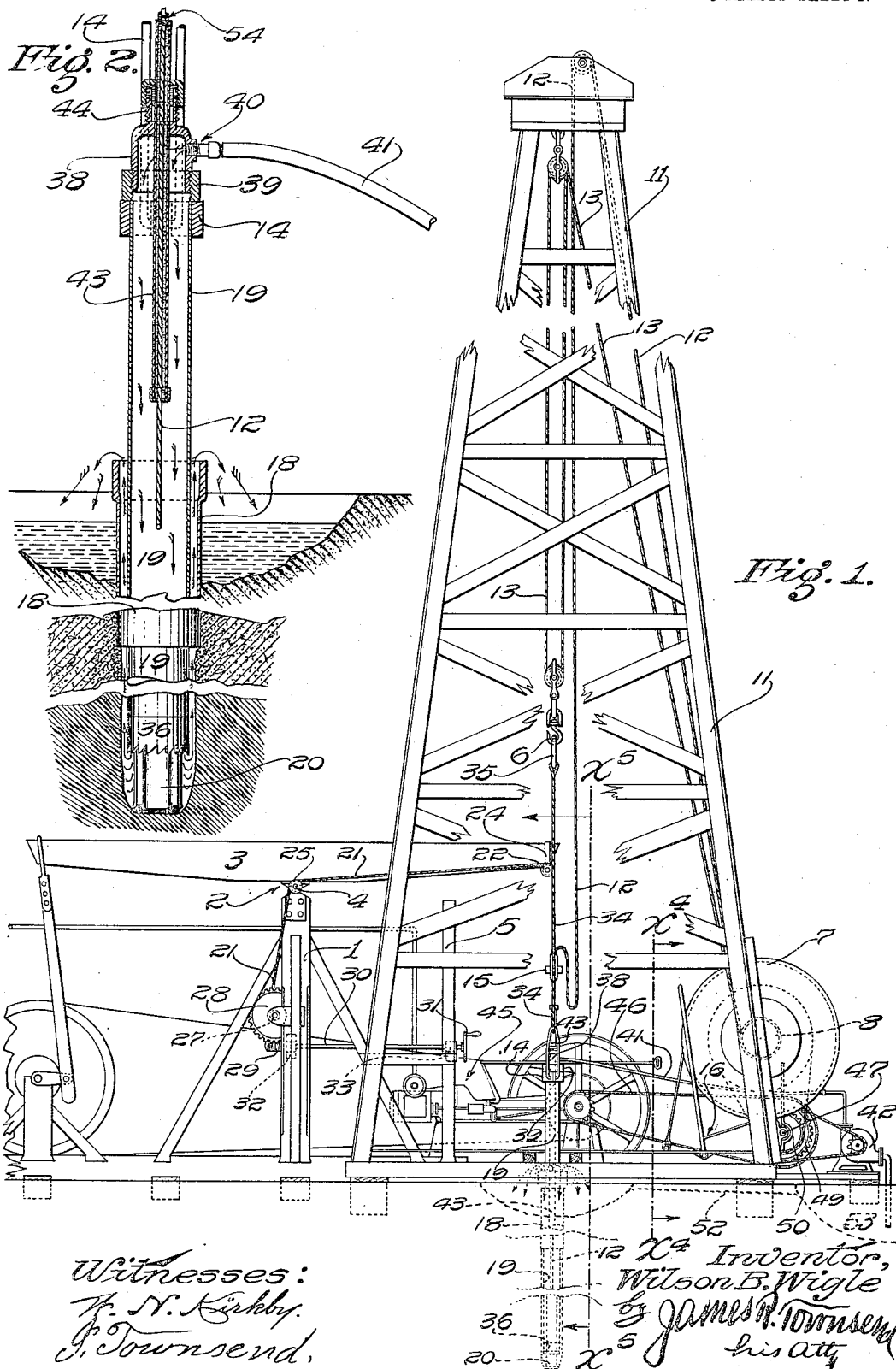


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APPLICATION FILED SEPT. 13, 1907.

992,527.

Patented May 16, 1911.

3 SHEETS—SHEET 1.

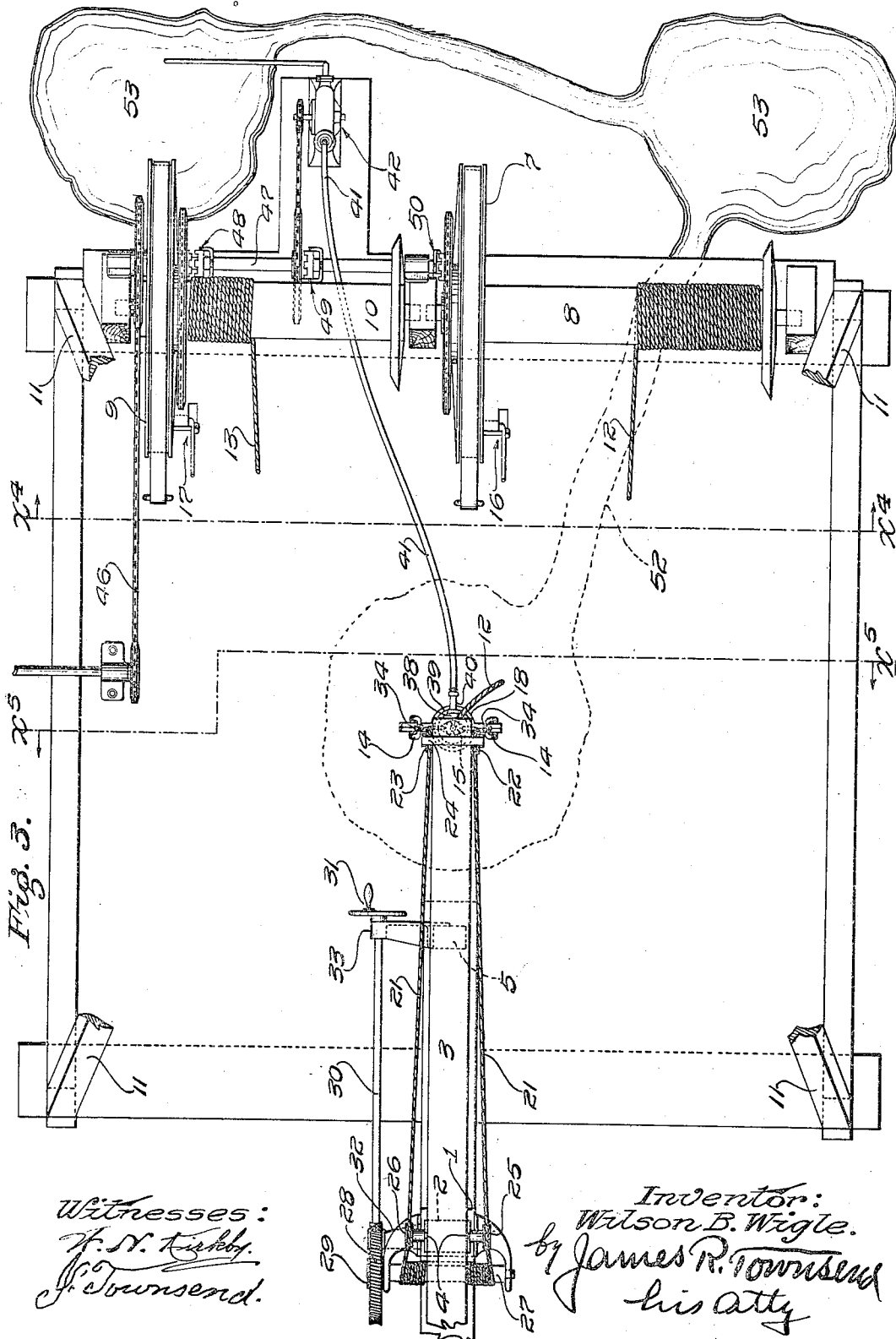


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Witnesses:  
F. N. Kubby.  
J. Townsend.

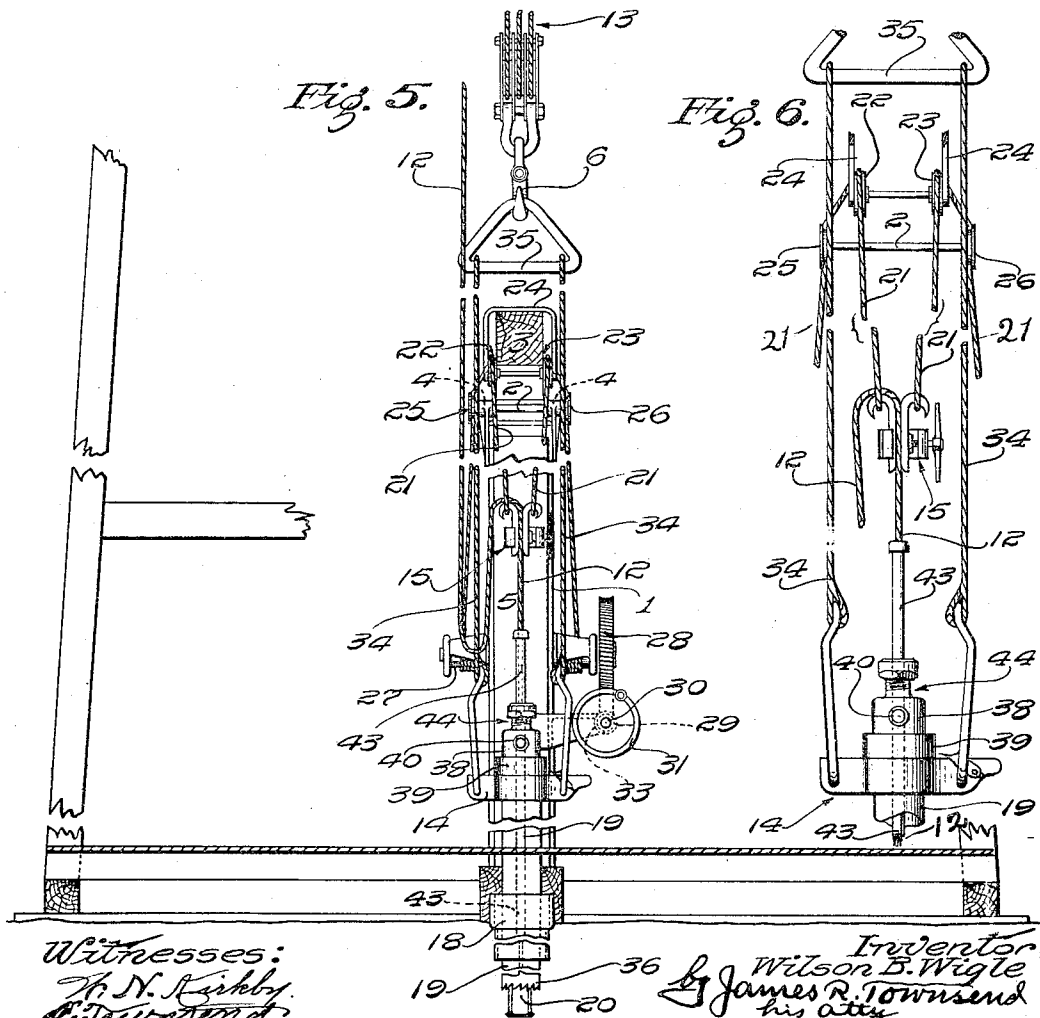
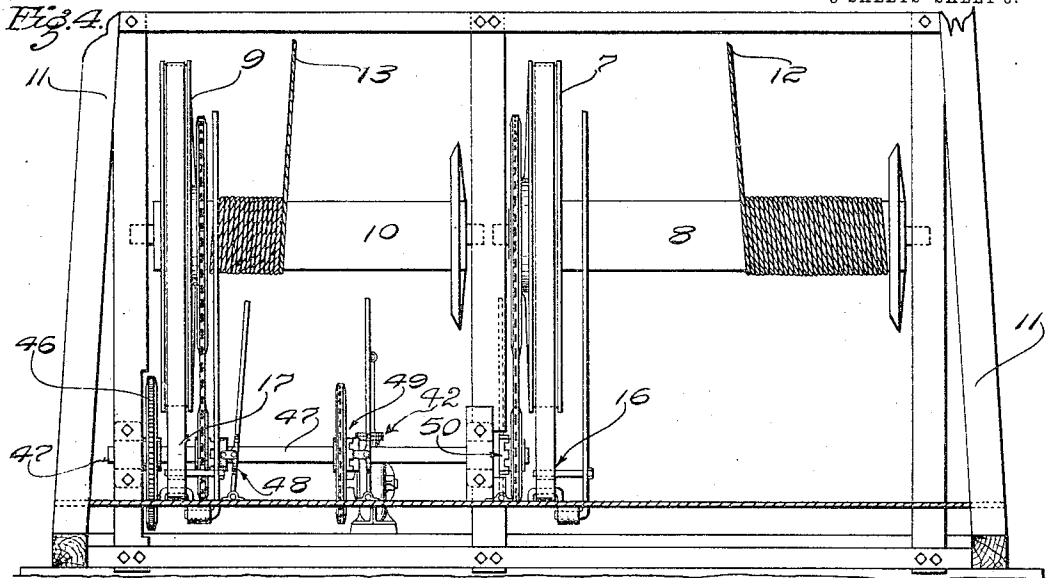
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Wilson B. Wigle.  
by James R. Townsend  
his atty

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# UNITED STATES PATENT OFFICE.

WILSON B. WIGLE, OF LOMPOC, CALIFORNIA.

COMBINATION STANDARD AND HYDRAULIC DRILLING-RIG.

992,527.

Specification of Letters Patent. Patented May 16, 1911.

Application filed September 13, 1907. Serial No. 392,810.

*To all whom it may concern:*

Be it known that I, WILSON B. WIGLE, a citizen of Canada, having declared my intention to become a citizen of the United States, residing at Lompoc, in the county of Santa Barbara and State of California, have invented a new and useful Combination Standard and Hydraulic Drilling-Rig, of which the following is a specification.

It is an object of this invention to facilitate the drilling of wells; to provide improved means whereby a standard drill may be continuously operated without the use of a sand pump; and to accomplish the foregoing objects by cheap, simple readily-installed and easily operated mechanism.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of a drilling rig embodying this invention in operation, parts being broken away for clearness of illustration. Fig. 2 is a fragmental axial section. Fig. 3 is a fragmental plan of the drilling rig on a larger scale than Fig. 1. Fig. 4 is an elevation looking to the right from line  $x^4-x^4$ , Figs. 1 and 3, toward the end of the beam, and showing the sling and its connections. Fig. 5 is an elevation looking from line  $x^5-x^5$ , Figs. 1 and 3. Fig. 6 is a fragmental detail from same plane as Fig. 5 for more clearly showing the arrangement of the several lines between the casing-yoke and the elevators.

1 designates the samson post; 2, the saddle thereon; 3, the beam mounted on the saddle by gudgeons 4; 5, the headache post; 6, the casing hook; 7, the bull-wheel; 8, the bull-wheel shaft; 9, the calf-wheel; 10, the calf-wheel shaft; 11, the derrick; 12, the drilling line; 13, the casing line; 14, the elevators; 15, drilling clamps; 16, the bull-wheel brake; 17 the calf-wheel brake; 18, the conductor; 19, the casing; and 20, the drilling tool. All of these parts are common and well-known in the art.

21 is a tension line connected by the clamp 15 with the drilling line 12 and led over pulleys 22, 23, which are mounted on the end of the beam 3 by means of a stirrup 24, and are led thence along the beam and over two pulleys 25, 26, which are mounted on the saddle 2, and thence down to the tension-drum 27 which is mounted on the samson post and operated by a gear 28, 29, under the control of the driller, by means of a shaft 30 provided with a hand-wheel 31 and journaled

at 32, 33, on the samson and headache posts. The line 21 and its connections are intended to take the place of the temper-screw of the ordinary drilling screw, and the operator can, by rotating the wheel 31, raise and lower the clamp 15, and consequently, tools 20, which are connected with said clamps by drilling-line 12.

34 is a sling connected with the elevators on opposite sides of the drilling-line 12 and carried by the casing-hook 6 by means of a yoke 35 which holds the lines of the sling apart so that the pulleys 22, 23 and clamp 15 may move freely up and down between the two lines of the sling.

36 designates a shoe on the lower end of the casing 19.

38 is a hollow bushing screwed into the collar 39 of the casing 19 and provided with a water connection 40 for a hose 41 which leads from a pump 42 to supply water to the inside of the casing 19.

43 is a hollow line-case working through a stuffing-box 44 in the water connection 40 and incasing the drilling-line 12, thus allowing it to move up and down freely with relation to the well-casing 19 without disturbing the same.

45 is an engine connected by a sprocket-chain 46 with a line shaft 47 provided with clutch gears 48, 49, and 50, for operating the calf-wheel, the pump, and the bull-wheel, respectively, and each capable of ready connection and disconnection for the purpose of operating or leaving free the several operative devices above-mentioned, so that the operator may cause said devices to operate simultaneously or separately.

In drilling a well the operation is practically as follows:—At the outset the well may be started in the usual way of drilling wells, excepting that after reaching the usual depth for connecting the drilling-line with the beam, said beam will be connected with said drilling-line by means of the tension-line 21 and its clamp 15, and as the work proceeds, the operator will regulate the tension by operating the hand-wheel instead of using the temper-screw heretofore employed. In the usual course of drilling, the conductor 18 is placed in the top of the hole and extends down a sufficient depth to prevent caving-in of the surface, and as the work proceeds, the case is lowered into the hole in the usual way, by means of the calf-wheel, except that the elevators are carried by the sling 34, the

lines of which extend on opposite sides of the beam. The bushing 38 being installed on the line 12, can be screwed into and out of the collar 39 as the work proceeds. When 5 said bushing is screwed into the collar 39 it forms a water-tight closure for the top of the casing through which water may be pumped from the pump 42 through the hose 41, thence down through the casing and out 10 at the bottom and up through the hole and out through the conductor between it and the casing. The water thus flowing through the hole constantly carries the drillings up and out of the hole and will be discharged 15 by a suitable conduit 52 into a settling basin 53 from which the water may be drawn to the pump 42 and used over and over again.

The line-casing 43 is calked tight to the drilling line by wrapping of soft rope 54 and 20 moves up and down with such line. Therefore, said line-casing 43 is made of somewhat greater length than the length of the beam stroke. Preferably, said line-casing will be ten or twelve feet long more or less, so as to 25 allow of the working of the casing at the same time as the working of the beam; that is to say, it may be run up or down at the will of the operator while the beam is in operation. As the work proceeds, the operator 30 will pay out the tension-line 21 and also the calf-wheel line 13 to lower the casing and the tools. When the top of the casing 19 has been lowered to the top of the conductor, the bull-wheel will be thrown into 35 gear and the slack of the drilling-line 12 will be taken up. Then the clamp 15 will be unclamped, the walking beam 3 will be taken down in the usual way, and the bull-wheel will then again be started to elevate the tools, 40 and thus will withdraw the packing 54 of the line from the line-casing 43, and the line will run freely through said line-casing until the tools engage the bottom of the line-casing and the bushing. In the meantime the 45 operator will have uncoupled the hose 41 and will then have unscrewed the bushing 38 from the collar 39, thus allowing said bushing and its attachments to move up on top of the tools as the same are drawn up

into the derrick. Then a new section of 50 casing may be screwed into the top of the casing in the well, the tools again be lowered into the casing, the bushing again screwed into place, and the parts replaced as at the outset, whereupon the drilling operation 55 may continue, and so on.

I claim:—

1. In a drilling rig, the combination with the casing hook and means for operating the same, of a sling, a yoke on said hook for 60 spreading said sling, elevators carried by said sling, a walking beam adapted to work in said sling between the casing hook and the elevators, a clamp for the drilling line, pulleys on the end of the walking-beam, pulleys at the support of the walking beam, a line connected with said clamp and led over 65 said pulleys, a drum for said line, and means for operating said drum.

2. In a drilling rig, the combination of a 70 bull wheel, a calf wheel, a pump, a casing line connected with the calf wheel, a casing, a bushing for the casing, a hose-connection between the bushing and the pump, a stuffing-box in the bushing, a line casing extending 75 through the stuffing-box, a drilling line extending through the line casing and connected with the bull wheel, packing for said drilling line in the line casing, elevators for the casing, a clamp for the drilling 80 line, a walking beam, means for operating the walking beam, pulley means on the walking beam, connections led over the pulley means and connected with the clamp, take-up means for said connections, means under 85 the control of the operator for operating such take-up means, means connecting the elevator with the casing line, a line shaft and clutch connections carried by said line shaft for respectively operating the calf 90 wheel, the pump and the bull wheel.

In testimony whereof, I have hereunto set my hand at Lompoc, California this 5th day of September 1907.

WILSON B. WIGLE.

In presence of—

F. S. LEWIS,

C. W. HENNING.