

No. 789,501.

PATENTED MAY 9, 1905.

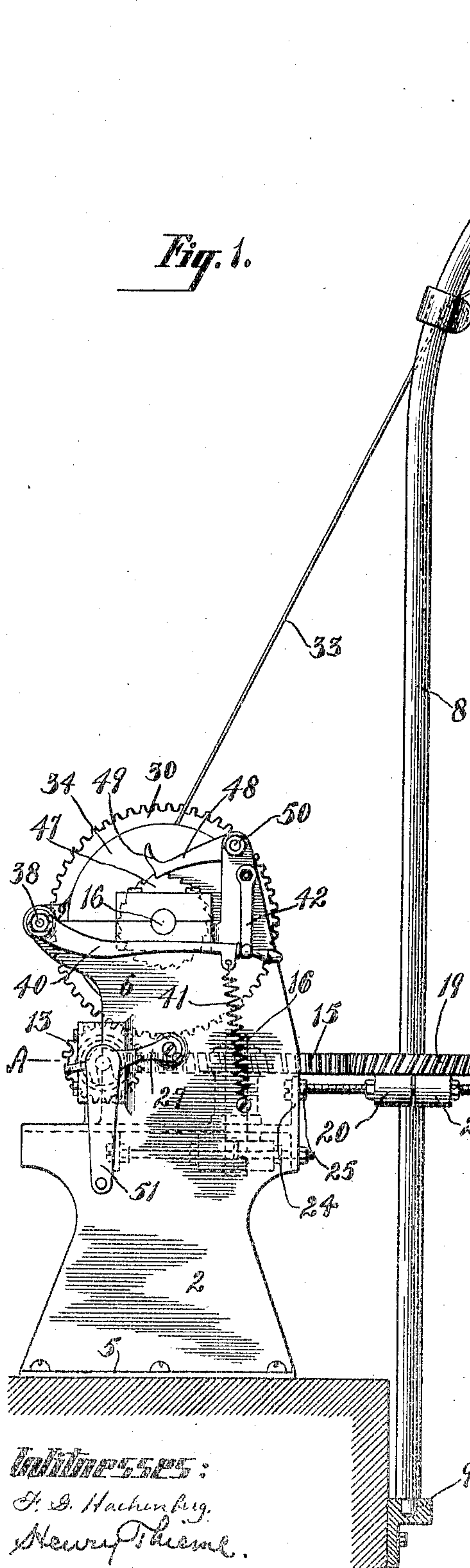
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DAVIT.

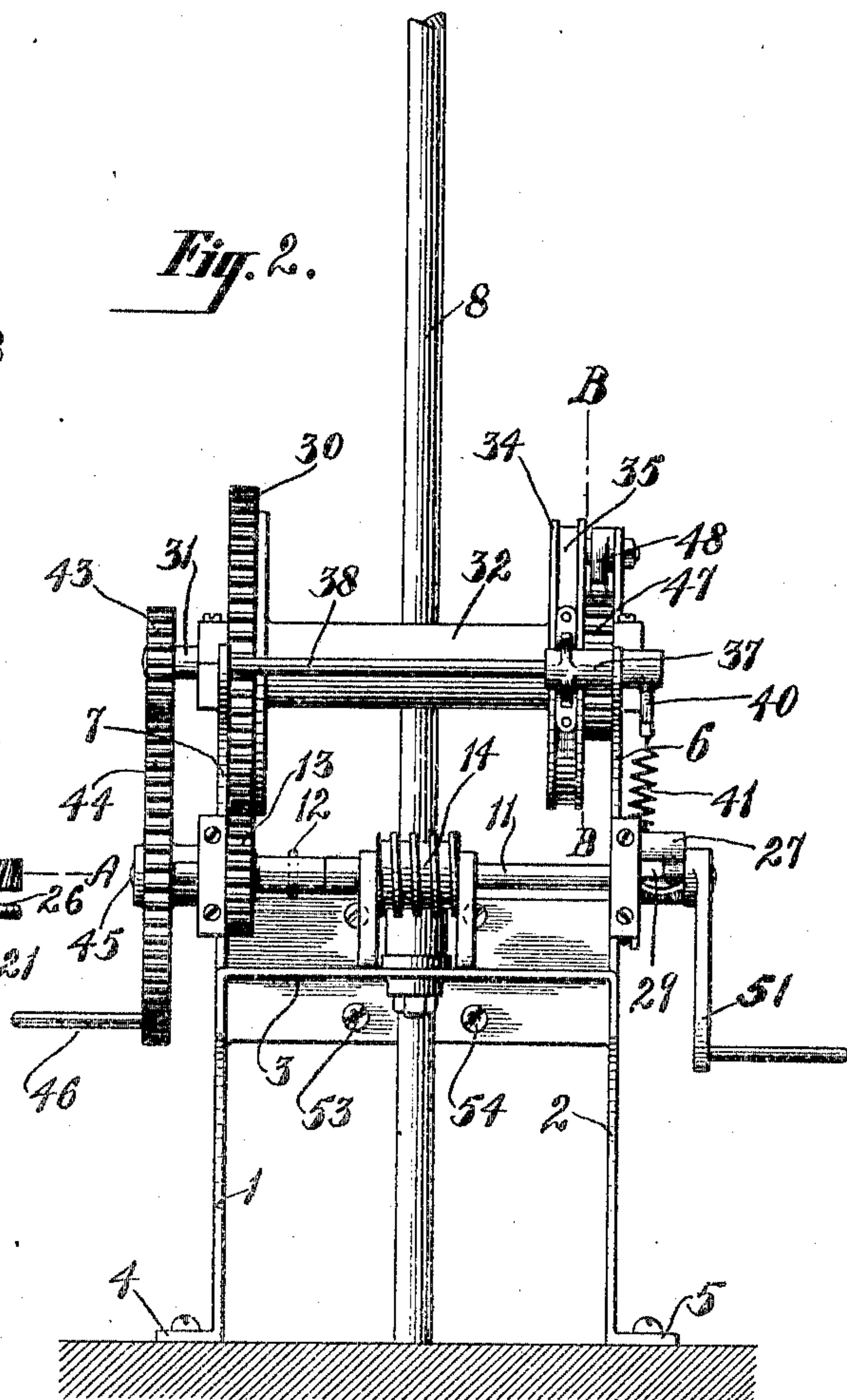
APPLICATION FILED OCT. 10, 1904.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



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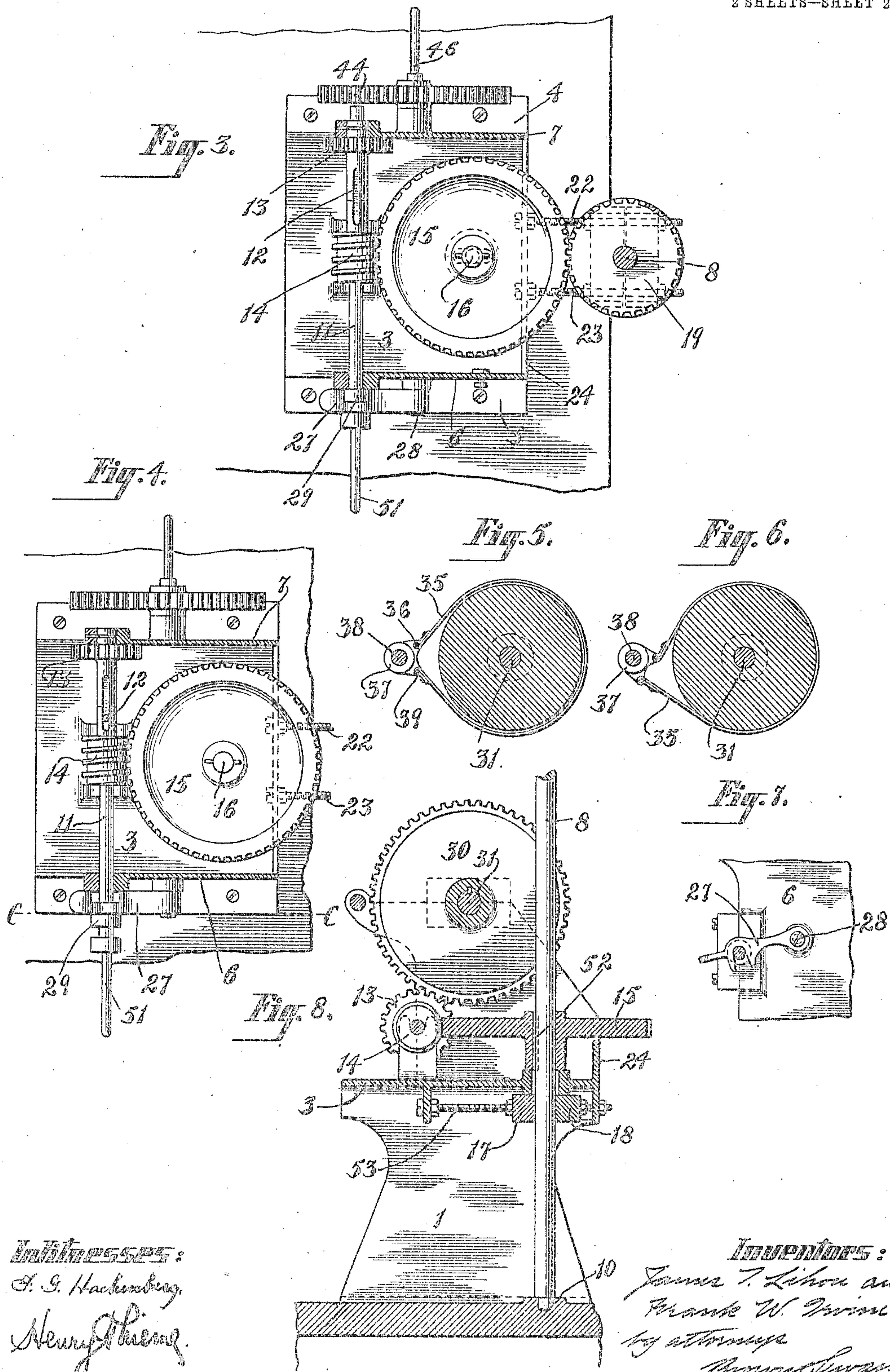


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DAVIT.

APPLICATION FILED OCT. 10, 1904.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## DAVIT.

SPECIFICATION forming part of Letters Patent No. 789,501, dated May 9, 1905.

Application filed October 10, 1904. Serial No. 227,805.

*To all whom it may concern:*

Be it known that we, JAMES T. LIHOU, a resident of Flushing, in the county of Queens, and FRANK W. IRVINE, a resident of the borough of Brooklyn, in the city of New York, State of New York, citizens of the United States, have invented a new and useful Davit, of which the following is a specification.

Our invention relates to davits, and more particularly to davits used on large craft where the life-boats, launches, and tenders are heavy, requiring a very considerable purchase to handle them.

Our object is to provide for the rapid taking up of slack lines and the subsequent lifting of the boat from the water by reducing-gear, and at the same time providing means for quick lowering away and for swinging the davit to carry the suspended boat inboard or outboard at pleasure, and to further provide for locating the davit-arm either inboard or outboard at pleasure.

It is to be understood that there are two of these davits of similar construction for handling each boat, one only being shown in connection with our present application.

In the accompanying drawings, Figure 1 is a view of the davit in side elevation, the davit-arm being located in this instance outboard. Fig. 2 is a back view of the same, the overhanging arm being broken away. Fig. 3 is a horizontal section in the plane of the line A A of Fig. 1, showing the worm-shaft in the position which it assumes when its pinion is engaged with the spur-wheel on the hoisting-drum. Fig. 4 is a similar view showing the worm-shaft in the position which it assumes when its pinion is released from the spur-wheel on the hoisting-drum. Fig. 5 is a view of the brake-wheel in the plane of the line B B of Fig. 2, showing the brake thereon released. Fig. 6 is a similar view showing the brake set. Fig. 7 is a view in side elevation in detail in the plane of the line C C of Fig. 4, showing the latch for retaining the worm-shaft in its different longitudinal adjustments; and Fig. 8 is a central vertical section from front to rear, showing the location of the over-

hanging arm inboard, the top of the arm being broken away.

The pedestal, which is assumed to be held fast to the deck, may be of any suitable form and is here shown as consisting of a pair of metallic legs 1 2, connected by a top plate 3 and provided with flanges 4 and 5 at the base through which it is bolted to the deck, the said pedestal being further provided with a superstructure either attached thereto or formed integral therewith and consisting of a pair of side plates 6 and 7, forming a continuation of the legs 1 and 2.

The overhanging arm is denoted by 8 and is shown in Figs. 1, 2, 3 as located outboard and supported in a suitable step 9, attached to the side of the vessel, while in Fig. 8 the said overhanging arm is supported in a suitable step 10 on the deck inboard and in this instance occupies a different relation to the operating-gear, as will be hereinafter more particularly described.

The worm-shaft, which is the operating-shaft, is denoted by 11 and is journaled in suitable bearings in the side plates 6 and 7. It is permitted a longitudinal sliding movement transversely of the frame to throw a clutch 12, fixed to the shaft, into and out of engagement with the hub of the driving-pinion 13 and also into and out of engagement with the hub of a worm 14, the said driving-pinion 13 and worm 14 being mounted on the shaft 11 to freely rotate on the shaft, while permitting the shaft to slide to a limited extent longitudinally through their hubs.

The worm 14 is in gear with a worm-wheel 15, mounted on a short axle 16, uprising from the top plate 3 of the pedestal and conveniently held in position by the cheek-pieces or two half-bearings 17 18, (see Fig. 8,) which cheek-pieces or half-bearings also may be used when the overhanging arm 8 is set inboard to hold the arm, and hence the worm-wheel 15, through which the arm 8 in this instance passes, in position with respect to the worm 14.

When the overhanging arm is set outboard, as shown in Figs. 1, 2, 3, it has keyed thereon a spur-wheel 19, in mesh with the worm-wheel



15, and is adjusted and held in position with the wheels 19 and 15 in gear by means of a pair of cheek-pieces or half-bearings 20 21, mounted on screws 22 23, (see Fig. 3,) set in  
5 a flange 24, uprising from the front of the top piece 3 of the pedestal and provided with adjusting-nuts 25 26.

The operating-shaft 11 is locked to the worm 14 by pulling it outwardly until its clutch 12 engages the hub of the worm 14, as shown in Fig. 4, and is released from the worm and locked to the driving-pinion 13 by pushing it inwardly until the said clutch 12 engages the hub of the driving-pinion 13, as shown in Fig.  
15 3. The operating-shaft 11 is held in each of these two positions—viz., its outward position to make the worm operative and its inner position to make the pinion operative—by means of a swinging latch 27, pivoted at 28  
20 to the side 6 of the superstructure and with its free end free to drop into position on either side of a collar 29, fixed on the operating-shaft exterior to the side frame 6.

The driving-pinion 13 intermeshes with a  
25 gear-wheel 30 on the shaft 31, which carries the winding-drum 32, to which one end of the hoisting-rope 33 is secured. There is fixed to rotate with the winding-drum 32 a plain-faced disk 34, which is the brake-wheel and  
30 around which a band-brake 35 is located, one end of the said band-brake being attached at 36 to a projection on a rocking hub 37, mounted on the tie or spacing bar 38 and the other end of said brake being attached at 39 to another projection on the said rocking hub 37,  
35 so that when the hub is rocked in one direction the two ends of the brake-band will be drawn in a direction to force the brake-band into contact with the brake-wheel, (see Fig.  
40 6,) and when the hub is rocked in the opposite direction the ends of the brake-band will be drawn in a direction to release the brake-band from the brake-wheel. (See Fig. 5.)

The hub 37 is operated by means of a rear-  
45 wardly-extending arm 40, which is actuated by means of a spring 41 in a direction to throw the brake into engagement with the brake-wheel, but which may be held against the tension of the spring 41 in position to release the brake-band from the brake-wheel by  
50 placing the end of the arm 40 in the bight of a depending hook 42. (See Fig. 1.)

The drum-shaft 31 has fixed thereon a pinion 43 in gear with the spur-wheel 44 on a  
55 short shaft 45, projecting outwardly from the sides of the plate 7. The wheel 44 has attached to it near its periphery a handle 46 for rotating it. The shaft 31 has also fixed thereon at its end opposite the pinion 43 a ratchet-wheel 47, engaged by a gravity-pawl 48, the  
60 said pawl being provided with a handle 49, by means of which it may be lifted out of engagement with the ratchet-wheel 47 when desired. The pawl 48 may be thrown temporarily out

of engagement with the ratchet-wheel 47 by 65 simply swinging up and over past center on its pivot 50.

The operating-shaft 11 is provided at its outer end with a crank 51 for operating it.

The operation is as follows: To swing the 70 davit to carry the boat outboard, adjust the shaft 11 with its clutch 12 in engagement with the hub of the worm 14, then rotate the shaft 11 by means of the crank 51, which will, through the engagement of the worm 14 with 75 the worm-wheel 15 and the engagement of the latter with the spur-wheel 19, cause the arm 8 to turn on its vertical axis. When it has reached the proper position for lowering the boat away, the hand-brake is permitted to be 80 thrown into engagement with the brake-wheel by unhooking the arm 40 from the hook 42 and letting the spring 41 actuate it in a direction to set the brake, and the pawl 48 is then lifted out of engagement with the ratchet 85 47. By manipulating the lever 40, which controls the band-brake, the operator permits the boat to be launched away under its own weight at such speed as may be desired, the pinion 13 working idly in the meantime on the shaft 11. 90 When it is desired to lift the boat from the water, the movable block on the hoisting-tackle may be carried off and attached to the boat while the boat is kept at any safe distance 95 from the side of the vessel, and when made fast the slack may be taken up rapidly by operating the gear-wheel 44 by its handle 46, since this is a multiplying-gear and causes the winding-drum to rotate several times for each revolution of the wheel 44. As soon as 100 the slack has been taken up the retaining-pawl 48 may be thrown into engagement with the ratchet-wheel 47 and the operating-shaft 11 unlatched and pushed inwardly to cause its clutch to engage the hub of the pinion 13. By 105 then rotating the shaft 11 the winding-drum is slowly rotated, but with a great purchase because of the reducing-gear 13 and 30, and the boat is hoisted from the water until it has reached a height sufficient to be swung in- 110 board. Prior to raising the boat the brake-band should be released from the brake-wheel by locking the arm 40 in the hook 42. When the boat has been elevated, it is swung in- 115 board by lifting the latch 27 and pulling the operating-shaft outwardly to cause the clutch 12 to engage the hub of the worm 14, then permitting the latch 27 to drop to hold the shaft 11 in position, when by turning the shaft 11 in the opposite direction from that 120 in which it was turned to swing the boat outboard the arms 8 will be swung in a direction to carry the boat inboard.

The operation hereinabove described is just the same when the overhanging arm is lo- 125 cated inboard, as shown in Fig. 8, as when it is lowered outboard; but our present invention provides for locating the said overhang-



ing arm in either position as may be desired. For example, if the arm 8 is to be located inboard instead of outboard the short shaft 16 is removed from its position and the arm 8 is allowed to take its place, passing down through the hub of the spur-wheel 15 and between the cheek-pieces or half-bearings 17 and 18 to the stop 10. The arm 8 is then keyed to the spur-wheel 15 by the ordinary feather-and-groove device, (indicated at 52, Fig. 8,) so that the arm 8 will be turned, together with the spur-wheel 15, by the action of the worm.

It is to be noted that the cheek-pieces or half-bearings 17 18 are so mounted on screws 53 54 that the short shaft 16 when it is used or the arm 8 when it is substituted for the shaft may be tilted to hold the spur-wheel 15 in the proper relation to the worm, and it is further to be noted that the half-bearings or cheek-pieces 20 and 21 on the screws 22 23 may also be adjusted to tilt the arm 8 to hold the spur-wheel 19 in its proper relation to the worm-wheel 15.

The device as a whole is eminently practicable and reasonably simple and fulfils all demands required of it.

What we claim is—

1. A davit comprising an overhanging arm suitably mounted to rotate, a gear-supporting frame, an operating-shaft mounted in the frame, a winding-drum mounted in the frame, a reducing-gear connecting the shaft with the drum, a multiple gear connecting the shaft with the drum and gear connecting the shaft with the said overhanging arm.

2. A davit comprising an overhanging arm mounted to rotate, a gear-frame, an operating-shaft mounted in the gear-frame, a winding-drum mounted in the gear-frame, reducing-gear and multiple gear connecting the winding-drum with the operating-shaft, a brake for controlling the rotary movement of the winding-drum, gear connecting the operating-shaft with the overhanging arm, and means for locking the operating-shaft to and releasing it from the winding-drum.

3. A davit comprising an overhanging arm mounted to rotate, a gear-frame, an operating-

shaft mounted in the frame, a winding-drum mounted in the frame, a ratchet-wheel carried by the winding-drum, a retaining-pawl in position to engage the ratchet-wheel, and adapted to be moved out of engagement with the ratchet-wheel, gear connecting the winding-drum with the operating-shaft, gear connecting the overhanging arm with the operating-shaft, a brake for controlling the rotary movement of the winding-drum and means for holding the brake temporarily out of gripping engagement with the winding-drum.

4. A davit comprising an overhanging arm suitably mounted to rotate, a gear-frame, a worm-wheel carried by the gear-frame, an operating-shaft mounted in the gear-frame, a winding-drum mounted in the gear-frame, a worm mounted on the shaft in engagement with the said worm-wheel, a pinion mounted on the shaft in engagement with the gear on the winding-drum, and gear connecting the overhanging arm with the operating-shaft, the said operating-shaft being provided with a clutch and the said shaft having a longitudinally-sliding movement in its bearings to throw the clutch into engagement with the worm or pinion at pleasure.

5. The combination with the stationary gear-frame and the rotary overhanging arm, of an operating-shaft provided with a worm, a worm-wheel for transmitting motion from the worm to the overhanging arm, a short axle for mounting the worm-wheel and a winding-drum in gear with the operating-shaft, the said worm-wheel being provided with an opening through its hub, for the reception of either the overhanging arm or the short axle, to suit the position of the overhanging arm inboard or outboard at pleasure.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 7th day of September, 1904.

JAMES T. LIHOU.  
FRANK W. IRVINE.

Witnesses:

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C. S. SUNDGREN.