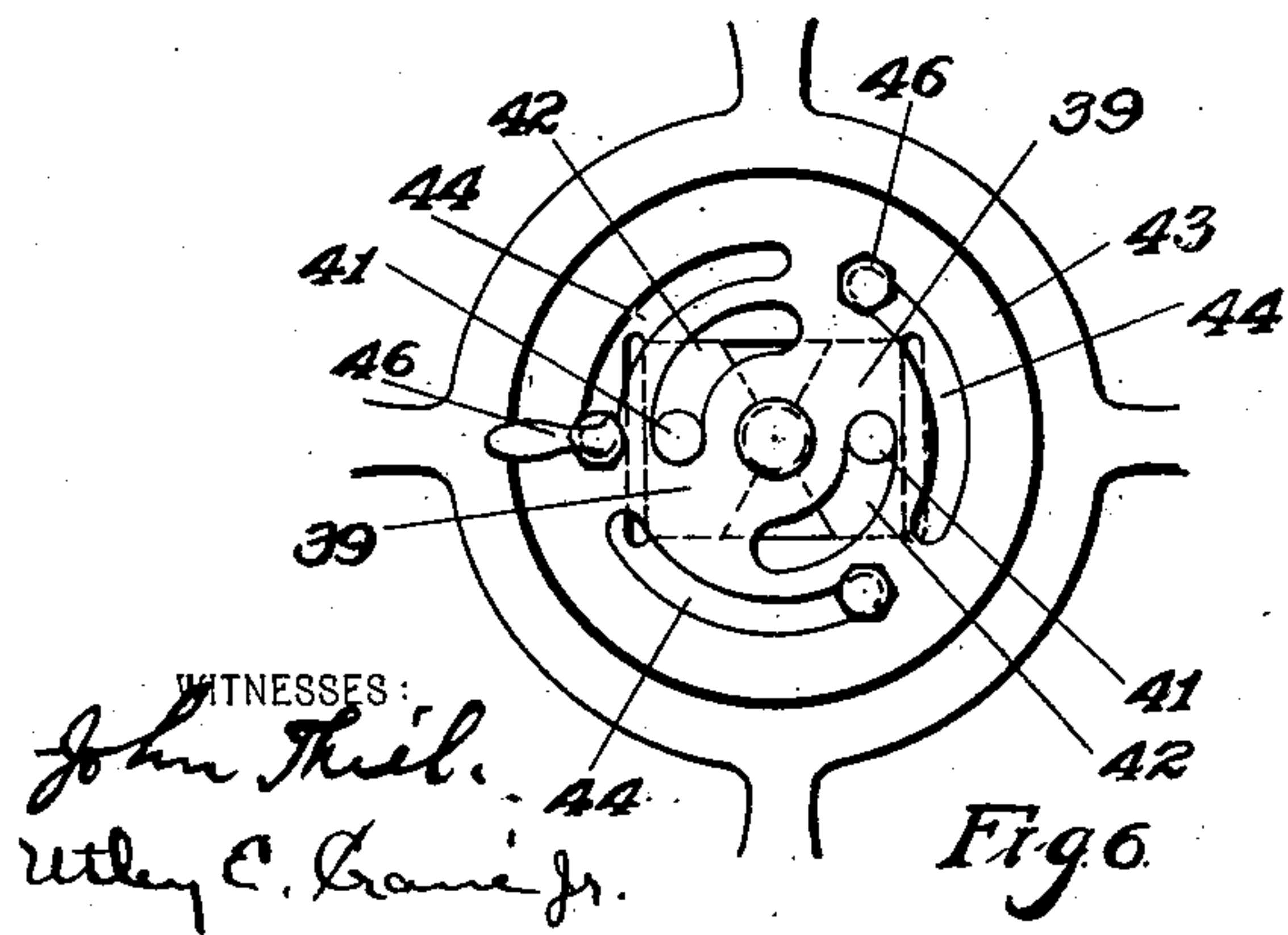
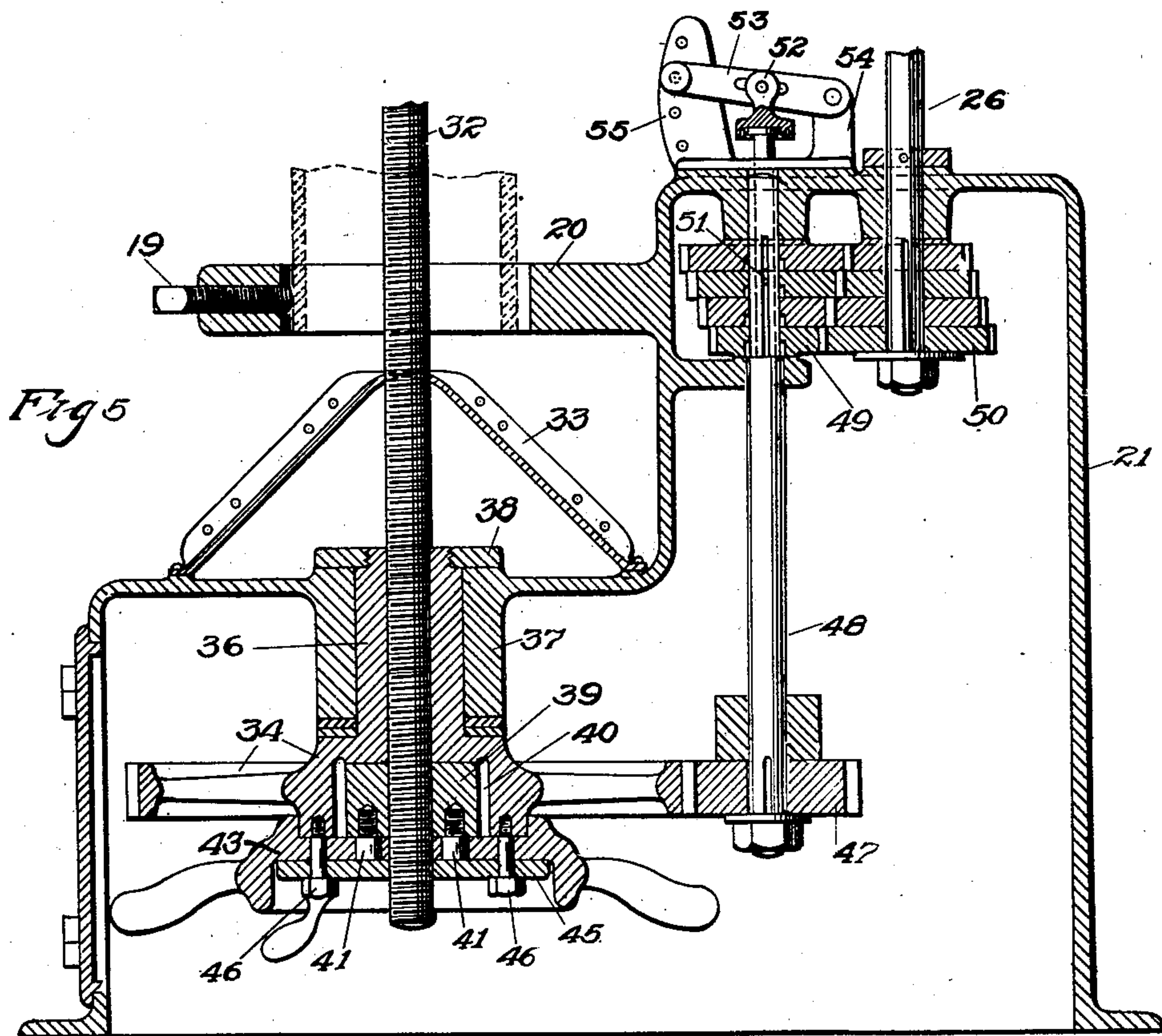
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3 SHEETS—SHEET 3.



INVENTOR

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UNITED STATES PATENT OFFICE.

ARTHUR FALKENAU, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 734,051, dated July 21, 1903.

Application filed November 13, 1902. Serial No. 131,274. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR FALKENAU, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Boring-Machines, of which the following is a specification.

This invention relates, primarily, to mechanism for boring or reaming pipes, and is designed to provide improved means for truing the interior surfaces of hollow cylinders generally.

The nature and characteristic features of the improvements will more fully appear by reference to the following description and the accompanying drawings, of which—

Figure 1 represents a front elevation of a boring-machine embodying the invention. Fig. 2 represents a side elevation of the construction shown in Fig. 1. Fig. 3 represents a plan view of the work-holder. Fig. 4 represents a side elevation, partially in section, of the mechanism shown in Fig. 3. Fig. 5 represents a sectional elevation of feeding and work-holding mechanism; and Fig. 6 represents a bottom view of details of the feeding mechanism, part being removed for the purpose of illustration.

As shown in the drawings, the frame 1, supported in any suitable manner, is provided with the rests 2 for supporting the work holder or hanger 3, which is adapted to slide thereon. The bolts 4 for clamping the hanger to the rests pass through the slot 5, which is made of sufficient size to permit the unclamped hanger to be moved both laterally and longitudinally in order to center the work carried thereby, as the pipe 6. To engage the pipe, the hanger is provided with a clamp 7, hinged to the movable bearing 8, the latter being connected to the threaded bolt 9, passing through the hanger-lug 10, to which the bolt is adjustably secured by the nuts 11. The clamp is drawn up on the pipe by means of the bolt 12 and nut 13 thereon, the bolt being passed through the clamp and pivoted to the hanger. The bolts 4 being unclamped, the hanger 3 is moved longitudinally by means of the screw 14, which runs through the boss 15, revolubly connected to the hanger, and

revolves in the bearing 16, to which it is longitudinally fixed, the screw being turned by the hand-wheel 17 or the key-head 18 thereon.

The hanger may be moved laterally by tapping it, the slot 5 permitting it to move with relation to the unclamped bolts 4 to the extent required for centering the work. The adjustment of the hanger having been effected by moving it longitudinally through the engagement of the screw 14 with the swiveled boss 15 and laterally by slightly turning it about its pivotal connection with the boss 15, the bolts are clamped and the work thus held in position.

The pipe, supported and centered at the top by the hanger 3, is held and centered at the bottom by means of set-screws, as 19, passing through an arm having a yoke 20, conveniently supported by the gear-casing 21.

The frame has journaled therein the shaft 22, having the bevel-gear 24 fixed thereon, driven in any suitable manner, as by the pulley 23. The bevel-gear 24 engages with the bevel-gear 25, fixed on the shaft 26, the latter being journaled in the frame and having the gear-wheel 27 fixed thereon. A gear-wheel 28, driven by the gear-wheel 27 and journaled in the frame, has the shaft 29 longitudinally movable, but revolubly fixed in relation thereto, as by means of a spline connection 30. The shaft 29 carries and revolves the reamer 31, which is fed through the pipe by the screw 32, connected therewith. The screw passes downward through a conical hood 33 for shedding the borings and through a wheel 34 for effecting the feeding into the tube 35 as the reamer is fed through the pipe by the revolution of the wheel, the latter having a hub 36, journaled in the fixed bearing 37, and a nut 38 for holding it therein.

The wheel 34 engages and disengages the screw 32 by means of a split nut 39, seated in a recess 40 thereof, the respective sections of the nut having fixed thereto the bosses 41, which engage the eccentric curved slots or cams 42 in the hand wheel or plate 43. The wheel or disk 43 has the curved slots 44, through which and the bearing-plate 45 are passed the bolts 46 into engagement with the wheel 34.

As the wheel is revolved to the right the bolts 46 are carried from the position shown in Fig. 6 to the opposite ends of the curves 44, the disk 43 is revolved, and the eccentric slots 42, with the bosses 41 therein, close the sections of the split nut 39 upon the screw 32. When the wheel 34 is inactive, the backward revolution of the disk 43 opens the nut 39 and permits the screw 32 to be lifted freely through the wheel, the disk being readily reversed by hand.

The wheel 34 is driven by the wheel 47, fixed on the revoluble shaft 48, which has thereon the normally loose nest of gears 49 in engagement with the nest of gears 50, fixed on the shaft 26. To obtain the feeding-speed desired, the respective gears 49 are separately fixed on the shaft 48 in any well-known manner, as by means of the spline 51, adapted to be adjusted to engage the desired gear by the rod 52, having a movable bearing in the lever 53, the latter having the fulcrum 54 and the rest 55, to which it is movably connected.

Having described my invention, I claim—
1. In a boring-machine, a frame having a work-rest thereon, a hanger adjustably sup-

ported by said rest, said hanger supporting and centering the work, an arm beneath said hanger having means for engaging and centering the work, a gear-wheel revolubly mounted on said frame, a shaft revolubly fixed and longitudinally movable in relation to said gear-wheel, a boring-tool fixed to said shaft, a feed-screw connected with said boring-tool, a gear-wheel and mechanism connected therewith for feeding said screw, and driving mechanism connecting said gear-wheels, substantially as specified.

2. In a boring-machine, a frame having a work-rest thereon, a work-holder adjustably supported by said rest and having a pipe-clamp thereon, a boss having a revoluble connection with said holder, and a screw engaging said boss for adjusting said holder, substantially as specified.

In testimony whereof I have hereunto set my hand, in the presence of the subscribing witnesses, this 10th day of November, A. D. 1902.

ARTHUR FALKENAU.

Witnesses:

JOHN THIEL,

UTLEY E. CRANE, Jr.