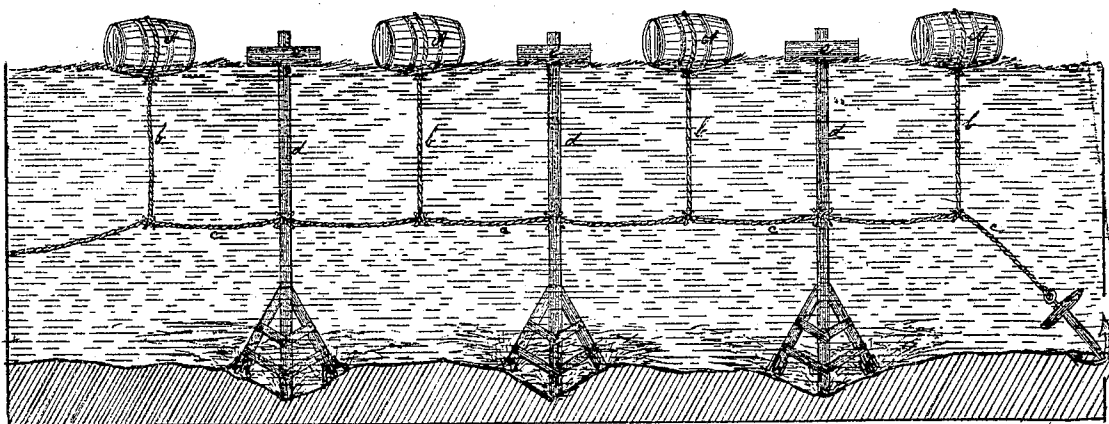


117772

JOHN HALLIDAY'S

PATENTED AUG 8 1871

Improved Apparatus for deepening the channels of rivers, etc.



Witnesses.

H. W. Jenkins
E. H. Levy

Inventor.

John. Halliday

UNITED STATES PATENT OFFICE.

JOHN HALLIDAY, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN APPARATUS FOR REMOVING SAND-BARS FROM RIVERS.

Specification forming part of Letters Patent No. 117,772, dated August 8, 1871.

To all whom it may concern:

Be it known that I, JOHN HALLIDAY, of the city of New Orleans and State of Louisiana, have invented a new, useful, and Improved Apparatus for Deepening the Channels of Rivers, Harbors, and other waters, the mode of construction, operation, and principles of which are clearly and correctly set forth in the following description and specification, and amply illustrated by the drawing annexed, which constitutes a part of the said specification and description, and in which—

A represents a series of buoys, which may be placed on the surface of the water parallel with the course of the channel, in the middle, on one side, or on both sides of it, at right angles with the same or diagonally, at equal or at unequal distances apart, at the will, pleasure, or convenience of the operator, and they may be made of wood or metal, or of any other suitable material, and in any desired form, shape, and size. These buoys support, by means of ropes, chains, or any other suitable and equivalent material, and in the manner shown on the drawing and indicated by the letters *b*, another line, rope, or chain, *c*, placed at an indefinite distance below the surface of the water, but usually directly below and parallel with the buoys *A* above mentioned. To this chain or rope, and intermediately between the buoys *A*, are attached the diggers, agitators, or excavators, indicated by the letters *d*, which, like the buoys aforesaid, may be constructed of wood or metal and of almost any form, length, or dimensions, but usually of the form shown on the drawing. At the top of the agitators I usually place a cross-plank, *e*, or a small sail of canvas, the object of which is to catch the wind or the waves, and thus be agitated or oscillated by them, and thereby rendered effectual in continually digging up the sand or mud below, which, when thus agitated, is easily and readily swept away by the passing currents of the water, and, as a consequence thereof, the channel made deep-

er and the navigation of it by vessels facilitated. The buoys *A* aforementioned will likewise be agitated by the undulations of the waters, by the winds, and the tides, and thus the apparatus be made instrumental in the mode and in the manner shown of deepening the channels of rivers, harbors, and other waters, at their outlets to the sea, by removing the sand or mud-bars which accumulate therein and which so often obstruct navigation, to the great injury, loss, and detriment of commerce. Hooks, arrow-heads, or crooked and pointed bars of metal may be bolted or fastened at the lower ends of the diggers, and thus be made the more effectual in tearing up or loosening very hard tough mud or gravel, and the whole apparatus must be anchored in any convenient manner so as not to be placed or thrown out of the necessary position with respect to the material or channel to be excavated or entirely swept away. For a like purpose kedge-anchors may be placed laterally, but not in position to interfere with or obstruct navigation.

It will readily be perceived that the buoys of my apparatus, if placed in proper position with respect to the channel, could be made to serve the useful purpose of guide to direct passing vessels to their proper courses or direction therein. It will also be perceived that my device will not only serve the purposes for the accomplishment of the results for which I claim it to be applicable, but it will accomplish another important and most desirable result, and that is, it will effectually prevent the accumulation and formation of sand-bars or mud-bars in any waters or channels in which or near which it may be placed in position.

What I claim, and desire to secure by Letters Patent, is the following:

The buoys *A*, ropes *b*, chain or rope *c*, and diggers or agitators *d*, so combined and arranged as to operate substantially as described.

Witnesses: JOHN HALLIDAY.

H. N. JENKINS,

E. H. LEVY.