

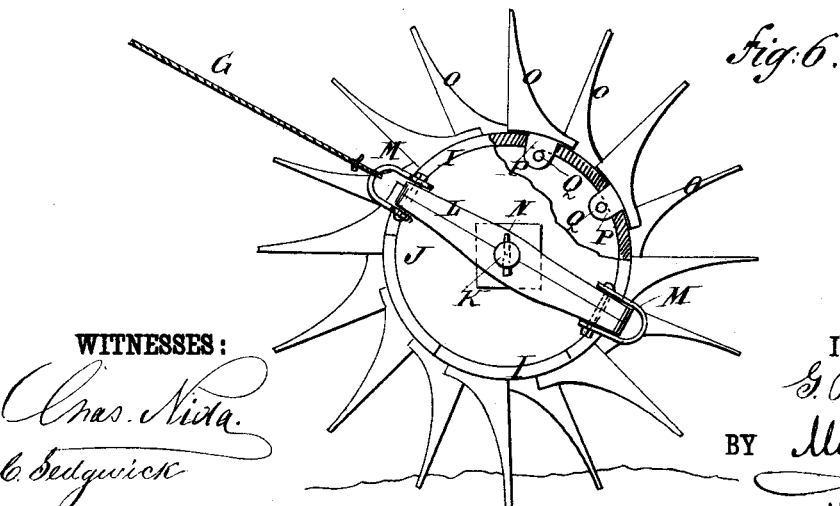
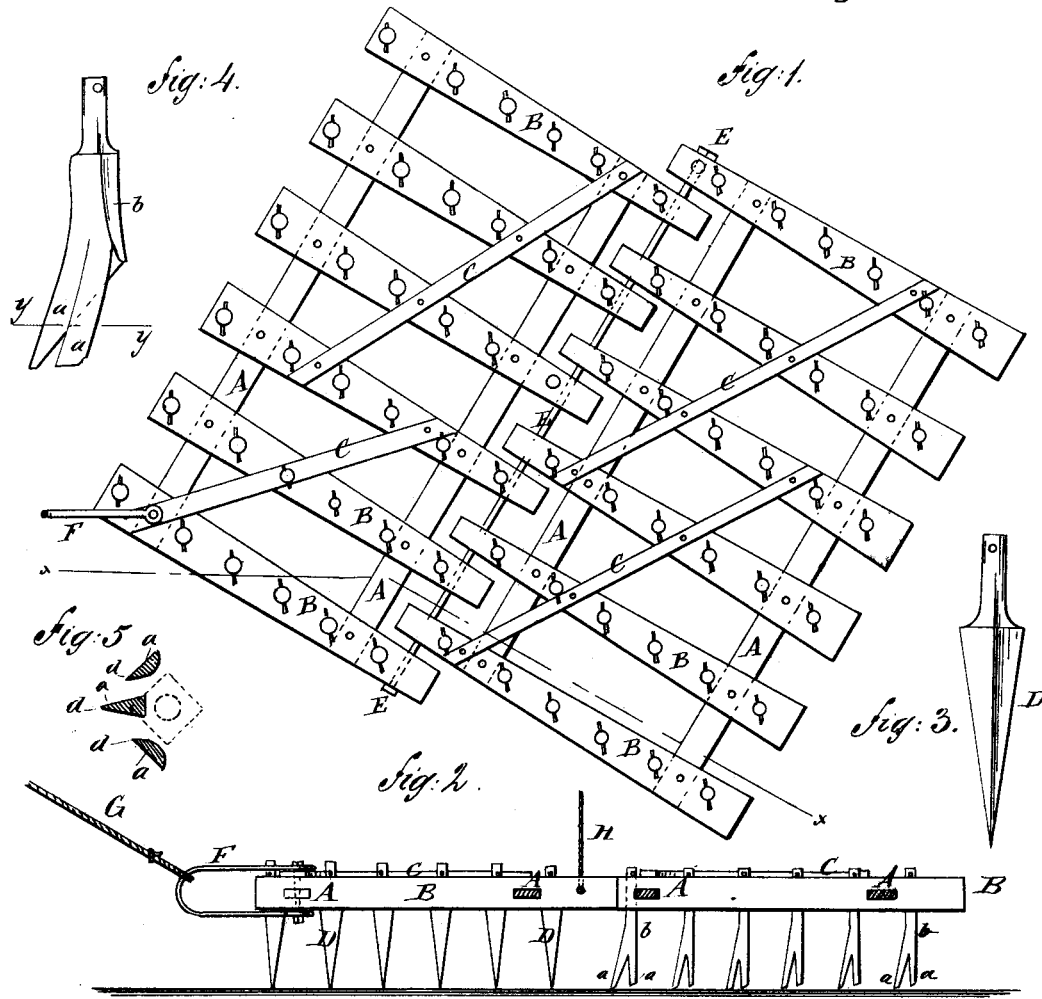
(No Model.)

2 Sheets—Sheet 1.

G. PETERSON.  
APPARATUS FOR DEEPENING CHANNELS.

No. 262,828.

Patented Aug. 15, 1882.



WITNESSES:

*Chas. Nida.*  
*C. Sedgwick*

INVENTOR:

*G. Peterson*

BY

*Mum & Co*

ATTORNEYS.

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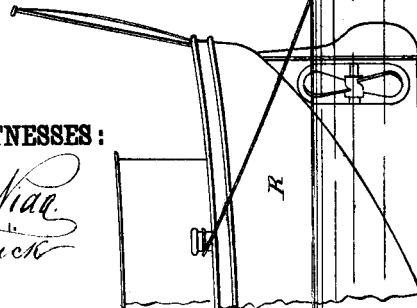
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*Fig. 1.*

WITNESSES:  
*Chas. Mac.*  
*C. Bulgwick*



INVENTOR:  
*G. Peterson*  
BY *Mum H.*  
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# UNITED STATES PATENT OFFICE.

GUSTAV PETERSON, OF GALVESTON, TEXAS.

## APPARATUS FOR DEEPENING CHANNELS.

SPECIFICATION forming part of Letters Patent No. 262,828, dated August 15, 1882.

Application filed April 17, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAV PETERSON, of Galveston, in the county of Galveston and State of Texas, have invented a new and Improved Apparatus for Deepening Channels and Removing Sand-Bars, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of dredging-machines designed to remove sand-bars and other shoals in navigable waters where strong tides flow and ebb; and it consists in the peculiar construction and arrangement of parts, as hereinafter fully set forth.

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

Figure 1 is a plan of the harrow-shaped frame, with teeth for scratching the surface of the bottom to be removed. Fig. 2 is a sectional elevation of the same, taken on line *x x* of Fig. 1. Fig. 3 is a front elevation of a simple form of tooth to be used in the form of apparatus represented in Figs. 1 and 2. Fig. 4 is a side elevation of a tooth for the said apparatus, having branches to the point. Fig. 5 is a section of Fig. 4 on line *y y*. Fig. 6 is an end elevation of the toothed revolving device for the same purpose; and Fig. 7 represents a portion of a steamer with the improved sand-removing implements in tow, and illustrates the method of removing sand-bars and deepening channels according to my invention.

I make rectangular frames of longitudinal bars A and cross-bars B, also diagonal braces C, similar in arrangement to the frame-bars of a harrow, or substantially so, and provided with sharp-pointed teeth D, or teeth of other approved form, preferring to employ two or more such toothed frames connected together by articulated joints at E, for the better application of the teeth to the surface of the bar to be removed, which device, suitably provided with a clevis, F, for the connection of a drag-chain, G, I propose to use for the removal of hard sand-bars or soft mud bottoms, wherever tides flow with sufficient force to wash away the sand or other bottom, by dropping said implement over the stern of a steamer by a derrick and dragging it over the surface of the bottom to scratch up and loosen the same

for so exposing it to the action of the currents of water flowing over the bottom.

The form of tooth which I prefer to employ in this apparatus is three-pointed, such as shown in Figs. 4 and 5, the same being more effective by reason of having the greater number of points, and being in this service practically successful because the wash of the water prevents the prongs from clogging, as they would in soil-tilling. The branching form is better also because the multiplication of parts is limited to the points and a little above, while from the branches upward to the frames the spaces are larger and freer for the circulation of the mixed sand and water than they would be with the same number of points of single shanks. The teeth of this form may consist of steel points *a*, welded onto a steel or iron shank, *b*, or the whole may be cast of steel, and for the best results the prongs should have their knife-edges *d* to the front, as shown in Fig. 5, for working easily, and the two outside branches should be oblique to the edge of the middle branch, the whole being in the form of a triangle.

The tow-rope H represents the connection with the derrick upon the steamer for dropping the apparatus overboard and hauling it aboard again, or the same may be accomplished by means of the drag-chain G, or both together.

For the rotary apparatus I provide a drum, I, made hollow by means of staves, or, being a hollow tube, with a head, J, at each end, and an axle, K, thereon, which runs in a box or bearer, L, that is prolonged each way from the journal about as much as the radius of the drum, and provided with a clevis, M, at each end, the said box being secured to the axle by a pin, N. The object of the clevis at each end is to attach the drag ropes or chains G at one end and hitch on the drag of Figs. 1 and 2 behind the rotary device. To this drum I spade-shaped teeth O, of steel or iron, are attached by eye-studs P and pins Q, as shown, or in any approved way, to dig and stir the sand upon the surface, as before stated.

The apparatus is intended more particularly for removing the long hard sand-bars of southern waters, but will of course be found useful elsewhere.

The mode of operation with the above-described implements is represented in Fig. 7,

where R represents the stern of a steamer having the rotary apparatus in tow by the line G, and the flat harrow of Figs. 1 and 2 also in tow by attachment to the rotary device by its line G.

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

1. The combination, with the rotary toothed drum I J and the boxes L, provided with the  
10 clevises M, of the toothed frame A B, provided with the clevis F, both the drum and frame being adapted to be drawn from a vessel in line with each other, substantially as shown and described.

15 2. The improved branch-pointed teeth *a a a b* for a sand-removing implement, substantially as specified.

3. The improved channel-deepening implement, consisting of the branch-pointed teeth *a*  
20 *a a b*, in combination with a frame, A B, and a clevis, F, substantially as specified.

4. The drum I J, having axles K, boxes L, teeth O, and end clevises, M, substantially as specified.

5. The improved rotary channel-deepening  
25 implement, consisting essentially of a drum, I J, with teeth O, attached by eye-studs P and pins Q, and said drum provided with axles K and boxes L and hitching-clevises M, substantially as specified.

30 6. The improved branch-pointed teeth *a b* for a channel-deepening and sand-bar-removing implement, having the front knife-edges, *d*, the points being arranged in a triangle, substantially as specified.

GUSTAV PETERSON.

Witnesses:

HUGO BROSIG,  
TIM FINN.