

(No Model.)

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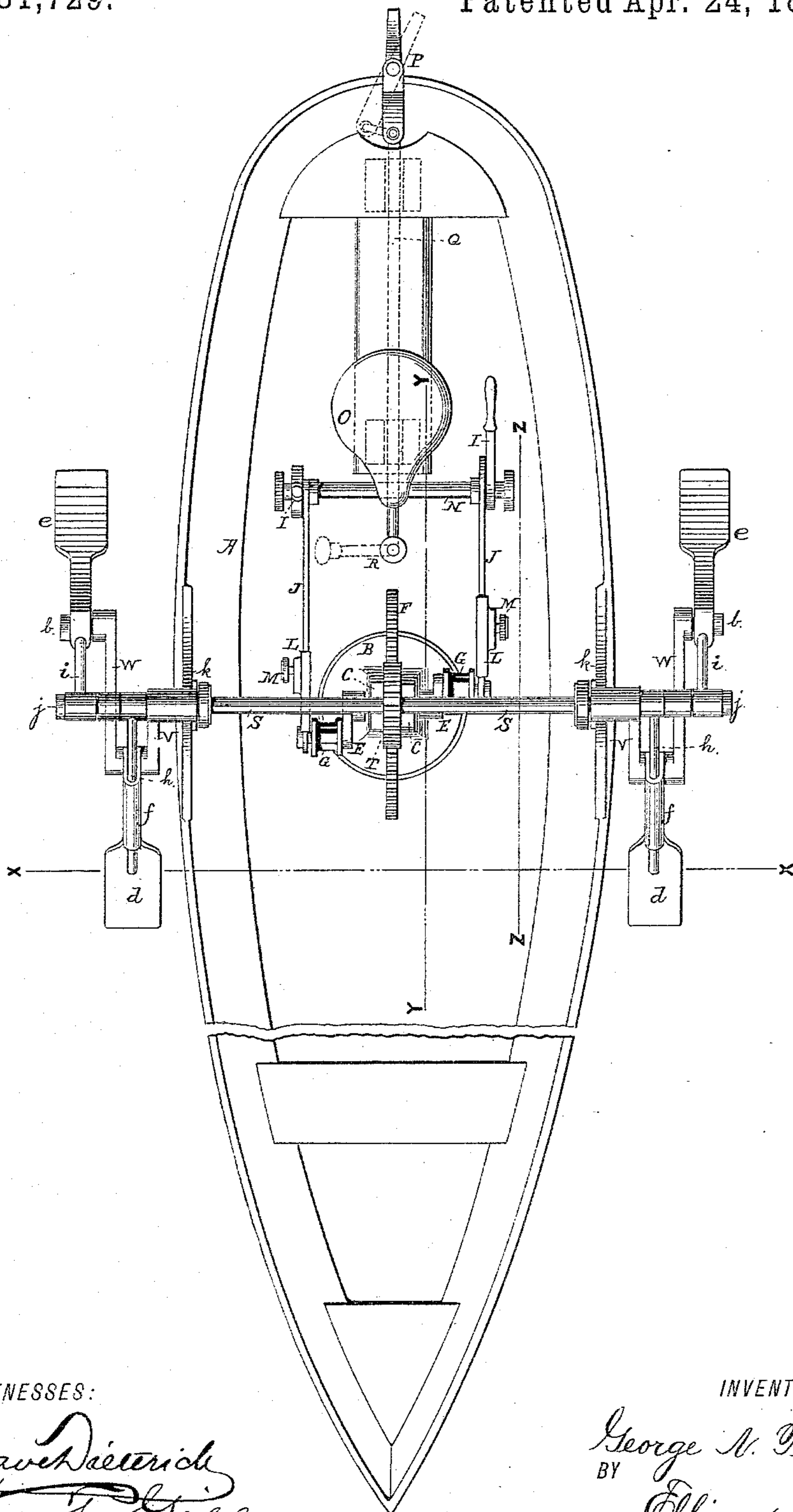
G. N. TIBBLES.

BOAT.

No. 381,729.

Patented Apr. 24, 1888.

Fig. 1.



WITNESSES:

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*Wm. T. Hill*

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*George N. Tibbles,*  
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(No Model.)

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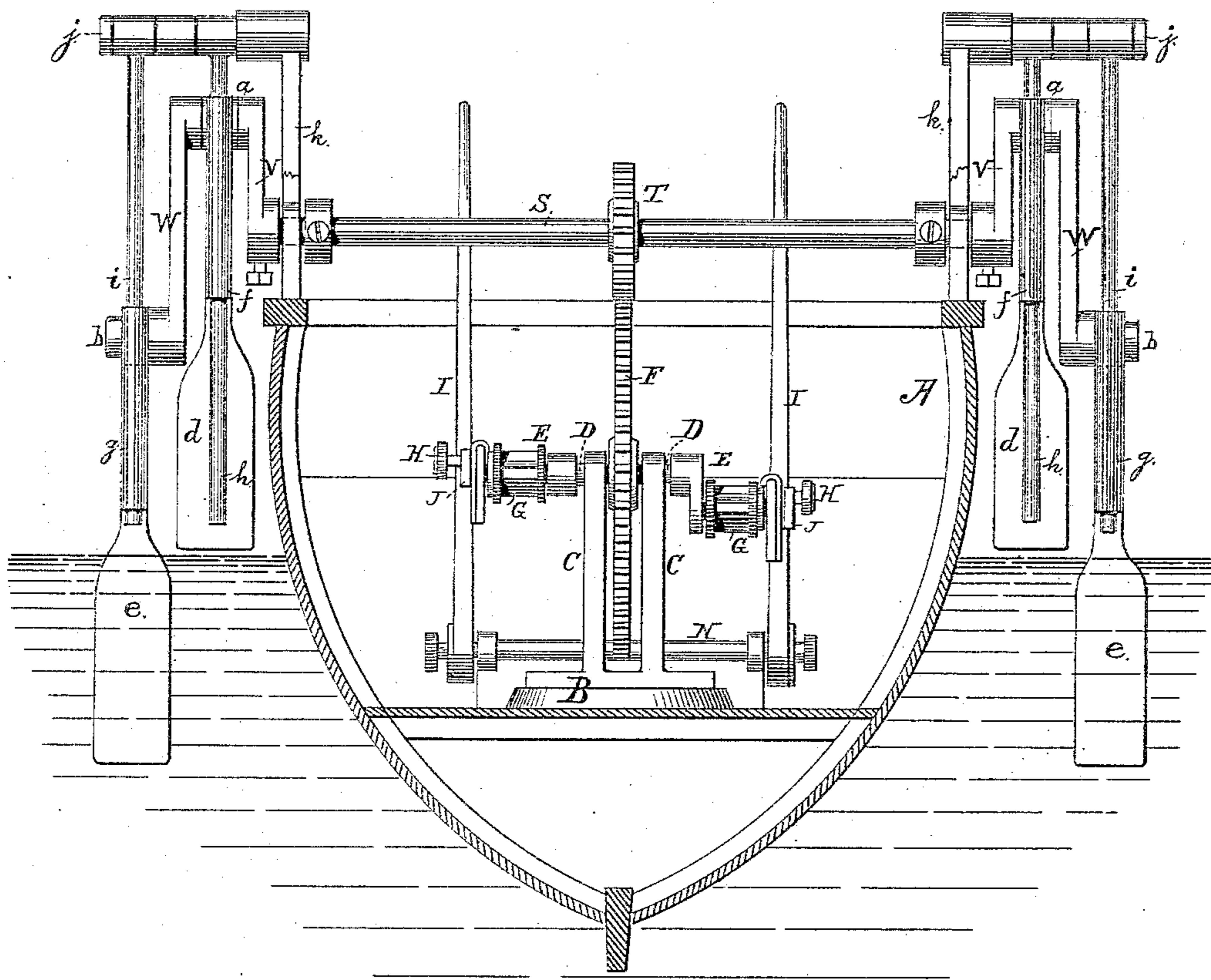
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*Fig. 2.*



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3 Sheets—Sheet 3.

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Fig. 3.

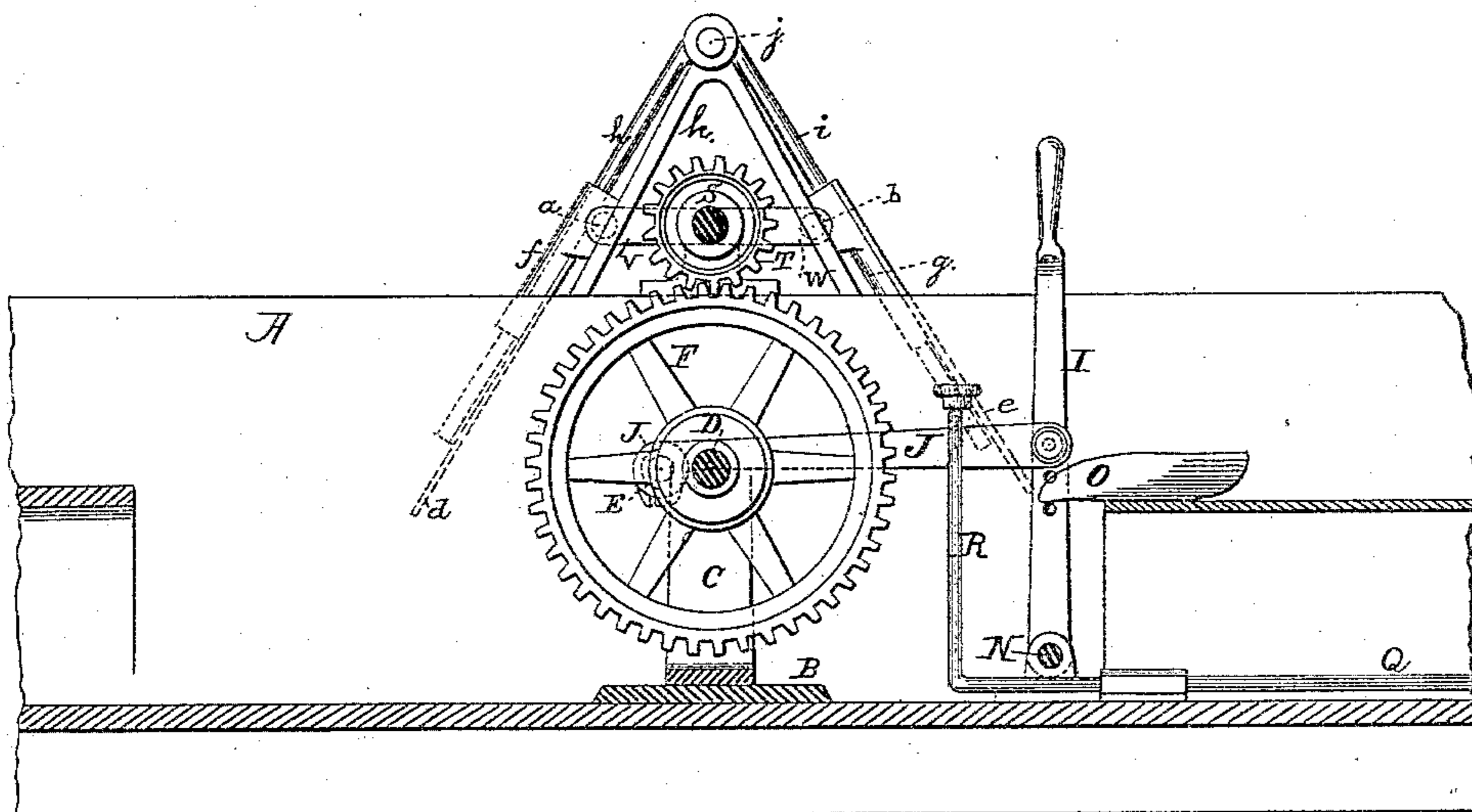


Fig. 5.

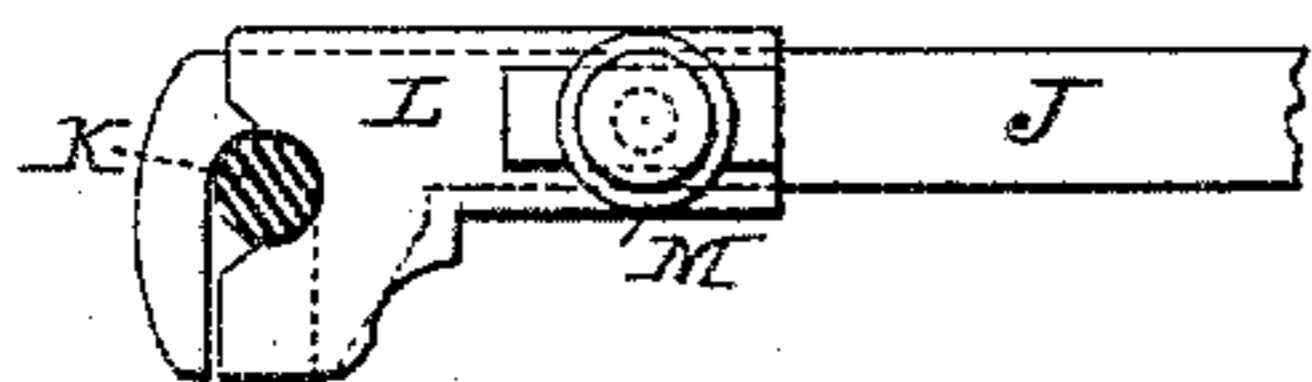


Fig. 4.

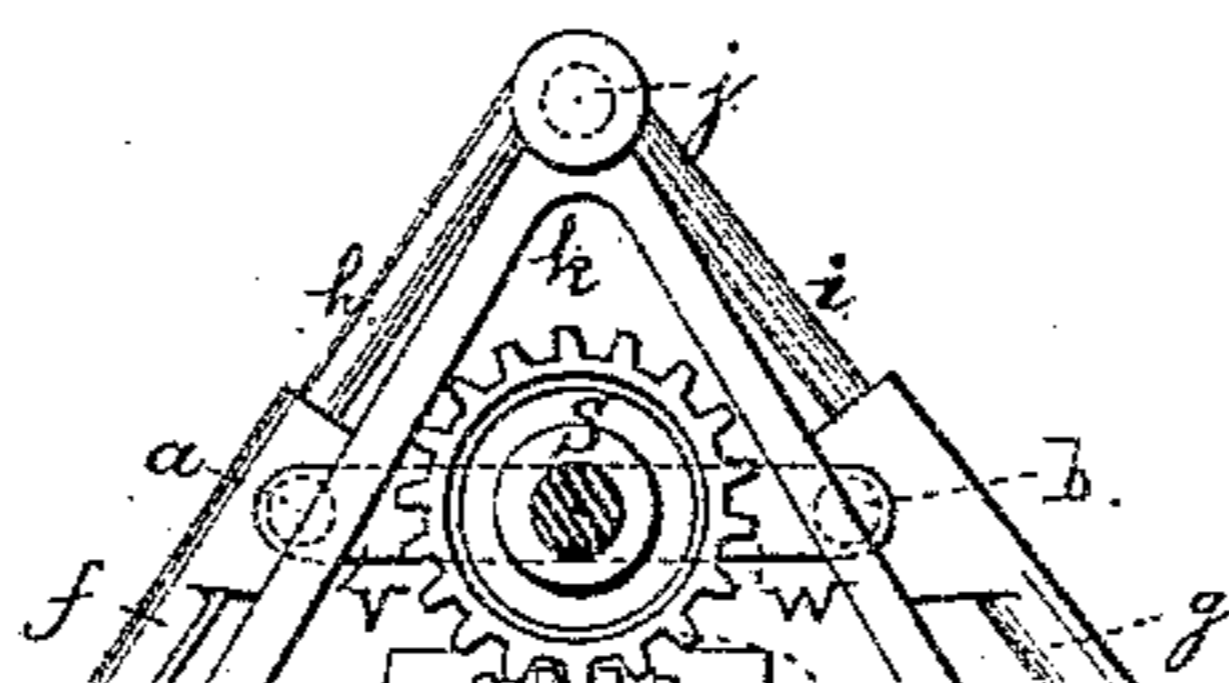
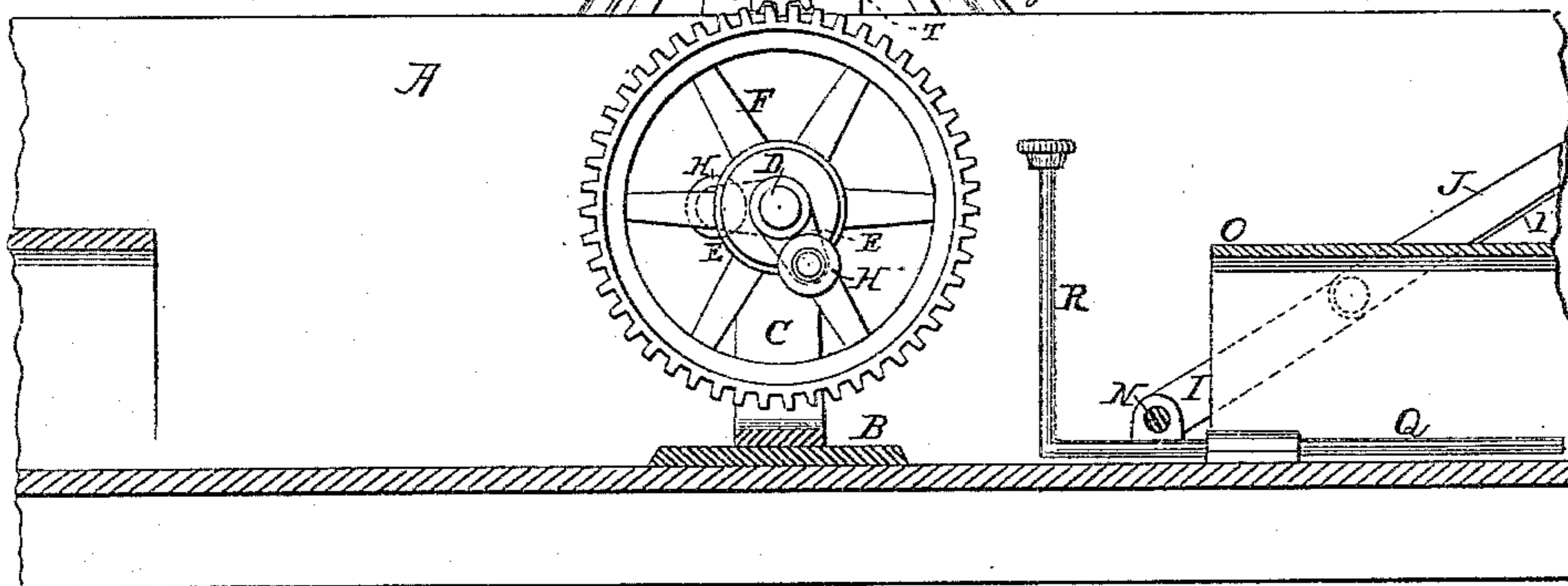
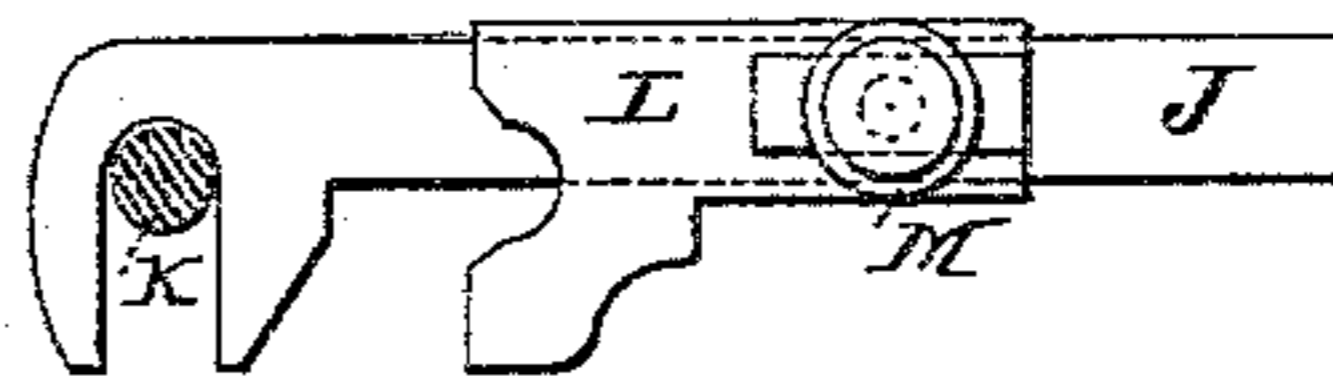


Fig. 6.



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# UNITED STATES PATENT OFFICE.

GEORGE N. TIBBLES, OF JERSEY CITY, NEW JERSEY.

## BOAT.

SPECIFICATION forming part of Letters Patent No. 331,729, dated April 24, 1888.

Application filed August 19, 1887. Serial No. 247,348. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE N. TIBBLES, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Boats, of which the following is a specification.

The invention relates to improvements in boats, and particularly to means of propelling the same; and its nature and objects will fully appear from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a boat, showing the invention applied thereto. Fig. 2 is a vertical transverse section of the same on the dotted line X X of Fig. 1. Fig. 3 is a vertical longitudinal section on the line Y Y of Fig. 1. Fig. 4 is a similar view on the dotted line Z Z of Fig. 1. Figs. 5 and 6 are detached views of one element of the mechanism, hereinafter referred to.

In the drawings, A denotes the boat, which may be of any suitable form and construction, and about the center of which is applied the stand B, supporting the standards C C, in the upper ends of which is journaled the transverse shaft D, having upon its opposite ends the crank-rods E E, and upon its center a rigidly-secured gear-wheel, F. Upon the horizontal portions of the crank-rods E are applied the revolving pedals G G, beyond which said portions of the crank-rods are supplied with heads H, as shown more clearly in Fig. 2.

The purpose of the revolving pedals G G is to enable the operator to cause the rotation of the crank-rods and shaft D by the movement of his feet applied in the ordinary way to treadles of this description. When, however, it is not desired to rotate the shaft D, carrying the gear-wheel F, by means of the feet, the same result may be accomplished through the medium of vertical hand-levers I I and the pitman-rods J, the latter being pivoted at one end to the said vertical levers, and at the other end being hooked upon the crank-rods adjacent to their outer ends.

In Figs. 5 and 6 I illustrate in enlarged detached views the application of the rods J to the horizontal portions (lettered K) of the crank-rods, Fig. 5 illustrating the rods locked

upon the portion K, and Fig. 6 the position of the parts when said rod is merely dropped upon said portion K. Upon the rods J is applied the locking sleeve L, which is adapted to have a sliding movement upon the rod, and is provided with a set-screw, M, by which it may be secured in any desired position. When the rods J are to be secured upon the crank-rods, their ends will first be dropped over said rods, as shown in Fig. 6, and the slides L then moved against said crank-rods and there secured, as illustrated in Fig. 5. The lower ends of the vertical hand levers I are pivotally secured upon the transverse rod N, and being devices of well-known construction their operation will be readily understood.

The seat for the operator or attendant is lettered O, and is in convenient position between the levers I for the latter to be grasped and operated, or to be discarded, and the attendant enabled to operate the crank-rods E with his feet.

In Fig. 4 I illustrate the levers I and rods J thrown backward out of the way and leaving the crank-rods free to be operated by the feet.

The rudder P will be connected with the longitudinal rod Q, extending beneath the seat O, and having upon its forward end the vertical rod R, which extends upward in front of the seat O, in convenient position to be moved laterally, as indicated by dotted lines in Fig. 1, by the knee of the operator.

Across the top of the boat is mounted in suitable bearings the transverse shaft S, having at its center the pinion-wheel T in engagement with the gear-wheel F, above referred to, and upon the ends of said shaft S are rigidly secured the arms V, which extend at right angles to the shaft, in near relation to the sides of the boat, and are connected with the parallel arms W by pins *a*, as shown by dotted lines in Figs. 3 and 4. The pins *a* are parallel with the shaft S, and operate as crank-arms, and upon the outer end of the arms W, which are on the opposite side of the shaft from the pins *a*, are provided the horizontal pins *b*, which operate also as crank-bearing arms for the arms W. Upon the pins *a* are secured the upper ends of the propelling-blades *d d*, and upon the pins *b b* are likewise secured the upper ends of the propelling-blades *e e*, the con-

nection of said blades with the pins being such that they may revolve thereon and form sleeves surrounding the same.

Upon the rear surface of the propelling-  
5 blades *d d* and *e e*, respectively, are formed the elongated guide-sleeves, (lettered *f f* and *g g*, respectively,) which are of suitable dimensions to receive and move on the loosely-hung rods, (lettered *h h* and *i i*, respectively,) the up-  
10 per ends of the rods being journaled upon the horizontal rods *j j*, as illustrated in Fig. 2, these rods extending over the sides of the boat and elevated upon suitable brackets, *k k*.

In the operation of the mechanism above  
15 described the shaft D will be rotated, and thus impart motion to the gear-wheel F, which will communicate a rotary movement through the pinion T to the transverse shaft S and crank-arms *a b*, respectively, carrying the propeller-  
20 blades *d d* and *e e*, respectively. The motion of the crank-pins *a a* and *b b* causes an alternate depression into and elevation from the water of the propeller-blades, said blades during these motions having a movement in the  
25 line of a horizontal ellipse. In Fig. 2 the propeller-blades *d d* are shown depressed into the water, the crank-pins *b b* being at their lowermost position, and the arms V and W being in a vertical position. It will appear evident  
30 from Fig. 2 that a half-rotation of the shaft S would cause the elevation of the propeller-blades *d d* and the depression of the propeller-blades *e e*, the crank-pins *a a* at this time being at their lowermost position and the  
35 pins *b b* turned upward to their highest position. The movement of the propeller-blades in the line of an ellipse during the operation of the machine is secured by reason of the arms V W being parallel to each other,  
40 and the crank-pins *a b*, respectively, being on opposite sides of the horizontal center of the shaft S, and this elliptical movement is particularly important, since thereby the propellers have a long line of movement while in  
45 the water, and a short movement while entering or ascending therefrom. During the movement of the propeller-blades they have a revolving motion upon the crank-pins *a b*, this being due to the rotation of the shaft S, and  
50 are sufficiently held against the resistance offered by the water by the rods *h i*, respectively, as illustrated more clearly in Figs. 1 and 2. When the propeller-blades are at their lower position, as shown in Fig. 2, their sleeves  
55 *f* are at the lower ends of the rods, and during the rotation of the shaft S to bring one pair of the propeller-blades upward and to cause the descent of the other pair the sleeves on the latter blades will slide downward on the  
60 rods, the latter having a sufficient oscillatory movement upon the rods *j j* to permit the

sliding movement of the blades thereon at either side of the vertical center of the shaft S.

It should be noted that during the operation of the mechanism above described the at-  
65 tendant or operator sits in a position facing the movement of the boat, and may readily, therefore, both attend to the propelling of the boat as well as the steering of the same.

I have described two methods of applying  
70 power to the shaft D, but do not wish the invention confined to either of said methods, since in some instances it will be desired to employ steam-power for operating the propeller-shaft.

What I claim as my invention, and desire to  
75 secure by Letters Patent, is—

1. In a boat, the transverse shaft S, having upon its ends the arms V W, carrying crank-  
80 pins *a b*, respectively, which are in line with each other and on opposite sides of the center of said shaft, combined with the propeller-blades *d d* and *e e*, respectively, loosely hung upon said crank-pins, the guides *f f* and *g g*,  
85 respectively, on the rear surface of said blades, the loosely-hung rods *h h* and *i i*, respectively, entering said guides, and mechanism for rotating the shaft S, substantially as and for the purposes set forth.

2. In a boat, the transverse shaft having  
90 upon its ends the arms V W, carrying crank-pins *a b*, respectively, on opposite sides of the center of said shaft, combined with the propeller-blades loosely hung upon said crank-pins, the loosely-hung guide-rods *h i*, adapted to  
95 move in the guides on said propeller-blades, the horizontal shaft D, having crank-arms at its ends and carrying the gear-wheel F, and the pinion-wheel T, secured upon the shaft S and being in engagement with the gear-wheel F,  
100 substantially as set forth.

3. In a boat, the horizontal shaft S, carrying two pairs of corresponding crank-arms upon its ends, combined with the propeller-blades  
105 secured upon said crank-arms, the horizontal shaft D, having the crank-arms upon its ends and carrying the gear-wheel F, the pinion-wheel T, secured upon the shaft S and being in engagement with said gear-wheel, the vertical  
110 levers I and pitman-rods J, the latter being pivotally secured at one end to the levers and at their other ends being provided with hook-shaped extremities, and locking-slides L, substantially as and for the purposes set forth.

Signed at New York, in the county of New  
115 York and State of New York, this 6th day of July, A. D. 1887.

GEORGE N. TIBBLES.

Witnesses:

CHAS. C. GILL,  
W. A. C. MATTHIE.