No. 874,275. PATENTED DEC. 17, 1907.

J. G. WINGER.

HYDRAULIC WINCH.

APPLICATION FILED JAN. 22, 1907.

3 SHEETS—SHEET 1.

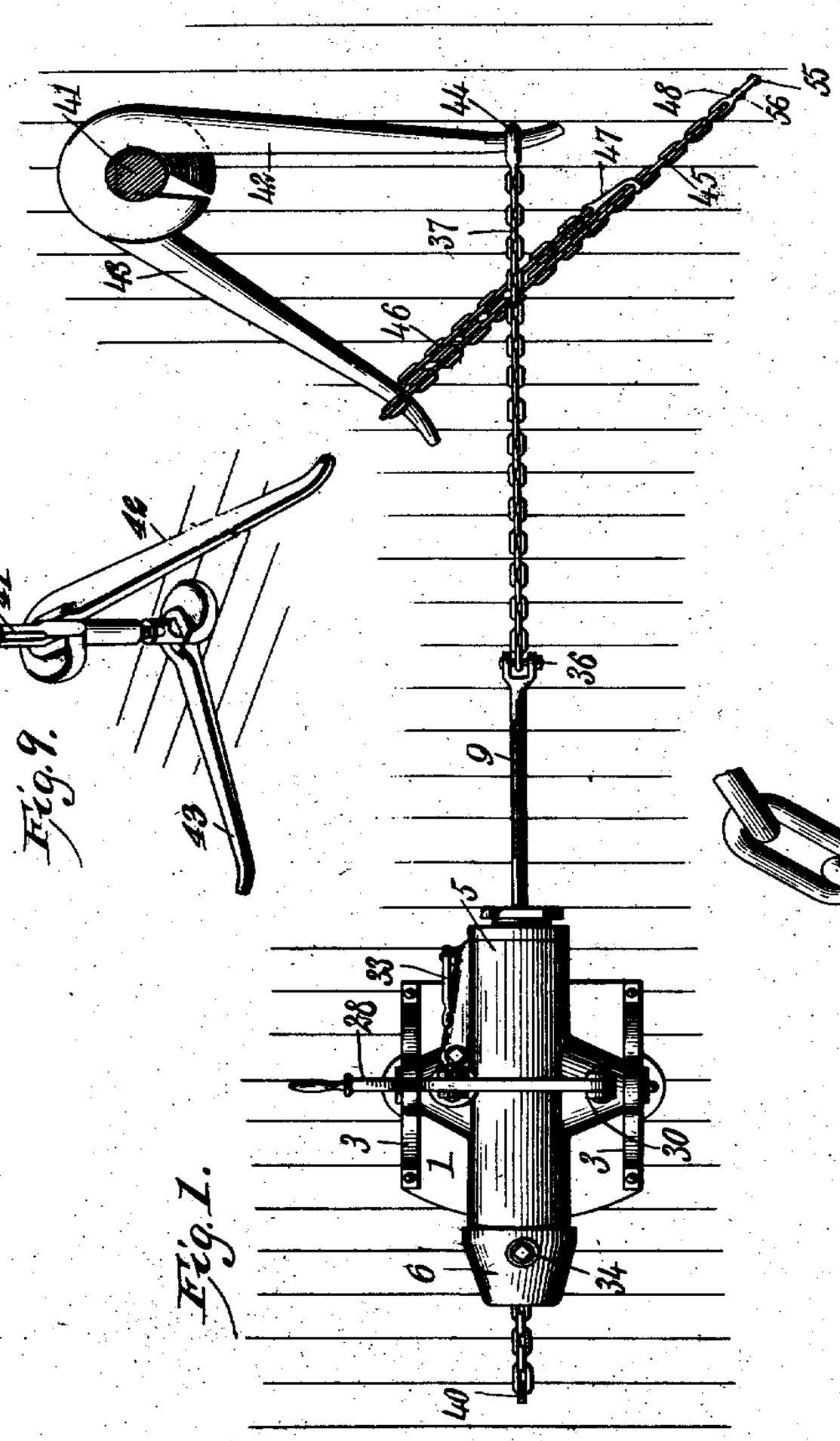

Fig. 1.

Fig. 9.

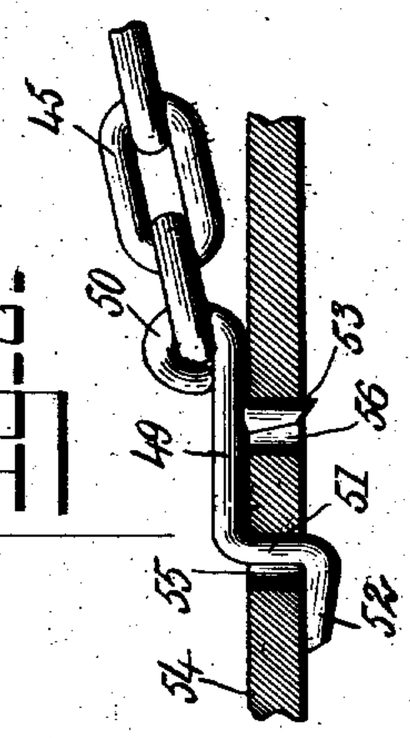

Fig. 8.

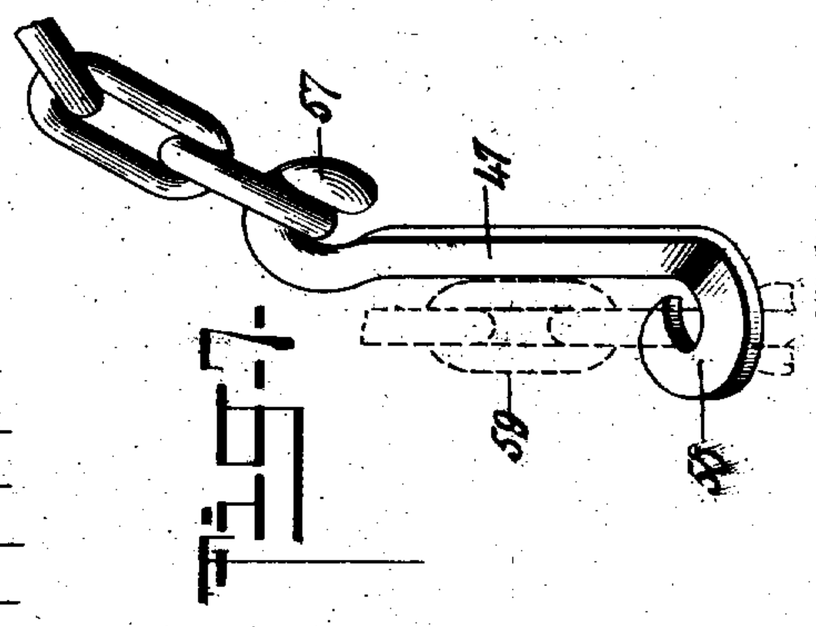

Fig. 7.

WITNESSES

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3 SHEETS—SHEET 2.

FIG. 2.

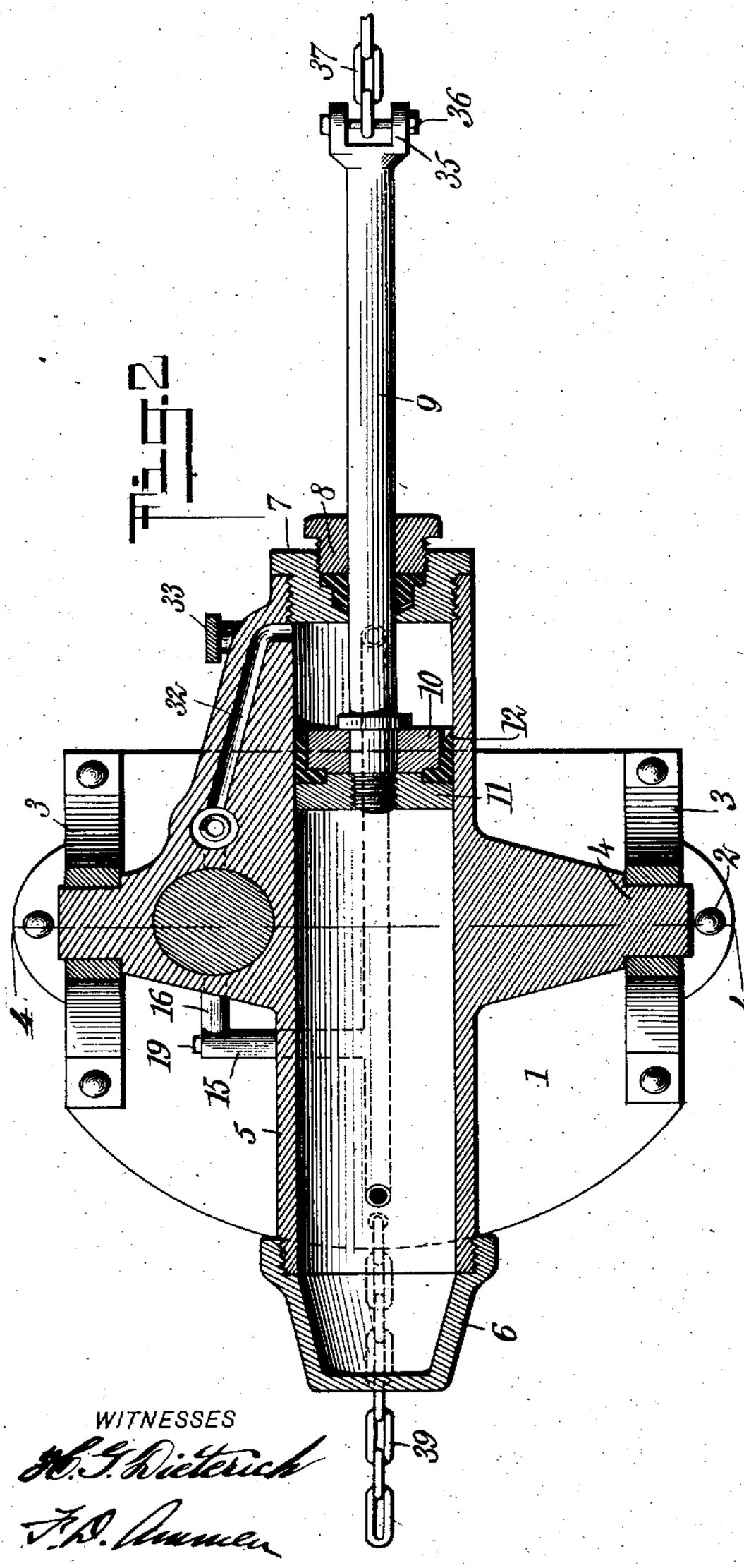
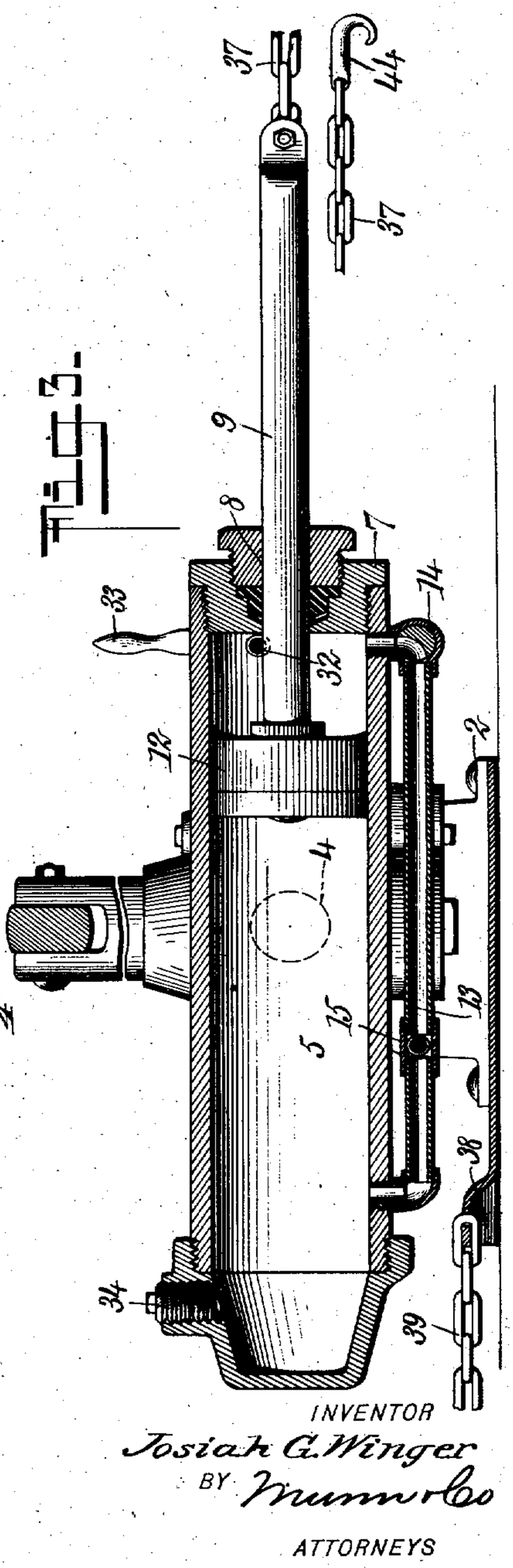


FIG. 3.



WITNESSES

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3 SHEETS—SHEET 3.

Fig. 4.

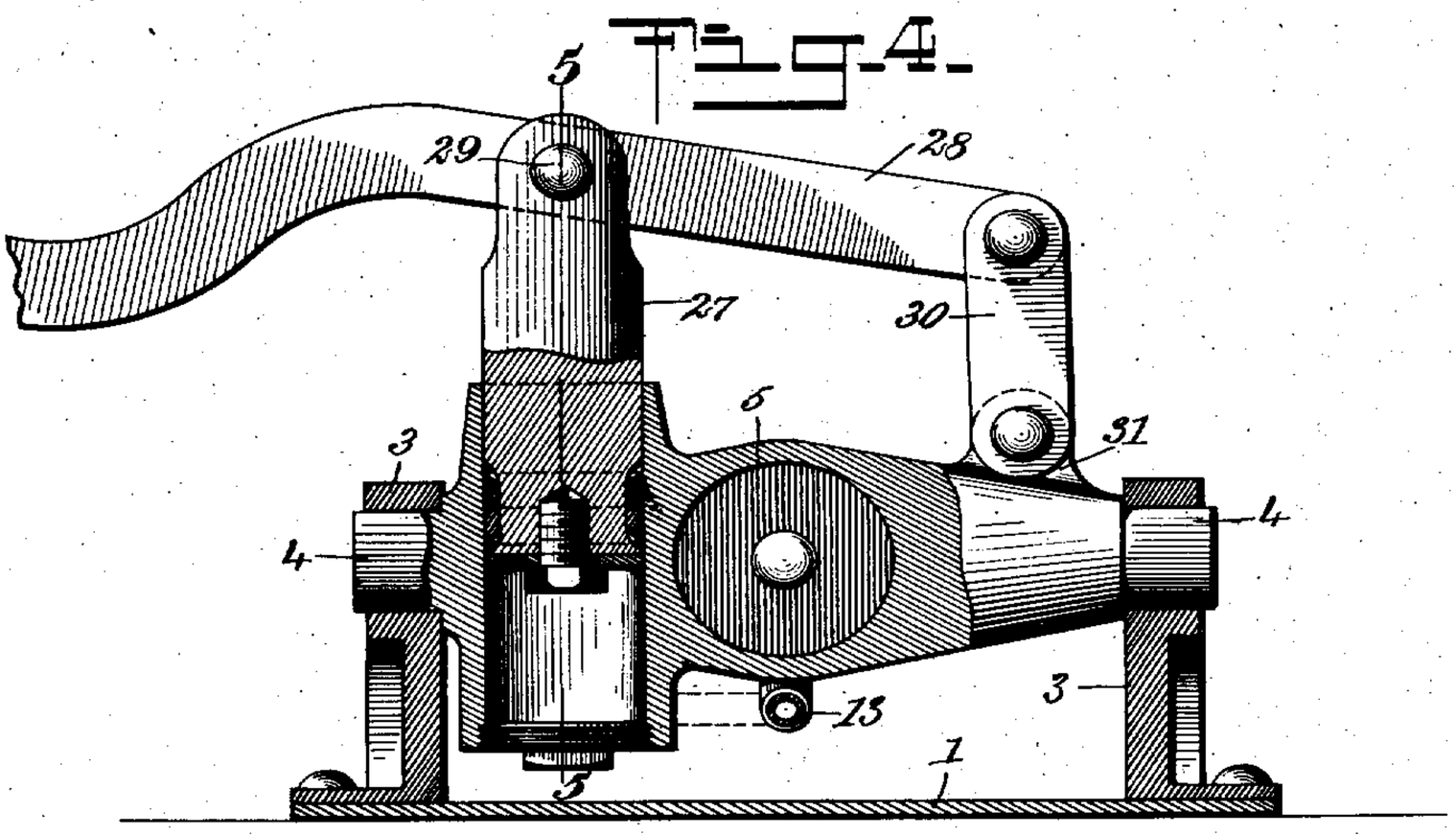

Fig. 5.

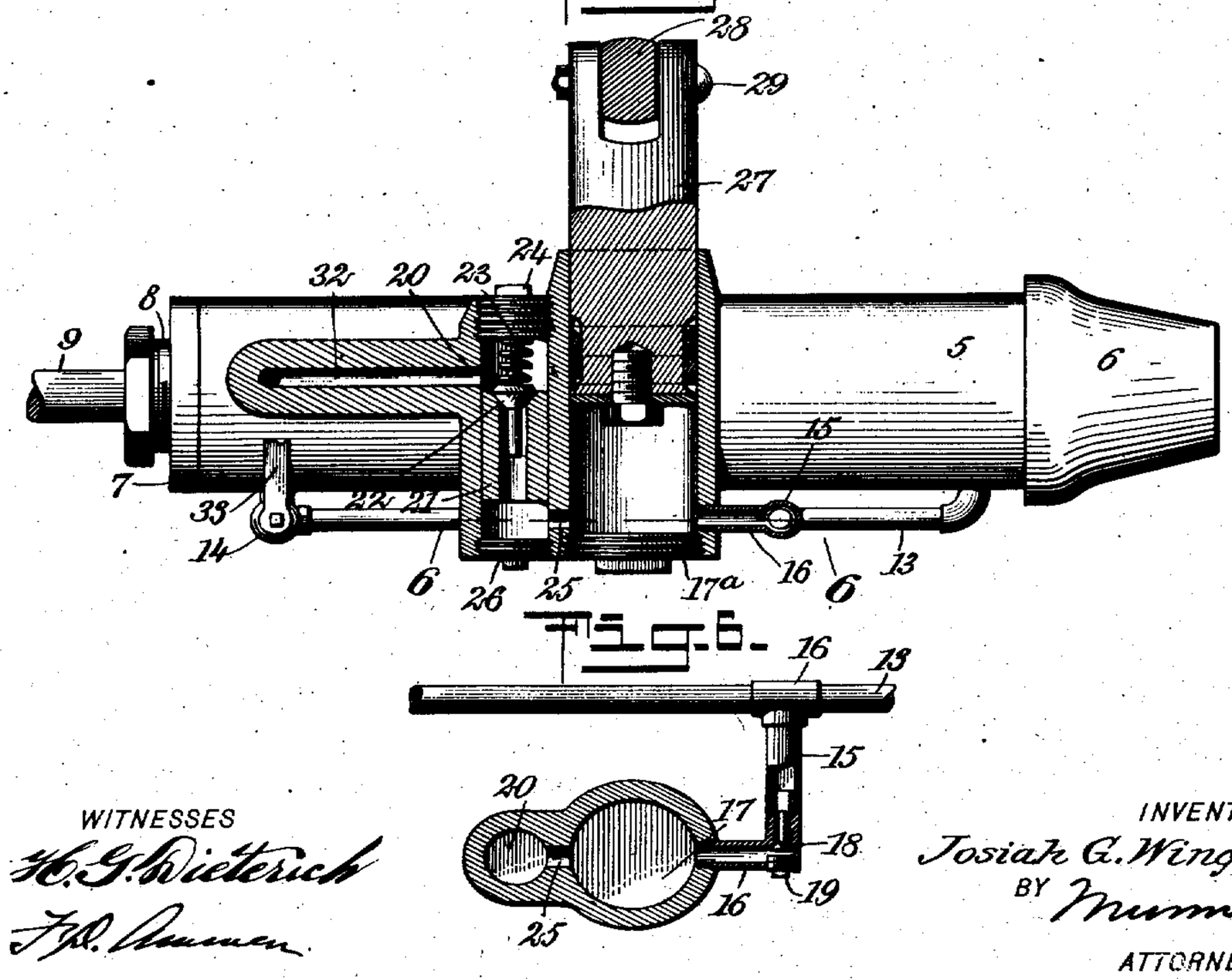

Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

JOSIAH G. WINGER, OF GRAND VALLEY, PENNSYLVANIA, ASSIGNOR TO CHRISTOPH FREDERICK GRETTENBERGER, OF TIDIOUTE, PENNSYLVANIA.

HYDRAULIC WINCH.

No. 874,275. Specification of Letters Patent. Patented Dec. 17, 1907.

Application filed January 22, 1907. Serial No. 353,523.

To all whom it may concern:

Be it known that I, JOSIAH G. WINGER, a citizen of the United States, and a resident of Grand Valley, in the county of Warren and State of Pennsylvania, have invented a new and Improved Hydraulic Winch, of which the following is a full, clear, and exact description.

This invention relates to winches, and especially to hydraulic winches.

The object of the invention is to produce a winch of this class which is simple in construction and which is especially adapted for use in connection with the drilling of oil wells or Artesian wells, and for unscrewing or screwing together the sections of the drill or tool joints.

A further object of the invention is to provide a winch especially adapted for moving heavy weights from place to place.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan showing the manner in which the winch is applied to the work and showing the drill in cross section; Fig. 2 is a longitudinal section through the winch, taken in a horizontal plane; Fig. 3 is a longitudinal section through the winch taken in a vertical plane; Fig. 4 is a cross section through the winch taken on the line 4—4 of Fig. 2; Fig. 5 is a vertical section on the line 5—5 of Fig. 4; Fig. 6 is a section taken on the line 6—6 of Fig. 5; Fig. 7 is a perspective illustrating the construction and manner of using an anchor hook which constitutes a feature of the invention; this hook is used for attaching an end of the chain to another portion of the chain; Fig. 8 is a vertical section taken through the floor and illustrating the construction and manner of use of an anchor hook for anchoring the end of a chain to the floor, and Fig. 9 is a perspective view of portions of two sections of a drill or tool, and the wrenches applied thereto.

Referring more particularly to the parts, and especially to Figs. 2 to 5, 1 represents a housing or base. At opposite sides, this frame is provided with upwardly projecting brackets 3 which constitute bearings for the trunnions 4 of a cylinder or barrel 5 mounted therebetween to rotate upon a horizontal axis. These brackets are attached to the base 1 by suitable bolts 2. The rear extremity of this barrel is closed by a bonnet 6 which screws upon the same as indicated. The opposite extremity is closed by a suitable plug 7 furnished with a stuffing-box 8 through which the plunger or piston rod 9 passes, as shown. Within the barrel, a piston head 10 is mounted to slide, and this head is rigidly attached to the piston rod 9 by means of a follower 11 which holds in position a cup leather or packing leather 12 of common construction.

As indicated most clearly in Fig. 3, the opposite ends of the cylinder are connected by a by-pass pipe 13, and at a suitable point in this pipe a cock 14 is provided, which enables communication between the two ends of the cylinder to be cut off. This cock is preferably attached near the forward end of the cylinder or barrel. Near the opposite end of the pipe 13, a feed pipe 15 is provided, as indicated in Fig. 6, which constitutes a branch from the pipe 13, and this pipe is formed with a lateral extension 16 which leads to the casing of the barrel as shown. In the casing of the barrel there is formed a pump cylinder 17, with which the pipe 16 communicates, as shown. This pump cylinder is formed upon a vertical axis, and its lower end is closed by a removable plug or head 17ª which screws into the cylinder from below as shown in Fig. 5.

In the feed pipe 15 near its point of communication with the extension 16, a check valve 18 is provided, which opens in a direction to permit a flow from the pipe 15 to the pump cylinder, but not in the opposite direction. Opposite this valve a removable plug 19 is provided, which enables the valve to be removed. At the side of the pump cylinder 17 there is formed a valve chamber 20 which is provided with a bushing 21, the upper portion of which is formed into a seat for a check valve 22, and this valve is normally held upon its seat by means of a spring 23, the upper end of which is seated against a removable plug 24. The lower portion of this valve chamber communicates, through a

port 25, with the interior of the pump cylinder at the lower end thereof. The lower end of the valve chamber is closed by a suitable removable plug 26. In the pump cylinder there is mounted a reciprocating plunger 27 which is adapted to be operated by means of a lever 28 connected thereto by a suitable pin 29, the said lever being attached at its forward extremity to links 30, the lower ends of which are pivotally attached to lugs 31 which project up from the casing or barrel, as indicated.

The upper portion of the valve chest 20 above the valve 22, is in communication with an inlet duct 32, which duct is formed in the casing or barrel as shown, and leads to the forward end of the barrel, as indicated most clearly in Fig. 2. The cock 14 may be opened or closed by means of a hand lever 33, and access may be had to the interior of the bonnet 6 through a removable plug 34.

The forward end of the piston rod 9 which extends through the stuffing-box 8, is formed into a clevis 35 having a transverse bolt 36 to which the winch chain 37 may be attached as indicated.

As indicated most clearly in Fig. 3, the base 1 consists substantially of a plate which lies flat upon the floor. At its rear edge this plate is offset upwardly so as to form a pocket 38 at which there is attached permanently a winch anchor chain 39. The rear end of this chain is attached to the floor by a suitable anchor bolt 40, as indicated in Fig. 1. To the upper section 41 of the drill, an upper wrench 42 is applied, as indicated in Fig. 1, and a similar wrench 43 is applied to the lower section. The chain 37 is provided at its extremity with a hook 44 which is attached to the wrench 42 as indicated. To the end of the wrench 43 an anchor chain 45 is attached by forming a loop 46 about the handle of the wrench as shown. The end of the chain forming this loop is provided with a hook 47, the construction of which is most clearly shown in Fig. 7, and the fixed end of the chain is provided with an anchor hook 48, the construction of which is most clearly shown in Fig. 8. This anchor hook is formed with a body 49 having an eye 50 formed at one extremity thereof, to which the chain 45 is attached. This body 49 is formed at its extremity opposite the eye 50 with a downwardly extending shank 51 and the extremity of this shank is bent forwardly to form a toe 52.

From the under side of the body 49 near the eye 50, a downwardly projecting spur 53 is formed. The form of this hook is such as to facilitate its being attached to the floor 54 by providing the floor with two openings 55 and 56. Through the first opening 55 the end of the hook is inserted, so that the toe 52 will project under the floor, the shank 51 passing through the opening 55 so that the body 49 of the hook lies flat upon the floor, as shown. The spur 53 is then received in the opening 56.

The hook 47 is formed with an elongated body formed from a flat bar, and the rear end of this body is bent to form a rudimentary eye 57. This eye is attached to the end of the chain forming the loop 46, as indicated most clearly in Figs. 1 and 7. At the end opposite the rudimentary eye 57, the body of the hook 47 is bent laterally and formed into a curved spur 58, which spur is disposed in a plane substantially at right angles to the body of the hook. This construction enables the hook to be applied to a straight taut chain, as indicated by the dotted lines 59 in Fig. 7. In this connection, it will be understood that the body of the hook lies substantially parallel with the direction in which the chain extends, and the spur 58 of the hook is passed into the eye of the link, as illustrated.

The arrangement of the parts illustrated in Fig. 1, is that which arises when the winch is to operate to screw together two drill sections connected by a right-hand thread, and the mode of operation with this arrangement will now be described: The lever 33 is rotated so as to close the cock 14; in this way, the outlet from the barrel becomes closed. The pump lever 28 is then rocked so as to draw a suitable fluid, such as oil or glycerin, from the rear end of the barrel, forcing the same into the forward end of the barrel through the valves 18 and 22, and through the inlet duct 32. The accumulating fluid in the forward end of the barrel forces the head 10 toward the rear of the barrel, and draws in the piston rod 9. In this way the chain 37 is taken up, so that the wrench 42 is operated, rotating the upper drill section 41 toward the right. The anchor chain 45 operates to prevent the rotation of the lower drill section through the medium of the wrench 43. After the wrench 42 is moved so far as to prevent the winch from operating upon it effectively, this wrench will be removed and applied further back and the operation repeated. In order to allow the piston rod 9 to return to its extended condition, it is only necessary to open the cock 14, whereupon free communication will be opened between the ends of the barrel.

It should be understood that the winch is not attached to the floor, but is simply anchored to the floor by the chain 40. With this arrangement, the winch can evidently shift its position so as to suit the changes in position of the hook 44 in a horizontal direction. The fact that the barrel of the winch is hung on trunnions, enables it to rock in a vertical plane so as to adapt itself to changes in the position of the hook 44 in a vertical plane. We thus have an arrangement which admirably adapts the winch for

operating under circumstances such as those described. While the winch is intended to be used for the purpose suggested, it is evidently capable of being used in many other connections.

Attention is also called to the fact that the power which drives the pump is exerted in a vertical plane which does not tend to deflect the chains from a straight line.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination with a horizontally turning and a vertically traveling lever, of a motor having a cylinder, a piston in the cylinder, and a base upon which the cylinder is pivotally mounted to rock in a vertical plane, a chain having one end secured to one end of the base of the motor and its other end anchored, and a second chain extending in an opposite direction to the first chain and having one end secured to the piston rod of the motor and its other end movably secured on the said lever, whereby the motor can shift its position to accommodate itself to the different vertical and horizontal positions the connection of the chain with the lever occupies in the various positions of said lever.

2. An apparatus for screwing together the sections of drills or like tools, comprising two wrenches for engaging the sections of the drill, a chain having one end secured to one wrench and its other end anchored, a motor having a cylinder, a piston in the cylinder and a base upon which the cylinder is pivotally mounted to rock in a vertical plane, a chain having one end secured to the end of the base of the motor opposite that from which the piston rod of the cylinder projects and its other end anchored, and a chain having one end secured to the piston rod and its other end to the other wrench.

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

JOSIAH G. WINGER.

Witnesses:
ISAAC VALENTINE,
HOMER M. PUTNAM.

Correction in Letters Patent No. 874,275.

It is hereby certified that Letters Patent No. 874,275, granted December 17, 1907, upon the application of Josiah G. Winger, of Grand Valley, Pennsylvania, for an improvement in "Hydraulic Winches," were erroneously issued to "Christoph Frederick Grettenberger," as owner of the entire interest in said invention, whereas said Letters Patent should have been issued to the inventor, *Josiah G. Winger and Christoph Frederick Grettenberger, jointly,* said Grettenberger being the assignee of *one-half* interest only in said patent, as shown by the record of assignment in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of January, A. D., 1908.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

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