

No. 705,791.

Patented July 29, 1902.

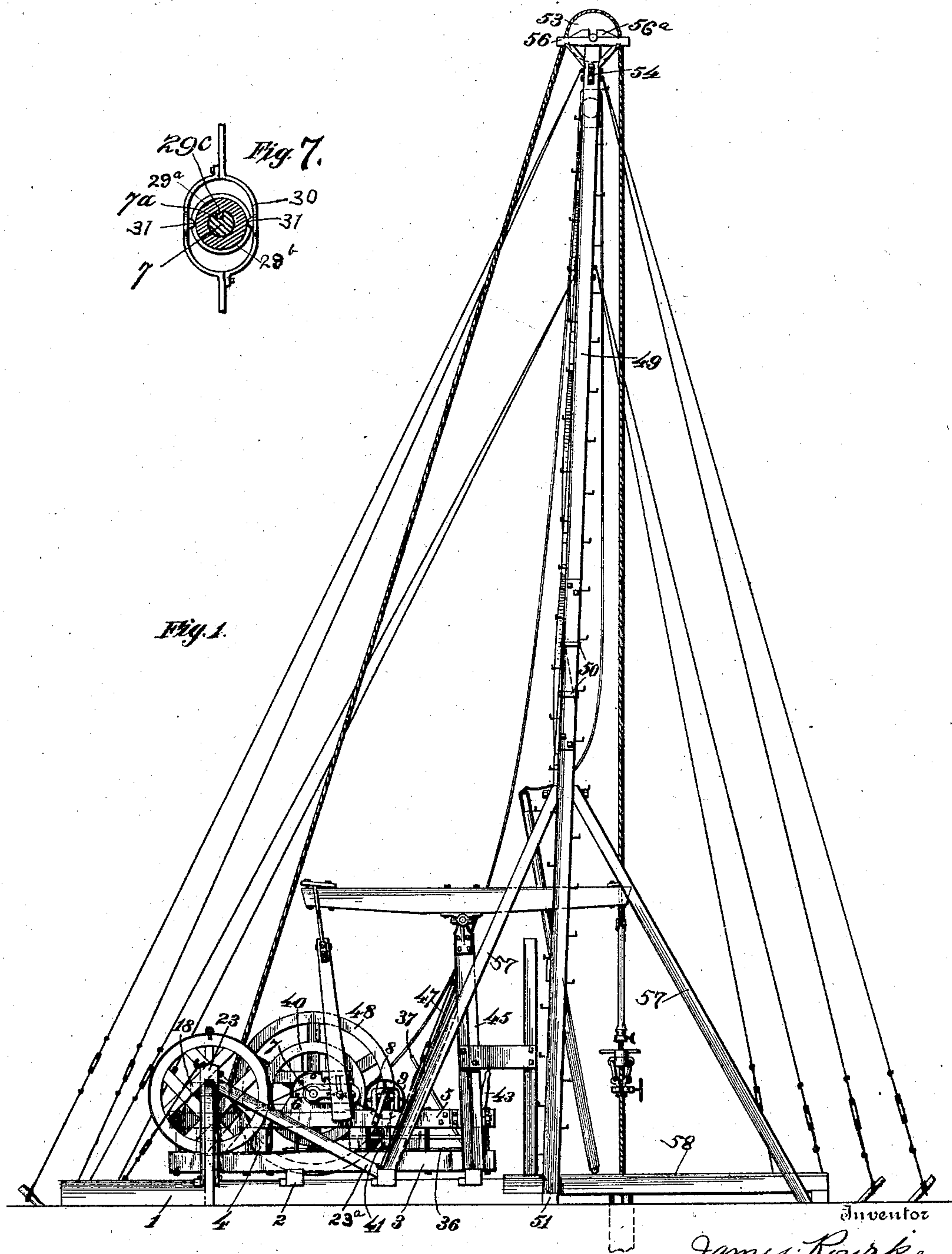
J. ROURKE.

PORTABLE DRILLING MACHINE.

(Application filed Dec. 10, 1901.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses

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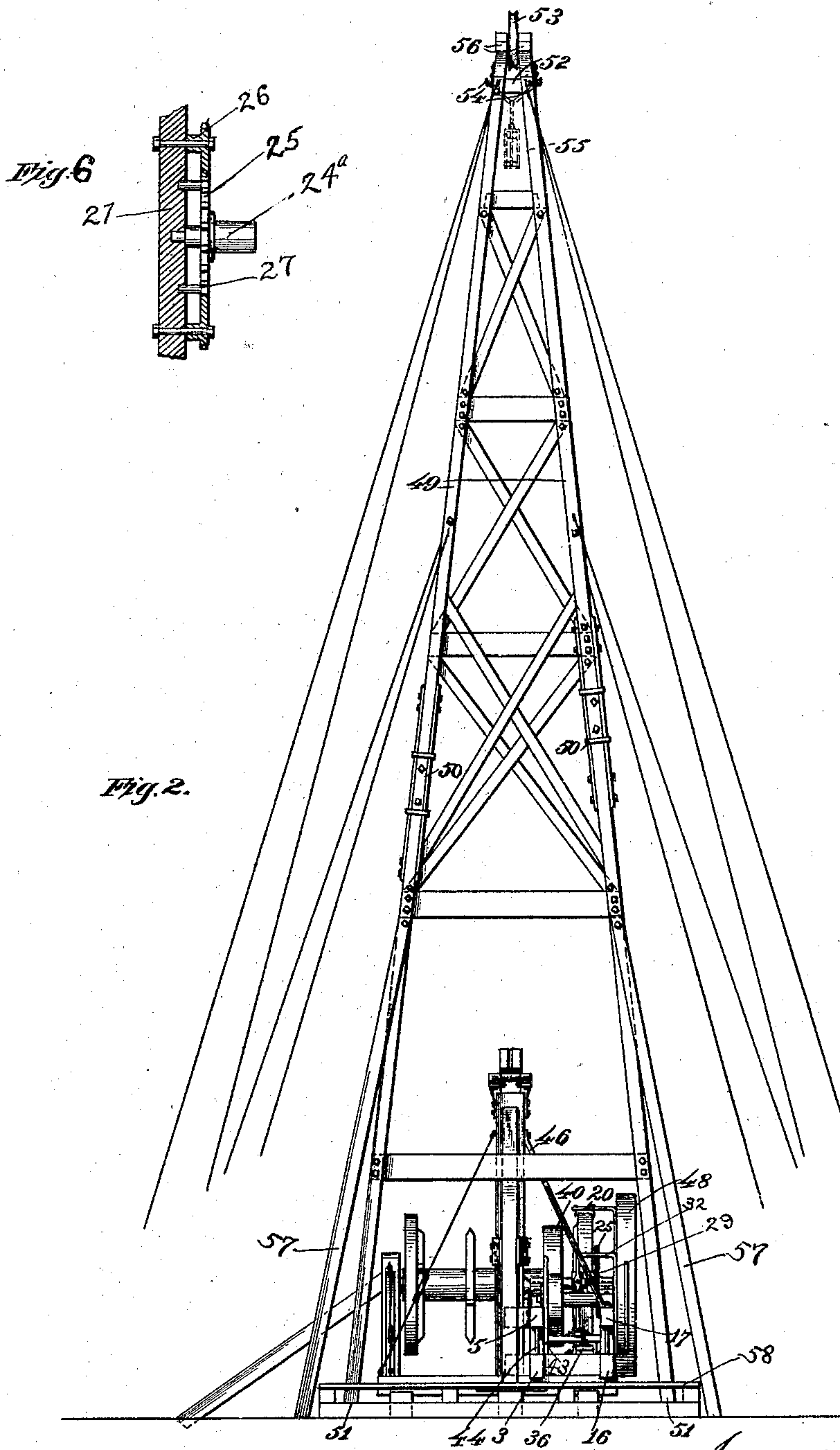
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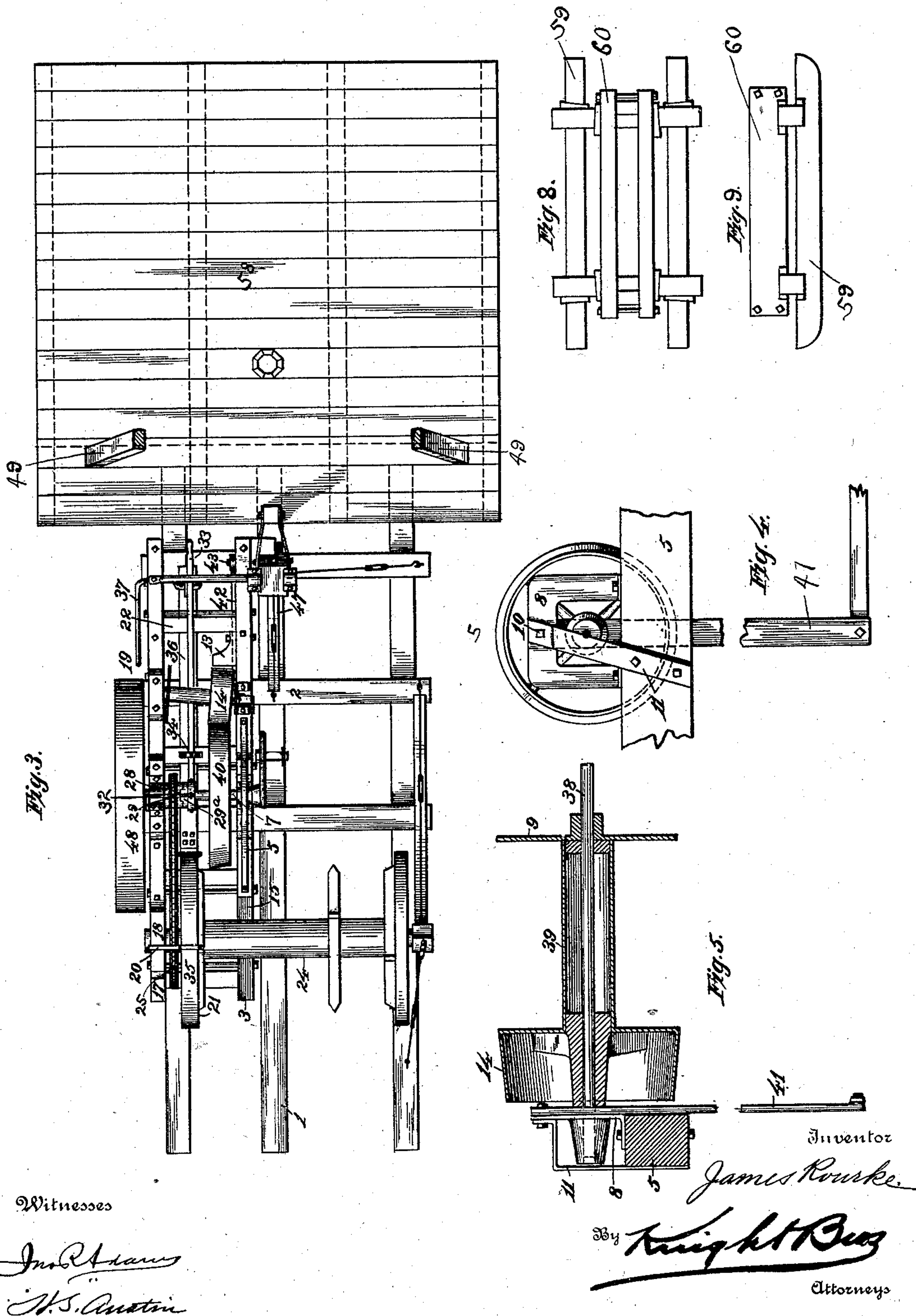
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Fig. 6.

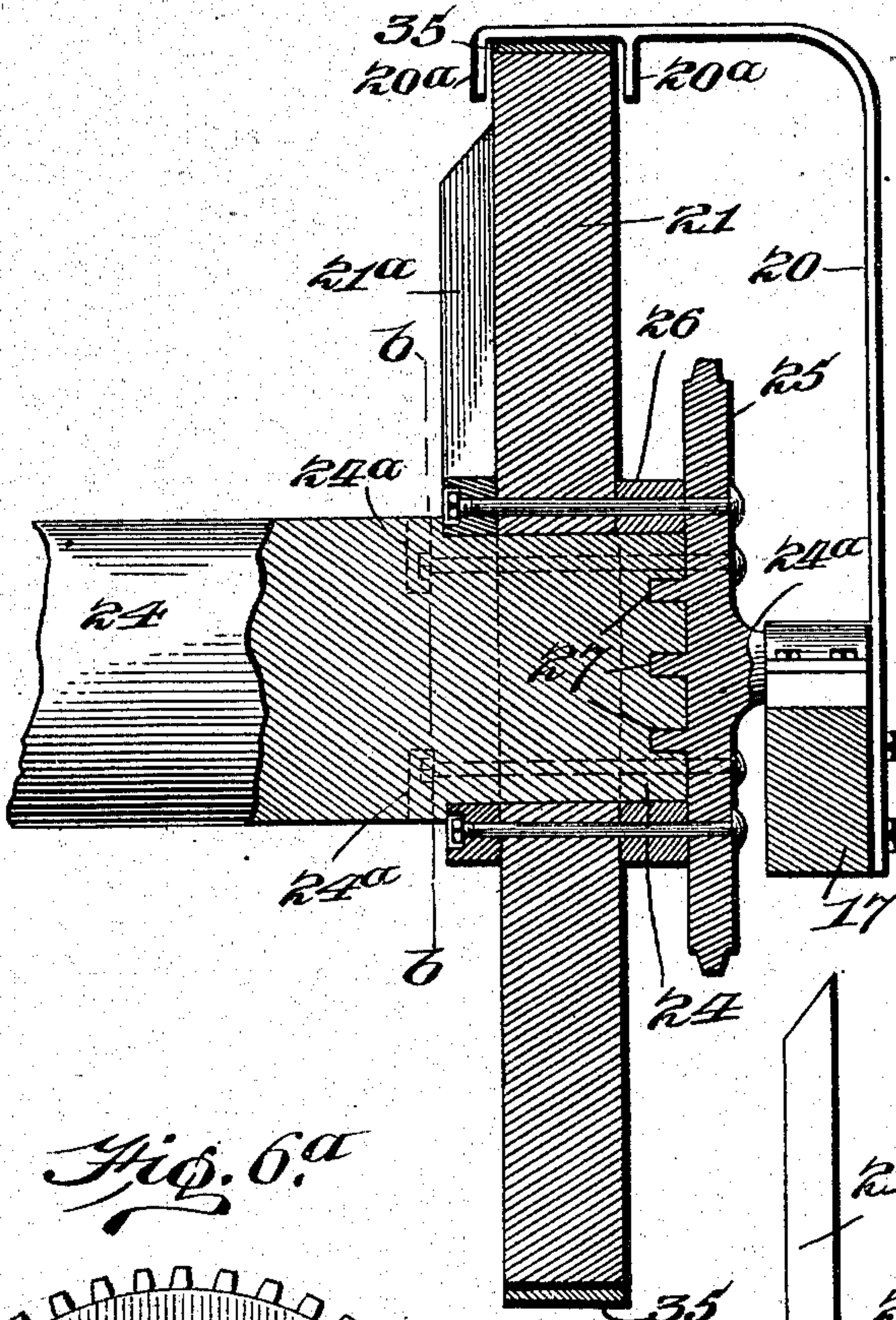


Fig. 6a

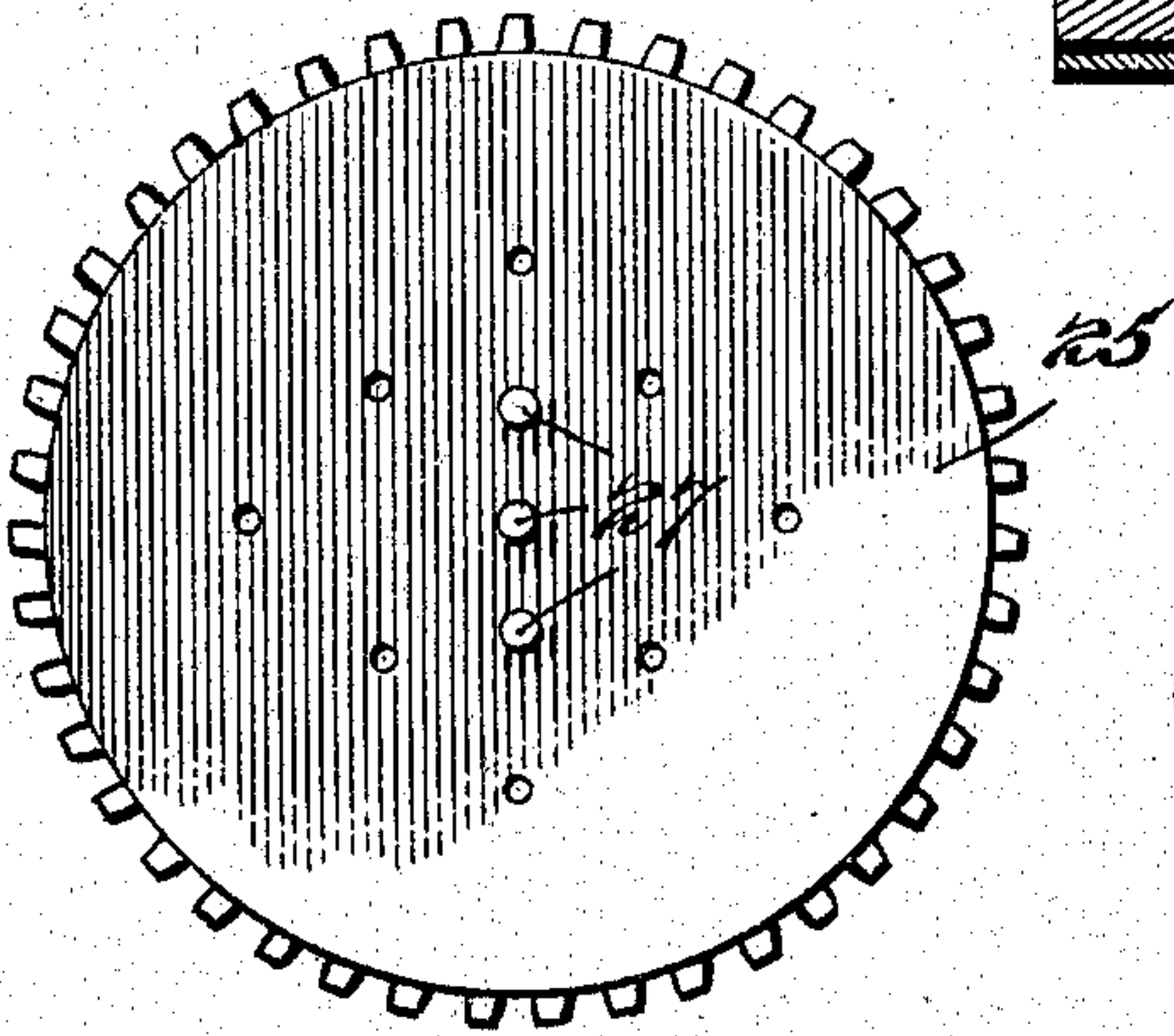
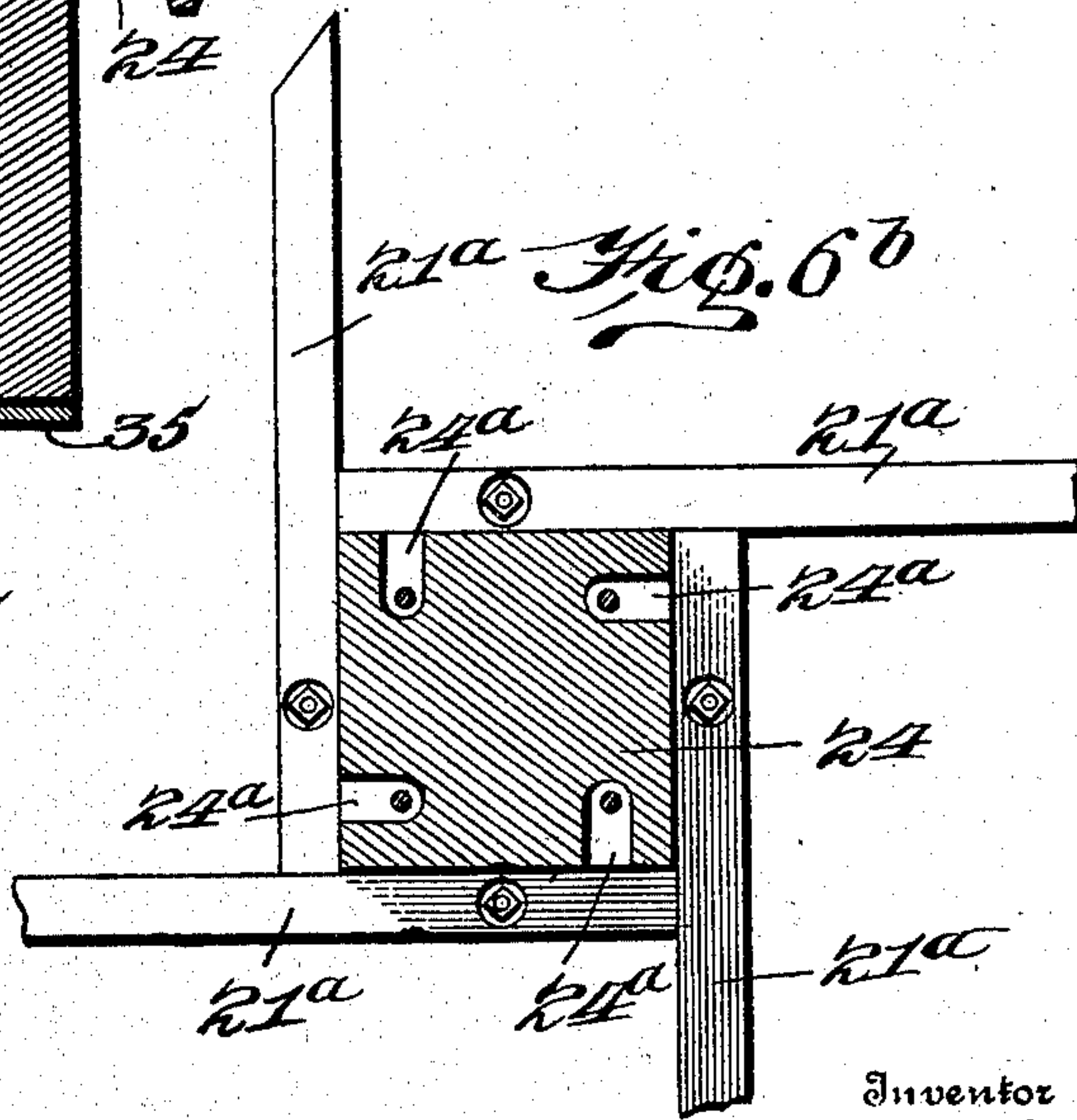


Fig. 6b



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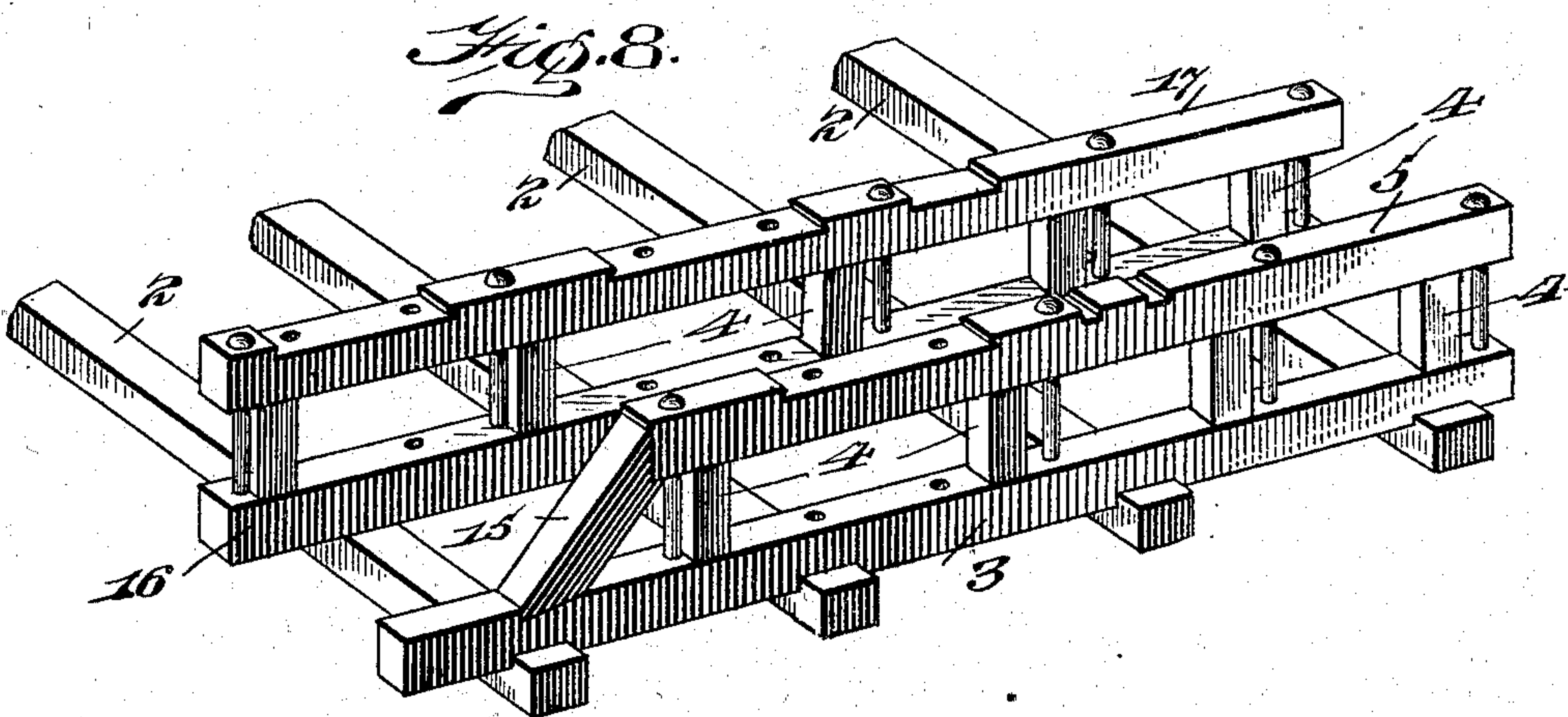
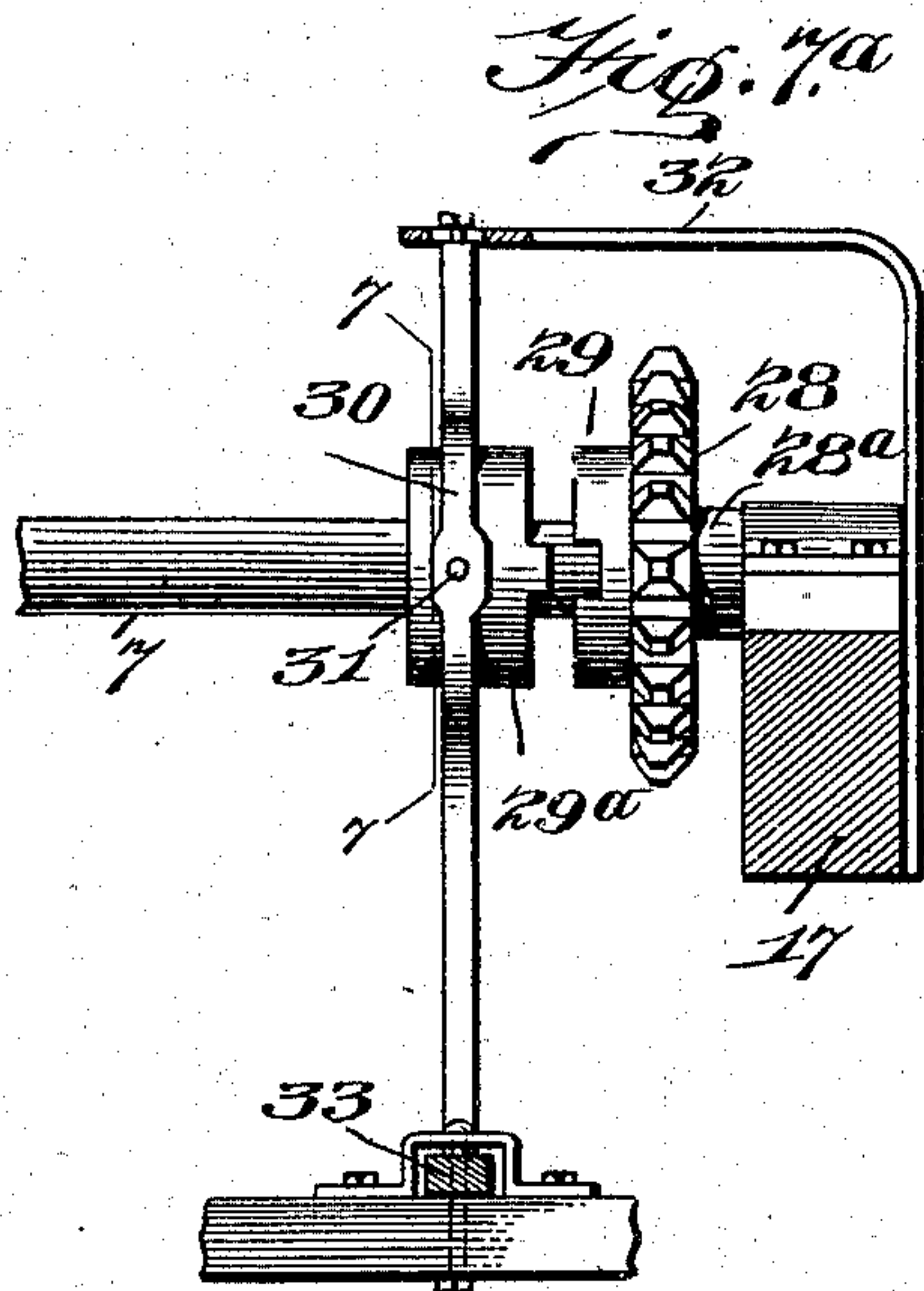
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5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

JAMES ROURKE, OF PARKERSBURG, WEST VIRGINIA.

PORTABLE DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 705,791, dated July 29, 1902.

Application filed December 10, 1901. Serial No. 85,350. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROURKE, a citizen of the United States, residing at Parkersburg, in the county of Wood and State of West Virginia, have invented certain new and useful Improvements in Portable Drilling-Machines, of which the following is a specification.

My invention relates to that class of portable drilling-machines which are used for drilling oil and Artesian wells, and has for its object to provide a machine which is of simple construction, durable, and which is not top-heavy and can be easily manipulated, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved drilling apparatus. Fig. 2 is an end view of the same with the drilling-cable, clutch, temper-screw, and walking-beam removed. Fig. 3 is a top view of the same with portions of the apparatus removed. Fig. 4 is an enlarged side elevation of the sand-reel friction-pulley and its operating-lever. Fig. 5 is a detail sectional view of the same. Fig. 6 is a detail view, partly in section and partly in elevation, showing the structure of the sprocket-wheel and means for securing same to the bull and brake wheels. Fig. 6^a is an inside view of the bull-wheel sprocket. Fig. 6^b is a view on line *b b*, Fig. 6, showing the bracing-arms for the bull-wheel. Figs. 7 and 7^a are detail sectional views of the clutch and clutch-operating mechanism, Fig. 7 being a view on the line 7 7, Fig. 7^a; and Fig. 8 is a detached view of the rig-frame.

Similar reference-numerals denote like parts throughout the several views.

1 represents mudsills.

2 represents cross-sills keyed into the mudsills 1 and upon which rests the rig-frame, which consists of two sides, the front or crank side comprising a lower sill 3, gained in and bolted to the cross-sills 2.

4 represents upright posts mortised in the lower sill 3 and provided with tenons at their tops, which are mortised into the plate 5, which is also bolted to the lower sill 3. Carried by said plate 5 is a pillow-block 6, which provides a bearing for the crank-shaft 7. The plate 5 also carries the frame 8, on which the sand-reel 9 is hung. The frame 8 is made of

flat iron, the ends being bent at right angles, as clearly shown in Fig. 4, the said ends being bored to receive bolts by which the frame 55 is secured to the plate 5. In the center of the top of the plate 8 is bored a hole to receive the bolt 10, which also carries the diagonal support 11 and the sand-reel swing-lever. The diagonal support has the effect 60 of making the frame 8 more rigid and is bolted at its lower end to the plate 5. Secured to the inside of the plate 5 is a brake-plate 13, (see Fig. 3,) which serves to stop the friction-pulley 14 when it is thrown out of 65 engagement with the friction-wheel on the crank-shaft.

In order to allow the bull-wheel to be hung as low as possible in the rig-frame, and in order that the same might spool the required 70 amount of cable for deep drilling, the plate 5 is made shorter than the corresponding plate, to be hereinafter described, and the rear end of the same is provided with a downwardly-extending brace 15, which is mortised in the 75 lower sill 3. (See Figs. 1 and 8.) The rear side of said rig-frame is constructed in substantially the same way as the front side, having a lower sill 16, the rear end only of which is shown, (see Fig. 2,) and an upper plate 17, 80 said upper plate being supported by upright posts and bolts similar to those already described. The plate 17 carries at its rear end a pillow-block 18 for supporting the back gudgeon of the bull-wheel. Centrally located 85 on the plate 17 is a pillow-block for supporting the rear end of the crank-shaft similar to that for supporting the front end thereof, and between this bearing and the front end of the plate 17 is a third pillow-block, which acts as 90 a bearing for the back gudgeon of the sand-reel. Secured to the side of the plate 17, near its rear end, is a bar 20, which extends upwardly and out over the brake-wheel 21. This bar carries two downwardly-extending 95 pins 20^a, which straddle the rim of the brake-wheel (see Figs. 2 and 6) and are adapted to prevent the brake-band from slipping therefrom. The frame-sills are spaced apart and held rigidly together by suitable blocks and 100 bolts. The plates 5 and 17 have a block 22 mortised therein and a bolt spacing them apart and holding them rigidly together. The front gudgeon of the bull-wheel is supported

by a post 23, which is dovetailed into the rear cross-sill 2 and there bolted. The post 23 is also strengthened by a front brace 23^a and also by front and back turnbuckle-rods.

5 The bull-wheel shaft 24 is of usual construction, save that the rear gudgeon 24^a of the same is made integral with the sprocket-wheel 25, which is bolted and keyed to the side of the brake-wheel 21 (see Fig. 6) by means of bolts passing through block 26, the 10 brake-wheel 21, and brace-arms 21^a, (clearly shown in Fig. 6^b), squared against the bull-wheel 24 and bracing the brake-wheel 21. The sprocket-wheel 25 is further secured by means 15 of key-pins 27 engaging perforations in the end of the bull-wheel shaft and by bolts extending longitudinally through the end of the bull-wheel shaft 24 to transverse cuts 24^a, (shown in dotted lines, Fig. 6,) the inner ends 20 of the bolts being held by nuts in said cuts. The sprocket-wheel 25 is connected to the sprocket-wheel 28 on the crank-shaft 7 by a chain, as shown in Fig. 3. The sprocket-wheel 28 is loosely mounted on said shaft, 25 having a collar 28^a on one side integral therewith and abutting against plate 17 and having a flange or hub 29 on the other side with a recess therein adapted to receive a projection or key on the clutch member 29^a, slid- 30 ably mounted upon the shaft 7 and having a rigid feather 29^c engaging a longitudinal slot or key-seat 7^a in said shaft 7, said clutch member 29^a adapted to be thrown into engagement by a sleeve 30, (see Figs. 7 and 7^a), 35 carrying the feathers 31, which play in a slot 29^b, extending around the periphery of the member 29^a. The sleeve 30 consists in two spoon-shaped members bolted together reversely, each of said members carrying one 40 of the feathers 31, the end of one of said members projecting upwardly and pivoted to a bent bar 32, which is secured to the plate 17. The end of the other member extends downwardly and is secured to the hand-lever 33, 45 which is pivoted at 34, and by which means the clutch is operated from the front of the rig. The brake-band 35 is bolted to a draw-bar 36, which is connected at the front end of the frame with a hand-lever 37.

50 The sand-reel 9, the location of which has already been described, comprises a shaft 38, the ends of which act as gudgeons, around which shaft a casing 39 is fitted snugly, a friction-wheel 14 being mounted on the end of 55 the shaft 38 and adapted to be thrown into engagement with the friction-wheel 40 on the crank-shaft 7. This is accomplished by means of the swing-lever 41, at the lower end of which is pivoted a draw-bar 42, at the end 60 of which draw-bar is a hand-lever 43, movably secured to the front vertical post 44.

45 is the samson-post, upon which is pivoted the usual walking-beam. The samson-post is braced on one side by a two-inch round 65 iron brace 46, on the opposite side by a turnbuckle-rod, and on the rear side by a turnbuckle-rod and a brace 47.

The band-wheel 48 is hung on the extreme rear end of the crank-shaft 7.

The derrick consists of two legs 49, which 70 are made in sections and spliced together to obtain the desired height, the splices being held by the straps 50, (see Figs. 1 and 2,) secured by bolts. The legs are spread apart at the bottom and mortised into the mudsills 75 at 51. They are drawn in at the top and spaced apart by a block 52, mortised into them, the block 52 being of sufficient length to allow the crown-pulley 53 to revolve freely. The legs 49 are also provided at their upper 80 ends with the dead-line hooks 54 for the purpose of hanging a snatch-block 55 (shown in dotted lines, Fig. 2) when necessary. The legs 49 are also provided at their upper ends with the cross-pieces 56, (see Figs. 1 and 2,) 85 which carry blocks 56^a, which provide bearings for the gudgeons of the crown-pulley 53. The cross-pieces 56 are braced on their under sides. The two legs 49 are rigidly secured together by cross-beams and diagonal braces, 90 as clearly shown in Fig. 2, which are bolted to the legs.

57 represents supports bolted to the legs and being mortised into the sill at the base of the derrick. The legs are also strength- 95 ened by turnbuckle-rods suitably arranged and being secured to pegs at the base of the derrick.

58 is the derrick-floor, with which portable drilling-machines have heretofore not been 100 provided. This floor is suitably mounted in cross-sills, which are gained in the mudsills.

59 represents runners on the engine-block 60. These runners are cut under at their ends and are so made to provide for the easy 105 changing of the engine from one position to another without removing the same from the block.

Having thus described my invention, what I claim as new therein, and desire to secure by 110 Letters Patent, is—

1. In a drilling-machine of the character described, the combination of a frame, a crank-shaft mounted upon said frame, a band-wheel mounted upon said crank-shaft, a sprocket- 115 wheel also mounted upon said shaft, of a bull-wheel shaft, a sprocket-wheel carried by said bull-wheel shaft, one of the gudgeons of said bull-wheel shaft being mounted in one side of said frame, the other gudgeon being 120 mounted in a post, one side of said frame being of lesser length than the other, to permit the mounting of the bull-wheel in close proximity to the ground and enable the same to spool the requisite amount of cable for deep 125 drilling.

2. In a drilling-machine of the character described, the combination with a frame having two sides, of a bull-wheel shaft having one of its gudgeons mounted in the end of 130 one of said sides, and a post forming a bearing for the other gudgeon of said bull-wheel shaft, the other side of said frame being of lesser length than the first-mentioned side to

permit the mounting of the bull-wheel in close proximity to the ground and enable the same to spool the requisite amount of cable for deep drilling.

- 5 3. In a drilling-machine of the character described, the combination of a bull-wheel shaft, of a brake-wheel carried on the end of said shaft, a sprocket-wheel formed integral with one of the gudgeons of said shaft and
10 having key-pins engaging perforations in the end of said shaft, of braces squared against

said shaft and bracing the brake-wheel, of bolts passing through said sprocket-wheel, the brake-wheel and said braces, of transverse cuts in said shaft, and bolts passing 15 through said sprocket-wheel and longitudinally through said shaft to the transverse cuts.

JAMES ROURKE.

In presence of—

BEN R. HAGAR,
C. A. SMITH.