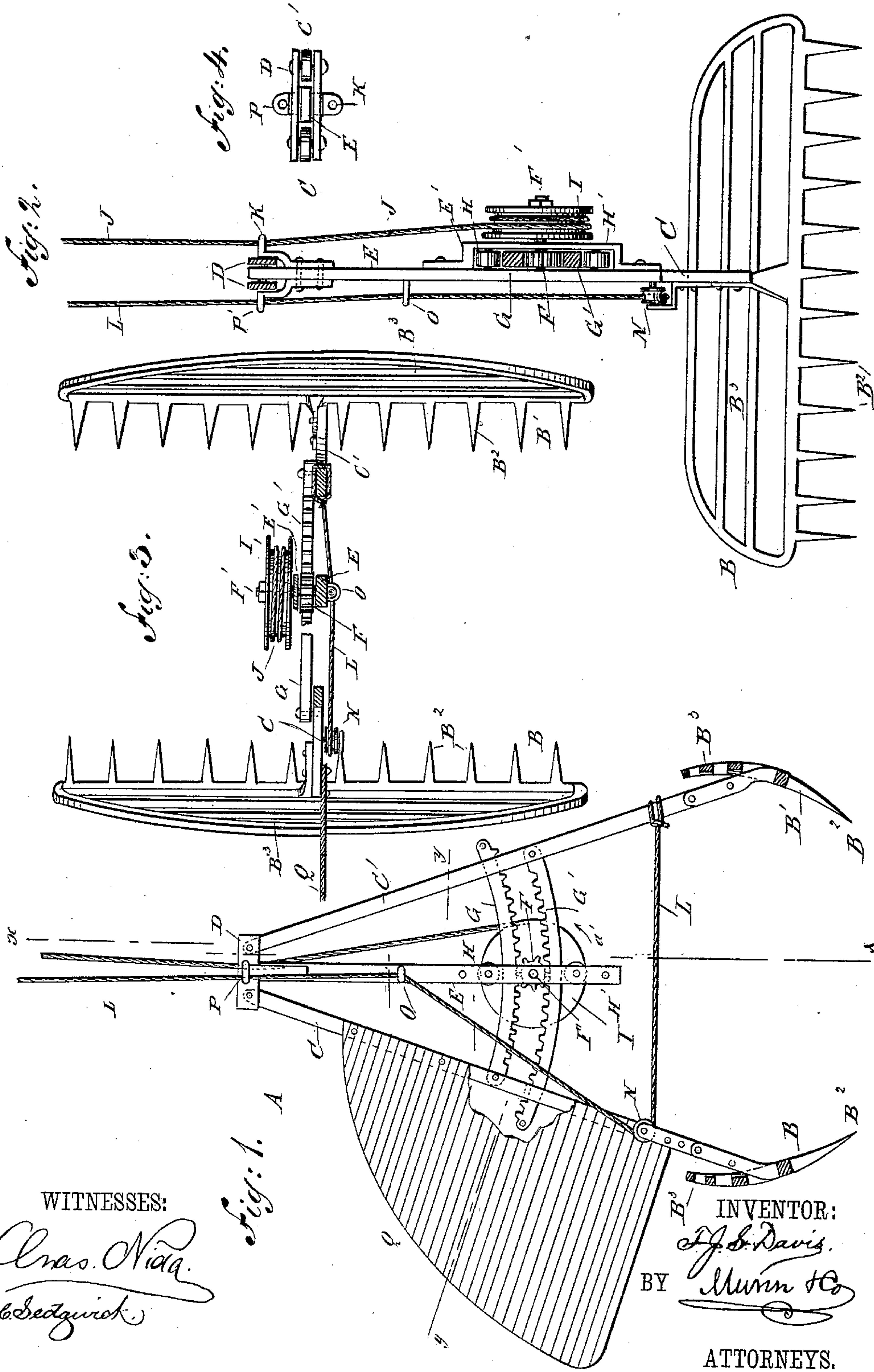


(No Model.)

T. J. S. DAVIS.  
GRAPNEL TONGS.

No. 390,758.

Patented Oct. 9, 1888.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

THOMAS J. S. DAVIS, OF DAVIS WHARF, VIRGINIA.

## GRAPNEL-TONGS.

SPECIFICATION forming part of Letters Patent No. 390,758, dated October 9, 1888.

Application filed February 21, 1888. Serial No. 264,731. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS J. S. DAVIS, of Davis Wharf, in the county of Accomack and State of Virginia, have invented new and Improved Grapnel-Tongs, of which the following is a full, clear, and exact description.

The object of the invention is to provide new and improved grapnel-tongs specially adapted for conveniently loosening and raising oysters in deep or shallow water.

The invention consists of two rakes adapted to swing toward and from each other, and of racks connected with said rakes, a gear-wheel, a drum, and ropes for operating the said racks and rakes.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

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

Figure 1 is an end elevation of the improvement, showing the rakes in section. Fig. 2 is a sectional side elevation of the same on the line *xx* of Fig. 1. Fig. 3 is a sectional plan view of the improvement on the line *yy* of Fig. 1, and Fig. 4 is a plan view of the arms supporting the tongs at their pivotal ends.

The improved grapnel-tongs A are provided with the two rakes B B', each of which is provided with the points B<sup>2</sup> and with the longitudinal bars B<sup>3</sup>, united at their ends to each other and to the bar carrying the points, so as to form a basket open at its ends when the two rakes B and B' are closed. The rakes B and B' are slightly curved, as is plainly shown in Fig. 1, and are secured in their middles to the lower ends of the arms C and C', pivotally connected at their upper ends with the frame D, provided in its middle with a downwardly-extending arm, E, carrying near its lower end a bracket, E', in which is mounted to rotate a shaft, F', carrying a gear-wheel, F, meshing into the racks G and G', respectively, on the top and bottom of the said gear-wheel F.

The racks G and G' are curved, having as a center the intersection of the arms C and C', to which opposite ends of the said racks G and G' are pivotally secured, as shown in Figs. 1

and 3. The racks G and G' pass between the arm E and bracket E', and are thus prevented from moving sidewise. The top edge of the rack G travels on the friction-roller H, mounted to rotate in the bracket E', while the bottom edge of the rack G' travels on the friction-roller H', also mounted to rotate in the bracket E.

The shaft F' extends to one side of the bracket E' and carries on its outer end a drum, I, on which is wound and secured one end of a rope, J, which extends upward and is passed through an eye, K, formed on the side of the frame D. A second rope, L, is fastened by one end to the lower part of the arm C' and then extends horizontally across to the arm C, passes under a pulley, N, mounted to rotate on the said arm C, and then the rope L extends upward from the said pulley N to an eye, O, held on the downwardly-extending arm E, secured to the frame D. The rope L then passes upward through an eye, P, formed on the other side of the frame D.

On the arm C is secured an outwardly-extending plate, Q, which serves as a rudder for the entire device, said rudder Q being at right angles to the rakes B and B'. The latter can be made of various sizes, so as to hold, when closed, any desired amount of oysters.

The operation is as follows: The ropes L and J are of such a length as to reach to the bottom of the water in which the rakes are to be used, and the operator lets the device down into the water from a boat or other vessel by taking hold of the said ropes L and J. When the points B<sup>2</sup> of the rakes B and B' strike the oyster-bed, the operator pulls on the rope J, thereby turning the drum I in the direction of the arrow *a'*, so that a rotary motion is imparted to the gear-wheel F, which, on account of meshing into the racks G and G', causes the latter to travel in opposite directions and outward, whereby the arms C and C' also swing outward from their pivotal points on the frame D, so that the rakes B and B' are opened. The points B<sup>2</sup> of the rakes B and B' now engage the oysters in the bed, and when the operator pulls on the rope L said rope causes a closing of the arms C and C' and the rakes B and B', as the said rope is fastened by its lower end to the arm C' and passes over the pulley N on the other arm, C, and then



upward through the eyes O and P. This closing movement of the rakes B and B' loosens the oysters from the bed, and at the same time the loosened oysters are gathered  
 5 on the longitudinal bars B<sup>3</sup> and are held in the basket formed by the said longitudinal bars when the rakes B and B' are entirely closed. The operator now pulls the entire device upward, either by hand or suitable machinery on  
 10 the boat, by taking hold of the rope L. When the device goes down into the water, as above described, the rudder Q will turn the entire device in the direction of the tide, so that it will be guided on the oyster-bed. When the  
 15 entire machine has been hauled up into the boat or vessel and the operator desires to empty the rakes B and B' of the gathered oysters, he simply turns them on one end, so that the oysters can fall out of the open ends of  
 20 the rakes B and B'.

In case the points B<sup>2</sup> do not catch and loosen the oysters when the rakes are closed, as above described, by pulling on the rope L, then the operator pulls on the other rope, J, again,  
 25 whereby the closed rakes B and B' are again opened, as above described, so that the operator can again close the rakes B and B' over the oyster-bed, as above described, until the said points B<sup>2</sup> have loosened the oysters and gathered them in the basket formed by the rakes.  
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It will be seen that the device can also be used for gathering sunken material, wreckage, logs, &c.

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

1. In grapnel-tongs, the combination, with pivoted arms carrying rakes, of racks secured to the said arms; a gear-wheel meshing into  
 40 the said racks, a drum secured on the shaft of the said gear-wheel, a rope wound on the said drum and extending upward, and a second rope fastened by one end to one of the said

arms, then passing over to the other arm, and then extending upward, substantially as shown 45 and described.

2. In grapnel-tongs, the combination, with pivoted arms carrying rakes, of racks secured to the said arms, a gear-wheel meshing into the said racks, a drum secured on the shaft of  
 50 the said gear-wheel, a rope wound on the said drum and extending upward, a second rope fastened by one end to one of the said arms, then passing over to the other arm, and then extending upward, and a rudder-plate secured to one of the said arms, substantially as  
 55 shown and described.

3. In grapnel-tongs, the combination, with a frame, of two arms pivoted on the said frame and carrying rakes at their free ends, a gear-  
 60 wheel mounted to rotate on the said frame, a drum secured on the shaft of the said gear-wheel, a rope wound on the said drum, and racks meshing into the said gear-wheel and secured at opposite ends to the said arms, sub-  
 65 stantially as shown and described.

4. In grapnel-tongs, the combination, with a frame, of arms pivoted on the said frame, rakes formed on the lower free ends of the said  
 70 arms, and a rope secured by one end to one arm, then passing over a pulley on the other arm, and extending upward through eyes on the said frame, substantially as shown and described.

5. In grapnel-tongs, the combination, with  
 75 two pivoted arms adapted to swing toward and from each other, of rakes secured to the free ends of the said arms and provided with points and longitudinal bars to form a basket, and a rudder-plate secured to one of the said  
 80 arms and extending at right angles to the said rakes, substantially as shown and described.

THOMAS J. S. DAVIS.

Witnesses:

JOHN S. DAVIS,  
 J. W. STURGES.