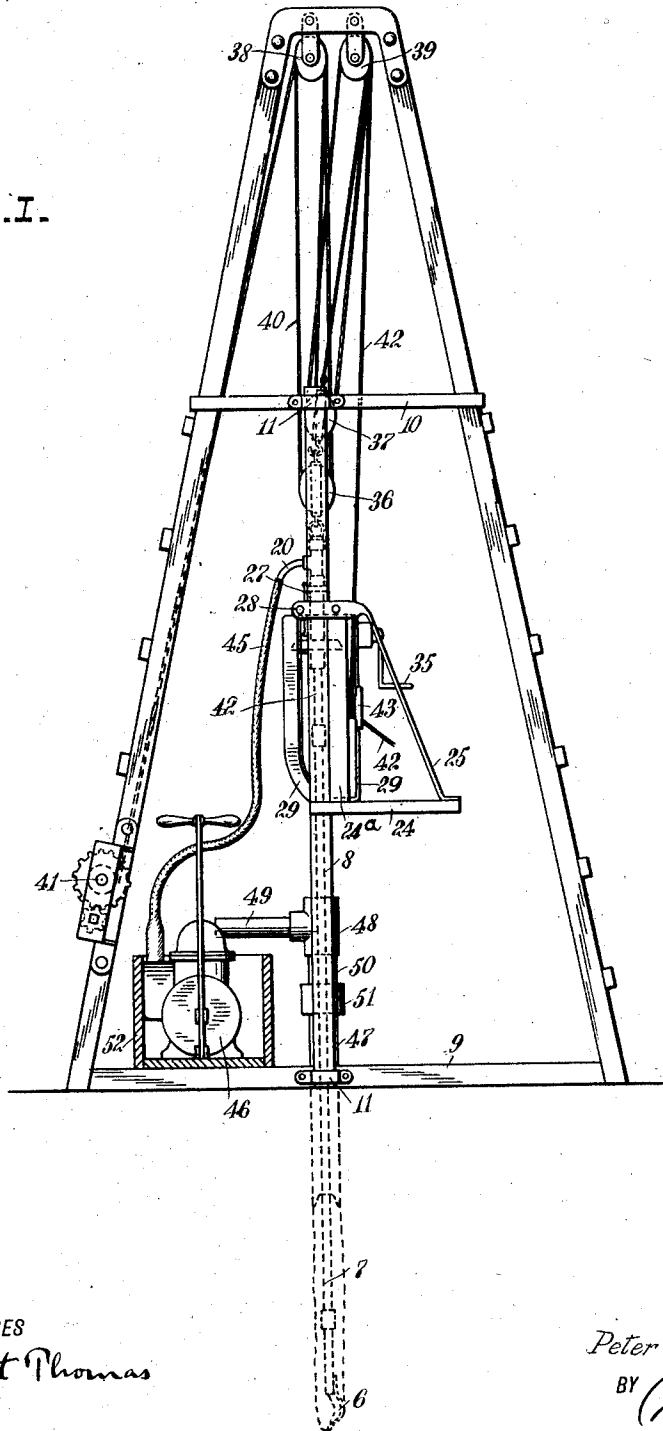


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WELL BORING MACHINE.
APPLICATION FILED NOV. 10, 1909.

970,880.

Patented Sept. 20, 1910.
3 SHEETS—SHEET 1.

FIG. I.



WITNESSES
G. Robert Thomas
E. J. Munnick

INVENTOR
Peter A. Bouchet
BY *Munnick*
ATTORNEYS

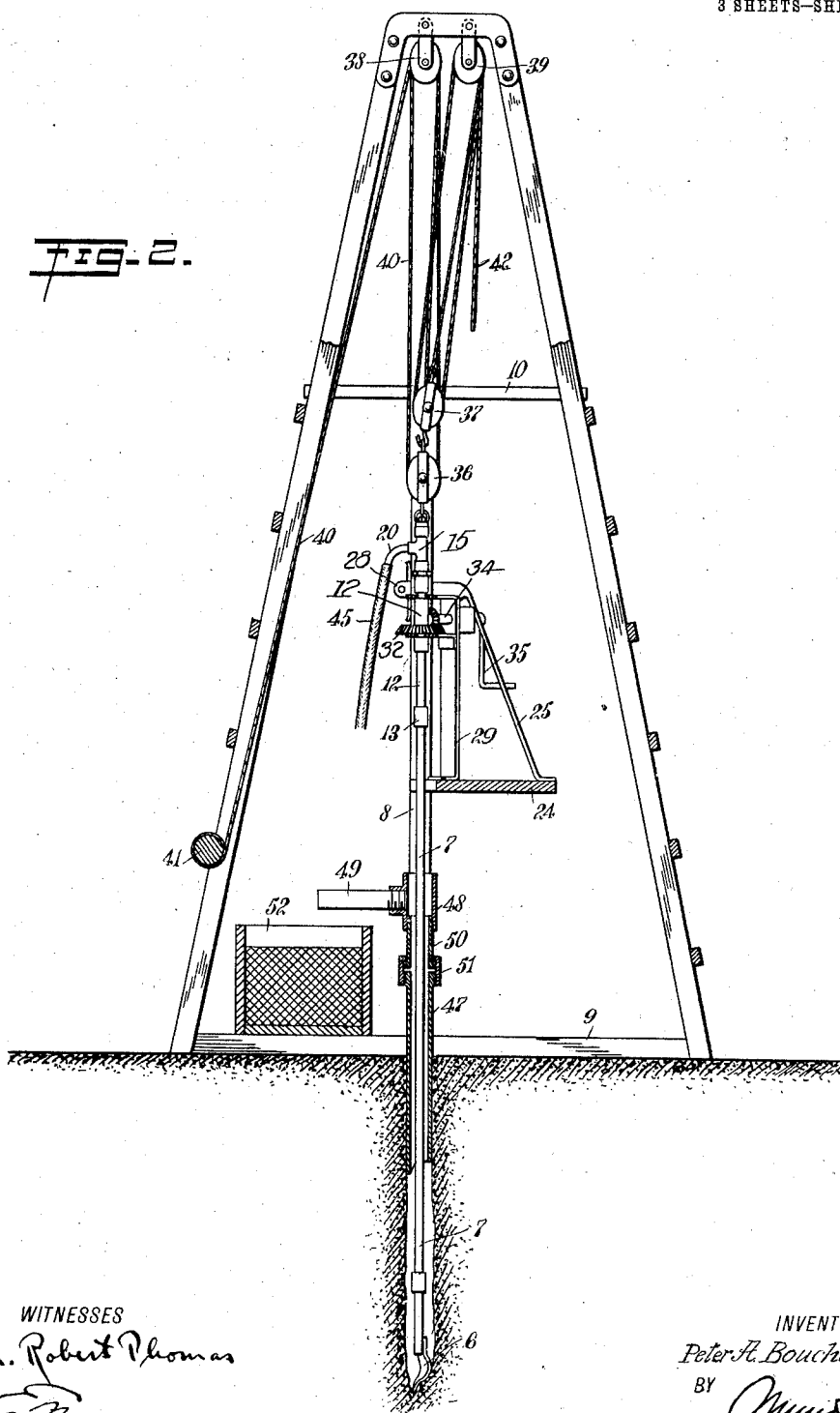
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FIG-2.



WITNESSES
G. Robert Thomas
C. M. M. M. M.

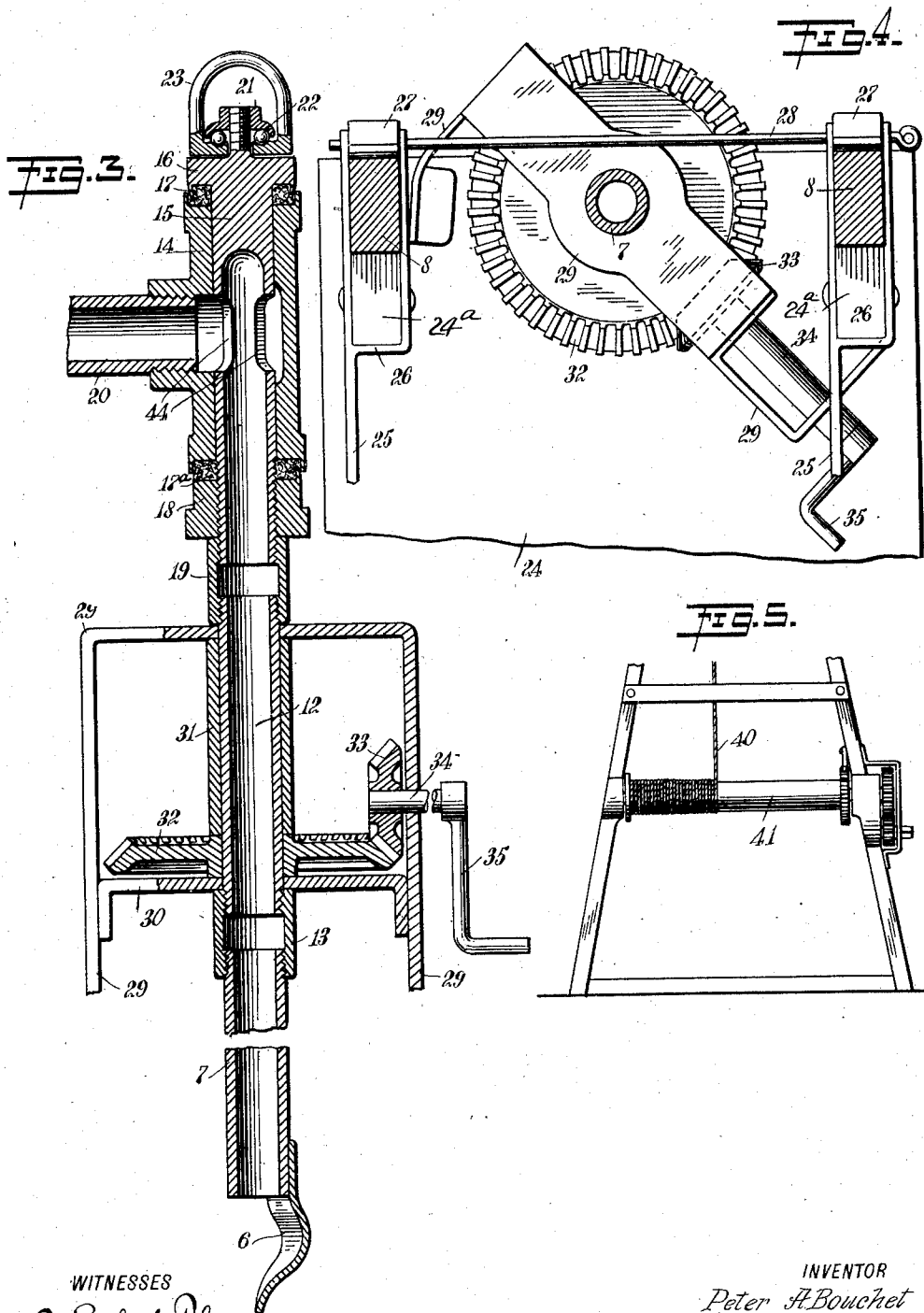
INVENTOR
Peter H. Bouchet
BY M. M. Co.
ATTORNEYS

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WITNESSES
G. Robert Thomas
C. M. Muddock

INVENTOR
Peter A. Bouchet
BY *Mum & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

PETER ANTONE BOUCHET, OF MERCED, CALIFORNIA.

WELL-BORING MACHINE.

970,880.

Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed November 10, 1909. Serial No. 527,174.

To all whom it may concern:

Be it known that I, PETER ANTONE BOUCHET, a citizen of the United States, and a resident of Merced, in the county of Merced and State of California, have invented a new and Improved Well-Boring Machine, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a platform suspended upon a boring rod to assist in sinking the same; to provide means for regulating the amount of weight applied to the boring rod; to provide a rotary head for the boring rod suitably mounted in the structure of the platform to be operated from the said platform; and to provide a guiding structure for controlling the path of the head of the boring rod.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a side elevation of a derrick and operating platform constructed and arranged in accordance with the present invention; Fig. 2 is a vertical central section of the same; Fig. 3 is a vertical section of the boring rod and rotating mechanism connected therewith, the said rod being contracted; Fig. 4 is a detail view in plan of a fragment of the platform, gears for rotating the boring rod, and guiding uprights for the said platform; and Fig. 5 is a detail view in side elevation of the lower end of the derrick, showing the windlass carried thereby.

The invention is shown in its application to boring in earth. The invention is applicable to boring in rock. When used for boring in earth a bit 6 is mounted at the lower end of a boring rod 7. The boring rod 7 is composed of a plurality of sections, added as the well is sunk. The sections of rod are of a length to extend from near the ground to the upper end of guide bars 8, 8. The guide bars 8, 8 are constructed of wood, or other suitable material, and held in a vertical position in cross bars 9, 9 at the bottom of the derrick and 10, 10 extended between and secured near the upper ends of the said derrick. The guide bars 8, 8 are removably mounted upon the cross bars 9, 9

and 10, 10, loops 11, 11 being provided on each of the said cross bars to hold the said guide bars.

The upper section of the boring rod 7 is engaged by a head section 12. The connection between the head section 12 and the rod 7 is by means of a union 13. The union 13 is secured to the head section 12 and to the section of the rod 7 by screw threads, as seen in Fig. 3 of the drawings. The upper end of the section 12 is extended through a T-shaped swivel 14. The head section 12 is terminated by a tubular head 15, the end whereof is solid and provided with a flange 16.

Formed in the upper end of the swivel 14 is a packing cup to receive a packing 17. Upon the packing 17 rests the flange 16. The lower end of the swivel 14 is provided with a similar packing recess to receive a packing 17^a. Against the packing at the lower end is forced a gland 18. The gland 18 has threaded engagement with the lower end of the head 15. When the gland 18 is screwed tightly against the packing 17^a at the lower end, the flange 16 is drawn tightly against the packing 17 at the upper end. The head 15 and rod forming the head 12 are joined by a union 19. This joint may be a fixed joint, although it is preferably formed in this manner to provide for alterations and removal of the parts in small sections.

The swivel 14 is held fixedly in the frame to extend a connection 20 constantly in one direction. In the operation, the boring rod 7 is rotated and when thus rotated it rests within the swivel 14. At the upper end of the head 15 is a threaded extension provided with a cap screw 21, the under surface of which is coned to provide an anti-friction bearing with balls 22. The opposite side of the bearing is formed by a stirrup 23, a circular shoe being provided to form the groove for the balls 22. It is to the stirrup 23 that the hoisting tackle is connected.

A platform 24 is extended at one side of the rod 7, and is guided by the guide bars 8, 8. The platform 24 is recessed to extend around the bars 8, 8, and is suspended by upright posts 24^a and by the rods 25, 25, which are drawn together and joined to form stirrup loops 26, 26. The loops 26, 26 are open ended, as are the recesses in the platform 24. The ends of the loops are

closed by shoes 27, 27. The shoes 27, 27 are centrally perforated and pass a holding rod 28. Perforations are provided in the loops 26, 26 to receive the said rod. The rod is threaded through the perforations in the said loops and said shoes when the platform is placed in guided relation to the bars 8, 8. With the loops 26, 26 thus closed it becomes unnecessary to close the recesses in the platform 24.

The weight of the platform 24 is carried on the boring rod 7, being suspended thereon by a hanger 29. The hanger 29 is perforated at the top to pass the head 12, the perforations being smooth bored to permit the said head to rotate therein. Between the upright extensions of the hanger 29 is secured a cross brace 30, likewise perforated to pass the head 12 and to permit the same to rotate therein. The two perforations are accurately alined in vertical disposition. They are separated by a sleeve 31 and the hub of a gear 32. The cross brace 30 rests upon, and has a bearing on top of the union 13. In this manner a mounting for the heads 12 and 15 and swivel 14 is provided in the hanger 29 and platform 24 connected therewith. The union 19 fits down over the top cross extension of the hanger 29, thereby holding the hanger snugly in relation to the said boring rod 7.

The rotating mechanism for the boring rod 7 employs double gears 32 and 33. The gear 32 is mounted as above described. The gear 33 is mounted as shown in Fig. 3 of the drawings, a bearing being provided in the hanger 29. Fixedly attached to the wheel 33 is a shaft 34. Mounted at the outer end of the shaft 34 is a crank 35. The crank 35 is so disposed that a mechanic standing on the platform 24 may revolve the crank 35, thereby operating through the gear 33 and gear 32 to rotate the boring rod 7 to which the said gear 32 is fixedly connected by means of the head 12 and union 13.

The suspended weight of the platform 24 and boring rod 7 is carried on blocks 36, 37, 38 and 39. A cable 40 is reeved about the blocks 38 and 36 and wound upon a windlass 41. When the windlass 41 is rotated to wind the cable 40, the boring rod 7 and platform 24 are raised thereby. The block 36 is suitably connected to the stirrup 23. By means of the cap 21, and the bearing formed thereby, the rotation of the head 15 and boring rod connected therewith does not twist the cable 40. A cable 42 is reeved about the blocks 37 and 39 and anchored on a belaying block 43.

In the operation of the cables 40 and 42, the cable 40 is employed to raise the boring rod 7 and platform 24 to the required height to permit the introduction of the succeeding section of the boring rod. These sections are connected by being threaded one within

the other, as is usual in this art. When connected to the uppermost of the rod sections, a new section is held in line while the head 12 is lowered upon the upper end of the new section, in which position the union 13 is screwed upon the said new section. The windlass 41 is now released, permitting the entire weight of the platform and operative standing thereon to be carried on the boring rod 7. The suspended weight is, however, immediately transferred to the cable 42. This cable 42 is operated manually by the operative snubbing the cable around the belaying block 43 to thereby govern the descent of the boring rod.

As the boring continues, the platform and the upper end of the new section of boring rod, gradually fall, until the platform rests upon the surface of the ground, or so nearly approach the same that it becomes necessary to add a new section of the rod 7. To do this the union 13 is raised and the windlass 41 again operated to lift the head 15 and part connected therewith to the raised position to receive a new section of the boring rod.

It will be understood that the operation of boring is dependent upon the rotation of the boring rod 7, and this is manually performed by the operative while standing on the platform. By this arrangement advantage is taken of the weight, as well as strength, of the operative.

It is to clear the hole as bored that I have provided the tubular boring rod 7. It is through the boring rod 7 that I introduce a stream of water under pressure. The water enters the rod 7 through orifices 44, 44 formed in the head 15 in line with the connection 20. The connection 20 is joined to a flexible hose 45, which is connected to any suitable pump, such as shown at 46 in Fig. 1 of the drawings. The rod 7 is surrounded by a pipe casing 47. The casing 47 is comprised of a plurality of sections suitably coupled and forced into the hole formed by the bit 6. The casing 47 is of a diameter sufficiently enlarged over the diameter of the rod 7 that the water forced downward through the rod 7 is delivered upward through the casing 47. At the upper end of the casing 47 is secured a head 48. This head is a T-shaped pipe section, from the middle extension of which is suspended horizontally a nozzle 49. The head 48 is provided with a nipple 50 adapted to be connected by means of a union 51, with the succeeding sections of the casing 47.

In operation, as the well is bored, and as each of the sections of the rod 7 are put in operation, the various sections of the casing 47 are placed in operation. The nozzle 49 is extended over any suitable trough 52, or equivalent reservoir or waste system.

Having thus described my invention, what I

I claim as new and desire to secure by Letters Patent is:

1. A well boring machine comprising a boring rod; a rotary head adapted to be fixedly attached to said rod; a platform connected with said head to be suspended therefrom; a beveled gear wheel fixedly mounted on said head; a pinion gear in toothed engagement with said beveled gear wheel; a crank shaft mounted in bearings on said platform and having fixedly mounted thereon said pinion; and vertical guide members for said platform stationarily mounted in parallel relation to said rod.

2. A well boring machine comprising a standing frame having a portion suspended above the proposed well; a boring rod embodying a plurality of joined sections; a rotary head adapted to be fixedly attached to said rod; a platform connected with said head to be suspended therefrom; a hoisting mechanism for said platform operatively controlled at said platform and embodying a windlass and tackle connecting the said head and frame; a beveled gear wheel fixedly mounted on said head; a pinion gear in toothed engagement with said beveled gear wheel; a crank shaft mounted in bearings on said platform and having fixedly mounted thereon said pinion; and vertical guide members for said platform stationarily mounted in parallel relation to said rod.

3. A well boring machine comprising a hoisting frame disposed above the proposed well and provided with hoisting tackle; a boring rod; a rotary head adapted to be fixedly attached to said rod; a platform connected with said head to be suspended therefrom; a beveled gear wheel fixedly mounted on said head; a pinion gear in toothed engagement with said beveled gear wheel; a crank shaft mounted in bearings on said platform and having fixedly mounted thereon said pinion; vertical guide members for

said platform stationarily mounted in parallel relation to said rod; and guide loops mounted on said platform to loosely surround said guide members.

4. A well boring machine comprising a hoisting frame disposed above the proposed well and provided with hoisting tackle; a boring rod; a rotary head adapted to be fixedly attached to said rod; a platform connected with said head to be suspended therefrom; a beveled gear wheel fixedly mounted on said head; a pinion gear in toothed engagement with said beveled gear wheel; a crank shaft mounted in bearings on said platform and having fixedly mounted thereon said pinion; vertical guide members for said platform stationarily mounted in parallel relation to said rod; open ended loops formed on said platform to loosely surround said guide members; removable closure members adapted to close the open end of said loops; and means for securing said closure members in position to close the said loops.

5. A well boring machine comprising a boring rod; a rotary head adapted to be fixedly attached to said head; a platform connected with said head to be suspended therefrom; manually operated means mounted on said platform for rotating said head; vertical guide members for said platform stationarily mounted in parallel relation to said boring rod; and a suspension mechanism for said platform connected with said guide members and manually controlled upon said platform to permit the weight of the platform and articles carried thereby to rest upon said boring rod.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER ANTONE BOUCHET.

Witnesses:

FRANK H. FARRAR,
F. W. HENDERSON.