

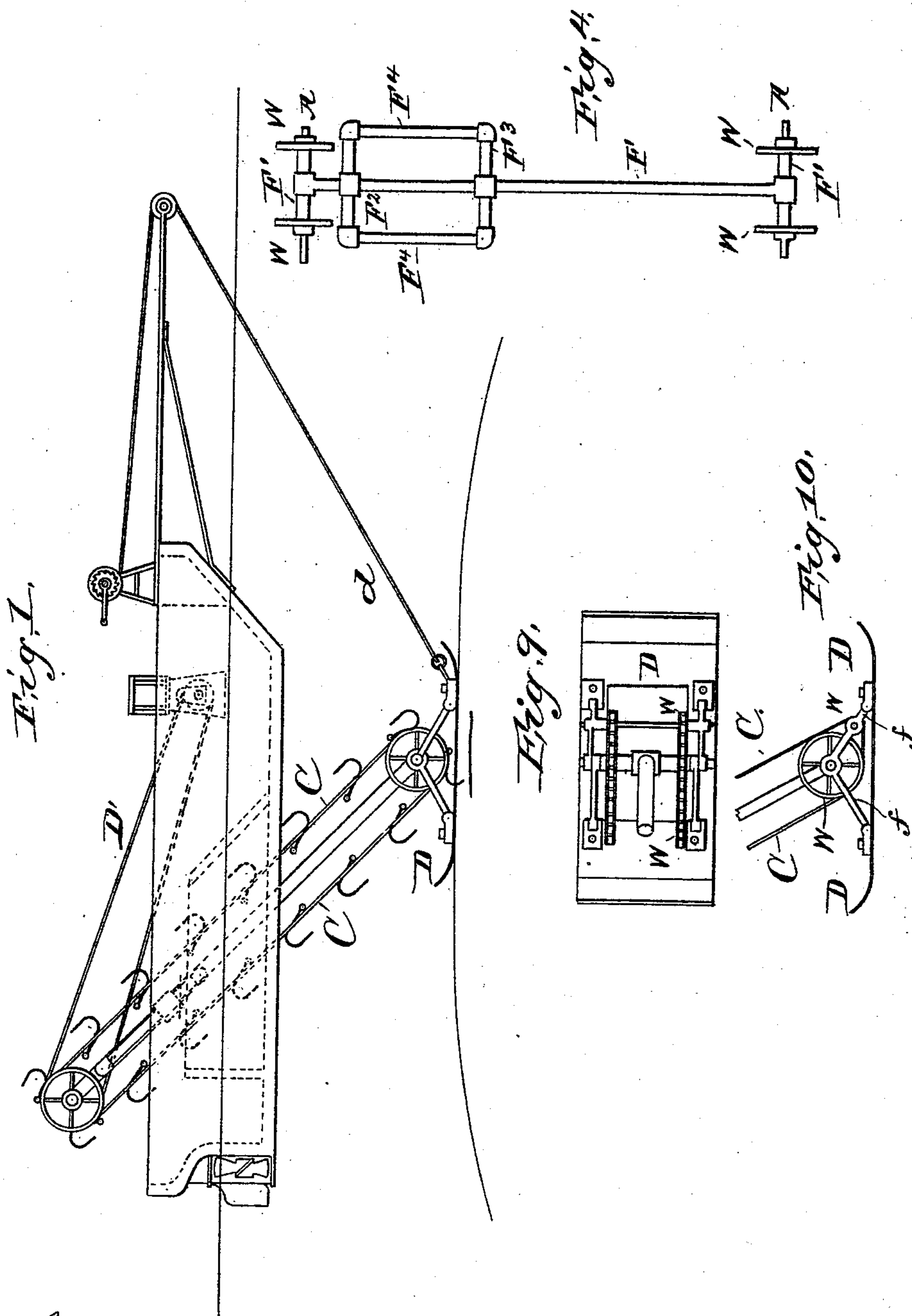
(No Model.)

2 Sheets—Sheet 1.

D. E. POWERS.  
OYSTER DREDGE.

No. 525,280.

Patented Aug. 28, 1894.



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C. W. Benjamin  
Peter H. Vermilyea.

Inventor:  
Daniel E. Powers  
by A. G. Spruill  
att'y

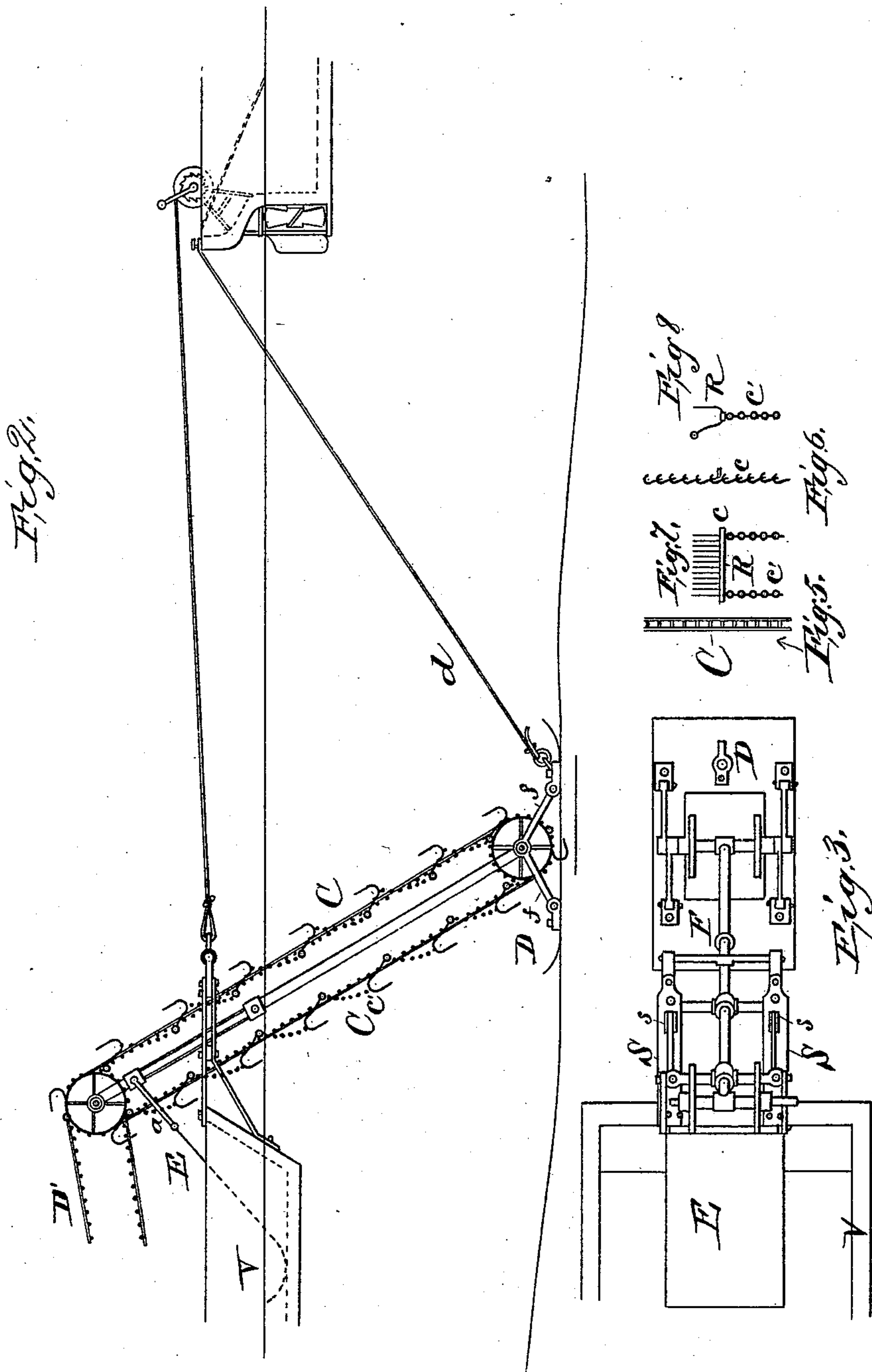
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# UNITED STATES PATENT OFFICE.

DANIEL E. POWERS, OF NEW YORK, N. Y., ASSIGNOR OF THREE-FOURTHS  
TO HUBERT H. HULL, OF JERSEY CITY, NEW JERSEY.

## OYSTER-DREDGE.

SPECIFICATION forming part of Letters Patent No. 525,280, dated August 28, 1894.

Application filed January 15, 1894. Serial No. 496,897. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL E. POWERS, a citizen of the United States of America, and a resident of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Oyster-Dredges, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same, in which—

Figure 1, is a side elevation of a vessel carrying a dredge embodying my invention, said dredge in this instance being projected through a well hole in the vessel provided for the purpose. Fig. 2, is a similar elevation of a vessel and dredge so arranged however that the dredge projects downward from the vessel's bow, the apparatus being in tow of a second vessel. Fig. 3, is a plan view of the vessel and dredge of Fig. 2, without the endless chain of rakes. Fig. 4 is a plan view of the frame and the sprocket wheels. Figs. 5 and 6 are respectively side and edge views of the chain. Figs. 7 and 8 are respectively side and edge views of the rakes; and Figs. 9 and 10 are respectively a plan view and a side elevation of the shoe and attachments with an additional roller added for a purpose to be described.

My object has been to produce a dredge which shall rake to a given depth, shall automatically adjust itself, and discharge into the boat, shall make a straight cut at the bottom and shall be light enough to be easily handled.

The frame consists of a central rod or shaft F, preferably hollow with hollow cross bars F', at each end, in which are journaled axles A each carrying a pair of sprocket wheels W. Near the upper end, shaft F, is further provided with two other cross bars F<sup>2</sup>, F<sup>3</sup>, a short distance apart, the outer extremities of which are joined in pairs by bearing or sliding pieces F<sup>4</sup>.

To the vessel V are fastened two brackets or supports S, provided with slots s, and when the dredge is placed in position the arms F<sup>4</sup>, are respectively passed through these slots before they are secured to the last cross bar F<sup>2</sup> or F<sup>3</sup> as the case may be.

At the bottom of the rod and journaled preferably to the axle of the lower sprocket

wheels or to lower cross bar F' is a frame f, f', carrying a shoe D which extends beyond the sprocket wheel, both fore and aft and has an opening in it as wide as the rakes employed and a little longer than the horizontal line of the cut intended to be made by the tines of one rake in the bed to be dredged. The depth of cut may be varied by varying the length of the frame irons f, f' or by securing their ends to the shoe at varying distances apart. An endless chain belt C, with connecting slats or rods c, is placed upon the sprocket wheel W, and to it are secured a number of rakes R at suitable distances apart preferably such that a succeeding rake will take ground immediately after the preceding one has fully cleared. I prefer to connect the tines of the rake to the slats at the bend of the rake and to secure the inner end by short chains c', running thence to the next slat as shown. A draft line d, is usually connected to the forward part of the shoe and runs thence either to the tow boat or the bow of the dredge boat for the purpose of holding the dredge in proper position and from the axle of the upper sprocket wheels or a drum on the said axle a driving belt D' extends to an engine or other source of power. Instead of having the chain belt run closely about the lower sprocket wheels, I sometimes place additional wheels w, on axles secured to the frames f of the shoe D, at such points that their lowest points will be parallel with the circumference of wheels W and then pass the chain-belt about both pairs of wheels W and w, the result being that for a short distance the rake will move in a straight line parallel with the bottom of the shoe and the points of the rakes will take the same direction and give a straight horizontal cut.

When the dredge projects from the bow of the boat I usually employ a chute E supported on arms a, extending from the sides of the frame to insure that the contents of the rakes will not drop overboard when discharged from the rakes. The dredge boat having been brought over the flats and any lines holding it up slackened it will run down until the shoe strikes the surface of the ground to be dredged, and the dredge will rest upon said shoe and the bearings S of its sliding



pieces  $F^4$  but be free to move up or down within the limit of the length of pieces  $F^4$ . The draft line  $d$ , is drawn taut and the dredge is ready, motion is then given to the driving belt and thereby to the chain belt carrying the rakes, they will descend, the points reaching the oysters upon the ground through the opening in shoe D, tearing them loose therefrom, carrying them upward and dumping them into the vessel, directly, or over the chute E. The vessel is of course moved forward by its own or some other motive power, over the bed and continues to raise the oysters as long as any remain above such a depth of water as it is intended to dredge, the arrangement of the shoe and wheels shown in Figs. 9 and 10 insuring a straight cut horizontal with the bottom instead of an arc shaped one as would be produced were but one wheel used. The shoe D, being hinged to the frame and extending both fore and aft from its pivot will automatically incline itself according to the inclination of the ground over which it is moving and as the rakes reach such ground through the opening in the shoe they will of course always cut to an even and regular depth below the surface. Furthermore the wheel  $w$ , being secured to the frame  $f$ , will always hold the belt in a line from wheels W, both straight and parallel to the shoe, and therefore to the ground, as desired, whatever the inclination of the surface of that ground. If the water shoals the frame will either ride upon its supporting brackets or the draft rope slacken or both. If the water deepens the frame will ride down upon its supports and whenever from either cause the inclination of the frame becomes either greater or less than is desirable, this may be obviated by slacking away or hauling in upon the draft rope, though for a considerable latitude of variations the parts will automatically adjust themselves.

It will be noticed that I have inclined the dredge downward and forward, this permits me to set the rakes so that the cut of the rakes is in the direction of the movement of the boat and yet at the same time they will be carried over and discharge into the boat without the necessity of any auxiliary frame for carrying them to a point where that will occur, which would not be the case with a dredge of similar cut but reverse inclination. So much support is given to the dredge by the broad shoe extending fore and aft that I am enabled to dispense with many braces to the frame, especially when I employ a draft rope as shown. Again if rock or other obstructions are met this shoe will in a majority of instances ride over them without any injury to the dredge, and the hanging of the

rakes is such that while they will at once take into ground yet when rock engages them they may ride inward on their chains a little and so pass over it.

What I claim, and desire to secure by Letters Patent, is—

1. An oyster dredge consisting of a frame supported on a vessel and carrying an endless belt to which is secured one or more rakes, hinged thereto at the end and provided with chains leading from the loop of the rake to the belt all substantially as set forth.

2. An oyster dredge consisting of a frame carrying an endless belt of rakes supported upon a vessel and provided with a shoe hinged to the lower part of the frame and extending fore and aft of the belt-wheel pivot substantially as set forth.

3. An oyster dredge consisting of a frame carrying an endless belt of rakes supported upon a vessel and provided with a shoe secured to the lower part of the frame extending fore and aft of the belt-wheel pivot and provided with an aperture in its sole arranged in the path of the points of the rakes substantially as set forth.

4. An oyster dredge consisting of a frame carrying an endless belt of rakes supported upon a vessel and provided with a shoe hinged to the lower part of the frame and a draft line extending from said shoe to a point in advance thereof substantially as and for the purpose set forth.

5. An oyster dredge consisting of a frame carrying an endless belt of rakes, and provided with bearing pieces and a shoe the latter of which is adapted to rest upon the bed surface, in combination with a supporting frame secured to the vessel and provided with slots or openings for receiving and bearings thereabout for sustaining the bearing pieces of the dredge frame whereby the latter may automatically adjust itself to varying depths of water, substantially as set forth.

6. An oyster dredge consisting of a frame supported upon a vessel and carrying an endless belt of rakes on wheels placed at or near each extremity of the frame in combination with a shoe hinged to the lower part of said frame and additional wheels on an axle in fixed relation to the sole of said shoe about which additional wheels also said endless belt is carried substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 10th day of January, 1894.

D. E. POWERS.

Witnesses:

H. H. HULL,

A. G. N. VERMILYA.