A. GARNHAM.

Devices for Removing Sand-Bars in Rivers.

No. 139,569. Patented June 3, 1873.

fig. 1.

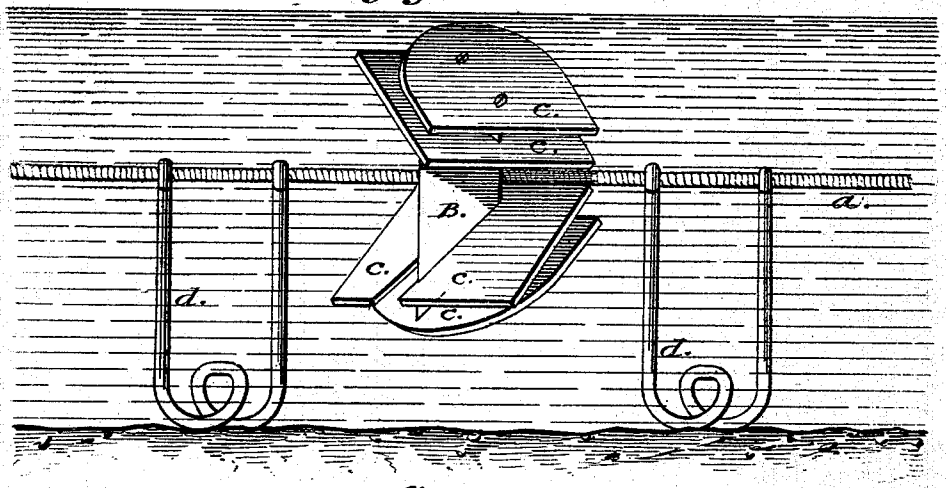


fig. 2.

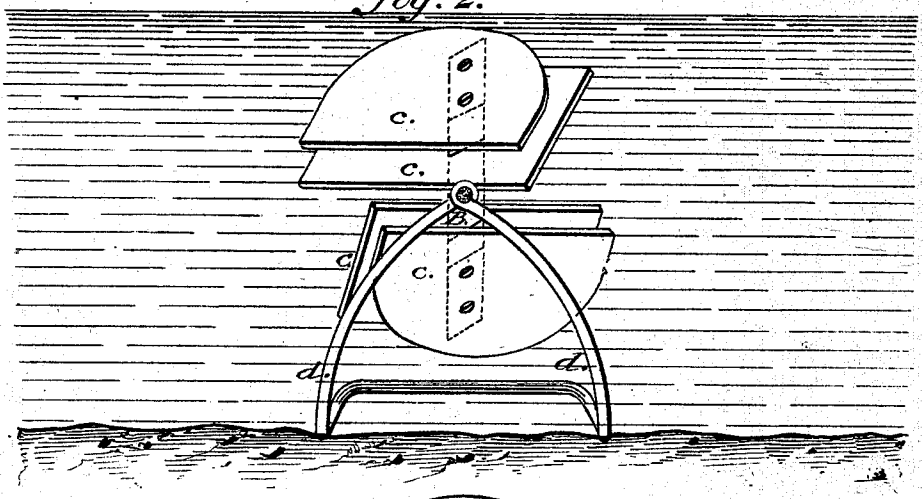
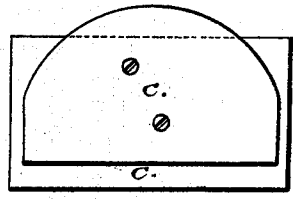


fig. 3.



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UNITED STATES PATENT OFFICE.

ALFRED GARNHAM, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN DEVICES FOR REMOVING SAND-BARS IN RIVERS.

Specification forming part of Letters Patent No. **139,569**, dated June 3, 1873; application filed November 1, 1872.

To all whom it may concern:

Be it known that I, ALFRED GARNHAM, of St. Louis, in the county of St. Louis, State of Missouri, have invented a certain Process for Removing Sand-Bars in Streams and Rivers, and changing and directing the channels of streams and rivers, and scouring the bottoms of the same, of which the following is a specification:

In the accompanying drawing, Figure 1 is a side view in perspective; Fig. 2 is an end view in perspective; and Fig. 3 is a view of the fan.

The nature of my invention consists in producing diverted or disturbed or spiral currents in a stream or river, by means of a submerged revolving mechanical device suitable for that purpose, so that said diverted, disturbed, or spiral current will act upon the bottom of the stream or river over which it is directed, and wash or cut a channel or scour the bottom of the stream or river. Thus I am enabled, by means of said diverted, disturbed, or spiral current so produced, to cut away sand-bars in rivers, to change and direct the bed or channel of a river, by the mere force of the water and action of the currents thus produced.

Where a straight current of water runs over a sand-bar, it washes only by the gradual friction of the water on the bottom; but when this diverted, disturbed, or spiral current is produced, it constantly stirs the sand up from the bottom and mixes it with the water and carries it off. Thus sand-bars can be cut through and washed away in a short time, and channels cut and opened up, and the beds and direction of rivers changed.

This diverted and disturbed current may be produced by many different kinds of submerged revolving mechanical devices, one of which I, having more particularly adopted, will proceed to explain, that the nature and scope of my invention may be more fully and perfectly understood.

In the drawing, A is a cable anchored up the stream, immersed in the water, and drawn in the direction I wish to cut my channel, or over the part of the sand-bar I wish to remove. On this cable, at intervals, I place fans and beaters, so constructed as to revolve when the water strikes them. In the drawing, B is a center piece, through the center of which the cable A passes, and on which it revolves. On this cable is a shoulder, to prevent the beater from slipping on said cord or cable. This part B is broad, and as it revolves it strikes the water, and with the fans C C C C at either end assists in giving the water the diverted, disturbed, or spiral motion. These fans C C C C are placed at the end of the piece B, at an inclination to each other on opposite ends of said piece B, so that they will assist to throw the water out of its usual course in a diverted and disturbed or spiral current, and they also serve to give a revolving motion to the beater, thus drawing the current of the water toward the bottom with a cutting effect, and mixing the sand with the water so that it will be carried off.

The fans being placed at an inclination, and so as to present a compound angle to the current of the stream, are by the current caused to revolve, carrying with them the broad beater B, which offers considerable resistance, owing to the surface it presents to the water while turning. The lower fans give a downward direction to the current, while the upper fans give an upward direction thereto. The lower portion of the beater forces the water downward, and the upper portion forces it upward. The entire operation of the device is such that it agitates the water, and the agitation causes the sand to be washed loose from the bed of the stream and to be mixed with the water, by which it is suspended as long as the agitation continues. As the device does not detain the water, the suspended sand is carried down with the volume of water, and in this manner is the object of the invention effected.

This cable may be provided with sinkers and supports *d d*, which are simple standards made of metal, and so constructed that they can be moved along the bottom of the stream without difficulty.

What I claim as new, and for which I ask Letters Patent of the United States, is—

The device, having a beater, B, provided with fans C, arranged, when properly submerged and anchored, to be automatically revolved by the current of the stream, substantially as and for the purpose hereinbefore set forth.

Witnesses: ALFRED GARNHAM.
THEODORE MUNGEN,
WM. M. ECCLES.