

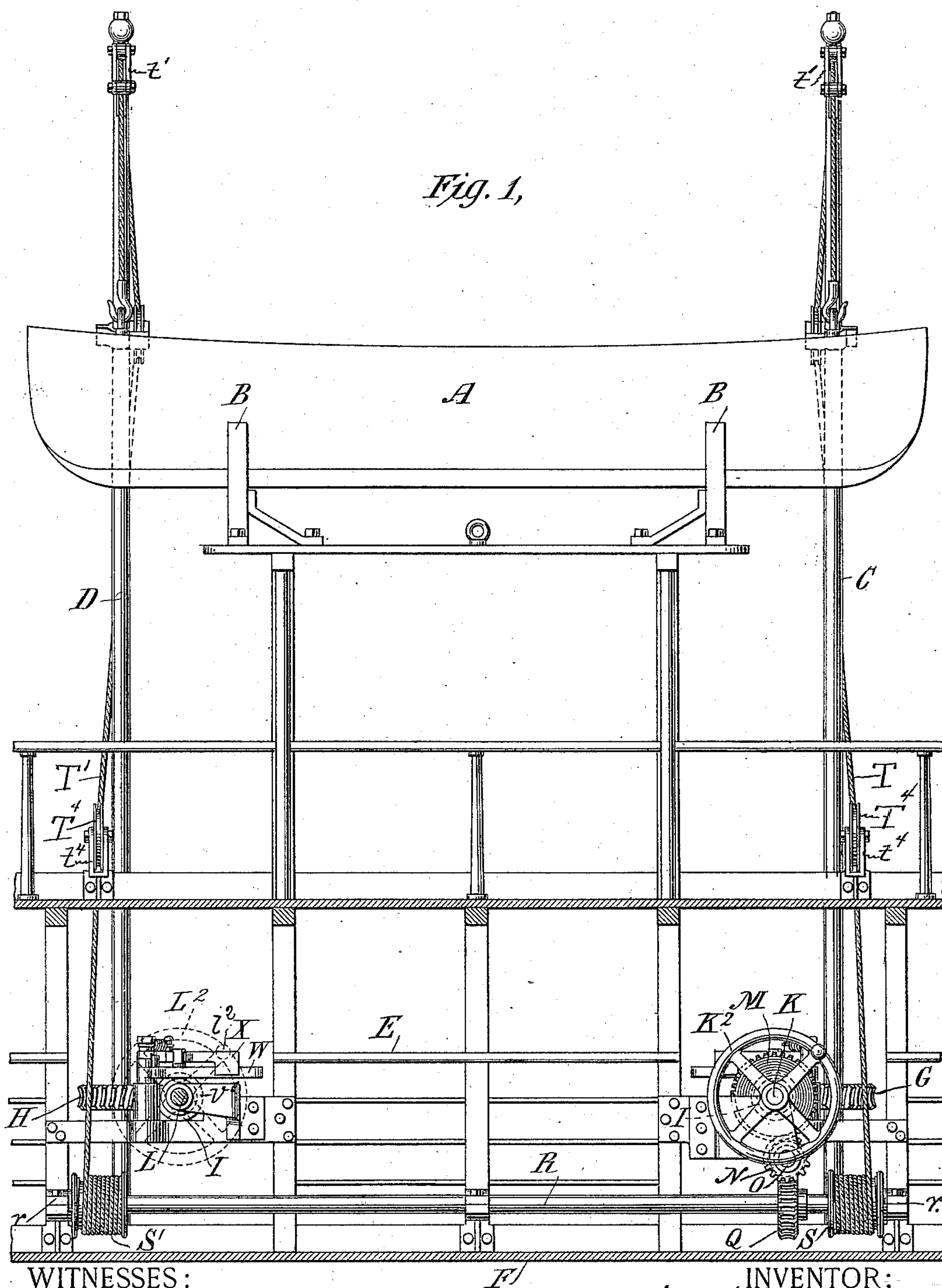
(No Model.)

J. W. McKINNON.  
DAVIT.

3 Sheets—Sheet 1.

No. 579,119.

Patented Mar. 16, 1897.



WITNESSES :

C. E. Ashley  
14 W. Lloyd.

INVENTOR:

James W. McKinnon  
By his Attorney  
Walter Brown

(No Model.)

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DAVIT.

3 Sheets—Sheet 2.

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Fig. 2,

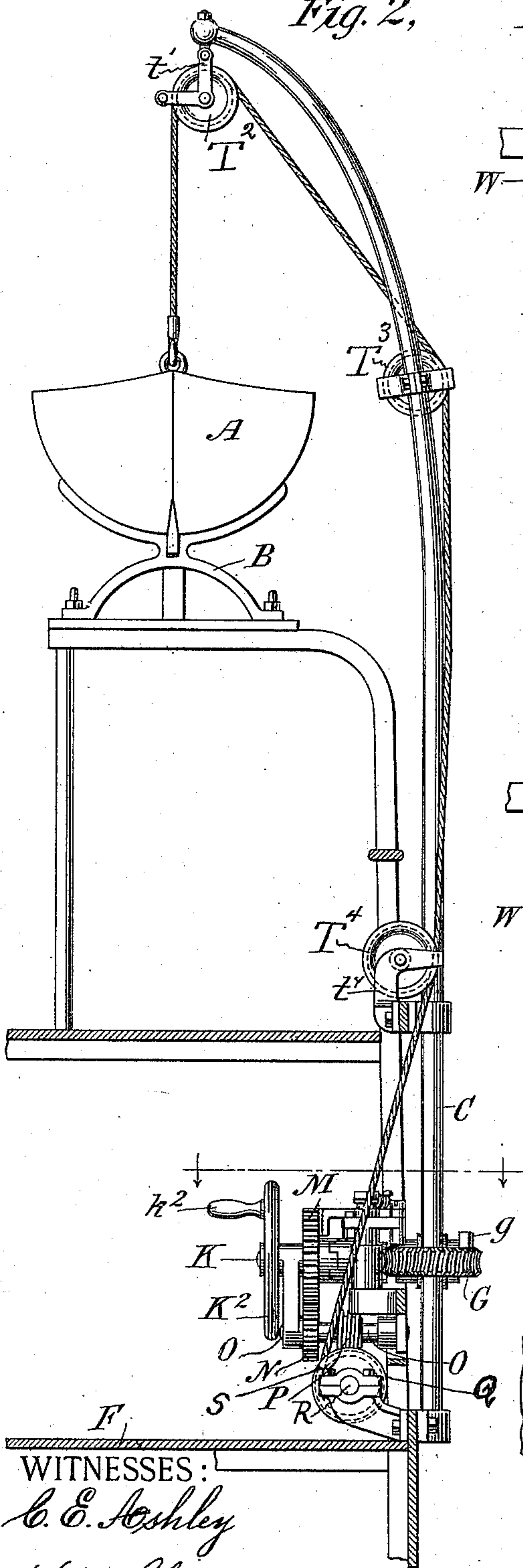


Fig. 4,

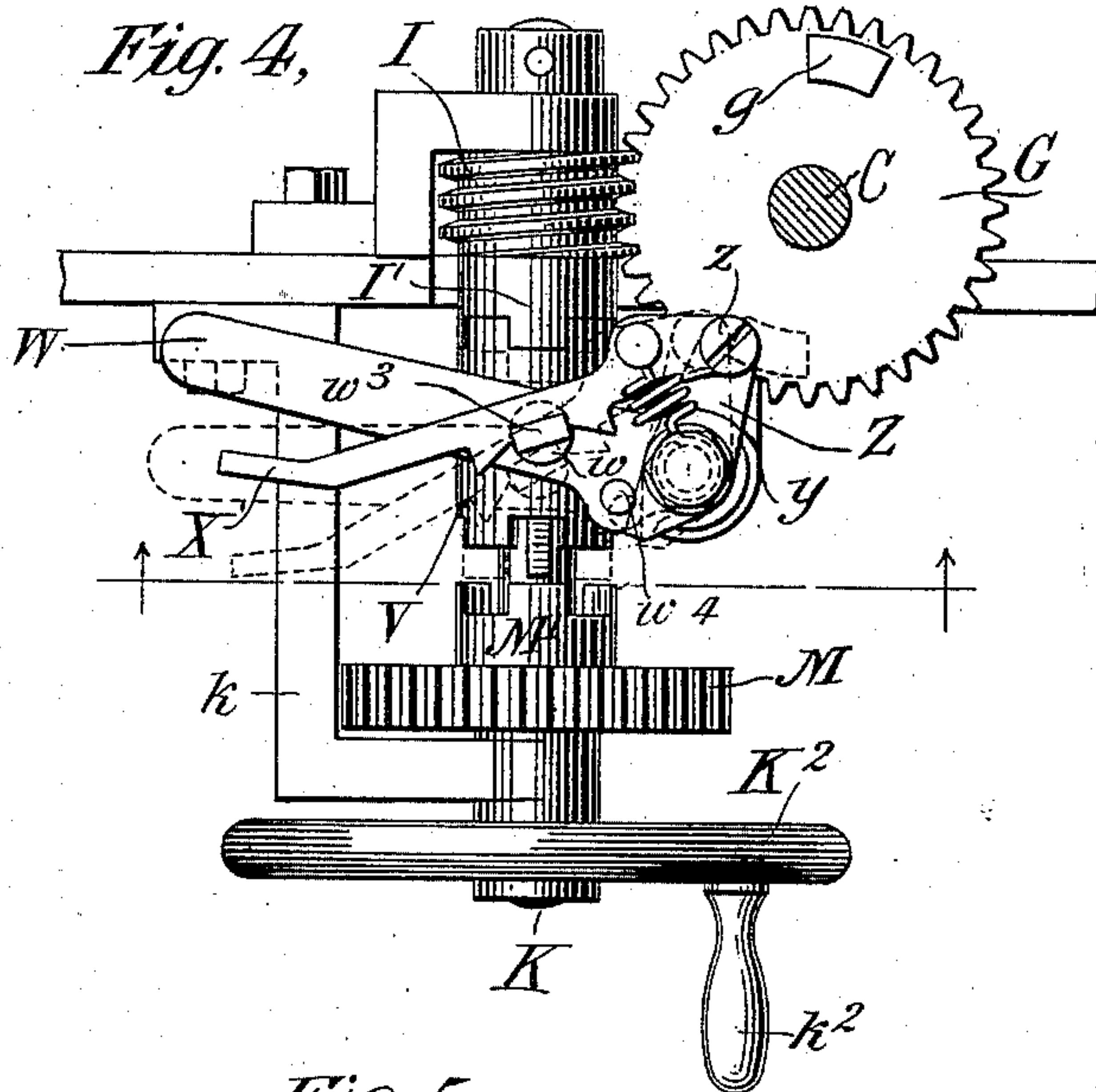


Fig. 5,

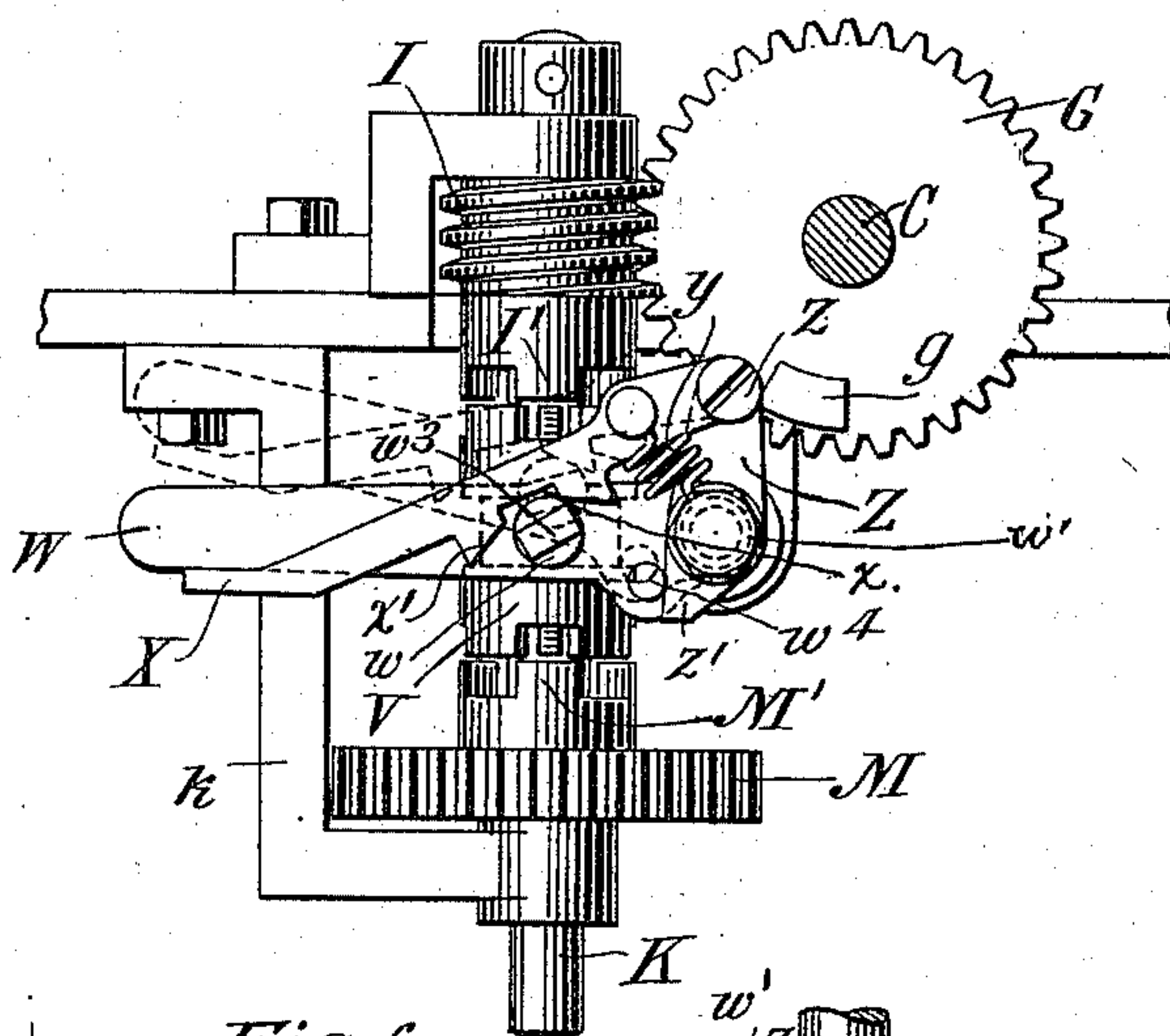
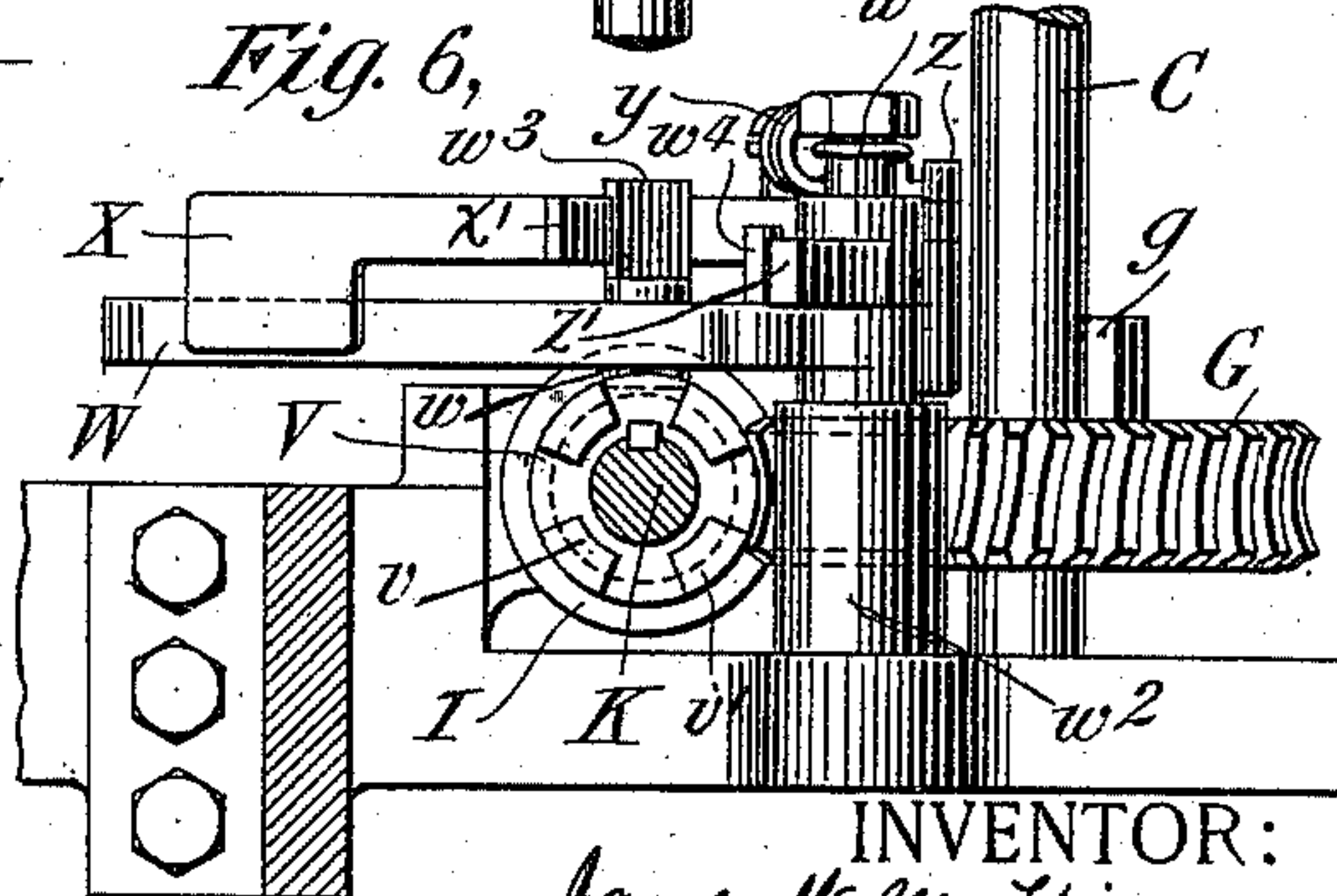


Fig. 6,



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(No Model.)

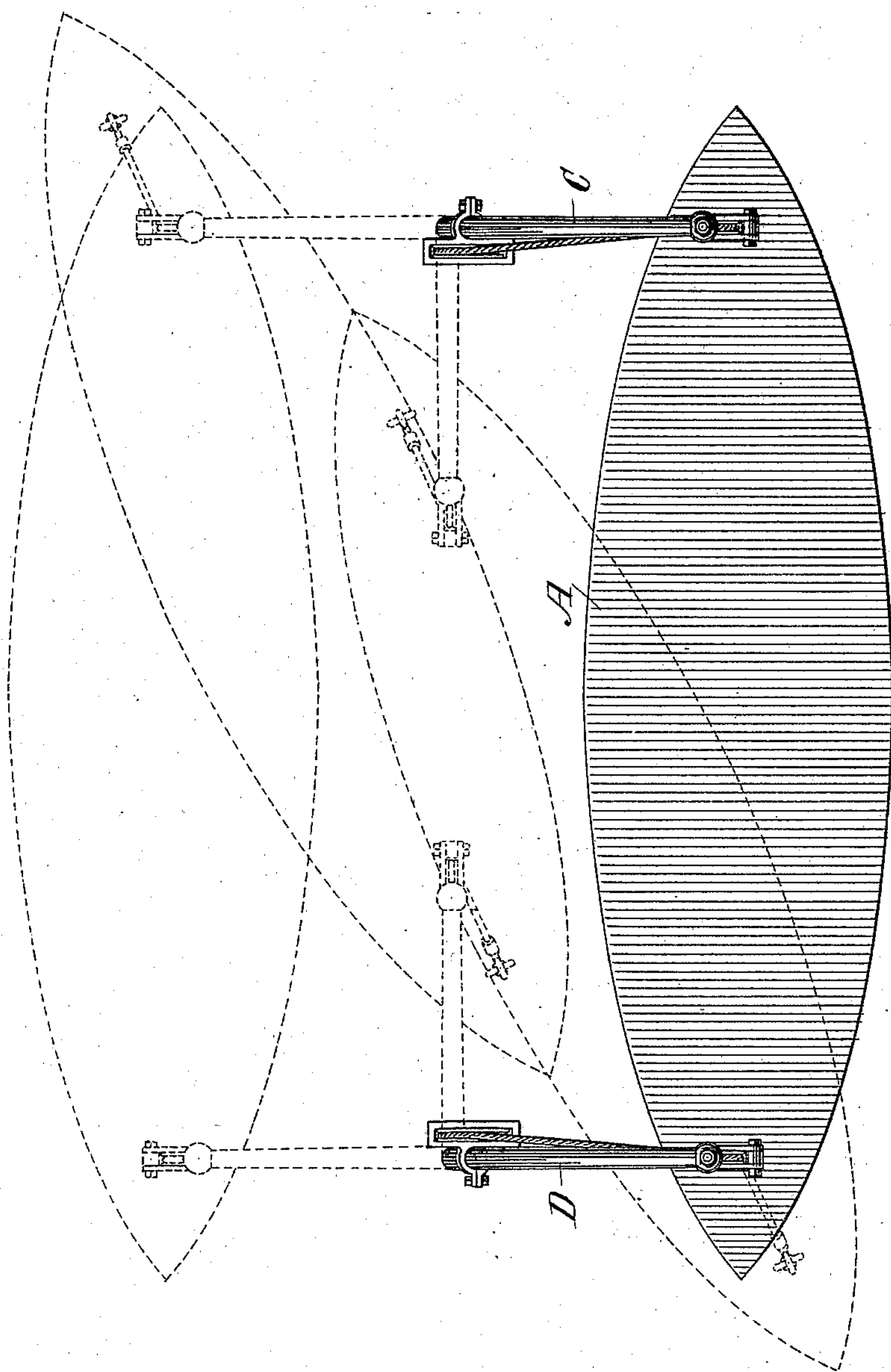
3 Sheets—Sheet 3.

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DAVIT.

No. 579,119.

Patented Mar. 16, 1897.

Fig. 3,



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# UNITED STATES PATENT OFFICE.

JAMES W. McKINNON, OF NEW YORK, N. Y.

## DAVIT.

SPECIFICATION forming part of Letters Patent No. 579,119, dated March 16, 1897.

Application filed October 4, 1895. Renewed August 11, 1896. Serial No. 602,458. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES W. McKINNON, a citizen of the United States, and a resident of the city of New York, county of New York, State of New York, have invented certain new and useful Improvements in Davits, of which the following is a specification.

My invention relates to improvements in davits for raising and lowering the boats of ships, and particularly it relates to the co-operation of the devices for revolving the davits and moving the boats.

Especially the invention relates to the gearing which actuates the davits in such manner that the rotation of the davit-heads shall carry the boats outboard and inboard clear of the davit-standards, and that when each davit has swung to its outboard position it shall stop automatically without requiring the stopping of the driving-shaft.

The invention also relates especially to the arrangement of the gearing, so that a loaded boat will remain at any point of suspension without requiring the efforts of the attendant and cannot fall rapidly to the water. In this manner the safety of the persons in the lowering boat is greatly promoted, the danger of a capsizing being reduced to a minimum.

The invention also relates to the specific constructions by which the foregoing purposes are attained.

Referring to the drawings which accompany the specification to aid the description, Figure 1 is a longitudinal or front elevation of the davits and their attachment and showing the boat resting on its supports. Fig. 2 is an end elevation of the same parts. Fig. 3 is a plan view of the apparatus. The successive positions of the davits and the boat are indicated by dotted lines. Figs. 4, 5, and 6 are details of the device for operating the clutch which throws the davits and the hoisting-drums in and out of operation, Figs. 4 and 5 being plans and Fig. 6 an elevation partly sectioned.

A is a boat resting on supports B, C and D being the davits.

E and F represent, respectively, the bulwark and deck of a ship.

G H are worm-gears, respectively, on said davits C D, said gears working through open-

ings in the bulwark E, as shown. In practice said gears G H may either be complete wheels, as shown, or may be semicircular segments, and said gears G H each carry lugs *g* for throwing out the davit-clutches, as hereinafter described.

I I are worms meshing with the gears G H and turning freely on counter-shafts K L, turning in suitable boxes carried by yokes *k*, that are supported on the bulwark E.

M is a pinion turning freely on shaft K and meshing with pinion N, fixed on a counter-shaft O, which turns in boxes in suitable supports, as shown.

P is a worm fixed on said shaft O and meshing with a worm-gear Q on the shaft R. Said shaft R extends across adjacent to both davits C D, and has fixed at each end hoisting-drums S S' for the ropes T T', *r r* being supports for the shaft R. The aforesaid counter-shafts K L are operated in any suitable manner, as by the cranks *k*<sup>2</sup> *l*<sup>2</sup>, fixed in wheels K<sup>2</sup> L<sup>2</sup>, and they can, if desired, be operated by a motor.

On the drawings there is a pinion N, worm P, and gear Q only at one side, and I prefer this arrangement; but, if desired, a similar pinion, worm, and gear with counter-shafts may be provided at the other end. I make the parts so interchangeable, moreover, that in any case I can shift the pinion N, worm P, counter-shaft O, and worm-gear Q from one end to the other end of the shaft R.

I' is a clutch-face on each of the aforesaid worms I I, and M' a similar clutch-face on the back of the pinions M.

V is a corresponding double clutch turning with the shaft K, but sliding thereon by means of proper feathers or ribs *v* between said clutches I' M', so as in the one position Fig. 4 to engage with the clutch I' and in the other position with the clutch M'.

*v'* is a circumferential groove in the body of the clutch V, and *w* is a pin working therein and depending from a clutch-lever W, which is pivoted on a stud *w'*, that is fixed in a standard *w*<sup>2</sup>.

X is an auxiliary bent lever pivoted on the stud *z* and provided with a socket *x*, that connects with an aperture provided with inclined sides *x'*. A square head *w*<sup>3</sup>, fixed on



pin  $w$ , normally rests in the socket  $x$ . A spring  $y$  normally tends to hold lever  $X$  against pin  $w^3$ .

$Z$  is an arm pivoted on stud  $w'$  and pin-  
5 connected at  $z$  with the end of lever  $X$ . The inner end of said arm  $Z$  is in the path of the lug  $g$ , and it is provided with a short outer end  $z'$ , which normally bears against a pin  $w^4$  on lever  $W$ . When the parts are in the  
10 position of Fig. 4, the levers  $W$  and  $X$  and arm  $Z$  form, in effect, a single lever, and any motion imparted to arm  $Z$  will move lever  $W$ , and therefore the clutch  $V$ .

$T$   $T'$  are hoisting-ropes for the two ends of  
15 the boat  $A$  and wound, respectively, on the drums  $S$   $S'$ . They are guided by the sheaves  $T^2$ , carried in hangers  $t'$ , that are swiveled in the heads of the davits  $C$   $D$  by sheaves  $T^3$  on said davits and by sheaves  $T^4$  on brackets  $t^4$ ,  
20 carried by the davits or on the bulwarks adjacent thereto.

Obviously in place of operating the shaft  $R$  from the wheel  $K^2$  it could be operated by a separate wheel or crank on the shaft  $O$ .

25 The operation is as follows: The boat  $A$  resting on its supports, as indicated in Fig. 1, a sailor throws right-hand clutch  $V$  off the clutch  $I'$  and into the clutch  $M'$ . Then he turns the right-hand crank  $k^2$  in the proper  
30 direction, thereby rotating the worm  $P$  and the gear  $Q$ , whereby the shaft  $R$ , with the hoisting-drums  $S$   $S'$ , is revolved and the boat raised off the supports  $B$ . As soon as the boat is clear of the supports  $B$  the sailor throws  
35 the right-hand clutch  $V$  off clutch  $M'$  and into clutch  $I'$ , Fig. 4, the pitch of the worm  $P$  preventing the drums  $S$   $S'$  from turning and letting the boat fall. Now the sailor goes on turning the right-hand crank  $k^2$ , and the davit  
40  $C$  begins to rotate, reaching at first the quarter and then the outboard position indicated by the dotted lines on the right of Fig. 3. As the gear  $G$  revolves the lug  $g$  comes against the arm  $Z$ , moving it to the left and, through  
45 the pin  $w$ , throwing off the clutch  $V$ , Fig. 5, so that davit  $C$  ceases to move as soon as it reaches the outboard position. In this manner in times of accident and confusion the automatic stopping of the davit informs the  
50 sailor when the davit is outboard and of the proper time to begin lowering away. When the sailor on the right first begins to turn his davit, as described, the sailor on the left, having first thrown his clutch  $V$  into the corre-  
55 sponding clutch or its worm for operating the left-hand davit  $D$ , gives a few backward turns to his crank  $k^2$ , to ease the strain on the rope  $T'$ . Then as soon as the right davit reaches the quarter he begins to turn the left davit  
60 outboard and continues turning until the lug  $g$  throws off the clutch  $V$  in the manner described for the right-hand davit. In this manner the davits carry the boat outboard clear of the standards of the davits. When the  
65 boat is outboard, the right-hand sailor throws clutch  $V$  into clutch  $M'$  and lowers away, the boat descending on an even keel, because

both drums  $S$   $S'$  are fixed on the same shaft  $R$ , and the davits remaining stationary because their proper clutches are disengaged 70 from the clutches  $V$ .

To raise and return the boat to its stand-  
ards, the sailor on the right turns his crank to wind up rope  $T'$ . When the boat is at proper  
75 height, he throws clutch  $V$  into clutch  $I'$  by first throwing lever  $X$  off the head  $w^3$  by bringing said lever  $X$  to the position of Fig. 5. Lever  $W$  is now not held by lever  $X$ , but is free to move to the position indicated by the dotted lines, Fig. 5, in which position  
80 clutch  $V$  is engaged with clutch  $I'$ . Now he begins to turn the davit  $C$  inboard, and very soon (as the lug  $g$  turns away) the spring  $y$  brings the lever  $X$  against head  $w^3$ , said head entering the socket  $x$ , as before. When davit  
85  $C$  has reached the quarter, the sailor on the left throws in his clutch and begins to turn davit  $D$ . Thus the boat is brought inboard and over the supports  $B$ . Now the sailor on the left stops turning, and the sailor on the  
90 right, throwing clutch  $V$  off clutch  $I'$  into clutch  $M'$ , lowers away, the boat descending evenly into the jaws of the supports  $B$ .

Now, having described my improvements, I claim as my invention—

95 1. The combination with a davit, of a gear on the davit, a worm meshing therewith, a clutch for actuating the worm, and devices actuated by said gear on the davit for throwing the clutch, substantially as described. 100

2. The combination with a davit of a hoisting-drum, a gear-train for operating the davit and drum, a clutch, a gear on the davit and means operated by said gear on the davit for throwing the clutch, substantially as de- 105 scribed.

3. The combination with a davit, of a gear thereon, a worm meshing with said gear, a shaft driving the worm, a hoisting-drum, a gear on the shaft of said drum, a worm, mesh- 110 ing with the gear on the shaft of the drum, and a train of gears connecting the shafts which actuate said worms, substantially as described.

4. The combination with a davit, of a gear 115 thereon a worm meshing therewith, a clutch for driving said worm, a lever for throwing said clutch, means on the davit for actuating said lever, a hoisting-drum, a gear therefor, a worm meshing therewith, a train of gears 120 for actuating said last-named worm, and a clutch for actuating said train of gears, substantially as described.

5. The combination with a davit, its gear, and a worm, therefor, of a clutch for actuat- 125 ing the worm, a lever pivotally connected therewith, an auxiliary spring-lever connected with the first-named lever by a separable connection, and an arm actuated by the gear of the davit, and being connected 130 with the auxiliary lever and engaging the first-named lever, substantially as described.

6. The combination with a davit and gear thereon, of a worm meshing with said gear,



a hoisting-drum, a gear-train for driving the same, a clutch on the worm and on the initial gear of the train, and a double clutch adapted to engage alternatively with the  
5 clutch on said worm and on said initial gear, substantially as described.

7. In a davit-operating mechanism, the combination of a davit, a gear thereon, mechanism for actuating said gear, and a clutch controlling said mechanism and adapted to be  
10 thrown by the revolution of the davit so as

to arrest the davit at the outboard position, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in 15 presence of two witnesses, this 2d day of October, 1895.

JAMES W. McKINNON.

Witnesses:

BERNARD J. ISECKE,  
HENRY V. BROWN.